

**FACTORS ASSOCIATED WITH UTILIZATION OF
FAMILY PLANNING METHODS AMONG WOMEN OF
REPRODUCTIVE AGE (15 – 49 YEARS) IN MANDERA
COUNTY, KENYA**

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**Factors Associated with utilization of Family planning methods among
Women of Reproductive Age (15 – 49 years) in Mandera County,
Kenya**

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Technology, Kenya**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

This thesis is dedicated to my parents; Mr Suleiman Omar and Mrs Hawa Aden whose support and encouragement made me accomplish my goals. My brothers Abdimalik and Abdirahman, Sisters Ayaan, Fartun and Jawahir. To my lovely wife Anisa and Sons Farhan and Mohamed.

May Almighty Allah bless you all.

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TABLE OF CONTENTS

DECLARATION.....	II
DEDICATION.....	III
ACKNOWLEDGEMENT	IV
TABLE OF CONTENTS.....	V
LIST OF TABLES	XI
LIST OF FIGURES	XII
LIST OF APPENDICES.....	XIII
ABBREVIATIONS AND ACRONYMS.....	XV
OPERATIONAL DEFINITION OF TERMS.....	XVII
ABSTRACT.....	XIX
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background Information	1
1.2 Statement of the Problem.....	3
1.3 Justification of the Study.....	4
1.4 Research Hypothesis	5
1.5 Research Hypothesis	5

1.6 Research Objectives	6
1.6.1 General objective	6
1.6.2 Specific objectives	6
CHAPTER TWO	7
LITERATURE REVIEW.....	7
2.1 Contraceptive and family planning	7
2.2 Fertility Rate and Contraceptive use	7
2.3 Benefits of Family Planning.....	9
2.4 Types of family planning methods.....	10
2.5 Factors associated with Family Planning Utilization	12
2.6 Conceptual Framework	13
CHAPTER THREE	15
MATERIALS AND METHODS	15
3.1 Study Site	15
3.2 Study Design	15
3.3.1 Inclusion criteria.....	16
3.3.2 Exclusion criteria	16
3.4 Sampling	16

3.4.1 Sampling procedure	16
3.5 Sample size determination	16
3.6 Data collection tools.....	17
3.6.1 Recruitment and training of field workers	17
3.6.2 Pre-testing of study tools.....	17
3.6.3 Questionnaires.....	18
3.6.4 Focus group discussions.....	18
3.6.5 Key informant interviews.....	19
3.7 Data Management and Analysis.....	20
3.8 Ethical considerations	20
CHAPTER FOUR.....	22
RESULTS.....	22
4.1 Socio-Demographic Characteristics of Participants.....	22
4.1.1 Region of origin	22
4.1.2 Age	22
4.1.3 Marrital status.....	22
4.1.4 Religion	22
4.1.5 Occupation	23

4.1.6 Income.....	23
4.2 Household demographic characteristics.....	25
4.2.1 Household headship	25
4.2.2 Household population size	26
4.2.3 Physiological status.....	26
4.2.4 Parity	26
4.2.5 Household number of live children.....	27
4.3 Participants awareness level of family planning methods	29
4.3.1 Contraceptive awareness.....	29
4.3.2 Source of family planning information	31
4.3.3 Types of family planning	31
4.3.4 Awareness of emergency contraceptive methods	32
4.3.5 Preferred childbearing age	32
4.3.6 Preferred child spacing age	33
4.3.7 Cost of FP.....	34
4.3.8 Ease of discussing FP.....	34
4.4 Level of utilization of Family Planning	35
4.4.1 Levele of FP utilization.....	35

4.4.2 Types of FP utilized	35
4.4.3 Sources of FP	35
4.4.4 Rating of FP utilized	36
4.4.5 Distance to FP provider.....	36
4.4.6 Reasons for not uptaking FP	36
4.5 Factors associated with the utilization of family planning.....	38
4.5.1 Socio-demographic and Economic factors.....	38
4.5.2 Household demographic characteristics.....	39
4.5.3 Awareness of contraceptive and family planning factors.	40
4.5.4 Patterns of contraceptives use related factors	43
4.6 Outcomes of qualitative analysis	45
4.6.1 Awareness of methods of family planning.....	45
4.6.2 Sources of family planning methods.....	46
4.6.3 Types of family planning methods.....	46
4.6.4 Cost of family planning methods	47
CHAPTER FIVE.....	48
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS	48
5.1 Discussion	48

5.1.1 Contraceptive use	49
5.1.2 Factors associated with utilization of family planning	50
5.2 Conclusions	53
5.3 Recommendations	53
REFERENCES	55
APPENDICES	64

LIST OF TABLES

Table 4.1: Socio-Demographic characteristics of the study participants	24
Table 4.2: Household Demographic characteristics.....	28
Table 4.3: Awareness of reproductive health and contraception	30
Table 4.4: Utilization of contraceptive and family planning	37
Table 4.5: Socio-demographic factors associated with family planning utilization	39
Table 4.6: Household related factors associated with family planning utilization	40
Table 4.8: Patterns of family planning and associated with the actual utilization	44

LIST OF FIGURES

Figure 2.1: Andersen’s Phase-2 Model of Family planning/Health Services Utilization	14
Figure 4.1: Household headship.....	25
Figure 4.2: Participants physiological state	26
Figure 4.3: Number of previous pregnancies.....	27
Figure 4.4: Awareness of contraceptive and family planning	29
Figure 4.5: First knowledge about reproductive health and contraception.....	31
Figure 4.6: Awareness level on the methods of contraception	32
Figure 4.7: Ideal time to have first child.....	33
Figure 4.8: Age of spacing between children	34

LIST OF APPENDICES

Appendix I: structured questionnaires	64
Appendix II: structured questionnaires in somali.....	71
Appendix III: Focus group discussion guide.....	79
Appendix IV: Focus group discussion in somali	81
Appendix V: Key informant interview guide	83
Appendix VI: Key informant interview guide in somali	86
Appendix VIII: Informed consent document for structured interviews	89
Appendix VIII: Informed consent documents for structured questionnaire in somali ...	92
Appendix IX: Informed consent for focus group discussions	95
Appendix X: Informed consent for focus group discussions in somali	97
Appendix XI: Informed consent document for key informant interviews.....	100
Appendix XII: Informed consent document for key informant interviews in somali ..	103
Appendix XIII: Assent form for participant between 15-18 years (structured interview)	106
Appendix XIV: Assent form for participant between 15-18 years in somali	108
Appendix XV: Assent form for participant between 15-18 years (focus group discussions).....	110

Appendix XVI: Assent form for participant between 15-18 years (focus group discussions) in somali 112

Appendix XVII: Map of mandera county..... 114

Appendix XVIII: Scientific steering committee approval letter 115

Appendix XIX: Ethical review committee approval letter 116

Appendix XX: Approval letter..... 117

Appendix XXI: Publication 118

ABBREVIATIONS AND ACRONYMS

CI	Confidence Intervals
CPR	Contraceptive Prevalence Rate
DICH-GCP	Declaration of Helsinki and International Conference on Harmonization Guideline on Good Clinical Practice
ERC	Ethical Review Committee
FGD	Focus Group Discussions
FGM	Female Genital Mutilation
FP	Family Planning
FPAK	Family Planning Association of Kenya
GoK	Government of Kenya
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immuno Deficiency Syndrome
ITROMID	Institute of Tropical Medicine and Infectious Disease
IUD	Intrauterine Device
KDHS	Kenya Demographic and Health Survey
KEMRI	Kenya Medical Research Institute
KII	Key Informants Interview

MMR	Maternal Mortality Ratio
MOH	Ministry of Health
OR	Odds Ratios
SID	Subject Identification Number
SSC	Scientific Steering Committee
STD	Sexually Transmitted Disease
TFR	Total Fertility Rate
WFS	World Fertility Survey

OPERATIONAL DEFINITION OF TERMS

Accessibility	Easy to approach, reach or use.
Affordability	Believed to be within some ones financial means.
Availability	Defined as the quality of being able to be used or obtained.
Beliefs	Are the assumptions we make about ourselves, about others in the world and about how we expect things to be.
Contraception	The deliberate prevention of conception or impregnation by any of various drugs, techniques, or devices; birth control.
Costs	will refer to any payments done/incurred related to the delivery in cash or in kind.
Distance	The length of space in terms of kilometers.
Family planning	The practice of controlling the number of children in a family and the interval between the births.
Health Care Utilization	The quantification or description of the use of services by persons for the purpose of preventing and curing health problems, promoting maintainance of health and well-being, or obtaining information about one's health status.
Income status	Approximate average income in Kenya Shillings.
Level of education	Will be defined as primary, secondary and tertiary.

Marital status	Will indicate whether married, single, widowed, separated or divorced.
Parity	Parity will reflect the number of children. Will be the number of deliveries before (those living and dead).
Religion	None, Christian, Muslim, traditionalist.
Reproductive age	in women, those years between menarche and menopause, roughly from ages 15 to 49 while in men, those years between onset of puberty and loss of fertility.
Utilization	Defined as the action of making practical and effective use of something.

ABSTRACT

Unmet need for modern family planning methods is an important health issue for women. The purpose of this study was to determine factors associated with utilization of family planning among women aged 15-49 years in Mandera County. This cross-sectional study enrolled 117 eligible women from April 2015 to September 2015. Data were collected using semi structured questionnaire; key informant interviews (KIIs) and focused group discussions (FGDs). Twelve (12) FGDs were conducted among women in health, leadership, education and religious sectors. Twelve (12) KIIs among influential and knowledgeable members of the county were also conducted to gather qualitative data. The FGDs and KIIs were conducted to confirm and clarify any pending or new issues described in the structured questionnaires. STATA version 13 was used for quantitative data analysis. The thematic content analysis was used to analyze qualitative data. The mean age of the respondent was 29.9 (SD± 9.8) years. 80% of these 117 women were aware of contraceptive and family planning methods mainly through family and friends (52.1%). Of the 41.9% who reported using family planning (FP) methods, 26.5% used condoms. In multivariate analysis, women who were from either the Northern (OR 4.3, 95% CI 1.1 to 18.2), Southern (OR 7.5, 95% CI 1.7 to 33.4) or Eastern of Mandera County (OR 4.7, 95% CI 1.1 to 20.8); had either secondary (OR 11.1, 95% CI 2.7 to 46.1) or tertiary (OR 11.9, 95% CI 2.6 to 55.9) level of education; were employed (OR 4.3, 95% CI 1.2 to 19.1); used either condoms (OR 5.7, 95% CI 1.3 to 24.5) or hormonal family planning methods (OR 5.8, 95% CI 1.4 to 25.2) were independently associated with utilization of FP. The FGDs and KIIs confirmed the continuous increase in the level of utilization of FP. The thematic analyses of FGDs and KIIs identified location of origin, awareness, income, employment, religion and cultural practices as some of the factors limiting the utilization of FP. In conclusion, a high proportion of women from Mandera County an arid region in the North Eastern Kenya, were aware and embraced FP. Factors such socio-cultural, lack of education and awareness were major deterrent to utilization of FP in this region. Ultimately for the

improvement in the proportion of women embracing FP in Kenya especially in the initially marginalized counties experiencing hardship (such as droughts) and insecurity; it is recommended that concerted efforts must be undertaken by the County and National government to promote and to tackle the socio-cultural deterrents of FP utilization. Further, improvement in the general awareness rate of FP among women at family level should be rolled out by the Mandera County Government in conjunction with the National Government. Should this be achieved, then this County could record one of the highest utilization rates of FP in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Globally, improved utilization of family planning contributes in achieving the 3.7 Universal Sustainable Development Goal (USDG), which focuses on ensuring universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes by 2030 (ICSU, ISSC, 2016). Fostering family planning has been associated with acceleration of socio-economic development, promotion of gender equality, and decreased maternal and infant mortality (UNFPA & PATH, 2008). The past five decades have been marked by significant decrease in fertility rates in Asia, Latin America and North Africa. Sub-Saharan Africa, however, has not experienced the same rapid trend, and today, the region still has total fertility rates (TFR) of around five births per woman (Bongaarts, 2011).

Kenya, like many developing economies, is characterized by exponential population growth. This is partly attributed to high fertility and birth rates, steady decline in death rates, low contraceptive utilization rate and high but declining mortality rate (Oyedokun, 2007; Lawoyin *et al.*, 2007; Cleland *et al.*, 2012; Population Reference Bureau, 2013). High population growth rate has been an impediment in the reduction of child mortality, improvement of maternal health, achievement of universal primary education, environmental sustainability and combating HIV and AIDS and other diseases as part of the Sustainable Development Goals (SDGs) (Health Policy Initiatives, 2017).

In response, Kenya concentrated on birth control measures using family planning (FP) services which enable couples to determine whether, when, and how often to have children (USAID, 2011). FP has a profound effect in controlling population growth. At the micro level, FP contributes critically to birth spacing and controlling family size. Some forms of FP also play the dual role of controlling family size and protection against sexually transmitted diseases (STDs) (Mayo, 2004; Asiimwa *et*

al., 2013). Other benefits include improved maternal and child health, reduced cases of induced abortion and improved household welfare. At the macro level, the benefits of a well-controlled population growth include improved infrastructure and reduced burden on national budgets (USAID, 2011).

Since the Kenya Government incorporated FP into the country's overall development policy in 1965, FP use increased from 18% (1987) to 58% (2014) with a decline in the fertility rates from 8.1 children per woman in 1977 to 3.9 in 2014 (Kenya Demographic and Health Survey, 2014). However, this increase has not been matched with a reduction in the unmet need for FP which has stalled at around 25% and is highest among the less privileged women and those in rural areas (Ojaka, 2008). The fertility rate in Kenya is lowest in Nairobi County (2.7 children per woman) and highest in North Eastern region (where Mandera county is located) (6.4 children per woman) (Kenya Demographic and Health Survey, 2014). Challenges facing reproductive health in the Mandera County include, but are not limited to inaccessibility to FP services, inadequate health personnel, lack of youth friendly clinics, high incidence of female genital mutilation (FGM), reluctance to accept modern FP methods and lack of sufficient education (National Coordination Agency for Population and Development Ministry of Planning and National Development, 2005). The sustained increase in the use of FP services among women aged between 15 and 49 years is a major factor in fertility transition, providing women and couples with the means to help them plan pregnancies (Campbell *et al.*, 2006; Republic of Kenya, 2007; USAID/HPI, 2009).

With the 2013 devolution of political power and economic resources from the Central government to the Country's 47 Counties, Mandera County is ranked among the top 3 among Counties receiving the largest share of budgetary allocation. In the 2014/2015 financial year (FY) Mandera County received KES 7.8 billion (about USD 78 million) which was increased to KES 8.9 billion (about USD 87 million) in the 2015/2016 FY, representing 3.5% of Kenya total revenue collection (Republic of Kenya, 2015). The World Bank, Danish International Development Agency (*DANIDA*) among other agencies contributes significantly to Mandera County's

health needs. All these are allocated to mitigate the health challenges in Mandera county; upgrade of existing hospitals and construction of others, increase supplies of both pharmaceutical and non-pharmaceutical items, increased health personnel, enable free maternal health care, public health education campaign, improve public education, service delivery, restore public confidence in public health facilities and improve service utilization (Mandera County Government, 2015). This study sought to evaluate the utilization of FP services amongst women of reproductive age in Mandera County.

1.2 Statement of the Problem

Since the Kenya Government incorporated FP into the country's overall development policy in 1965, FP use increased from 18% (1987) to 58% (2014) with a decline in the fertility rates from 8.1 children per woman in 1977 to 3.9 in 2014 (KDHS, 2010; 2014). However, this increase has not been matched with a reduction in the unmet need for FP which has stalled at around 25% and is highest among the less privileged women and those in rural areas (Ojakaa, 2008; Mutombo *et al.*, 2014). The fertility rate in Kenya is lowest in Nairobi County (2.7 children per woman) and highest in North Eastern region (where Mandera county is located) (6.4 children per woman) (KDHS, 2014). Challenges facing reproductive health in the Mandera County include, but are not limited to inaccessibility to FP services, inadequate health personnel, lack of youth friendly clinics, high incidence of female genital mutilation (FGM), reluctance to accept modern FP methods and lack of sufficient education (National Coordination Agency for Population and Development Ministry of Planning and National Development, 2005). The sustained increase in the use of FP services among women aged between 15 and 49 years, is a major factor in fertility transition, providing women and couples with the means to help them plan pregnancies (Campbell *et al.*, 2006; Republic of Kenya, 2007; USAID/HPI, 2009). With the 2013 devolution of political power and economic resources from the Central government to the Country's 47 Counties, Mandera County is ranked among the top 3 among Counties receiving the largest share of budgetary allocation. In the 2014/2015 financial year (FY) Mandera County received KES 7.8 billion (about

USD 78 million) which was increased to KES 8.9 billion (about USD 87 million) in the 2015/2016 FY, representing 3.5% of Kenya total revenue collection (Republic of Kenya, 2015). The World Bank, Danish International Development Agency (*DANIDA*) among other agencies contribute significantly to Mandera County's health needs. All these are allocated to mitigate the health challenges in Mandera county; upgrade of existing hospitals and construction of others, increase supplies of both pharmaceutical and non-pharmaceutical items, increased health personnel, enable free maternal health care, public health education campaign, improve public education, service delivery, restore public confidence in public health facilities and improve service utilization (Mandera County Government, 2015). This study sought to evaluate the utilization of FP services amongst women of reproductive age in Mandera County

1.3 Justification of the Study

In 2015, United Nations member states signed up to the Sustainable Development Goals (SDGs), a set of seventeen international development targets intended to catalyze development and reduce global poverty (ICSU, ISSC, 2016). To date progress towards these goals has been uneven. Of particular concern is Sustainable Development Goal 3 (SDG 3) aimed at ensuring healthy lives and promote wellbeing for all at all ages. Of interest the SDG goal **3.7** which by 2030 aims at ensuring universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes. Current estimates suggest that this initiative is behind schedule. Only 23 countries out of a surveyed 181 are likely to meet the SDG target on time despite increasing volumes of official development aid being provided by donors (Greco *et al.*, 2008; Hogan *et al.*, 2010; ICSU, ISSC, 2016).

In Kenya, knowledge of FP is almost universal at 95% for women of reproductive age, with male condoms, injectable contraceptives and pills being the most commonly known methods (KNBS, 2010). Generally Kenyan FP use has in the last two decades also increased from 18% (1987) to 39% (2008/09). However, this

increase has not been matched with a reduction in the unmet need for FP or reduction in fertility rates. The unmet need for FP in Kenya has stalled at around 25% and is highest among the less economically well-off women and those in rural areas (Ojaka, 2008). Total fertility rate in rural areas has remained unchanged at 5.2. In addition, at the national level, only a slight decrease in fertility has been reported from 4.7 in 1998 to 4.6 in 2008/09 (Ojaka, 2008). There are regional variations in fertility trends in Kenya. Fertility is highest in North Eastern, Nyanza and Western provinces at 5.9, 5.6 and 5.4 respectively (KNBS, 2010). North Eastern and Mandera District has population that is rapidly expanding estimated at 1,025,756 (CBS, Ministry of planning, Kenya; 2009), which cannot be comfortably supported by the existing resources. The use of family planning among women of child bearing age is not only important to their society and their health, but also a source of improvement of wellbeing of the entire family (MOH, 2001). Unfortunately, no equivocal data exist in Mandera District showing the level of awareness, utilization and factors affecting FP use.

1.4 Research Hypothesis

1. What are the social-cultural and demographic characteristics among women of reproductive age (15-49 years) in Mandera County?
2. What are the economic factors influencing utilization of family planning methods among women of reproductive age (15-49 years) in Mandera County?
3. What is the awareness level of family planning services among women of reproductive age (15-49 years) in Mandera County?
4. What are the types and levels of utilization of family planning methods among women of reproductive age (15-49 years) in Mandera County?

1.5 Research Hypothesis

Null Hypothesis (H₀): Women of reproductive age (15-49 years) in Mandera County are not aware and do not utilize family planning methods. The associated factors are not similar with other factors in other parts of the Country.

1.6 Research Objectives

1.6.1 General objective

To determine factors associated with utilization of family planning methods among women of reproductive age (15-49 years) in Mandera County.

1.6.2 Specific objectives

1. To determine the social-cultural and demographic characteristics among women of reproductive age (15-49 years) in Mandera County.
2. To determine the economic factors influencing utilization of family planning methods among women of reproductive age (15-49 years) in Mandera County.
3. To determine the awareness level of family planning services among women of reproductive age (15-49 years) in Mandera County.
4. To determine the types and levels of utilization of family planning methods among women of reproductive age (15-49 years) in Mandera County.

CHAPTER TWO

LITERATURE REVIEW

2.1 Contraceptive and family planning

Contraceptive or family planning is a process of using basic knowledge, attitude and responsible decision by an individual or couples to practice contraception and promote health of the family. It allows a couple to well-plan their family size and the desired number of children (WHO, 2014). World Health Organizations (WHO) declared that family planning is an important step to reduce maternal mortality by allowing women to delay 23 motherhood, avoid unintended pregnancies and abortions (WHO, 2014). Furthermore, by practicing family planning, women will have more opportunity to be employed and able to support their children and families (Mosha et al., 2013; Spieler, 2014). This in turn will bring a positive impact to the community and country. Modern contraception such as oral contraceptive pills, intra-uterine contraceptive device (IUCD), condom, injectable hormone, Implanon, and tubal ligation are known effective methods of family planning (Mosha et al., 2013).

2.2 Fertility Rate and Contraceptive use

Contraceptives are used by the majority of married or in-union women in almost all regions of the world (United Nations, Department of Economic and Social Affairs, Population Division (2015)). In 2015, 64 per cent of married or in-union women of reproductive age worldwide were using some form of contraception. However, contraceptive use was much lower in the least developed countries (40 per cent) and was particularly low in Africa (33 per cent). Among the other major geographic areas, contraceptive use was much higher in 2015, ranging from 59 per cent in Oceania to 75 per cent in Northern America (United Nations, Department of Economic and Social Affairs, Population Division (2015)). Within these major areas there are large differences by region. Prevalence in 2015 was several times as high in Northern Africa and Southern Africa (53 per cent and 64 per cent, respectively) as in Middle Africa (23 per cent) and Western Africa (17 per cent). Contraceptive use has

been increasing recently in Eastern Africa and now stands at 40 per cent. At the other extreme, Eastern Asia had the highest prevalence (82 per cent) of all the world regions in 2015, due to the very high level of contraceptive use in China (84 per cent). Regional contrasts are smaller in Latin America and the Caribbean, although the level of contraceptive use was lower in the Caribbean (62 per cent) than it was in Central America (71 per cent) and South America (75 per cent). Within Europe, prevalence in 2015 was lowest in Southern Europe (65 per cent) and highest in Northern Europe (77 per cent) (United Nations, Department of Economic and Social Affairs, Population Division (2015)).

The total fertility rate in countries with a low CPR is usually high, as the case in Cambodia, Lao People's Democratic Republic and Papua New Guinea at 3.3-4.1 in 2008, while the Philippines at 3.2 and Pacific Island countries with a small population mostly at 3.9-4.4. Most of the countries with a high total fertility rate often have limited choice of contraceptive methods (WHO, 2013).

The policy developed by the Government of Kenya since 1968 remained dormant until the findings from the World Fertility Survey (WFS) in 1977 showed that Kenya had one of the highest fertility rates in the world of 8 children per woman (WFS, 1977). This statistic served to focus both policy and public attentions on fertility issues and tore invigorate the population policy, with the result that substantial national and international support was dedicated to developing and strengthening a vigorous national family planning program. The impact of this was remarkable, as the fertility rate declined from 8.1 children per woman in 1977 to 6.7 children per women in 1989, 4.9, 4.6 and 3.9 in 2003, 2008 and 2014 respectively, (KDHS, 2014). Indeed, the decline in fertility between 1977 and 1998, from 8.1 to 4.7 births per woman was one of the most rapid declines ever documented in the world. This consistent decline in fertility led to projections that total fertility rate (TFR) would decline gradually to about 3.5 by 2008. Fertility is lowest in Nairobi province (2.7 children per woman), followed by Central province at 2.8 children per woman, and highest in North Eastern province (6.4 children per woman). Fertility in Western (4.7), Nyanza (4.3), Coast (4.3), and Rift Valley (4.5) provinces is slightly above the

national average. These differentials in fertility are closely associated with disparities in educational levels and knowledge and use of family planning methods. This decline was attributed to increased contraceptive use among women aged between 15 and 49 years (Republic of Kenya, 2003). On the other hand, the contraceptive prevalence rate increased rapidly from 9.7 percent in 1984 to 39 percent in 2003. The sustained increase in the use of family planning services was a major factor in fertility transition, providing women and couples with the means to help them plan pregnancies (Backer, 2003; USAID/HPI, 2007; Republic of Kenya, 2007b).

2.3 Benefits of Family Planning

Family Planning has several benefits, some of which are specific to the health of mothers and their children. Others include socio-economic benefits; for example, women are able to advance their education and careers by delaying or limiting childbearing and this can bring better economic prospects to their household (WHO, 1999; Smith et al., 2009). FP serves to reduce child and maternal morbidity and mortality by preventing unintended pregnancies and unsafe abortions (Moreland & Talbird, 2006). The number of maternal deaths that could be averted during childbirth as a result of a reduction in the number of pregnancies and induced abortions would be significant (PAI, 2010). FP also enables birth spacing, ultimately reducing child mortality while enhancing the nutritional status of both mother and child (WHO, 1999). Moreland and Talbird's (2006) analysis of the role of contraception use to the Millennium Development Goals showed that fulfilling the unmet need for FP in Kenya will prevent maternal mortality and child mortality by 14 040 and 434 306 deaths, respectively, and reduce poverty (Republic of Kenya, Kenya Vision 2030, 2007). Consequently, this could contribute to significantly empowering women, achieving universal education for all, and achieving long term environmental sustainability (Cleland et al., 2011). Several studies have assessed women's and couples' knowledge about, and use of contraceptives, in addition to barriers to the uptake of FP services (Nangendo, 2012; Mutombo et al., 2014). A study conducted in Bondo District of Western Kenya found that few women knew that FP prevented conception, enabled child spacing, reduced the risk of acquiring

and transmitting sexually transmitted infections and helped avoid high-risk pregnancies (Nangendo, 2012).

2.4 Types of family planning methods

There are five different groups of family planning methods including, Barrier methods, Hormonal methods, Emergency contraception, Intrauterine methods, Sterilization (Department of Health and Human Services, Office on Women's Health, 2011; Planned Parenthood Federation of America, 2012). Barrier Methods: are designed to prevent sperm from entering the uterus. Barrier methods are removable and may be an option for women who cannot use hormonal methods of contraception. Types of barrier methods include: Male and female condoms and Diaphragms. Condoms prevent pregnancies as well reduce the risk of spreading sexually transmitted diseases (STDs). Diaphragms are shallow, flexible cup made of latex or soft rubber that is inserted into the vagina before intercourse, blocking sperm from entering the uterus (Allen, 2004). Other barrier methods include cervical caps, contraceptive sponges and spermicides. These are also barriers to sperm reaching uterus (American College of Obstetricians & Gynecologists, 2011).

Hormonal methods of birth control use hormones to regulate or stop ovulation and prevent pregnancy. Ovulation is the biological process in which the ovary releases an egg, making it available for fertilization. Hormones can be introduced into the body through various methods, including pills, injections, skin patches, transdermal gels, vaginal rings, intrauterine systems, and implantable rods. Depending on the types of hormones that are used, these pills can prevent ovulation; thicken cervical mucus, which helps block sperm from reaching the egg; or thin the lining of the uterus. Health care providers prescribe, monitor, and administer hormonal contraceptives (National Center for Biotechnology Information. 2010).

Intrauterine Methods; An IUD is a small, T-shaped device that is inserted into the uterus to prevent pregnancy. A health care provider inserts the device. An IUD can remain and function effectively for many years at a time. After the recommended length of time, or when the woman no longer needs or desires contraception, a health

care provider removes or replaces the device. There are two types of intrauterine method; Copper IUD which acts by releasing a small amount of copper into the uterus, causing an inflammatory reaction that generally prevents sperm from reaching and fertilizing the egg. The hormonal IUD releases a progestin hormone into the uterus. The released hormone causes thickening of the cervical mucus, inhibits sperm from reaching or fertilizing the egg, thins the uterine lining, and also may prevent the ovaries from releasing eggs (Food and Drug Administration, Office of Women's Health. 2011).

Sterilization is a permanent form of birth control that either prevents a woman from getting pregnant or prevents a man from releasing sperm. This procedure is performed by health care provider and usually involves surgery. These procedures usually are not reversible. Sterilization includes; sterilization implants which is a nonsurgical method for permanently blocking the fallopian tubes (Conceptus, 2012). Tubal ligation which is a surgical procedure involving the cutting, tying or sealing of the fallopian tubes to block the path between the ovaries and the uterus preventing sperms from reaching the egg.

Vasectomy is a surgical procedure that cuts, closes, or blocks the vas deferens hence blocking the path between the testes and the urethra blocking sperm from leaving testes (National Library of Medicine, MedlinePlus, 2012).

2.5 Factors associated with Family Planning Utilization

Women's education, employment, access to and knowledge of contraception have been highlighted as important predictors of fertility and contraception by demographers (Al Riyami et al., 2004; Duze & Mohammed, 2006). Previous studies have shown that couple attitudes towards family planning, fertility desire, and women's ability to make decisions regarding the use of family planning were important predictors of family planning use. Some studies indicated that in cases where there was couple disagreement, childbearing was less likely to occur, whereas other studies in India and Nigeria have shown that men's attitudes played a bigger role in determining actual childbearing behavior than that of their wives (Wolf et al, 2000).

In Kenya, a study conducted in Bondo District of Western Kenya found that cultural beliefs, fear of side effects, disapproval by couples and inadequate knowledge about contraceptive methods and their benefits are major barriers to contraceptive uptake (Nangendo et al., 2012; Korra, 2012; Tilahun et al., 2012). Women with knowledge about contraceptives and the benefits of FP are more likely to use contraceptives. Knowledge enables women to make informed decisions about what contraceptives to use and when to use them (WHO, 1999).

In the Middle East, knowledge and use of contraception are prevalent in varying degrees and have been shown to have a negative impact on fertility. Similarly, contraceptive use and delayed marriage have been shown to have positive effects on fertility reduction (Tabutinet al., 2005). A study amongst 615 married women between the ages of 15-49 in Kuwait (Hammoudehand Abu-Rmeileh, 2009) found that Bedouins, women married at younger ages, and women with a greater number of children desired larger families; whereas women's education and husbands' education had a negative effect on fertility desire. Women with higher education, women whose spouses were more educated, and women who had reached or exceeded their ideal family size were more likely to use contraception. Similarly, a cross-sectional study of 1,830 women in Oman (Hammoudeh and Abu-Rmeileh,

2009) indicated that education, employment, and increased autonomy made women more likely to use contraception. The study also indicated that in nearly half of cases, the husband decided whether contraception would be used. Another study conducted in the Bureij refugee camp in the Gaza Strip indicated that increased education, younger age, and husbands' positive attitudes towards contraception had a positive effect on contraceptive use (Donati et al., 2000).

2.6 Conceptual Framework

Figure 2.1: shows the Andersen model of health care utilization adopted in this study. In this conceptual model factors which affect utilization of health product (Andersen, 1995; Andersen & Newman, 2005) are believed to be influenced by a complex interaction of many factors at individual, social and service delivery levels. Individually, parity, education, knowledge about contraception and HIV seropositivity do influence utilization of FP. Socially; cultural norms such as the fatalism attributed to HIV, designated gender roles, age of sexual onset and the demand for bigger families influence the individual's conception choices. In addition, peer pressure; religious teachings and policy influence freedom of choice of an FP method. Also, FP service delivery factors such as attitudes and skills of the providers, method specific side effects, ease of use and access of FP method do act directly or indirectly to influence utilization of FP.

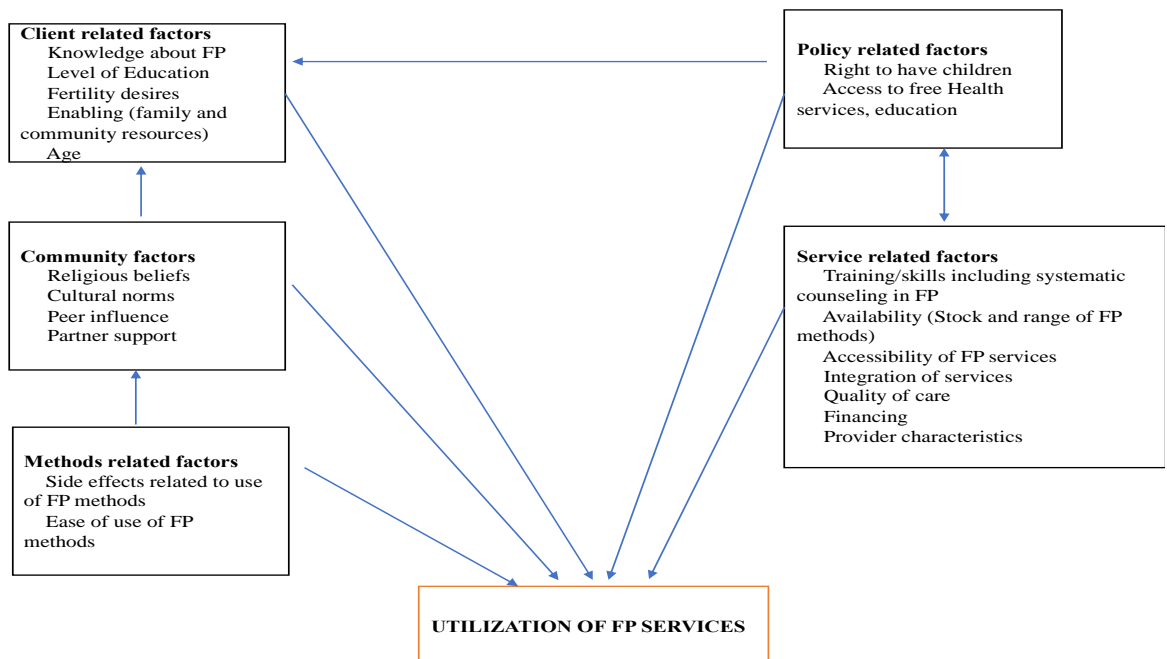


Figure 2.1: Andersen’s Phase-2 Model of Family planning/Health Services Utilization (adapted from Andersen, 1995)

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Site

The study was conducted in Mandera County. Mandera County is located in the North part of Kenya being one of the four Districts in North Eastern Province. The County lies between latitude 2. 11' North and 4. 17' North, and longitudes 39. 47'East and 41. 48'East. The county covers an area of 26,474 square kilometers and boards Ethiopia to the north, Somalia to the east and Wajir County to the south and southwest. The county has six sub-counties namely Mandera East, Mandera South, Mandera West, Mandera North, Banisa and Lafey (Appendix IX). The sub-counties have a total of 18 administrative divisions. Mandera has a largely semi-arid climate with most areas lacking permanent water sources or water mass, and reporting low rainfalls throughout the year. The total population of the county recorded in the 2009 national census was 1,025,756. The Mandera Central Division has the highest population density of 436 per square km. The high density is due to the fact that it is the district's headquarters and is served with social amenities. Other divisions with high densities include Mandera South, Mandera North, and Banisa which have permanent water sources (Racida, 2010).

3.2 Study Design

A cross sectional study design was adopted in this study. The study design was suitable in describing the factors associated with utilization of family planning among women of reproductive age (15-49) in Mandera County, Kenya.

3.3 Study population

The study targeted women of reproductive age group 15-49 years within Mandera County. The study population included all women of reproductive age 15-49 years in Mandera County. The qualitative data collected using FGD and KII were women

drawn from diverse backgrounds including formal or informal leadership, health sectors, religious or tribal leaders, education sectors as well as local communities.

3.3.1 Inclusion criteria

1. Women of childbearing age (15-49 years).
2. Women who had lived in the study area for at least two years.
3. Women willing to give informed consent.
4. Willing to undergo a 30-minute face to face interview.

3.3.2 Exclusion criteria

Women were excluded if,

1. Not in the reproductive age group.
2. Not resident of Mandera County for at least two years.
3. Unwilling to give informed consent

3.4 Sampling

3.4.1 Sampling procedure

The study adopted a stratified sampling procedure where all the six Sub-Counties of Mandera namely; Mandera South, Mandera East, Mandera North, Mandera West, Lafey and Banisa were considered as strata. From each stratum women meeting the recruitment criteria were enrolled randomly on a first come first served basis until the desired sample size were attained. Equal numbers were randomly selected from health facilities in each and every stratum.

For FGDs and KIIs, this study recruited women from health facilities, schools and colleges. To achieve this, the researcher approached the heads of various health facilities and schools in Mandera. The heads of schools and colleges were approached in order to gain contact with targeted women.

3.5 Sample size determination

The Fisher *et al.*, (1998) formula was used to determine the minimum sample size required for this study:

$$N = \frac{\{z_{1-\alpha/2}^2 P(1-P)\}}{\delta^2}$$

Where; N= Expected sample size

Z= Degree of confidence at 95% that corresponds to 1.96

P= the estimated value of the proportion of women of reproductive age who have ever used any method of family planning in North Eastern Kenya (p = 0.075 referring to a prevalence of 7.5%) (KDHS, 2014).

δ = Acceptance error at 0.05.

$$\frac{\{1.96^2 \times 0.075(1 - 0.075)\}}{0.05^2} = 106.6 \approx 107$$

The sample size was increased by 10% to take care of refusals. Therefore, the minimum number of subjects sampled was 117 participants. Equal number of participants were (19) meeting the recruitment criteria and those who consented were enrolled in this study.

3.6 Data collection tools

3.6.1 Recruitment and training of field workers

A total of ten women field workers were recruited for the study from local population but during training, eight field workers were selected and trained for two days on best practises of questionnaire administration and study protocol of sampling participants. Form four level of education was the minimum requirement to be recruited to be an interviewer for the study.

3.6.2 Pre-testing of study tools

Pretesting was conducted so as to ensure the reliability and suitability of the questionnaire. It was also used as a means of training and assessing research assistants who were involved in the main survey. Pretesting was conducted on a selected group of women who were randomly picked from the Mandera County Referral Hospital. A total of 30 respondents were sampled for the pre-test. This group was not included in the actual data collection exercise.

3.6.3 Questionnaires

Structured questionnaires (Appendix I) were used to collect data and were administered to participants by field assistants. The questionnaire was translated to the local language (Somali language). The tool captured components of awareness rate, the utilization rate of family planning and factors associated with the utilization of family planning among women of reproductive age (15-49 years) in Mandera County.

3.6.4 Focus group discussions

A total of twelve (12) focus group discussions (FGD) were conducted to explore further the levels of FP service awareness, utilization and associated factors in this region. Randomly six women (two aged 15 – 25 years; two aged 26 – 36 years and two elders 37 – 49 years) of reproductive age from each of the six Sub-Counties gave consent to participate in the FGDs. These persons were invited to participate in a FGD on a fixed time and date at a convenient location to them in each sub county. Up to 2 FGDs in each sub-county (depending on saturation point of the issues being probed) were carried out in groups of 6 individuals, each group having been selected to reflect the age groups above. These women were drawn from diverse backgrounds including formal or informal leadership, health sectors, religious or tribal leaders, education sectors as well as local communities. From this pre-generated list by the county leadership (formal or informal) of women meeting the above criteria, a random number of 144 women participants were selected from the whole County. Female moderators were trained to help in conducting these discussions in the preferred language of the group and the moderators and note takers were fluent in the

language. A standard guide (Appendix II) was used for all focus groups, with appropriate modification for different age groups. Each FGD lasted for about 45 minutes.

3.6.5 Key informant interviews

Key informant interviews were conducted to confirm and clarify any pending or new issues described in the structured questionnaires and FGDs. Key informant interviews have been shown to provide a valuable foundation for a broader understanding of contextual matters relevant to the issues being explored (Bernard, 1994). Randomly 12 (two persons per Sub-County) knowledgeable members of the Mandera County were identified and intermittently interviewed at a place and time most convenient and confidential for the participants including their offices. The key informants were selected for their position of leadership, either formal or informal, in the community and their ability and willingness to reflect on the findings. The Key informants included health professionals, religious or community leaders, and experienced women in reproductive health well regarded in and from the community. In addition to being willing to share, reflect upon the findings of the study, key informants were observant, articulate and available for multiple interviews of varying duration on an assortment of family planning related to the study. A KII guide (Appendix III) was used in the discussions. The guide captured issues which needed more clarity from questionnaires and focus group discussion. The note taking and moderation were done in collaboration by the trained field researchers and principal researcher.

3.7 Data Management and Analysis

All subjects were assigned a subject identification number (SID). All data entered into the study databases were de-identified and only associated with a SID in password protected files. A double entry system for the data was maintained. All paper research records were kept in a password protected, locked filing cabinet located in a restricted-access room at the research station. Data entry, cleaning and validation were performed in order to achieve a clean data.

Quantitative data were analyzed using STATA version 13 (StataCorp LP, College Station, TX, USA). Descriptive statistics frequency (%), mean, standard deviation and medium (interquartile ranges at 25% and 75%) were used to express quantitative data. The overall utilization of FP was determined for all participants. In bivariate analyses, odds ratios (OR) and 95% confidence intervals (CI) for the association between utilization of FP and socio-demographic, household demographic, awareness and reproductive health patterns characteristics were calculated using Poisson regression. In multivariate analyses, a manual backward elimination approach was used to reach the most parsimonious model including factors that were associated with utilization of FP among women in Mandera County at the significance level of $P \leq 0.05$.

The qualitative data (FGD and KII) were subjected to a thematic content analysis. This approach entailed the categorization of recurrent data collected under thematic areas (Green & Thorogood, 2010). The analysis was done manually using general purpose software tools using Microsoft Word (La Pelle, 2004).

3.8 Ethical considerations

The research protocol was presented for scientific and ethical approvals by the Scientific Steering Committee and the Ethical Review Committee of the Kenya Medical Research Institute prior to commencement of field activities. Written informed consent was obtained from each participant (Appendix IV, Appendix V and

Appendix VI). For participants aged 15-17 years assent form was used to obtain their assent (Appendix VII and Appendix VIII).

To maintain confidentiality, participants for FGDs were de-identified and only referred to as participant 1, 2, 3. Further, issues of confidentiality were explained to all participants, interviewers as well as note takers. The interviews were done in secluded secured locations.

CHAPTER FOUR

RESULTS

4.1 Socio-Demographic Characteristics of Participants

4.1.1 Region of origin

A total of 117 women of reproductive age in various locations in Mandera County were recruited in the study. The participant's socio-demographic characteristics are presented in Table 4.1. Near equal participants were drawn from each of the six regions within Mandera County including; (13.7%) Mandera North, (15.4%) Mandera South, (15.4%) Mandera East, (17.1%) Mandera West, (19.7%) Banisa and (18.8%) from Lafey. There was no significant difference in the distribution of study participants with regards to region of origin ($\chi^2 = 1.821$; $df = 5$; $P = 0.879$).

4.1.2 Age

The mean age of the participants was 29.9 (\pm SD 9.8) years with a range of 15 to 48 years. Slightly under a quarter (33.3%) of the participants were aged 31 to 40 years while the least 15.4% were aged above 41 years. The age distribution was statistically significant ($\chi^2 = 8.231$; $df = 3$; $P = 0.042$). There was near equal distribution in the participant's level of education; primary (19.7%), Secondary (22.2%), Tertiary (22.2%) and those with non-formal (such as Madrassa) (35.9%). There was no significant difference in the distribution of study participants with regards to education level ($\chi^2 = 7.615$; $df = 3$; $P = 0.055$).

4.1.3 Marital status

Many (59%) of the participants were married and only (19.7%) of them being single (never married). The rest (21.3%) were separated. There was significant difference in the distribution of study participants with marital status ($\chi^2 = 34.667$; $df = 2$; $P = 0.001$).

4.1.4 Religion

The majority of the participants (86.3%) were Muslims compared to (13.7%) who were Christians. A significantly higher proportion of the study participants were Muslims ($\chi^2 = 61.75$; $df = 1$; $P = 0.001$).

4.1.5 Occupation

Moreso, 49.6% of the participant were unemployed, 19.7% were in formal employment verses 30.8% that were self-employed. A significantly higher proportion of the study participants were unemployed ($\chi^2 = 16.05$; $df = 2$; $P = 0.001$).

4.1.6 Income

While the mean monthly income was 2031.9 (SD 23114.1) Ksh ranging from 1000 to 120,000 ksh, more than a quarter of the participants (38.5%) had no monthly income and only (12%) earned over 120,000ksh per month. A significantly higher proportion of the study participants reported no monthly income ($\chi^2 = 42.615$; $df = 4$; $P = 0.001$).

Table 4.1: Socio-Demographic characteristics of the study participants

Socio-Demographic Characteristic	Sample size		χ^2	df	P
	No	%			
Region					
Mandera North	16	13.7	1.821	5	0.879
Mandera South	18	15.4			
Mandear East	18	15.4			
Mandera West	20	17.1			
Banisa	23	19.7			
Lafey	22	18.8			
Age					
Mean (\pm SD)	29.9	(\pm 9.8)	8.231	3	0.042
Median (IQR)	29	(21-38)			
Range	33	(15-48)			
15- 20	27	23.1			
21-30	33	28.2			
31-40	39	33.3			
>41	18	15.4			
Education level					
Primary	23	19.7	7.615	3	0.055
Secondary	26	22.2			
Tertiary	26	22.2			
Non-Formal	42	35.9			
Marrital status					
Single	23	19.7	34.667	2	0.001
Married	69	59			
Seperated	25	21.3			
Religion					
Christian	16	13.7	61.752	1	0.001
Muslim	101	86.3			
Occupation					
Employed	23	19.7	16.051	2	0.001
Self employed	36	30.8			
Unemployed	58	49.6			
Monthly Income (Ksh)					
Mean (\pm SD)	2031.9	(\pm 23114.1)	42.615	4	0.001
Median (IQR)	11000	(7250-26000)			
Range	119000	(1000-120000)			
None	45	38.5			
10000	35	29.9			
10001-20000	15	12.8			
20001-30000	8	6.8			
>30001	14	12			

No - Number; % - Percentage; χ^2 - Chi square; df - Degree of freedom; P - Level of significance; $P \leq 0.05$ indicates the relationship is significant

4.2 Household demographic characteristics

Table 4.1 shows various household heads of the study participants.

4.2.1 Household headship

The table indicates that 61.5% of the households were headed by participant's husbands. About (13.7%) of the households were headed by participant's mother in-law while 24.8% by others (self, grandparents, and other relatives) (Figure 4.1). A significantly higher proportion of the study participants were headed by male spouses (husband) ($\chi^2 = 16.05$; $df = 2$; $P = 0.001$).

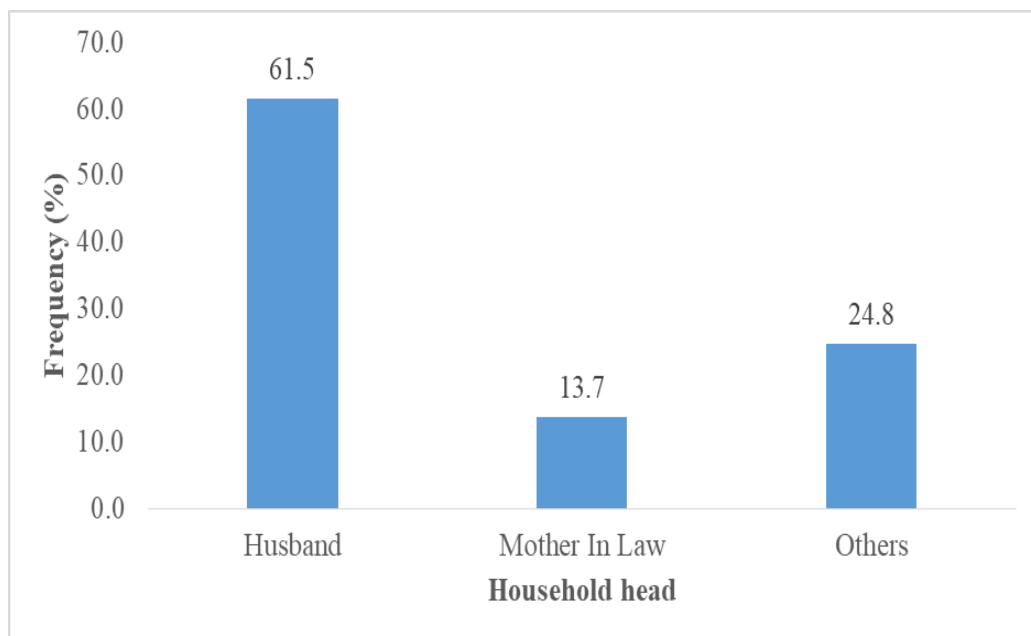


Figure 4.1: Household headship

4.2.2 Household population size

The mean household population was 5.22 (SD = 2.5) ranging from 1 to 13 persons. There was near equal distribution in number of households with less than or equal to 4 persons (42.7%) and those with equal to or greater than 5 persons (57.3%) (Table 4.2). There was no significant difference in the distribution of study participants with household population ($\chi^2 = 2.47$; $df = 1$; $P = 0.139$).

4.2.3 Physiological status

In addition, more than half (56.4%) of the participants in this study were neither pregnant nor lactating at the time of interviews. About (16.2%) were pregnant, (23.9%) lactating and some (3.4%) lactating and pregnant (Figure 4.2). A significantly higher proportion of the study participants were not pregnant at the time of the survey ($\chi^2 = 71.615$; $df = 3$; $P = 0.001$).

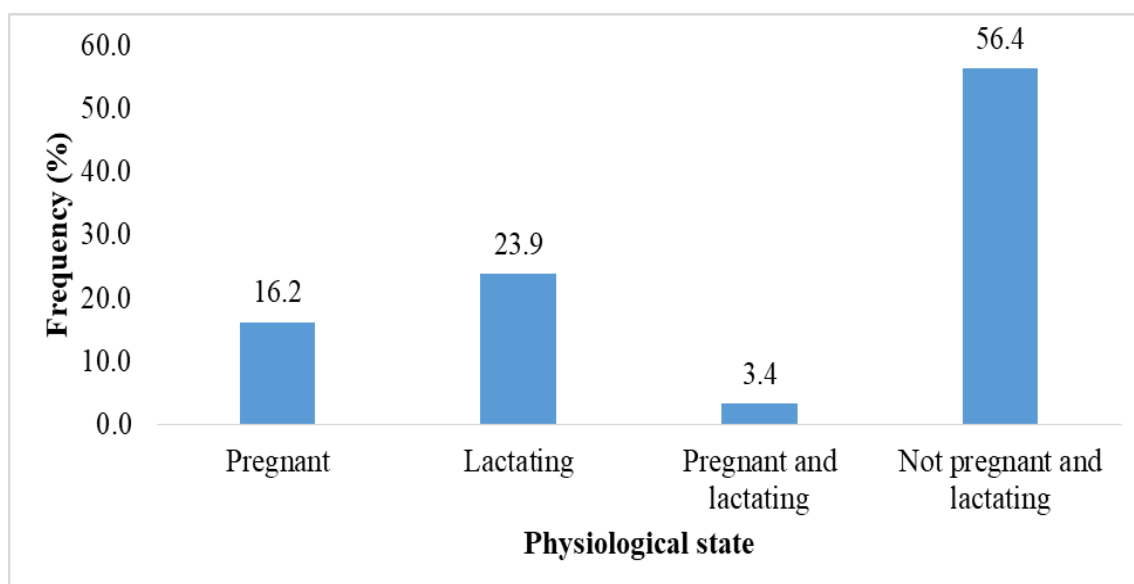


Figure 4.2: Participants physiological state

4.2.4 Parity

The mean number of previous pregnancies was 3.92 (SD = 3) ranging from 0 to 12 pregnancies. Majority of the participants (46.2%) had had equal to or more than 4 pregnancies. Only (13.7%) had not been pregnant before (Figure 4.3). A significantly higher proportion of the study participants had had more than 4 pregnancies ($\chi^2 = 20.974$; $df = 2$; $P = 0.001$).

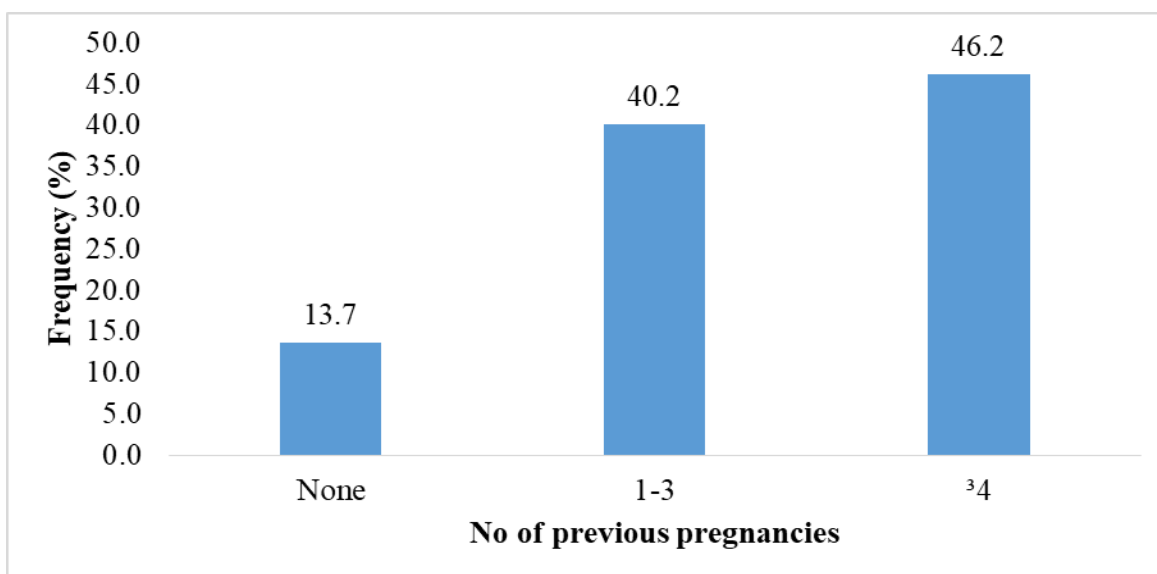


Figure 4.3: Number of previous pregnancies

4.2.5 Household number of live children

The mean number of children currently living with was 3.39 (SD = 2.68) ranging from 0 to 11 children. Majority of the participants (42.7%) had 1 to 3 children currently living with. Only 16.2% had not children living with currently (Table 4.2). A significantly higher proportion of the study participants were currently living with 1 to 3 children ($\chi^2 = 15.436$; $df = 2$; $P = 0.001$).

Table 4.2: Household Demographic characteristics

Household Demographic Characteristic	Sample size		χ^2	df	P
	No	%			
Household Head					
Husband	72	61.5	44.051	2	0.001
Respondent's Mother	16	13.7			
Others	29	24.8			
Household population					
Mean (\pm SD)	5.22	(\pm 2.5)	2.47	1	0.139
Median (IQR)	5	(4-7)			
Range	12	(1-13)			
≤ 4	50	42.7			
≥ 5	67	57.3			
Current physiological state					
Pregnant	19	16.2	71.615	3	0.001
Lactating	28	23.9			
Pregnant and lactating	4	3.4			
Not pregnant and lactating	66	56.4			
Previous pregnancies					
Mean (\pm SD)	3.92	(\pm 3)	20.974	2	0.001
Median (IQR)	3	(2-6)			
Range	12	(0-12)			
None	16	13.7			
1-3	47	40.2			
≥ 4	54	46.2			
Number of children living with					
Mean (\pm SD)	3.39	(\pm 2.68)	15.436	2	0.001
Median (IQR)	3	(1-5)			
Range	11	(0-11)			
None	19	16.2			
1-3	50	42.7			
≥ 4	48	41			

No - Number; % - Percentage; χ^2 - Chi square; df - Degree of freedom; P - Level of significance; $P \leq 0.05$ indicates the relationship is significant

4.3 Participants awareness level of family planning methods

Figure 4.4 summarizes the awareness and knowledge of participants on family planning and contraceptives.

4.3.1 Contraceptive awareness

Majority (79.5%) of the participants compared to (20.5%) were aware of at least one type of contraceptive and family planning (figure 4.4). A significantly higher proportion of the study participants were aware of at least one type of contraceptive and family planning ($\chi^2 = 40.692$; $df = 1$; $P = 0.001$).

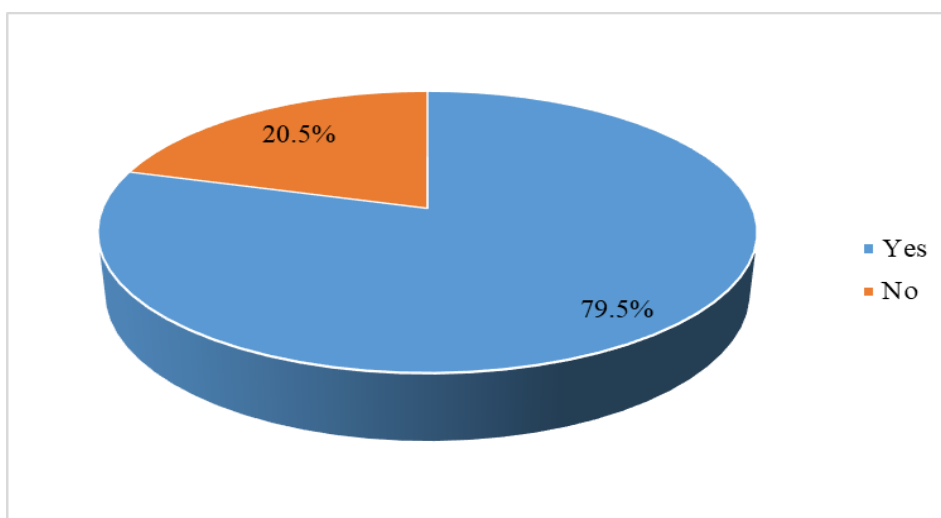


Figure 4.4: Awareness of contraceptive and family planning

Table 4.3 summarizes the awareness of reproductive health and contraception. When asked about the meaning of family planning 84.6% were aware of the meaning versus 14.4% who were not. A significantly higher proportion of the study participants were aware of the meaning of family planning ($\chi^2 = 57.966$; $df = 1$; $P = 0.001$).

Table 4.3: Awareness of reproductive health and contraception

Awareness of contraceptive and family planning	Sample size		χ^2	df	P
	No	%			
Awareness of contraceptive and family planning					
Yes	93	79.5	40.692	1	0.001
No	24	20.5			
Aware of meaning of Family planing					
Yes	99	84.6	57.966	1	0.001
No	17	14.5			
First knowledge about reproductive health and contraception					
Family and Friends	61	52.1	83.385	4	0.001
Media	4	3.4			
School	18	15.4			
Health care/Professional	22	18.8			
Not stated	12	10.3			
Methods of contraception heard					
Natural (Calendar/Withdrawal)	2	1.7	155.308	3	0.001
Barrier (Condoms)	14	12			
Hormonal (Pills/IUD/Injectable)	87	74.4			
None	14	12			
Awareness of emergency contraceptive methods					
Yes	51	43.6	1.923	1	0.001
No	66	56.4			
Ideal time to have first child					
Between 15-18	31	26.5	24.846	3	0.001
Between 18-21	48	41			
Between 22-24	28	23.9			
Between 25-27	10	8.5			
Age of spacing between children					
One year	31	26.5	46.385	3	0.001
One to two years	55	47			
Three to five years	28	23.9			
Five years or more	3	2.6			
Cost of family planning services					
Affordable	51	43.6	74.145	2	0.001
Expensive	7	6			
Free	5	4.3			
No idea	54	46.2			
Attitude towards sexual health and family planning information with unmarried girl					
Not common in our society to discuss	71	60.7	92.88	3	0.001
Sham to discuss/embarrass to discuss	31	26.5			
Common topics in our society to discuss	11	9.4			
I never think about this before	4	3.4			
Attitude when discussing with husband/partner about reproductive health and family planning					
Embarrassing/avoid to discuss	15	12.8	24.667	2	0.001
Positive/we enjoy discussing	44	37.6			
Avoid/never discuss	58	49.6			

No - Number; % - Percentage; χ^2 - Chi square; df - Degree of freedom; P - Level of significance; $P \leq 0.05$ indicates the relationship is significant

4.3.2 Source of family planning information

Slightly over half (52.1%) of participants first heard about reproductive health and contraception from family and friends and only 3.4% from media. A significantly higher proportion of the study participants obtained their first knowledge on reproductive health and contraception from family and friends (Figure 4.5) ($\chi^2 = 83.385$; $df = 4$; $P = 0.001$).

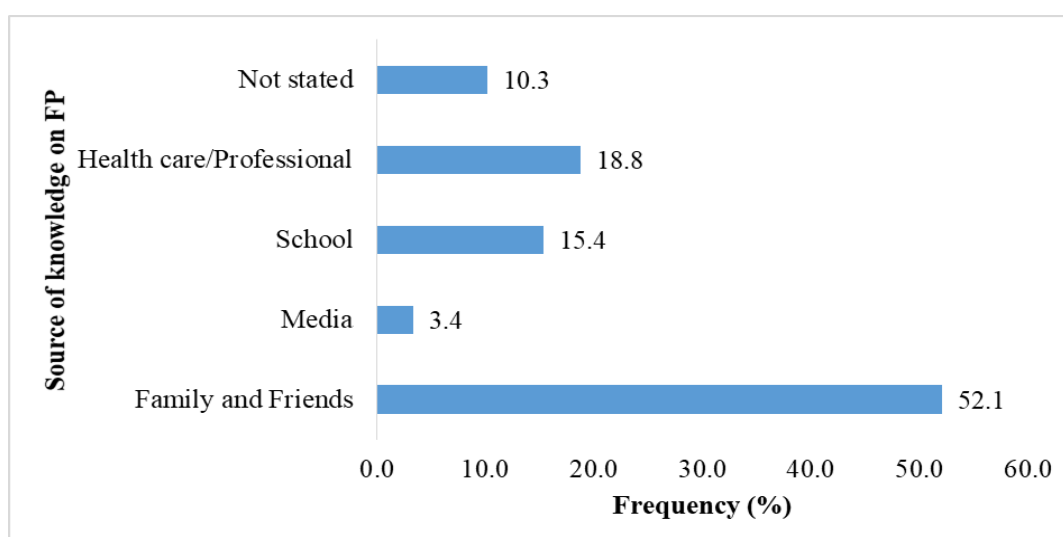


Figure 4.5: First knowledge about reproductive health and contraception

4.3.3 Types of family planning

About three quarters (74.4%) of participants were aware of hormonal (Pills/IUD/Injectable) method of contraceptive. The least (1.7%) knew the natural (Calendar/Withdrawal) methods while (12%) were not aware of any contraceptive methods (Figure 4.6). A significantly higher proportion of the study participants were aware of hormonal (Pills/IUD/Injectable) method of contraceptive ($\chi^2 = 155.308$; $df = 3$; $P = 0.001$).

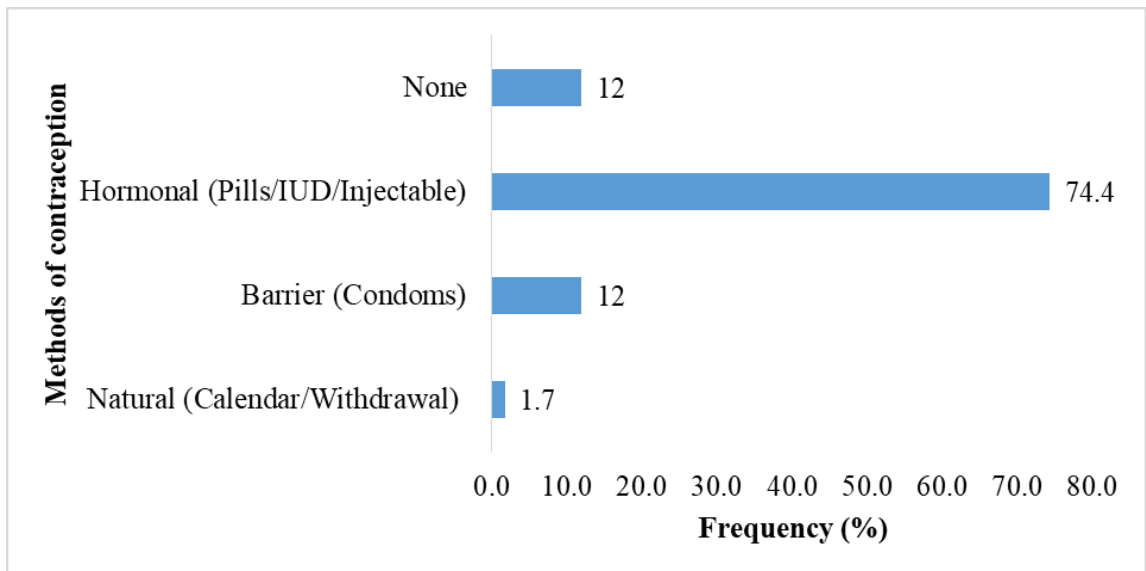


Figure 4.6: Awareness level on the methods of contraception

4.3.4 Awareness of emergency contraceptive methods

Regarding the awareness of emergency contraceptive methods, Table 4.3 shows that more than half (56.4%) were not aware of the emergency contraceptive methods versus 43.6% who were aware. A significantly higher proportion of the study participants were not aware of emergency contraceptive methods ($\chi^2 = 1.923$; $df = 1$; $P = 0.001$).

4.3.5 Preferred childbearing age

The figure 4.7 further shows that more than half (67.5%) of the participants preferred to have their first child before the age of 21 (26.5%) between the age 15 to 18 years and (41%) between 18 to 21 years) and 8.5% preferred ideal age beyond 25 years aware. A significantly higher proportion of the study participants preferred the childbearing age between 18 to 21 years ($\chi^2 = 24.846$; $df = 3$; $P = 0.001$).

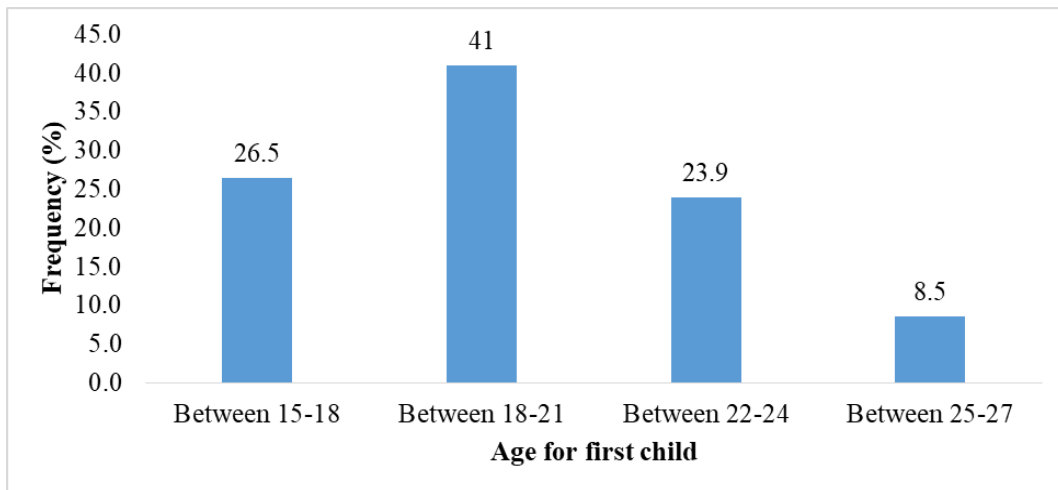


Figure 4.7: Ideal time to have first child

4.3.6 Preferred child spacing age

The figure 4.8 below indicate that more than three quarters (73.5%) of the participants preferred having below two years age of spacing between children (26.5% one year and below and 47% between one and two years) and 2.3% preferred spacing their children five years and more. A significantly higher proportion of the study participants preferred having below two years age of spacing between children ($\chi^2 = 46.385$; $df = 3$; $P = 0.001$).

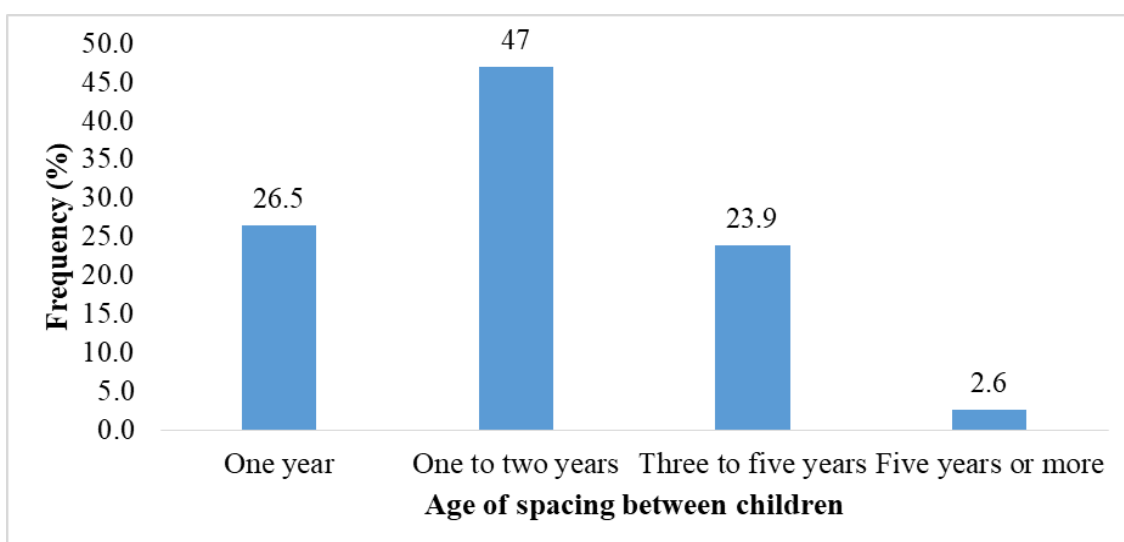


Figure 4.8: Age of spacing between children

4.3.7 Cost of FP

Regarding the cost of family planning services, close to half of the participants (46.2%) had no idea on the cost of family planning services. Only (4.3%) of them reported these services as being free (Table 4.3). A significantly higher proportion of the study participants had no idea on the cost of family planning services ($\chi^2 = 74.145$; $df = 2$; $P = 0.001$). In addition, majority (60.7%) said it was not common in the society to discuss these issues.

4.3.8 Ease of discussing FP

Indeed (26.5%) were a shamed to discuss/embarrass to discuss including (3.4%) of them who had never thought of this issue before this study. Many participants either avoided or never discussed the issue (49.6%) or were embarrassed to discuss this topic with their husband/partner (Table 4.3) A significantly higher proportion of the study participants were a shamed to discuss or embarrassed to discuss the family planning issues with husband/partner ($\chi^2 = 92.88$; $df = 3$; $P = 0.001$).

4.4 Level of utilization of Family Planning

Table 4.4 summarizes the utilization of contraceptives and family planning among study participants.

4.4.1 Level of FP utilization

The table 4.4 indicates slightly over half (58.1%) of the participants compared to (41.9%) stated using contraceptive and family planning. A significantly higher proportion of the study participants were using one of the family planning methods ($\chi^2 = 3.085$; $df = 1$; $P = 0.096$). Apart from the (58.1%) who reported not using any of these methods, (32.5%) of the family planning methods were used by individual participants and (9.4%) by male partner. A significantly higher proportion of the study participants female were the ones using the family planning methods ($\chi^2 = 41.692$; $df = 1$; $P = 0.001$).

4.4.2 Types of FP utilized

Regarding use of method of contraception 58.1% who reported not using any of these methods, (26.5%) reported using barriers such as condoms while (12%) used hormonal (Pills/IUD/Injectable) and the least (3.8%) used natural (calendar/withdrawal) contraceptive methods. A significantly higher proportion of the study participants were not using any of the family planning methods ($\chi^2 = 83.786$; $df = 1$; $P = 0.001$).

4.4.3 Sources of FP

Majority of family planning providers (62.4%) were from the health facilities. Other (7.7%) and (9.4%) obtained these services from work place, (20.5%) from other unstated places. A significantly higher proportion of the study participants obtained their family planning methods from the health facilities ($\chi^2 = 91.768$; $df = 3$; $P = 0.001$).

4.4.4 Rating of FP utilized

As far as quality of family planning services about 35% ranked the quality of family planning services as good, (26.5%) as poor, (16.2%) as better while (7.7%) as best. A significantly higher proportion of the study participants ranked the quality of family planning services as good ($\chi^2 = 27.145$; $df = 4$; $P = 0.001$).

4.4.5 Distance to FP provider

The table 4.4 further shows that 67.5% of the participants stayed less than 5 kilometers from the family planning providers versus 32.5% whose distance was beyond 5km. A significantly higher proportion of the study participants stayed less than 5 kilometers from the family planning providers ($\chi^2 = 14.368$; $df = 1$; $P = 0.001$).

4.4.6 Reasons for not uptaking FP

As to the justification for not seeking reproductive health services 53% identifies cultural as the major hindrance to women seeking reproductive health services. About (30.8%) were unaware of provider while 3.4% stated poor provider attitude. A significantly higher proportion of the study participants identifies cultural as the major hindrance to women seeking family planning services ($\chi^2 = 108.684$; $df = 4$; $P = 0.001$)

Table 4.4: Utilization of contraceptive and family planning

Utilization of contraceptive and family planning	Sample size		c2	df	P
	No	%			
Using contraceptive and family planning					
Yes	49	41.9	3.085	1	0.096
No	68	58.1			
Who uses contraceptives?					
Self	38	32.5	41.692	2	0.001
husband	11	9.4			
None	68	58.1			
Methods of contraception heard					
Natural (Calendar/Withdrawal)	4	3.4	83.786	3	0.001
Barrier (Condoms)	31	26.5			
Hormonal (Pills/IUD/Injectable)	14	12			
None	68	58.1			
Provider of Family planning					
Health facility	73	62.4	91.786	3	0.001
Work Place	9	7.7			
Other sources	11	9.4			
None	24	20.5			
Rating of family planning					
Best	9	7.7	27.145	4	0.001
Better	19	16.2			
Good	41	35			
Fair	17	14.5			
Poor	31	26.5			
Distance to family planning provider					
Mean (\pm SD) (Km)	6.75	(\pm 7.734)	14.368	1	0.001
Median (IQR) (Km)	3	(1-10)			
Range (Km)	40	(1-40)			
>5 KM	79	67.5			
< 5.1 KM	38	32.5			
Why women of reproductive age do not seek reproductive health services					
Unaware of provider	36	30.8	108.684	4	0.001
Expensive/Costly	5	4.3			
Distance	10	8.5			
Cultural/Shame issues	62	53			
Poor provider attitude	4	3.4			

No - Number; % - Percentage; c2 - Chi square; df - Degree of freedom; P - Level of significance; $P \leq 0.05$ indicates the relationship is significant

4.5 Factors associated with the utilization of family planning

4.5.1 Socio-demographic and Economic factors

Table 4.5 shows socio-demographic characteristics associated with utilization of family planning among women of reproductive age (15-49 years) in Mandera County. In the bivariate analyses, women who were from Mandera North were more likely to utilize family planning methods compared to women from Lafey (OR 3.3, (95%) CI 1.2 to 9.4). Women who had secondary (OR 4.8, (95%) CI 1.8 to 13.3) and tertiary (OR 7.4, 95% CI 2.8 to 19.5) level of education were more likely to utilize family planning methods compared to women who had non-formal education. Christian women (OR 2.3, (95%) CI 1.2 to 4.3) were more likely to utilize family planning methods compared to Muslim women. Further, women who were employed (OR 3.2, (95%) CI 1.6 to 6.1) were more likely to utilize family planning methods compared to unemployed women. Further women who had non-monthly income (OR 0.3, (95%) CI 0.1 to 0.6) and those with less than 10,000khs monthly income (OR 0.5, (95%) CI 0.2 to 0.9) were less likely to utilize family planning methods compared to women who had more 30,000ksh monthly income.

Table 4.5: Socio-demographic factors associated with family planning utilization

Socio-Demographic Characteristic	Sample size	Utilization of Family Planning		P - value	Bivariate OR (95% CI)	P - value	Multivariate OR (95% CI)
		No	%				
Region							
Mandera North	16	12	24.5	0.025	3.3(1.2-9.4)	0.025	4.2(1.2-14.9)
Mandera South	18	8	16.3	0.239	1.9(0.6-5.9)	0.013	5.6(1.5-22.5)
Mandera East	18	6	12.2	0.527	1.4(0.4-4.8)	0.217	2.2(0.6-7.8)
Mandera West	20	9	18.4	0.221	1.9(0.7-5.9)	0.129	2.6(0.8-8.9)
Barisa	23	9	18.4	0.33	1.7(0.6-5.1)	0.306	1.8(0.6-6.1)
Lofey	22	5	10.2	Referent	Referent	Referent	Referent
Age							
15- 20	27	7	14.3	0.906	0.9(0.3-2.9)	0.459	0.5(0.1-2.8)
21-30	33	14	28.6	0.416	1.5(0.5-4.2)	0.83	1.1(0.3-4.6)
31-40	39	23	46.9	0.127	2.1(0.8-5.6)	0.243	2.1(0.6-6.8)
> 41	18	5	10.2	Referent	Referent	Referent	Referent
Education level							
Primary	23	6	26.1	0.195	2.1(0.7-7.2)	0.449	1.7(0.4-6.2)
Secondary	26	15	57.7	0.002	4.8(1.8-13.3)	0.002	6.3(2.1-20.2)
Tertiary	26	23	88.5	0.001	7.4(2.8-19.5)	0.001	8.7(2.3-31.5)
Non-Formal	42	5	11.9	Referent	Referent	Referent	Referent
Marrital status							
Single	23	13	56.5	0.298	1.5(0.7-3.7)	0.504	1.6(0.4-5.8)
Married	69	27	39.1	0.828	1.1(0.5-2.3)	0.634	1.2(0.5-3.6)
Divorced/Widow	25	9	36	Referent	Referent	Referent	Referent
Religion							
Christian	16	13	81.3	0.011	2.3(1.2-4.3)	0.174	0.5(0.2-1.4)
Muslim	101	36	35.6	Referent	Referent	Referent	Referent
Occupation							
Employed	23	20	87	0.001	3.2(1.6-6.1)	0.125	2.6(0.8-8.5)
Self employed	36	13	36.1	0.471	1.3(0.6-2.7)	0.572	1.4(0.5-4.2)
Unemployed	58	16	27.6	Referent	Referent	Referent	Referent
Monthly Income (Ksh)							
Not stated	45	10	22.2	0.002	0.3(0.1-0.6)	0.25	2.8(0.5-16.1)
≤10000	35	14	40	0.05	0.5(0.2-0.9)	0.328	1.9(0.5-6.9)
10001-20000	15	7	46.7	0.201	0.5(0.2-1.4)	0.344	1.8(0.5-6.1)
20001-30000	8	6	75	0.789	0.9(0.3-2.3)	0.917	1.1(0.4-3.1)
>30001	14	12	85.7	Referent	Referent	Referent	Referent

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; NS - Not significant; ND - Not done

4.5.2 Household demographic characteristics

Table 4.6 shows household demographic factors (including household headship, household population, Women current physiological state, previous pregnancy and population living children) were associated with utilization of family planning services.

Table 4.6: Household related factors associated with family planning utilization

Household Demographic Characteristic	Sample size	Utilization of Family Planing		P - value	Bivariate OR (95% CI)	P - value	Multivariate OR (95% CI)
		No	%				
Household Head							
Husband	72	29	40.3	0.748	0.9(0.5-1.7)	0.599	1.2(0.6-2.8)
Respondent's Mother	16	7	43.8	0.959	1.1(0.4-2.4)	0.847	1.1(0.4-3.1)
Others	29	13	44.8	Referent	Referent	Referent	Referent
Household population							
≤4	50	21	42	0.986	1.1(0.6-1.8)	0.834	0.9(0.5-1.8)
>5	67	28	41.8	Referent	Referent	Referent	Referent
Current physiological state							
Pregnant	19	5	26.3	0.143	0.5(0.2-1.2)	0.175	0.5(0.2-1.4)
Lactating	28	9	32.1	0.18	0.6(0.3-1.3)	0.237	0.6(0.3-1.4)
Pregnant and lactating	4	0	100	0.998	ND	0.998	ND
Not pregnant and lactating	66	35	53	Referent	Referent	Referent	Referent
Previous pregnancies							
None	16	10	62.5	0.141	1.8(0.8-3.8)	0.631	1.9(0.1-25.1)
1-3	47	20	42.6	0.553	1.2(0.6-2.3)	0.949	1.1(0.3-3.7)
>4	54	19	35.2	Referent	Referent	Referent	Referent
Number of children living with							
None	19	11	57.9	0.159	1.7(0.8-3.7)	0.961	0.9(0.1-11.7)
1-3	50	22	44	0.398	1.3(0.7-2.5)	0.663	1.3(0.4-4.6)
>4	48	16	33.3	Referent	Referent	Referent	Referent

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; NS - Not significant; ND - Not done

4.5.3 Awareness of contraceptive and family planning factors.

Table 4.7 shows that women who were aware of contraceptive and family planning were more likely to utilize family planning methods compared to women who were not (OR 6.1, 95% CI 1.5 to 24.9). Women whose first knowledge about reproductive health and contraception was either school (OR 7.9, 95% CI 1.1 to 61.5) or health care /Professional (OR 7.6, 95% CI 1.0 to 58.1) were more likely to utilize family planning methods compared to women who did not state their sources of first knowledge.

Women who had heard hormonal (Pills/IUD/Injectable) as method of contraceptive (OR 7.1, 95% CI 1.1 to 51.4) were more likely to utilize family planning methods compared to women who had not heard any method of contraceptive. Women who

were aware of emergency contraceptive methods (OR 3.2, 95% CI 1.7 to 6.1) were more likely to utilize family planning methods compared to those who were not aware. Women who stated that the cost of family planning services were either affordably (OR 4.8, 95% CI 2.2 to 10.3) or expensive (OR 3.8, 95% CI 1.2 to 12.8) were more likely to utilize family planning methods compared to women who had no idea on the cost of these methods. Women whose husband/partners had positive attitude or enjoyed discussing reproductive health and family planning (OR 3.1, 95% CI 1.7 to 5.8) were more likely to utilize family planning methods compared to those who avoided or never discussed reproductive health and family planning.

Moreover, women whose ideal time to have first child was between 15 to 18 years (OR 0.1, 95% CI 0.03 to 0.6) or between 18 to 21 years (OR 0.4, 95% CI 0.2 to 0.9) were less likely to utilize family planning methods compared to women whose ideal time to have first child was between 25-27 years. Similarly, women whose age of spacing between children was one year were less likely to utilize family planning methods compared to women whose age of spacing between children was five years or more. In multivariate analyses, none of these factors were associated with utilize family planning methods

Table 4.7: Family planning awareness and influence on utilization

Awareness of contraceptive and family planning	Sample size	Utilization of Family Planing		P - value	Bivariate OR (95% CI)	P - value	Multivariate OR (95% CI)
		No	%				
Awareness of contraceptive and family planning							
Yes	93	47	50.5	0.013	6.1(1.5-24.9)	0.668	0.6(0.1-6.2)
No	24	2	8.3	Referent	Referent	Referent	Referent
Aware of meaning of Family planing							
Yes	99	49	49.5	0.995	ND	0.988	ND
No	17	0	0	Referent	Referent	Referent	Referent
First knowledge about reproductive health and contraception							
Family and Friends	61	20	32.8	0.181	3.9(0.5-29.3)	0.991	
Media	4	2	50	0.143	5.6(0.5-66.1)	0.991	NS
School	18	12	66.7	0.046	7.9(1.1-61.5)	0.991	
Health care/Professional	22	14	63.6	0.05	7.6(1.0-58.1)	0.991	
Not stated	12	1	8.3	Referent	Referent	Referent	Referent
Methods of contraception heard							
Natural (Calendar/Withdrawal)	2	0	0	0.991	ND	0.991	
Barrier (Condoms)	14	4	28.6	0.215	4.1(0.4-35.8)	0.992	ND
Hormonal (Pills/IUD/Injectable)	87	44	50.6	0.05	7.1(1.1-51.4)	0.992	
None	14	1	7.1	Referent	Referent	Referent	Referent
Awareness of emergency contraceptive methods							
Yes	51	35	68.6	0.001	3.2(1.7-6.1)	0.668	0.6(0.1-6.2)
No	66	14	21.2	Referent	Referent	Referent	Referent
Ideal time to have first child							
Between 15-18	31	3	9.7	0.002	0.1(0.03-0.6)	0.462	
Between 18-21	48	17	35.4	0.05	0.4(0.2-0.9)	0.695	NS
Between 22-24	28	21	75	0.877	0.9(0.4-2.1)	0.308	
Between 25-27	10	8	80	Referent	Referent	Referent	Referent
Age of spacing between children							
One year	31	6	19.4	0.02	0.2(0.05-0.8)	0.745	
One to two years	55	18	32.7	0.073	0.3(0.09-1.2)	0.791	NS
Three to five years	28	22	78.6	0.695	0.8(0.23-2.6)	0.783	
Five years or more	3	3	100	Referent	Referent	Referent	Referent
Cost of family planning services							
Affordable	51	36	70.6	0.001	4.8(2.2-10.3)	0.249	
Expensive	7	4	57.1	0.027	3.8(1.2-12.8)	0.133	NS
Free	5	1	20	0.777	1.4(0.2-10.8)	0.703	
No idea	54	8	14.8	Referent	Referent	Referent	Referent
Attitude towards sexual health and family planning information with unmarried girl							
Not common in our society to discuss	71	33	46.5	0.541	1.9(0.3-13.6)	0.411	
Sham to discuss/embarrass to discuss	31	7	22.6	0.924	0.9(0.1-7.3)	0.25	NS
Common topics in our society to discuss	11	8	72.7	0.314	2.9(0.4-23.3)	0.609	
I never think about this before	4	1	25	Referent	Referent	Referent	Referent
Attitude when discussing with husband/partner about reproductive health and family planning							
Embarrassing/avoid to discuss	15	5	33.3	0.786	1.2(0.3-4.1)	0.533	
Positive/we enjoy discussing	44	31	70.5	0.001	3.1(1.7-5.8)	0.275	NS
Avoid/never discuss	58	13	22.4	Referent	Referent	Referent	Referent

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; NS - Not significant; ND - Not done

4.5.4 Patterns of contraceptives use related factors

Table 4.8 shows that participants who reported using these contraceptive (OR 7.4, 95% CI 3.4 to 15.9) or by their husbands (OR 6.2, 95% CI 2.3 to 16.5) were more likely to utilize family planning methods compared to women who did not indicated either them or partners using these family planning methods. Participants who reported using either natural methods (calender/withdrawal) (OR 6.9, 95% CI 1.4 to 35) or barriers (condoms) (OR 12.9, 95% CI 4.9 to 33.4) or hormonal (pills/IUD/Injectible) (OR 12.9, 95% CI 4.9 to 33.4) as method of family planning were more likely to utilize family planning compared to women who did not indicated using any family planning methods. Laslty, women who rated quality of family planning as good (OR 5.4, 95% CI 1.9 to 15.6) were more likely to utilize family planning compared to those who rated the quality as poor.

In multivariate analysis, women who used barriers (condoms) (OR 5.7, 95% CI 1.3 to 24.5) and hormonal (pills/IUD/Injectible) family planning methods (OR 5.8, 95% CI 1.4 to 25.2) remained associated with utilization of family planning.

Table 4.8: Patterns of family planning and associated with the actual utilization

Patterns of contraceptive and family planning	Sample size	Utilization of Family Planing		P - value	Bivariate OR (95% CI)	P - value	Multivariate OR (95% CI)
		No	%				
Who uses contraceptives							
Self	38	33	86.6	0.001	7.4(3.4-15.9)	0.516	1.5(0.4-4.9)
Husband	11	8	72.7	0.001	6.2(2.3-16.5)	0.774	1.2(0.3-4.8)
None	68	8	11.8	Referent	Referent	Referent	Referent
Methods of contraception heard							
Natural (Calendar/Withdrawal)	4	2	50	0.021	6.9(1.4-35)	0.113	4.1(0.7-24.5)
Barrier (Condoms)	31	28	93.3	0.001	12.9(4.9-33.4)	0.018	5.7(1.3-24.5)
Hormonal (Pills/IUD/Injectable)	14	14	100	0.001	13.8(4.9-38.3)	0.018	5.8(1.4-25.2)
None	68	5	7.2	Referent	Referent	Referent	Referent
Provider of Family planning							
Health facility	73	41	56.2	0.99		0.993	
Work Place	9	7	77.8	0.994	ND	0.993	ND
Other sources	11	1	9.1	0.994		0.933	
None	24	0	0	Referent	Referent	Referent	Referent
Rating of family planning							
Best	9	3	33.3	0.214	2.5(0.6-11.5)	0.513	
Better	19	6	31.6	0.166	2.4(0.6-8.7)	0.81	
Good	41	29	70.7	0.001	5.4(1.9-15.6)	0.784	NS
Fair	17	7	41.2	0.199	0.6(0.3-1.3)	0.746	
Poor	31	4	12.9	Referent	Referent	Referent	Referent
Distance to family planning provider							
>5 KM	79	34	43	0.78	1.1(0.6-2.1)	0.809	NS
< 5.1 KM	38	15	39.5	Referent	Referent	Referent	Referent
Why women of reproductive age do not seek reproductive health services							
Unaware of provider	36	18	50	1	1(0.3-4.3)	0.996	
Expensive/Costly	5	0	0	0.997	ND	0.996	NS
Distance	10	4	40	0.797	0.8(0.1-4.3.4)	0.99	
Cultural/Shame issues	62	25	40.3	0.77	0.8(0.2-3.4)	0.926	
Poor provider attitude	4	2	50	Referent	Referent	Referent	Referent

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; NS - Not significant; ND - Not done

4.6 Outcomes of qualitative analysis

The qualitative data from FGDs and KIIs were grouped into different themes which included

4.6.1 Awareness of methods of family planning

The FGDs and KIIs analysis regarding awareness of family planning and contraceptive methods yielded varied responses but largely agreed in context with the quantitative outcomes. Example one FGD participant stated

“Even if we are asked to have less family size since the economy continues to worsens, the overall say lies on the hands of household head”. “If I use family planning methods without asking my husband, this will be tragedy for me. He will be seen as weak in the community which no man allows here. I must follow his decision; this is the tradition in this area”

One KII participant on religion and family planning said *“Islam forbids a couple from choosing to practice FP through the use of surgeries which are irreversible”*.

Another FGD participant said *“I wish I could see these services here and cheaply, we could be all using these services”*. One KII participant said *“in this region of Mandera North some of these family planning services thanks to devolution are now available in some health facilities”*.

From the interviews and group discussions (FGD), there were mixed response on the participant’s level of awareness about family planning and contraceptive methods. A Key informant participant KII stated;

“For increased uptake of family planning services, promotion that facilitates awareness about the available family planning services and their possible side effects and benefits is paramount”.

Not all were aware of family planning – a focus group participant (FGD) said;

“If I knew FP before, I would have not born all these children. My children would have been well spaced and much stronger”.

4.6.2 Sources of family planning methods

Various responses were reported regarding the first source of reproductive health and contraception information and types of contraceptive. An FGD participant confirmed;

“That most information including family planning issues are discussed in non-formal settings including Madrassa and in the family units”.

Another FGD participant said;

“Every woman should use family planning a service only after talking to their husband should emergency occurs he will be required to stand up and take responsibility”.

4.6.3 Types of family planning methods

Concerning the family planning types known, most qualitative participants were able to mention at least one modern method but not necessarily approving the method. One FGD participant;

“I am known method such as condoms which are available at the clinic”.

The second FGD participant said;

“I have seen condom shown to me by the village health worker who also told us about cutting off the Uterus which I cannot use I want to die with my whole organs”.

On the other hand, most of them were not aware about the emergency contraceptives;

“Most women here give birth every year because other than condoms no other family planning methods available can be used quickly to help prevent unplanned children, in fact most pharmacist do not stock these pills”

4.6.4 Cost of family planning methods

Mixed reactions were presented regarding cost of family planning services, source of information as noted by one KII informant;

"Cultural norms and religion affect discussion let alone utilization of family planning".

But a participant in FGD noted;

“We are majority Muslims and we really are taught about family planning methods. It is like a taboo for us to talk about sex and issues surrounding family planning among family circles".

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

This study investigated the awareness and uptake of family planning methods and associated factors among women of reproductive age in Mandera County; an arid, region in the North Eastern Kenya. The study was conducted two years post the 2013 devolution of political power and economic resources from the central government to the devolved county governments. Although initial surveys have associated the county with low utilization of FP at 1.9% in 2014 (Asiimwe *et al.*, 2013), this study has shown that the proportion of women aged 15 to 49 years embracing FP is considerably higher than previous studies standing at 41.9%. This rate was slightly lower than that of married women of reproductive age in Kenya (58%) who reported using FP in 2014 (Kenya Demographic and Health Survey, 2014).

During the study period, about 40.1% of these participants were either lactating or pregnant with more than 46.2% having given birth to ≥ 4 children, pointing to high fertility rate in the region. More than half of the participants were married, with close to 67.5% preferring to have children before the age of 21 years. This is a confirmation of a previous survey that indicated that in this region women have younger ages of sexual debut, young age of motherhood and younger age of first birth pointing to the unmet need for family planning services (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2009).

The FGDs and KIIs discussions confirms the young age of marriage and child birth. One participant in an FGD noted;

“Women here are married at a really young age...for me I was married at my 14th birth day”.

One KII participant said;

“If it were not for the current government administration....my husband's clans' men would have married off my three daughters before they attended secondary school, personally I have witnessed a lot of these cases before”.

5.1.1 Contraceptive use

Although 79.5% of the participants were aware of family planning only about half of them (41.9%) were currently using contraceptive and family planning. This is not unique to this region. In many developing countries reports shows that despite the campaign on the usefulness of family planning in having smaller and healthier families, contraceptive use is still low (Adeleye *et al.*, 2010; KDHS, 2014; Lasisi *et al.*, 2014; Nettey *et al.*, 2015). One study in the Kintampo Districts of Ghana reported even higher family planning awareness level (97%) but lower (25.3%) utilization of any modern family planning method (Nettey *et al.*, 2015). Our results and these others show that awareness does not necessarily influence utilization. From the FGDs and KIIs discussions this unmatched awareness and utilization of family planning methods was evident. One participant in an FGD participant observed;

“That most information including family planning issues are discussed in non-formal settings including Madrassa and in the family units”.

Concerning the family planning types known, most qualitative participants were able to mention at least one modern method but not necessarily approving the method. One participant in an FGD noted;

“I know method such as condoms which are available at the clinic”. The second participant in FGD participant said “I have seen condom shown to me by the village health worker who also told us about cutting off the Uterus...which I cannot use ...I want to die with my whole organs”.

A participant in an FGD reported that not all women in the region were aware of family planning;

“If I knew family planning before, I would have not given birth to these children.... My children would have been well spaced and much stronger”. Emergency contraceptives are not known as stated by KII respondent *“most women here give birth every year because other than condoms no other family planning methods available can be used quickly to help prevent unplanned children, in fact most pharmacist do not stock these pills”.* A Key informant participant stated *“for increased uptake of family planning services, promotion that facilitates awareness about the available family planning services and their possible side effects and benefits is paramount”.*

5.1.2 Factors associated with utilization of family planning

This study showed utilization of FP was significantly associated women’s: region of origin, education level, wealth status (occupation and income), religion, awareness and exposure to the media, and utilization of reproductive health services including modern hormonal contraceptives, and the perceived importance of family planning.

Women from Mandera North, East and South were more likely to utilize family planning. These regions are the most developed constituencies within the County; Mandera East hosts the County government offices and is by infrastructure the most developed. Mandera South and North follow in that order in terms of infrastructure and developed. As expected socioeconomic status, education level, availability and capacity of health care services as well as supplies of available modern family planning methods are considerably better in these three sub-counties compared to the other regions within the County. The relationship between development and use of FP has also been reported by other studies (Gizaw and Regassa, 2011).

The role of region of origin to utilization of FP was also captured. One respondent observed;

“I wish I could see these services here and cheaply, we could be all using these services”. One participant in the KII participant from Mandera East

said” *in this region of Mandera North some of these family planning services thank to devolution are now available in some health facilities”.*

Women who had secondary and tertiary level of education were more likely to utilize FP, which is consistent with other studies (Wanyenze *et al.*, 2011; Creanga *et al.*, 2011; Rutaremwa *et al.*, 2011). Higher education level provides women with a better and wider understanding of the FP options including availability, and invariably the benefits of family planning and regulation. Further, education increases awareness of the side effects of contraceptive methods and preference for the most convenient ones (Mekonnen & Worku, 2011). One participant in an FGD reported;

“I use modern family planning methods because I was made aware of their importance when I was in college”.

High monthly income and employment equating to wealth had a direct relationship with women’s utilization of FP. Women from richer households or high wealth quintiles are empowered are able to afford modern FP services and are most likely better exposed to current reproductive health, FP and contraceptive related issues. Wealth and riches are equated to utilization of modern FP even in other studies (Rutaremwa *et al.*, 2011).

One participant in an FGD said;

“I am able to use these family planning methods because I buy them on my own”.

Although majority of population in this region are predominantly Muslims, participants who were Christians were more likely to uptake family planning. Christian especially the Protestants are often highly accepting of contraceptive use compared to Catholic counterparts. This argument is consistent with literature elsewhere where Christian protestant women were more likely to use highly effective contraceptive methods (Jones & Dreweke, 2011). Singh *et al.*, (2003) notes that there is no mention of contraception in Quran (first source of Islamic law), and only

mentioned in the sayings of the Prophet Mohammed (the second source of Islamic law) advocating for coitus interrupts to control family size. Further, most Muslims either do not send their children to school or send them to madrasas run by Muslim trusts, the overall environment of the later institutions helps in the continuation of their traditional values and thus hindering social changes including family planning (Agadjanian *et al.*, 2009). Regarding the role of religion on the uptake of FP one participant said;

“Islam forbids a couple from choosing to practice FP through the use of surgeries which are irreversible”. One participant in an FGD said; *“we are majority Muslims and we rarely are taught about family planning methods. It is like a taboo for us to talk about sex and issues surrounding family planning among family circles:*

Schools and health care as a source of knowledge family planning messages, increased use of FP. Further awareness of modern family planning methods such as emergency contraceptive, condoms and hormonal contraceptives (Pills/IUD/Injectable) were key in the utilization of FP. Exposure to information has been equated to increased demand for learnt services as well as in the long run, behavior change (Wakefield *et al.*, 2010).

Positive attitude of husband/partner on reproductive health and family planning predicted uptake of utilization of FP. The socio-cultural role of husband or partner has been shown to influence family related issues including FP. This and other similar studies show strong male influencing in the overall family outlook (Rutarema *et al.*, 2011). Therefore, male-to-male outreaches and identifying male champions for family planning in various settings are important in promoting modern FP utilization. Family planning utilization does not at all depend on the women. One respondent stated;

“For a woman to use family planning services, partner’s approval must be granted”.

Another FGD participant on barriers to FP stated;

*“Even if we are asked to have fewer families size since the economy continues to worsens, the overall say lies on the hands of household head”.
“If I use family planning methods without asking my husband, this will be tragedy for me. He will be seen as weak in the community which no man allows here. I must follow his decision; this is the tradition in this area”.*

5.2 Conclusions

1. Concerning FP awareness level among women of reproductive age (15-49 years) in Mandera County, a significant proportion of interviewed women (more than three quarters) were aware of contraceptive and family planning methods mainly through family and friends. Condoms were the most common family planning methods used in the County.
2. Significant proportions of women were using FP compared to the Kenya demographic health survey reports of the last 3 years.
3. Further, socio-cultural, religion and awareness attribute of the participants, provide an important avenue to evaluate the interplay if any of the multifaceted and multilevel factors that impact availability and utilization of FP.

5.3 Recommendations

Ultimately for the improvement in the proportion of women embracing FP in Kenya especially in the initially marginalized counties experiencing hardship (arising from droughts and insecurity) this study makes the following the recommendations;

1. Concerted efforts must be undertaken by the County and National government to promote and to tackle the socio-cultural deterrents of FP utilization. Should this be achieved, these regions could record one of the

highest utilizations of FP compared to other wealthy and affluent regions of Kenya.

2. To improve the general awareness rate of FP among women advocacy and sensitization campaigns at family level should be rolled out by the Mandera County Government in conjunction with the National Government. Involvement of faith-based organization, religious leaders and other stakeholders is of paramount.
3. Family planning services should be rolled out by County and National government in all public and private health facility in order to make easy access for women seeking the service.
4. County Government should allocate funds towards promoting family planning services by listing services of Community Health Workers (CHW's) to visit women at household levels.
5. Setting up of mobile family planning services functional to offer services to nomadic population.

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APPENDICES

Appendix I: structured questionnaires

STUDY TITLE: Factors associated with the utilization of family planning services among women of reproductive age (15-49years) in Mandera County

Date _____	Individual
Location _____	interviewed _____
Interviewer _____	Time _____

SOCIO-DEMOGRAPHIC INFORMATION:

1. Age of respondent (put absolute years) _____
2. What is your marital status? 1. Single (never married) 2. Married 3. Divorced/Separated 4. Widow
3. Religion of the respondent
1. Christian 2. Muslim 3. Hindi 4. Others _____ (Specify)
4. Occupation of the respondent (Multiple response)
1. Housewife 2. Small scale business 3. Farmer 4. Civil servant 5. Casual labourer 6. Student 7. Others _____ (Specify)
5. Main source of income in your house (Multiple response)
1. Self Salary 2. Pastrolist 3. Business 4. Husband 5. Remittance 6. Others _____ (Specify)
6. Approximately how much do you earn per month? _____ (Ksh)

7. How many times have you been pregnant? _____
8. How many of these pregnancies resulted in a baby that was born alive?

9. How many living children do you have currently? _____
10. Have you ever attended school? 1. Yes 2. No
11. What is the highest level of school you completed?
1. Primary 2. Secondary 3. College/University 4. Postgraduate 5. Madrassa 6.
None
12. What is the womans current physiological state? 1. Pregnant 2. Lactating

3. Pregnant and Lactating 4. Not pregnant and lactating
13. Who is the head of the house hold? 1. Husband 2. Respondents Mothers 3.
Others (specify) _____

FAMILY PLANNING AWARENESS AND KNOWLEDGE

14. Have you ever heard about contraceptive and family planning?
1. Yes 2. No
15. Family planning is the planning of when to have child. Do you agree?
1. Yes 2. No
16. Where did you get your first source of information about reproductive health
and contraception?
1. Parents/ Siblings / family member
2. Family planning clinic
3. School
4. Friends
5. Sexual partner/Lovers
6. Nurse or doctor after child birth
7. Physician
8. Magazine/ Internet/Books
9. TV/Movies/ Media
10. Husband after marriage
11. Seminars

17. Which of the above do you consider the most useful source of information for you on issues relating to reproductive health?

1. Parents/ Siblings / family member
2. Family planning clinic
3. School
4. Friends
5. Sexual partner/Lovers
6. Nurse / doctor
7. Physician
8. Magazine/ Internet/Books
9. TV/Movies/ Media
10. Husband
11. Seminars

18. Have you ever received any reproductive health and contraceptive related education at your school or informally or in health clinics?

1. Yes
2. No

19. Which methods of contraceptives have you heard about?

- | | |
|---|------------------------------|
| 1. Pills | 8. Female sterilization |
| 2. IUD | 9. Male sterilization |
| 3. Injectable (Depo provera) | 10. Implants |
| 4. Diaphragm/ Cervical cap | 11. Emergency contraceptives |
| 5. Foam/ Jelly | 12. Withdrawals |
| 6. Female condom | |
| 7. Male condom | |
| 13. Calendar observation/ periodic abstinence | |

20. Have you ever heard about any emergency contraceptive method?

1. Yes
2. No
3. Do not know

21. What is ideal time to have first child?

1. Between 15-20
2. Between 18-21
3. Between 22-24
4. Between 25-27
5. Between 28-30
6. Above 30

22. How many children do you like to have or suggest to other? _____

23. What is the ideal age space between children?

1. One year
2. One and half to two years
3. Three to five years
4. Five years or more

24. Would you describe the Family Planning Services and Friendliness of Staff in the facility/facilities you have attended?

1. Unfriendly
2. Friendly
3. Uncertain

25. How could you describe cost of Family Planning Services?

1. Affordable
2. Expensive
3. Free
4. No idea

26. Did you get any education about reproductive health and contraceptive methods before you first sexual encounter?

1. Yes
2. No
3. Do not know

27. Do you think unmarried young girl should know about reproductive health and family planning?

1. Yes
2. No
3. Do not know

28. If you think yes that unmarried young girl need to know about reproductive health and family planning, then please mention

29. What do you think is the attitude towards discussion about sexual health and family planning information with unmarried girl, in your social context?

1. Not common in our society to discuss
2. Shame to discuss/ Embarrass to discuss
3. Common topics in our society to discuss
4. I never think about this before

30. Have you ever discussed with your husband/partner about reproductive health and family planning?

1. Yes
2. No

31. What was your attitude when you discussed with your husband/partner or your surroundings about family planning?

1. Embarrass/avoid to discuss
2. Positive/ we are enjoying discussions

3. I never discussed

32. What was your husband's/patners attitude or your surroundings attitude when he discussed with you about family planning?

- 1. Embarrass/ avoid to discuss
- 2. Positive/ we are enjoying discussions
- 3. Avoid or never discussed

33. What is your view about contraceptive methods?

- 1. I have used contraceptives without any problems
- 2. I have used contraceptives in spite of problems
- 3. It is troubles to use
- 4. It has side effects
- 5. It is against nature
- 6. I don't like to use
- 7. I never used

34. If you don't like contraceptive methods, then please mention why?

.....

35. If you have any bad experiences with using of contraceptives, then please mention the experience with name of contraceptives method

.....

FAMILY PLANNING UTILIZATION

36. Have you ever used any family planning?

- 1. Yes 2. No

37. If No, why have you not used any method of family planning method

- 1. I want to be pregnant
- 2. I dislike them
- 3. Preferred traditional method
- 4. Fear of side effect
- 5. Not available
- 6. Others _____ (specify)

38. Are all of your children born healthy?

- 1. Yes 2. No 3. Don't know

39. Do you like to have more children now?

- 1. Yes 2. No 3. Don't know

40. If you do not want to have more children then are you using any contraceptives now?

1. Yes
2. No
3. Don't know

41. Who in the family is/are using any contraceptives?

1. Me
2. My husband
3. No one

42. If you are using contraceptives then which method (s) are you using now?

1. Condom
2. Oral contraceptives
3. Intra Uterine Device/Coil
4. Injection
5. Withdrawal method
6. Breast feeding
7. Male sterilization
8. Female sterilization
9. Diaphragm
10. Calendar method
11. None

43. Why do you prefer this method (s)?

1. Comfortable with it
2. Partner preference
3. Wish to have a short break
4. Wish to have along break
5. Motivated by friends / neighbor
6. Cheap for me
7. Others _____ (specify)

44. Who is (are) Family Planning Service Provider (s)?

1. Health facility
2. Mobile health workers
3. Pharmacy
4. Workplace
5. Others

45. What was the quality of family planning services?

1. Best
2. Better
3. Good
4. Fair
5. Poor

46. What is your proximity to family planning service provider?
_____ (Kilometers)

47. Does your spouse know that you are using any family planning method?
 1. Yes 2. No
48. If No, give reason (s) why?
 1. Spouse dislike
 2. Want more children
 3. Fear of side effect
 4. Others _____(Specify)
49. Are there any practices in your community that prevents women from using family planning?
 1. Yes 2. No
50. If yes, which ones?
 1. Polygamy
 2. Wife inheritance
 3. Pastoralism/nomadism
 4. ignorance
 5. Others _____(Specify)
51. Were your last pregnancy planned?
 1. Yes 2. No 3. don't know
52. What do you think are the Main Reasons why women of reproductive age do not Seeking RH Services?
 1. Did not know where to go
 2. Services too expensive/Did not have money
 3. Clinic too far
 4. Too scared/too shy
 5. Too busy
 6. Unfriendly staff
 7. Parents refused
 8. It is culturally shameful

Appendix II: structured questionnaires in somali

Lifaaqa 1b: Wareysiyo Qaabdhismeed Loo Yeelay

Cinwaanka Daraasada: Sababaha lala xiriirsho ka faaiideysiga qorsheynta qoyska ee dumarka da'da dhalmada kujira ee 15-49 sano jir ee Dagmaada Mandheera

Taariikh _____	Shakhsiga la wareystay _____
Deegaanka _____	Wagtiga _____
Wareysigaade _____	

XOG LA XIRIIRTA QOFKA LA WAREYSANAYO OO DHANKA BULSHO

AH:

1. Qofka jawaabaha bixinaya da'diisa (inta sano ee uu jiro qor) _____
2. Xaaladaada guurku waa maxay?
 1. Doob (weli ma guursan)
 2. La qabo
 3. Laga dhintay/Kala maqan ama kala daggan khilaaf dartii
 4. Garoob
3. Diinta qofka
 1. Masiixi
 2. Muslim
 3. Xindi
 4. Diin kale _____ (Qeex)
4. Shaqada qofka (Jawaabo badan ayaa la qaadan karaa)
 1. Gurijoogto
 2. Ganacsi yar
 3. Beerfalid
 4. Shaqo dowladeed
 5. Hamalato
 - 6.

Shaqooyin kale _____ (Qeex)

5. Dakhliga ugu badan meesha uu qoyskaaga ka soo galo (Jawaabo badan ayaa la qaadan karaa)

2. Mushaar 2. Dalag beer ka soo go'ay 3. Ganacsi 4. Qarash ninku soo shaqeeyo

5. Dakhli kale _____ (Qeex)

6. Qiyaas ahaan meeqa ayaa ku soo gasha bishii? _____ (Ksh)

7. Imisa jeer ayaad uur yeelatay? _____

8. Imisa jeer ayaad inta uur yeelatay aad dhashay cunug nool? _____

9. Imisa carruur ah ayaa hada kuu nool? _____

10. weli iskool maaqresatey? 1. Haa 2. Maya

11. Iskoolkii ugu sareeyay ee aad dhigato keebuu ahaa?

1. Dugsi hoose 2. Dugsi sare 3. Koleejo/ Jaamacad 4. Jamacaad saare 5. Madrassa

12. Hada uur ma leedahay? 1. Haa 2. Maya

3. Cunug ayaan nuujiyaa

13 Qoyska yaa u madax ah? 1. Ninka 2. Hooyada 3. Dad kale

(qeex) _____

WACYIGALINTA IYO AQOONTA QORSHEYNTA QOYSKA

14. Weligaa ma maqashay waxyaabaha laisaga ilaaliyo qaaditaanka uurka ama cudurada iyo qorsheynta qoyska?

1. Haa 2. Maya

15. Qorsheynta qoysku waa qorsheynta markii la doonayo in ilmo la dhalo iyo marka aan la doonayn in ilmo la dhalo. Ma saxbaa sidaasi oo ma aqbashay?

1.Haa 2. Maya

16. Halkee ama qofkee markaagii ugu horeysay ka heshay aqoonta ku saabsan caafimaadka taranka ama la xiriira galmada iyo waxyaabaha cudurada ama uurka qaaditaankiisa looga gaashaanto waqtiga galmada?

1. Waalidiin/Walaalo/xubnaha qoyska
2. Isbitaal laga helo adeegyada qorsheynta qoyska
3. Iskoolka
4. Saaxiibo
5. Qof aan isu galmoono/Qof aan is jecelnahay
6. Kalkaaliso ama dhaqtar mar aan dhalay ka dib
7. Dhaqtar cudurada guud qaabilsan
8. Joornaal/ Internet/Buugaag
9. TV/Aflaan/Warbaahinta
10. Ninkayga markii aan isguursanay ka dib
11. Seminaaro

17. Ilaha sare kuxusan midee ayay kula tahay isha ugu muhiimsan ee laga helo xogta loogu tala galay dhallinyarada xogtaas oo ku saabsan arimaha galmada?

1. Waalidiin/Walaalo/xubnaha qoyska
2. Isbitaal laga helo adeegyada qorsheynta qoyska
3. Iskoolka
4. Saaxiibo
5. Qof aan isu galmoono/Qof aan is jecelnahay
6. Kalkaaliso ama dhaqtar mar aan dhalay ka dib
7. Dhaqtar cudurada guud qaabilsan
8. Joornaal/ Internet/Buugaag
9. TV/Aflaan/Warbaahinta
10. Ninkayga markii aan isguursanay ka dib
11. Seminaaro

18. Weligaa iskoolkaaga ma ku baratay wax ku saabsan waxbarashada caafimaadka galmada iyo waxyaabaha looga gaashaanto uurka ama cudurada ama aqoontaa ma ku heshay si aan rasmi ahayn ama ma ka soo heshay isbitaalada?

1. Haa
2. Maya

19. Nooc ee ka mid ah waxyaabaha la isga dhowro uurka ama cudurada marka la galmoonayo oo aad maqashay adigu?

1. Kaniino
2. IUD
3. Cirbad(Depo provera)
4. Dahaar/Daboolka xubinta taranka dumarka la gasho
5. Xumbo/Xayr

- | | |
|---|---|
| 6. Kondhoomka dumarka | 11. Waxyaabaha lagu gaashaanto marka ay jiraan xaalado dagdag ah |
| 7. Kondhoomka ragga | 12. Biyaha ragga oo bannaanka la geeyo |
| 8. Si joogto ah oo dumarka dhalmada looga joojiyo | 13. Isticmaalida kalandaariyaha /xilliyada uurka aad qaadi karto oo aadan galmoon |
| 9. Si toos ah oo ragga dhalmada looga joojiyo | |
| 10. Wax lagu tallaalo jirka oo la dhex galiyo | |

20. Ma maqashay wali habka uurka la isga ilaaliyo marka xaaladaha dagdaga ahi jiraan?

1. Haa 2. Maya 3. Ma ogi

21. Waqtigee ugu habboon in la dhalo cunugga curadka ah?

1. Inta u dhexeysa 15-20
2. Inta u dhexeysa 18-21
3. Inta u dhexeysa 22-24
4. Inta u dhexeysa 25-27
5. Inta u dhexeysa 28-30
6. Wixii ka dambeeya 30

22. Imisa carruur ah ayaad jeclaan lahayd inaad dhasho ama aad kula talin lahayd dadka kale? _____

23. Waqti intee dhan ayaa habboon in loo dhexeysiiyo carruurta?

1. Hal sano
2. Hal sano iyo bar illaa laba sano
3. Saddex illaa shan sano
4. Shan sano iyo ka badan

24. Ma ku tilmaami lahayd Adeegyada Qorsheynta Qoyska iyo Shaqaalaha Caafimaadka ee ka shaqeeya?

1. Kuwo aan wanaagsanayn
2. Kuwo wanaagsan
3. Aan la hubin inay wanaagsan yihiin iyo in kale

25. Maxaad ku tilmaami lahayd qiimaha Adeegyada Qorsheynta Qoyska?

1. Kuwlo la goyn karo
2. Kuwo qaali ah
3. Kuwo lacag la'aan ah
4. Ma ogi

26. Ma baratay waxbarasho kusaabsan caafimaadka taranka iyo hababka la isaga ilaaliyo uurka ka hor intii aan lagu guursan?

1. Haa 2. Maya 3. Ma ogi
27. Ma kula tahay in ay wanaagsan tahay in gabdhaha yaryar ee aan la guursan ay wax ka bartaan caafimaadka taranka iyo qorsheynta qoyska?
 1. Haa 2. Maya 3. Ma ogi
28. Hadii ay haa kula tahay in gabdhaha yaryar ee aan weli la guursan ay u baahan yihiin inay wax ka ogaadaan caafimaadka taranka iyo galmada iyo qorsheynta qoyska, bal wax nooga sheeg fadlan marka
29. Maxaad ka qabtaa in lagala hadlo gabdhaha aan la guursan weli waxyaabo ku saabsan caafimaadka taranka iyo galmada marka bulshadiina loo eego?
 1. Bulshadeena sida gaalibka ah kama hadasho
 2. Waa ceeb in laga hadlo/Waa wajigabax in laga hadlo
 3. Waa wax caadiyan laga hadli karo bulshadeena
 4. Weligey arinkaa hada ka hor kama fakarin
30. Weli makatashatey ninkaaga arimaha caafimaadka taranka iyo qorsheynta qoyska?
 1. Haa 2. Maya
31. Muxuu ahaa fikirka aad qabtay markii aad kala hadlaysay ninkaaga ama dadka kuu dhowdhow ee asxaabta aad tihiin hababka uurka la isaga ilaalin karo?
 1. Wajigabax weeye/ha ka hadlin
 2. Haa waa arin wanaagsan/waan ubogeynaa mawduucaan
 3. Weligey kama aanan hadlin
32. Muxuu ahaa fikirka ninkaaga ama dadka asxaabtaada ah ay ka qabeen markii aad ka wada hadleyseen hababka uurka laisaga ilaaliyo?
 1. Wajigabax/ha ka hadlin
 2. Haa waa arin wanaagsan/waan u bogeynaa mawduucaan
 3. Maya weligay kama aanan hadlin
33. Waa maxay aragtidaada ku aaddan hababka uurka laisaga ilaaliyo?
 1. Waxaan waxyaabahan laisaga ilaaliyo uurka u isticmaalay si aan dhib lahayn
 2. Waxaan isticmaalay waxyaabaha laisaga ilaaliyo uurka inkastoo dhibaato ay leeyihiin
 3. Waa dhibaato hadii la isticmaalo
 4. Dhibaatooyin ayay keenaan isticmaalka kadib
 5. Dabiiciga ayay ka horimaanayaan
 6. Ma jecli inaan isticmaalo
 7. Waligay ma isticmaalin
34. Hadii aadan jeclayn hababka laisaga ilaaliyo uurka, fadlan sababta bal noo sheeg?

35. Hadii dhibaatooyin xun ay kaa soo mareen waxyaabaha uurka looga hortago, fadlan bal sheeg dhibaataada kaa soo martay iyo magaca waxaas aad isticmaashay

KAA FAAIIDEYSIGA QORSHEYNTA QOYSKA

36. Weligaa qorsheynta qoyska ma isticmaashay?

1. Haa
2. Maya

37. Hadii jawaabtaada Nambar 41 ay maya tahay waa maxay sababta aadan u isticmaalin wax hab qorsheyn qoys ah

1. Uur inaan yeesho ayaan rabaa
2. Waan necbahay
3. Hab dhaqameedka ayaan door bidaa
4. Hadhow inay dhib igu keenaan ayaan ka baqaa
5. Lama helo
6. Sababo kale_____ (Qeex)

38. Carruurtaada oo dhan ma ayagoo caafimaad qaba ayay dhasheen?

1. Haa
2. Maya
3. Ma ogi

39. Carruur kale inaad dhasho hada ma doonaysaa?

1. Haa
2. Maya
3. Ma ogi

40. Hadii aadan doonayn inaad dhasho carruur kale hada ma wax uurka looga hortago ayaad isticmaashaa?

1. Haa
2. Maya
3. Ma ogi

41. Yaa isticmaala waxyaabaha uurka looga hortago?

1. Aniga
2. Ninkayga
3. Midkeena ma isticmaalo

42. Hadii aad isticmaasho hada waxyaabaha uurka looga hortago habkee ama hababkee ayaad isticmaashaa?

1. Kondhom
2. Waxyaabo afka laga qaato
3. Aalad xubinta taranka la dhex gasho/*spiral*
4. Cirbad
5. Biyaha oo bannaanka la geeyo
6. Nuujin
7. Qalliin ninka lagu sameeyo
8. Qalliin naagaha lagu sameeyo

9. Dahaar
10. Habka kalandaariyaha
11. Waxba

43. Waa maxay waxa aad u doorbiday habkaa ama hababkaas?
 1. Raaxo weeye
 2. Ninka ayaa doorbida
 3. Waxaan rabaa inaan ilmaha ka nasto dhalitaankooda waqti gaaban
 4. Waxaan rabaa inaan ilmaha ka nasto dhalitaankooda waqti dheer
 5. Saaxiibo/daris ayaa igu dhiirigashay
 6. Waa ii raqiis
 7. Sababo kale _____ (qeex)
44. Yaa bixiya Adeegyada Qorsheynta Qoyska?
 1. Xarun caafimaad
 2. Shaqaale caafimaad oo hadba meel taga
 3. Farmashi
 4. Goobta shaqada ayaa laga helaa
 5. Dad kale
45. Tayada adeegyada qorsheynta qoysku sidee ahayd?
 1. Wey ugu fiicnayd
 2. Aad ayay u fiicnayd
 3. Wey fiicnayd
 4. Xoogaa wey yara fiicnayd
 5. Waa xumayd
46. Intee masafo u jirtaa meesha laga bixiyo adeegyada qorsheynta qoyska?
_____ (Kilometer ku qor)
47. Miyaa ninkaagu og yahay inaad isticmaasho hab ka mid ah hababka qorsheynta qoyska?
 1. Haa
 2. Maya
48. Hadii ay Maya tahay, sababta ama sababaha sheeg?
 1. Ninka ayaa neceb
 2. Carruur badan ayaan rabaa
 3. Waxaan ka baqaa inuu igu kacsho xanuuno
 4. Dhibaatooyin kale _____ (Qeex)
49. Miyay jiraan wax dhaqamo ah oo bulshadiinu leedahay oo ka hor joogsada dumarku inay isticmaalaan qorsheynta qoyska?
 1. Haa
 2. Maya

50. Hadii ay haa tahay, waa kuwee?

1. Ragga oo naago badan guursada
2. Dhaxlitaanka xaasaska-dumaalid
3. Xoolo dhaqatonimada
4. Reer baadiyenimada
5. Kuwo kale _____(Qeex)

51. Miyaa dhammaan uurarkii aad yeelatay la qorsheeyay?

1. Haa
2. Maya
3. Ma ogi

52. Maxay kula tahay inay yihiin sababaha ugu waaweyn ee dhallinyaradu aysan u doonan adeegyada caafimaadka taranka?

1. Meel ay ka doontaan
ma aysan ogayn
2. Adeegyadaa waa qaali
aad/Lacag ma aysan
haysan
3. Isbitalka ayaa ka fogaa
4. Aad ayay uga
baqayeen/aad ayay u
xishoodeen
5. Mashquulkooda ayaa
badan
6. Shaqaalaha ayaan
furfurnayn
7. Waalidiintood ayaa u
diiday
8. Dhaqan ahaan waa
ceeb

Appendix III: Focus group discussion guide

Title: Factors associated with utilization of family planning among women of reproductive age (15-49years) in Mandera County.

Introduction:

- a. Introduction of FGD Facilitator, Recorder, and participant organizations
- b. Express gratitude for group participation
- c. Disclaimer regarding confidentiality of collected information.
- d. The objectives of this project are to:
 - I. To determine the socio-demographic characteristics of women of reproductive age (15-49 years) in Mandera County.
 - II. To determine awareness rate of family planning among women of reproductive age (15-49 years) in Mandera County.
 - III. To determine the utilization rate of family planning services among women of reproductive age (15-49 years) in Mandera County.
 - IV. To evaluate factors associated with the utilization of family planning among women of reproductive age (15-49 years) in Mandera County.

Site _____

date _____

Demographic data

S/no	Names	Age
Occupation		

1. _____

2. _____

3. _____

4. _____

5. _____

Questions for discussions

1. What are the problems associated with large population in this community?
2. Are there cases of unwanted pregnancies among the women whether married or not in this county?
3. What are the taboos associated with pregnancy in this community?
4. How does the community perceive the family planning services in the county?
5. Do women attend reproductive health services in your county and why?
6. What are the constituents of MCH service?
7. What do you understand with FP?
8. Identify examples of FP services in your county?
9. What is the level of awareness of FP services in your area?
10. Discuss how utilization of family planning services by women is achieved and how is it perceived by members of your community?
11. With whom do members of your community consult regarding questions and concerns about family planning?
12. What prevention methods, if any, do people use to protect themselves from unwanted pregnancies?
13. How do community members prepare themselves with pregnancy related emergency?
14. How do families prepare themselves when their family member is/are pregnant?
15. What do you think is needed to stop the maternal mortality due to pregnancies in this community?
16. In your opinion what are the attitude of health care providers towards mothers seeking family planning services?
17. What are the challenges of family planning or barriers to FP service utilization
18. What are the solutions and recommendations to improve family planning service utilization?

Note: Please summarize discussion and thank the participants for their contributions and time.

Appendix IV: Focus group discussion in somali

Lifaaqa 2b: Wadahadalka Kooxda

Cinwaana: Sababaha la xiriira ka faaiideysiga qorsheynta qoyska ee dumarka dhalhada wada (15-49 sano jirka) ee Dagmada Mandheera

Hordhac:

- a. Baritaanka kooxda magaca xiriiriyaha FGD-ga, Rikoorka, iyo ururada ka qeybqaateyaasha
- b. Umahadnaq kooxda kasooqeybgalkooda
- c. Shardiga qarsoodi ka dhigida xogta la aruurinaayo.
- d. Ujeedooyinka mashruucaan laga leeyahay waa in:
 - I. La ogaado heerka wacyiga qorsheynta qoyska ee dumarka dhalhada wada (15-49 sano jirka ah) ee Dagmada Mandheera inta uu gaarsiisan yahay.
 - II. La ogaado heerka ka faaiideysiga adeegyada qorsheynta qoyska ee dumarka dhalhada wada (15-49 sano jirka ah) ee Dagmada Mandheera.
 - III. Qiimeyn lagu sameeyo sababaha la xiriira ka faaiideysiga qorsheynta qoyska ee dumarka dhalhada wada ee (15-49 sano jirka ah) ee Dagmada Mandheera.

Site _____	Taariikh _____	
S/no	Magaca	Sanad
Occupation		

1. _____

2. _____

3. _____

4. _____

5. _____

Suaalaha laga wada hadlayo

1. Waa kuwee dhibaatooyinka lala xiriirsho dadka badan ee bulshadaan?
2. Dagmadaan miyay jiraan dumar uur aan la doonayn qaada hadii la qabo iyo hadii kaleba?
3. Waa maxay waxyaabaha lama taabtaanka ah eel ala xiriirsho uurka bulshadaan dhexdeeda?
4. Sidee bulshadu u aragtaa adeegyada qorsheynta qoyska ee laga helo dagmada?
5. Miyaa dumarku soo xaadiraan wacyigalinta looga hadlaayo adeegyada caafimaadka taranka ee dagmadiina sababtuna maxay tahay?
6. Waa maxay waxyaabaha uu ka kooban yahay adeegga caafimaadka hooyada iyo dhallaanka?
7. Maxaad ka fahamtaa oraahda Qorsheyn Qoys?
8. Sheeg tusaaleyaal ah adeegyo Qorsheyn Qoys oo ka jira dagmadaada?
9. Ilaa heerkee ayuu gaarsiisan yahay wacyigalinta Qorsheynta Qoyska ee deegaankiina?
10. Ka hadla sida dumarku inay ka faaiideystaan adeegyada qorsheynta qoyska loogu guuleysto iyo sida ay u arkaan xubnaha bulshadaada?
11. Yay xubnaha bulshadaadu kala tashadaan suaalaha iyo walaaca ay ka qabaan qorsheynta qoyska?
12. Waa maxay hababka uurka looga hortago, hadiiba ay jiraan, ee dadku isga ilaaliyaan gaar ahaan uurka aan loo baahnayn?
13. Sidee xubnaha bulshadaadu isugu diyariyaan xaaladaha dagdaga ah ee la xiriira uurka?
14. Sidee qoysasku isugu diyaariyaan marka haweeney ka mid ah ay uur leedahay/dhowr dumar ah oo ka tirsan ay uur yihiin?
15. Maxay kula tahay in loo baahan yahay si loo joojiyo dhimashada hooyada marka ay dhalayso ama ay uurka tahay bulshadaada dhexdeeda?
16. Fikirkaaga markii loo eego, waa maxay fikirka dadka adeegyada caafimaadka siiya hooyooyinka doonaya adeegyada qorsheynta qoyska?
17. Waa maxay caqabadaha soo wajaha ama mixnadaha soo wajaha adeegyada qorsheynta qoyska ka faaiideysigooda?
18. Waa maxay xalalka iyo talooyinka lagu horumarin karo kafaaiideysiga adeegga qorsheynta qoyska?

Xasuusnow: Fadlan uga mahadnaq ka qeybqaateyaasha ka soo qeybgalkoodii iyo waqtigii ay kuu soo hureen dartood.

Appendix V: Key informant interview guide

Title: Factors associated with utilization of family planning among women of reproductive age (15-49years) in Mandera County

Introduction: May I take this opportunity to welcome you to this interview which may take between 40-50minutes. The essence of this session is to get your views regarding factors associated with the utilization of family planning services among women of reproductive age (15-49 years) in Mandera County. The main objective is to help us identify community awareness, utilization rate and factors associated with the utilization of family planning. Please note that there are no right or wrong responses or answers to the issues or questions below. Also feel free to give any contribution or response to any of the issues/questions at any time. Kindly do not feel offended if I interject or ask for any clarification or more information when you will be responding.

Date:.....

Name (optional).....

Gender.....

Age (inyear)

Position.....

Probing Questions

Demographic factors affecting utilization of ANC.

1. What type of work do you do? (Self-employed/employed by someone else)?
2. What do you see as your role in the community? (What positions do you hold (formal and informal)?
3. What do you understand by family planning?

4. There are two types of family planning methods; the modern and the traditional.
Could you kindly mention a few of these that you can recall
5. What is the level of awareness of family planning in the county (give a score of 1 to 10? 1 means low knowledge while 10 high awareness)
6. Do you think women in the county use these services?
7. How would you categorize the level of utilization (give a score of 1 to 10: 1 means low utilization levels while 10 high levels of utilization)?
8. In your opinion what are the demographic factors that affect utilization of family planning service in this County?
Probe: - women's education, husband's education, parity, age of women at marriage or at pregnancy, marital status, religion, caste and ethnicity, family size, poverty and knowledge on FP.

Social factors affecting utilization of ANC.

1. Are there social factors that affect FP utilization in this community?
2. How do people view ANC services in this community?

Cultural factors affecting utilization of ANC.

1. Are there any traditional practices are practiced in this community?
2. What are the cultural challenges that affect FP service utilization in this community?

Economic factors and ANC utilization

1. Are there economic reasons that affect the utilization of FP services that you know off?
Probe: cost of services, socio-economic status or income of the household, occupation of woman/husband and employment

Knowledge

1. What are the problems associated with pregnancy in this community?
2. How is the utilization of FP services by women, perceived by members of your community?

3. With whom do members of your community consult regarding questions and concerns about FP?
4. What are the awareness/knowledge challenges facing women regarding FP service utilization in the county?

Attitude

1. What are attitude or reaction or perceptions of women regarding FP utilization
2. Are there women attitudes or reaction or perceptions regarding FP that affect FP service utilization?

Practices

1. What are the general practices regarding FP utilization in this county?
2. Are the FP service providers in this county?
3. Kindly mention all sources that you know
4. What is the general trend of women regarding FP service seeking practice?
Probe – what gestation, who decides,

Health

1. Do the staffs have adequate knowledge on FP
2. How is the accessibility of FP services?
5. Does the facility have guidelines on FP services?
6. What are the attitudes of the service providers on women seeking FP services?

Note: Please summarize the discussion and thank the participant for their contributions and time.

Appendix VI: Key informant interview guide in somali

Lifaaqa 3b: Tilmaamaha Wareysiga Lala Yeelanayo Qofka

Cinwaanka: Sababaha la xiriira sida dumarka dhalmada wada ee jira (15-49 sano) ay uga faaiideystaan qorsheynta qoyska dagmada Mandheera.

Hordhac: Fursadaan aan u isticmaalo inaan idinku soo dhaweeyo wareysigaan oo laga yaabo inuu qaato 40-50 daqiiqadood. Nuxurka xiisadaan waa in la helo aaraadiina ku aaddan sababaha la xiriira sida dumarka jira da'da dhalmada ee ah (15-49 sano) ay uga faaiideystaan adeegyada qorsheynta qoyska ee Dagmada Mandheera. Ujeedooyinka ugu weyn waa in uu naga caawiyo wacyigalinta bulshada, heerka ka faaiideysiga iyo asbaabta la xiriirta ka faaiideysiga qorsheynta qoyska. Fadlan xasuusnow inaysan jirin jawaabo saxan iyo kuwo qaldan oo ay leeyihiin arimaha ama suaalaha hoos ku xusan. Sidoo kale waxaad wax ka oran kartaa ama ka jawaabi kartaa wixii arimo/ama suaalo ah waqtigii aad doonto. Fadlan ha ka xumaan hadii aan kaa dhexgalo ama aan faahfaahin ku weydiiyo ama qeexitaan marka aad jawaabta bixinayso.

Taariikh:

Magaca (waad ka tagi kartaa hadaad doonto)

Lab ama dheddig

Da'da (sanado).....

Jagada.....

Suaalo Baaritaan ah

Sababaha kala duwanaanshaha dadka ee saameeya ka faaiideysiga daryeelka la siiyo dumarka uurka leh.

1. Shaqo nooc ee ah ayaad qabataa? (Ganacsi/ama inaad qof kale u shaqeyso)?
2. Maxay kula tahay inuu yahay dowlada aad bulshada dhexdeeda ku leedahay? (Jagadee haysaa (rasmi ha ahaato ama yaysan ahaan)?
3. Maxaad ka fahantaa qorsheynta qoyska?
4. Waxaa jira laba hab oo ah qorsheynta qoyska; hab casri ah iyo hab soo jireen ah. Fadlan ma magacaabi kartaa dhowr ka mid ah oo aad xasuusato?
5. Intee gaarsiisan yahay heerka wacyiga kusaabsan qorsheynta qoyska ee dagmadaan (jawaabtaadu ha u dhexeyso 1 ilaa 10. 1 waa hooseeyaa halka 10 ay tahay waa sareeyaa)
6. Miyaad u malaynaysaa in dumarka dagmadaan ay isticmaalaan adeegyadaas?
7. Darajo intee dhan ayaad siin lahayd heerka ka faaiideysiga (jawaabtaadu ha u dhexeyso 1 ilaa 10. 1 waa hooseeyaa halka 10 ay tahay waa sareeyaa)
8. Fikirkaaga hadii aad ka dhiibato waa maxay sababaha kala duwanaanshaha dadka ee saameeya ka faaiideysiga adeegyada qorsheynta qoyska ee Dagmadaan?
Baar: - waxbarashada dumarka, waxbarashada ninka, sinnaan, da'da dumarka lagu guursado ama ay uurka ku qaadaan, xaalada guurka, diinta, dabaqada ama qabiilka, qoysku inta uu dhan yahay, faqriga iyo aqoonta loo leeyahay.

Sababaha bulsho ee saameeya ka faaiideysiga daryeelka la siiyo dumarka dhalaya

1. Miyay jiraan sababo bulsho oo saameeya ka faaiideysiga qorsheynta qoyska ee bulshadaan?
2. Sidee dadku u arkaan adeegyada la siiyo dumarka dhalaya ee bulshadaan?

Sababaha dhaqan ee saameeya daryeelka la siiyo dumarka dhalaya

1. **Miyay jiraan dhaqamo soo jireen ah oo bulshadaani ku dhaqanto?**
2. **Waa maxay caqabadaha dhaqanka ee saameeya kafaaiideysiga adeegga qorsheynta qoyska ee bulshadaan?**

Sababaha dhaqaale iyo kafaaiideysiga daryeelka la siiyo dumarka uurka leh

1. Miyay jiraan sababo dhaqaale oo aad ogtahay oo saameeya ka faaiideysiga adeegyada qorsheynta qoyska?

Baar: qiimaha ay joogaan adeegyadu, xaalada dhaqan dhaqaale ama dakhliga qoyska, shaqada dumarka/ninka iyo shaqaaleynta

Aqoonta

1. Waa maxay dhibaatooyinka la xiriira uurka bulshadaan dhexdeeda?
2. Sidee xubnaha bulshadaadu u arkaan sida dumarku uga faaiideysto adeegyada qorsheynta qoyska?
3. Yay xubnaha bulshadaadu kala tashadaan suaalaha iyo walaaca ay ka qabaan qorsheynta qoyska?
4. Waa maxay caqabadaha aqoonta/wacyigalinta ee soo wajaha dumarka marka laga hadlayo dhanka ka faaiideysiga adeegga qorsheynta qoyska ee dagmada?

Fikirka

1. Waa maxay fikirka ama ficil celinta ama waxyaabaha dumarku ka aaminsan yihiin ka faaiideysiga qorsheynta qoyska?
2. Miyay jiraan fikrado dumarku qabaan ama ficil celin ama fikrado ku saabsan ka faaiideysiga adeegga qorsheynta qoyska?

Dhaqamada

1. Waa maxay dhaqamada guud ee kutaxaluqa sida dagmadaan dadku uga faaiideystaan qorsheynta qoyska?
2. Miyaa adeeg bixiyeyaasha qorsheynta qoysku joogaan dagmadaan?
3. Fadlan sheeg dhammaan ilaha laga helo adeegyada aad taqaano
4. Waa maxay isbaddalka guud ee kuyimid dumarka ee kuaaddan adeegga dhaqanka ka faaiideysiga qorsheynta qoyska
5. Kafaaiideysi
6. Baar – jiilka, cidda goaamisa

Caafimaadka

1. Miyaa shaqaaluhu aqoon fiican u leeyihiin qorsheynta qoyska?
2. Waa sidee helitaanka adeegyada qorsheynta qoyska?
3. Miyaa xaruntu leedahay tilmaameyaal kusaabsan adeegyada qorsheynta qoyska?
4. Waa maxay fikradaha adeegbixiyeyaasha ee ku saabsan dumarka doonaya adeegyada qorsheynta qoyska?

Xasuusnow: Fadlan umahadnaq ka qeybqaateyaasha ka soo qeybgalkoodii iyo waqtigii ay kuu soo hureen dartood.

Appendix VIII: Informed consent document for structured interviews

Study Title: Factors associated with the utilization of Family Planning amongst women of reproductive age 15-49 at Mandera County

Institutions and Investigators:

Principle investigator	Institution
Abdikadir Omar	Post graduate Student at Jomo Kenyatta University of Agriculture and Technology
Dr. Joseph Mutai	Kenya Medical Research Institute
Dr. Florence Kyallo	Jomo Kenyatta University of Agriculture and Technology

Study Location: The study will be conducted in all the six Sub-Counties, Mandera County.

Purpose of the study: The study aims to collect information on family planning availability, awareness, practices, attitudes and utilization amongst women of reproductive age 15-49 in Mandera County. You are being asked to participate in this face to face interview to gather information and would be grateful if you are willing to participate by answering questions from this study.

Description of the study: If you agree to participate in this study the following will occur:

- i) You will sit with a trained interviewer and will be required to answer questions that have been prepared by means of face to face interviews on information regarding family planning. The interviewer will be recording your responses in a questionnaire.
- ii) No identifying information such as name will be collected from you during this interview, except your age, level of education, marital status and your current occupation.
- iii) You will be interviewed only once for approximately 20 minutes in a private setting.

Risks: There will be no risk in participating in this study

Benefits: There is no immediate benefit to you individually. However; the results will be used to assist in formulating policies that may initiate improved access and utilization of family planning among women of reproductive age in your community. Your decision whether or not to participate in this study will not affect your current enrollment in any other study during your health care visit.

Confidentiality: All the information collected from you will be kept confidential. Only people working in this research study will have access to the information. We will ensure that any information included in our report does not identify you as a respondent.

Compensation/Reimbursement: There will be no compensation or reimbursement of time spent during the interview; however, your participation is highly appreciated. There is no monetary benefit for your participation in this study.

Time involvement: This study will be part of your routine visit for your maternal care and the general time involved during this visit may be extended subject to the length of the interview.

Record storage: The information collected from you both printed and recorded will be stored for a period of three years during the course of this study and thereafter destroyed.

Participation: Your participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve loss of any benefits to which you are otherwise entitled. You will receive a copy of this signed consent form to take away with you.

Who to contact: If you have questions about this study, please don't hesitate to contact: Abdikadir Omar, P.O Box 103122 - 00101 Nairobi, Mobile No. 0720-567425. For any questions pertaining to your rights as a research participant the contact person is: The secretary KEMRI Ethics Review Committee P.O Box 54840-00200, Nairobi. Tel 0202722541, 0722295901, 0733400003. E mail address ercadmin@kemri.org

Signature

I have read/understood the contents in this form. My questions have been answered. I agree to participate in this study.

Signature / thumbprint of Participant.....

Signature of Interviewer.....

Date

Appendix I: Informed consent documents for structured questionnaire in somali

Lifaaqa 4b: Dukumiinti-daada weyn Wareysiga Laogolaaday

Cinwaanka Daraasada:

Sababaha lala xiriirsho ka faaiideysiga qorsheynta qoyska ee dumarka da'da dhalmada kujira ee 15-49 sano jir ee Dagmada Mandheera.

Macaahiida iyo Cilmibaareyaasha:

Cilmi baaraha	Machadka
Cabdiqaadir Cumar	Arday Post graduate ah oo dhigta jaamacada Jomo Kenyatta University of Agriculture and Technology
Dr. Joseph Mutai	Kenya Medical Research Institute
Dr. Florence Kyallo	Jomo Kenyatta University of Agriculture and Technology

Deegaanka Daraasadu Ka Dhaceyso

Daraasadu waxay ka dhacaysaa dhammaan dagmo-hoosaadyada lixda ah ee Dagmada Mandheera.

Qorshaha laga leeyahay daraasada

Daraasadu waxay diirada saareysaa in la soo uruuriyo xog ku saabsan sababaha lala xiriirsho sida haweenka da'da dhalmada kujira ee 15-49 sano jirka ah ay uga faaiideystaan Qorsheynta Qoyska ee Dagmada Mandheera. Waxaa lagaa dalbayaa inaad ka qeybqaadato daraasadaan waxaana ku faraxsanaan lahayn hadii aad ka qeybqaadan lahayd adigoo ka jawaabaya suaalaha daraasadaan.

Halista

Kaqebqadashadu Daraasadu halis malaaha.

Faaiidooyinka

Xogta aad bixinayso aad ayay muhiim u tahay oo u qiime badan tahay. Faaiidada la filaayo in laga helo daraasadaan waxaa ka mid ah in xogta aad na siinayso loo adeegsan doono in sare loogu qaado isticmaalka qorsheynta qoyska. Goankaaga ah in aad ka qeybqaadato ama aadan ka qeybqaadan daraasadaan saamayn kuma yeelanayo inaad iminka kujirto daraasad kale inta aad kujirto booqashada aad ku soo doonanayso daryeelka caafimaad.

Waxay wax ka tari doontaa sidii sare loogu qaadi lahaa fahamkeena ku saabsan heerka aqoonta, afkaarta iyo dhaqamada qorsheynta qoyska ee dumarka da'da dhalmaada kujira ee 15-49 sano jira. Si kastaba ha ahaatee majirto faaiido toos ah; ee natiijooyinka ka soo baxa ayaa waxaa loo isticmaali doonaa inay gacan ka geystaan qaabeynta siyaasadaha laga yaabo in lagu bilaabo helitaan iyo kafaaiideysi horumarsan oo ah qorsheyn qoys oo loogu tala galay haweenka bulshadiina.

Waqtiga loo meel dhigayo

Daraasadaan waxay qeyb ka ahaanaysaa hawlahaaga mar kasta oo aad u imaanayso daryeelka hooyooyinka la siiyo oo waqtiga guud ee loo qoondeeyay booqashadaan waxaa laga yaabaa in la sii dheereeyo hadii wareysigu dheeraado.

Qofka aad la xiriiri karto

Hadii suaalo aad ka qabto xaquuqda aad leedahay maadaama aad tahay qof ka qeybqaadanaya daraasada, ama aadan kuqanacsanayn waqtigii ay ahaataba wax ka mid ah daraasadaan, durba la soo xiriir:

- a) Cabdiqaadir Cumar oo laga helo sanduuqa boosto 103122 - 00101 Nairobi, Nambarka taleefanka 0720-567425
- b) Wixii suaalo ah oo kusaabsan xaquuqda ka qeybqaataha cilmibaarista waxaad kala soo xiriireysaa:

Xoghayaha Guddiga Dibueegida Anshaxa ee KEMRI

Sanduuqa boosto 54840-00200, Nairobi. Taleefanada 0202722541, 0722295901,
0733400003

E mail: ercadmin@kemri.org

Saxiixa

Anigoo ah waan aqriyay/fahmay waxa
ku qoran foomkaan. Suaalahaygii waa laga jawaabay. Waan aqbalay inaan ka qeybqaato
daraasadaan.

Saxiixa kaqeybqaataha.....

Magaca Wareysigaadaha

Saxiixa Wareysigaadaha

Taariikh

Appendix IX: Informed consent for focus group discussions

Study Title: Factors Associated with the Utilization of Family Planning amongst women of reproductive age 15-49 at Mandera County

Institutions and Investigators:

Principle investigator	Institution
Abdikadir Omar	Post graduate Student at Jomo Kenyatta University of Agriculture and Technology
Dr. Joseph Mutai	Kenya Medical Research Institute
Dr. Florence Kyallo	Jomo Kenyatta University of Agriculture and Technology

Study Location: The study will be conducted in all the six Sub-Counties, Mandera County.

Purpose of the study: The study aims to collect information on family planning availability, awareness, practices, attitudes and utilization amongst women of reproductive age 15-49 in Mandera County. You are being asked to participate in these focus group discussions together with other women to gather information.

Description of the study: If you agree to participate in this study, we will invite you in a group of 12 other women in a central location where we will have a discussion lead by a trained interviewer. The discussions will be recorded and a trained note taker will be involved in taking summary of emerging issues. These discussions will last for approximately 60 minutes.

Risks: There will be no risk in participating in this discussion

Benefits: There is no immediate benefit to you individually. However; the results will be used to assist in formulating policies that may improve access and utilization of family planning among women of reproductive age in your community. Your decision whether or not to participate in this study will not affect your current enrollment in any other study during your health care visit.

Confidentiality: All the information collected from you will be kept confidential. Only people working in this research study will have access to the information. We will ensure that any information included in our report does not identify you as a respondent.

Compensation/Reimbursement: There will be no compensation or reimbursement of time spent during the interview; however, your participation is highly appreciated. There is no monetary benefit for your participation in this study.

Time involvement: This study will be part of your routine visit for your maternal care and the general time involved during this visit may be extended subject to the length of the interview.

Record storage: The information collected from you both printed and recorded will be stored for a period of three years during the course of this study and thereafter destroyed.

Participation: Your participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve loss of any benefits to which you are otherwise entitled. You will receive a copy of this signed consent form to take away with you.

Who to contact: If you have questions about this study, please don't hesitate to contact: Abdikadir Omar, P.O Box 103122 - 00101 Nairobi, Mobile No. 0720-567425. For any questions pertaining to your rights as a research participant the contact person is: The secretary KEMRI Ethics Review Committee P.O Box 54840-00200, Nairobi. Tel 0202722541, 0722295901, 0733400003. E mail address ercadmin@kemri.org

Signature

I have read/understood the contents in this form. My questions have been answered. I agree to participate in this study.

Signature / thumbprint of Participant.....

Signature of Interviewer.....

Date

Appendix II: Informed consent for focus group discussions in somali

Lifaaqa 5b: Dukumiinti-daada weyn Wareysiga Laogolaaday

Cinwaanka Daraasada:

Sababaha lala xiriirsho ka faaiideysiga qorsheynta qoyska ee dumarka da'da dhalmada kujira ee 15-49 sano jir ee Dagmada Mandheera.

Macaahiida iyo Cilmibaareyaasha:

Cilmi baaraha	Machadka
Cabdiqaadir Cumar	Arday Post graduate ah oo dhigta jaamacada Jomo Kenyatta University of Agriculture and Technology
Dr. Joseph Mutai	Kenya Medical Research Institute
Dr. Florence Kyallo	Jomo Kenyatta University of Agriculture and Technology

Deegaanka Daraasadu Ka Dhaceyso

Daraasadu waxay ka dhacaysaa dhammaan dagmo-hoosaadyada lixda ah ee Dagmada Mandheera.

Qorshaha laga leeyahay daraasada

Daraasadu waxay diirada saareysaa in la soo uruuriyo xog ku saabsan sababaha lala xiriirsho sida haweenka da'da dhalmada kujira ee 15-49 sano jirka ah ay uga faaiideystaan Qorsheynta Qoyska ee Dagmada Mandheera. Waxaa lagaa dalbayaa inaad ka qeybqaadato daraasadaan waxaana ku faraxsanaan lahayn hadii aad ka qeybqaadan lahayd adigoo ka jawaabaya suaalaha daraasadaan.

Halista

Kaqebqadashadu Daraasadu halis malaaha.

Faaiidooyinka

Xogta aad bixinayso aad ayay muhiim u tahay oo u qiime badan tahay. Faaiidada la filaaayo in laga helo daraasadaan waxaa ka mid ah in xogta aad na siinayso loo adeegsan doono in sare loogu qaado isticmaalka qorsheynta qoyska. Goankaaga ah in aad ka qeybqaadato ama aadan ka qeybqaadan daraasadaan saamayn kuma yeelanayo inaad iminka kujirto daraasad kale inta aad kujirto booqashada aad ku soo doonanayso daryeelka caafimaad.

Waxay wax ka tari doontaa sidii sare loogu qaadi lahaa fahamkeena ku saabsan heerka aqoonta, afkaarta iyo dhaqamada qorsheynta qoyska ee dumarka da'da dhalmada kujira ee 15-49 sano jira. Si kastaba ha ahaatee majirto faaiido toos ah; ee natiijooyinka ka soo baxa ayaa waxaa loo isticmaali doonaa inay gacan ka geystaan qaabeynta siyaasadaha laga yaabo in lagu bilaabo helitaan iyo kafaaiideysi horumarsan oo ah qorsheyn qoys oo loogu tala galay haweenka bulshadiina.

Waqtiga loo meel dhigayo

Daraasadaan waxay qeyb ka ahaanaysaa hawlahaaga mar kasta oo aad u imaanayso daryeelka hooyooyinka la siiyo oo waqtiga guud ee loo qoondeeyay booqashadaan waxaa laga yaabaa in la sii dheereeyo hadii wareysigu dheeraado.

Qofka aad la xiriiri karto

Hadii suaalo aad ka qabto xaquuqda aad leedahay maadaama aad tahay qof ka qeybqaadanaya daraasada, ama aadan kuqanacsanayn waqtigii ay ahaataba wax ka mid ah daraasadaan, durba la soo xiriir:

a) Cabdiqaadir Cumar oo laga helo sanduuqa boosto 103122 - 00101 Nairobi, Nambarka taleefanka 0720-567425

b) Wixii suaalo ah oo kusaabsan xaquuqda ka qeybqaataha cilmibaarista waxaad kala soo xiriireysaa:

Xoghayaha Guddiga Dibueegida Anshaxa ee KEMRI

Sanduuqa boosto 54840-00200, Nairobi. Taleefanada 0202722541, 0722295901,
0733400003

E mail: ercadmin@kemri.org

Saxiixa

Anigoo ah waan aqriyay/fahmay waxa ku qoran foomkaan. Suaalahaygii waa laga jawaabay. Waan aqbalay inaan ka qeybqaato daraasadaan.

Saxiixa kaqeybqaataha.....

Magaca Wareysigaadaha

Saxiixa Wareysigaadaha

Taariikh

Appendix III: Informed consent document for key informant interviews

Study Title: Factors associated with the utilization of family planning amongst women of reproductive age 15-49 at Mandera County

Institutions and Investigators:

Principle investigator	Institution
Abdikadir Omar	Post graduate Student at Jomo Kenyatta University of Agriculture and Technology
Dr. Joseph Mutai	Kenya Medical Research Institute
Dr. Florence Kyallo	Jomo Kenyatta University of Agriculture and Technology

Study Location: The study will be conducted in all the six Sub-Counties, Mandera County.

Purpose of the study: The study aims study is to collect information on family planning availability, awareness, practices, attitudes and utilization amongst women of reproductive age 15-49 in Mandera County among key persons with authority in this region. These key persons such as you will include men and women selected for their position of leadership, either formal or informal. The Key informants included health professionals, religious or tribal leaders, and experienced women in reproductive health well regarded in and from the community. You being one of these persons are being asked to participate in this face to face discussions to gather these information and clarify others that emerged during our initial focus group discussion and face to face interviews with participant in your location.

Description of the study: If you agree to participate in this study you will sit with a trained interviewer and will be required to participate in a discussion to answer questions that have been prepared by means of face to face interviews. Your response will be reorded using audio tapes as well as in form of summarized notes. None of your identifying information such as name will be collected from you during this interview,

except your age, level of education, marital status and your current occupation. This discussion will last approximately 60 minutes in a private setting.

Risks: There will be no risk in participating in this study

Benefits: There is no immediate benefit to you individually. However; the results will be used to assist in formulating policies that may initiate improved access and utilization of family planning among women of reproductive age in your community. Your decision whether or not to participate in this study will not affect your current enrollment in any other study during your health care visit.

Confidentiality: All the information collected from you will be kept confidential. Only people working in this research study will have access to the information. We will ensure that any information included in our report does not identify you as a respondent.

Compensation/Reimbursement: There will be no compensation or reimbursement of time spent during the interview; however your participation is highly appreciated. There is no monetary benefit for your participation in this study.

Time involvement: This study will be part of your routine visit for your maternal care and the general time involved during this visit may be extended subject to the length of the interview.

Record storage: The information collected from you both printed and recorded will be stored for a period of three years during the course of this study and thereafter destroyed.

Participation: Your participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve loss of any benefits to which you are otherwise entitled. You will receive a copy of this signed consent form to take away with you.

Who to contact: If you have questions about this study, please don't hesitate to contact: Abdikadir Omar, P.O Box 103122 - 00101 Nairobi, Mobile No. 0720-567425. For any questions pertaining to your rights as a research participant the contact person is: The

secretary KEMRI Ethics Review Committee P.O Box 54840-00200, Nairobi. Tel
0202722541, 0722295901, 0733400003. E mail address ercadmin@kemri.org

Signature

I have read/understood the contents in
this form. My questions have been answered. I agree to participate in this study.

Signature / thumbprint of Participant.....

Signature of Interviewer.....

Date

Appendix IV: Informed consent document for key informant interviews in somali

Lifaaqa 6b: Dukumiinti-daada weyn Wareysiga Laogolaaday

Cinwaanka Daraasada:

Sababaha lala xiriirsho ka faaiideysiga qorsheynta qoyska ee dumarka da'da dhalmada kujira ee 15-49 sano jir ee Dagmada Mandheera.

Macaahiida iyo Cilmibaareyaasha:

Cilmi baaraha	Machadka
Cabdiqaadir Cumar	Arday Post graduate ah oo dhigta jaamacada Jomo Kenyatta University of Agriculture and Technology
Dr. Joseph Mutai	Kenya Medical Research Institute
Dr. Florence Kyallo	Jomo Kenyatta University of Agriculture and Technology

Deegaanka Daraasadu Ka Dhaceyso

Daraasadu waxay ka dhacaysaa dhammaan dagmo-hoosaadyada lixda ah ee Dagmada Mandheera.

Qorshaha laga leeyahay daraasada

Daraasadu waxay diirada saareysaa in la soo uruuriyo xog ku saabsan sababaha lala xiriirsho sida haweenka da'da dhalmada kujira ee 15-49 sano jirka ah ay uga faaiideystaan Qorsheynta Qoyska ee Dagmada Mandheera. Waxaa lagaa dalbayaa inaad ka qeybqaadato daraasadaan waxaana ku faraxsanaan lahayn hadii aad ka qeybqaadan lahayd adigoo ka jawaabaya suaalaha daraasadaan.

Halista

Kaqebqadashadu Daraasadu halis malaaha.

Faaiidooyinka

Xogta aad bixinayso aad ayay muhiim u tahay oo u qiime badan tahay. Faaiidada la filayo in laga helo daraasadaan waxaa ka mid ah in xogta aad na siinayso loo adeegsan doono in sare loogu qaado isticmaalka qorsheynta qoyska.. Goaankaaga ah in aad ka qeybqaadato ama aadan ka qeybqaadan daraasadaan saamayn kuma yeelanayo inaad iminka kujirto daraasad kale inta aad kujirto booqashada aad ku soo doonanayso daryeelka caafimaad.

Waxay wax ka tari doontaa sidii sare loogu qaadi lahaa fahamkeena ku saabsan heerka aqoonta, afkaarta iyo dhaqamada qorsheynta qoyska ee dumarka da'da dhalmada kujira ee 15-49 sano jira. Si kastaba ha ahaatee majirto faaiido toos ah; ee natiijooyinka ka soo baxa ayaa waxaa loo isticmaali doonaa inay gacan ka geystaan qaabeynta siyaasadaha laga yaabo in lagu bilaabo helitaan iyo kafaaiideysi horumarsan oo ah qorsheyn qoys oo loogu tala galay haweenka bulshadiina.

Waqtiga loo meel dhigayo

Daraasadaan waxay qeyb ka ahaanaysaa hawlahaaga mar kasta oo aad u imaanayso daryeelka hooyooyinka la siiyo oo waqtiga guud ee loo qoondeeyay booqashadaan waxaa laga yaabaa in la sii dheereeyo hadii wareysigu dheeraado.

Qofka aad la xiriiri karto

Hadii suaalo aad ka qabto xaquuqda aad leedahay maadaama aad tahay qof ka qeybqaadanaya daraasada, ama aadan kuqanacsanayn waqtigii ay ahaataba wax ka mid ah daraasadaan, durba la soo xiriir:

a) Cabdiqaadir Cumar oo laga helo sanduuqa boosto 103122 - 00101 Nairobi, Nambarka taleefanka 0720-567425

b) Wixii suaalo ah oo kusaabsan xaquuqda ka qeybqaataha cilmibaarista waxaad kala soo xiriireysaa:

Xoghayaha Guddiga Dibueegida Anshaxa ee KEMRI

Sanduuqa boosto 54840-00200, Nairobi. Taleefanada 0202722541, 0722295901,
0733400003

E mail: ercadmin@kemri.org

Saxiixa

Anigoo ah waan aqriyay/fahmay waxa ku qoran foomkaan. Suaalahaygii waa laga jawaabay. Waan aqbalay inaan ka qeybqaato daraasadaan.

Saxiixa kaqeybqaataha.....

Magaca Wareysigaadaha

Saxiixa Wareysigaadaha

Taariikh

Appendix V: Assent form for participant between 15-18 years (structured interview)

Your daughter / spouse aged below 18 years is being invited to participate in a research study about family planning. This research is being conducted by Mr. Abdikadir Omar, a post-graduate student from Jomo Kenyatta University. The study intends to ask her questions about her personal particulars and information regarding her utilization of family planning services in Mandera County. The interview will take you about 20 minutes. It is unlikely that any form of injury could happen to her as a result of her being in this study. All study records will be maintained in a secured location. There will be no direct monetary benefit for her participation in this study however the results will be used to assist in formulating policies that may initiate improved access to family planning services among your community.

All her responses given will be kept confidential and will only be shared with research team members. We will ensure that any information included in our report does not identify her as a respondent. If you have read this form and have decided to allow your daughter/spouse to participate in this project, please understand her participation is voluntary and she has the right to withdraw your consent or discontinue participating at any time without penalty. She has the right to refuse to answer particular questions. Her individual privacy will be maintained in all published and written data resulting from the study.

Who to contact: If you have questions about this study, please don't hesitate to contact: Abdikadir Omar, P.O Box 103122 - 00101 Nairobi, Mobile No. 0720-567425. For any further questions pertaining to her rights as a research participant the contact person is: The secretary KEMRI Ethics Review Committee P.O Box 54840-00200, Nairobi. Tel 0202722541, 0722295901, 0733400003. E mail address ercadmin@kemri.org

Signature

I(Being the parent, guardian or spouse)
ofI have read/understood the contents in this form. My
questions have been answered. I agree to allow her participate in this study.

Signature / thumbprint of Participant.....

Signature of Interviewer.....

Date

Appendix VI: Assent form for participant between 15-18 years in somali

Lifaaqa 7B: Ogolaanshaha Dadka Da'da Yar ee Kayar 15-18 Sano Jir

Waxaa lagugu soo dhaweynayaa inaad ka qeybqaadato cilmi baaris ku saabsan qorsheynta qoyska. Cilmi baaristaan waxaa samaynaya Mr. Cabdiqaadir Cumar, oo ah arday *post-graduate* ah oo ka socda jaamacada Jomo Kenyatta University. Waxaa lagu weydiin doonaa suaalo adiga kugu saabsan iyo inaad bixiso xog kusaabsan sida aad uga faaiideysato adeegyada qorsheynta qoyska ee Dagmada Mandheera. Wareysigu wuxuu qaadan doonaa qiyaas ahaan 30 daqiiqo. Ma dhaceyso in wax dhibaato ah ay kaa soo gaarto ka qeybqaadashada daraasadaan. Dhammaan qoraalada daraasada waxaa la dhigi doonaa meel ammaan ah. Ma jirto lacag lagu qaadanayo ka qeybqaadashada daraasadaan laakiin si kastaba ha ahaatee natiijooyinka ka soo baxa ayaa waxaa loo isticmaali doonaa inay gacan ka geystaan qaabeynta siyaasadaha laga yaabo in lagu bilaabo helitaan iyo kafaaiideysi horumarsan oo ah qorsheyn qoys oo loogu tala galay haweenka bulshadiina.

Dhammaan jawaabaha waxaa laga dhigayaa qarsoodi waxaana la tusinayaa xubnaha kooxda cilmi baarista oo kaliya. Waxaanu xaqiijin doonaa in wixii xog ah oo lagu soo daro warbixinteen aysan muujinayn in adigu aad jawaabo bixisay.

Hadii aad foomkaan aqrisay aadna goaansatay inaad ka qeybqaadato mashruucaan, fadlan faham in ka qeybqaadashadaadu tahay iskaa wax u qabso aadna xaq u leedahay inaad ogolaanshahaagii dib uga laabato ama ka qeybqaadashada aadan sii wadin waqtigii aad doonto ayadoon wax ciqaab ah jirin. Waxaad xaq u leedahay inaad diido inaad ka jawaabto suaalo gaar ah. Magacaaga laguma xusi doono macluumaadka la daabacayo ama la qorayo ee daraasadaan.

Qofka aad la xiriiri karto

Hadii suaalo aad ka qabto xaquuqda aad leedahay maadaama aad tahay qof ka qeybqaadanaya daraasada, ama aadan kuqanacsanayn waqtigii ay ahaataba wax ka mid ah daraasadaan, durba la soo xiriir:

a) Cabdiqaadir Cumar oo laga helo sanduuqa boosto 103122 - 00101 Nairobi, Nambarka taleefanka gacanta. 0720-567425

b) Wixii suaalo ah oo kusaabsan xaquuqda ka qeybqaataha cilmibaarista waxaad kala soo xiriireysaa:

xoghayaha Guddiga Dibueegida Anshaxa ee KEMRI

Sanduuqa boosto 54840-00200, Nairobi. Taleefanada 0202722541, 0722295901, 0733400003

E mail: ercadmin@kemri.org

Saxiixa

Anigoo ah waan aqriyay/fahmay waxa ku qoran foomkaan. Suaalahaygii waa laga jawaabay. Waan aqbalay inaan ka qeybqaato daraasadaan.

Saxiixa kaqeybqaataha.....

Saxiixa Wareysigaadaha

Taariikh

Appendix VII: Assent form for participant between 15-18 years (focus group discussions)

Your daughter / spouse aged below 18 years is being invited to participate in a research study about family planning. This research is being conducted by Mr. Abdikadir Omar, a post-graduate student from Jomo Kenyatta University. The study intends to ask her to participate in a group discussion together with others about issues regarding women utilization of family planning services in Mandera County. The discussions will take you about 60 minutes. These discussions will be recorded as well as a trained note taker will summarize key emerging issues in form of notes. It is unlikely that any form of injury could happen to her as a result of her being in this study. All study records will be maintained in a secured location. There will be no direct monetary benefit for her participation in this study however the results will be used to assist in formulating policies that may initiate improved access to family planning services among your community.

The responses obtained from this discussion will be kept confidential and will only be shared with research team members. We will ensure that any information included in our report does not identify her as a respondent. If you have read this form and have decided to allow your daughter, spouse to participate in this project, please understand her participation is voluntary and she has the right to withdraw your consent or discontinue participating at any time without penalty. She has the right to refuse to answer particular questions. Her individual privacy will be maintained in all published and written data resulting from the study.

Who to contact: If you have questions about this study, please don't hesitate to contact: Abdikadir Omar, P.O Box 103122 - 00101 Nairobi, Mobile No. 0720-567425. For any further questions pertaining to her rights as a research participant the contact person is: The secretary KEMRI Ethics Review Committee P.O Box 54840-00200, Nairobi. Tel 0202722541, 0722295901, 0733400003. E mail address ercadmin@kemri.org

Signature

I(Being the parent, guardian or spouse)
ofI have read/understood the contents in this form. My
questions have been answered. I agree to allow her participate in this study.

Signature / thumbprint of Participant.....

Signature of Interviewer.....

Date

Appendix VIII: Assent form for participant between 15-18 years (focus group discussions) in somali

Lifaaqa 8B: Ogolaanshaha Dadka Da'da Yar ee Kayar 15-18 Sano Jir

Waxaa lagugu soo dhaweynayaa inaad ka qeybqaadato cilmi baaris ku saabsan qorsheynta qoyska. Cilmi baaristaan waxaa samaynaya Mr. Cabdiqaadir Cumar, oo ah arday *post-graduate* ah oo ka socda jaamacada Jomo Kenyatta University. Waxaa lagu weydiin doonaa suaalo adiga kugu saabsan iyo inaad bixiso xog kusaabsan sida aad uga faaiideysato adeegyada qorsheynta qoyska ee Dagmaada Mandheera. Wareysigu wuxuu qaadan doonaa qiyaas ahaan 30 daqiiqo. Ma dhaceyso in wax dhibaato ah ay kaa soo gaarto ka qeybqaadashada daraasadaan. Dhammaan qoraalada daraasada waxaa la dhigi doonaa meel ammaan ah. Ma jirto lacag lagu qaadanayo ka qeybqaadashada daraasadaan laakiin si kastaba ha ahaatee natiijooyinka ka soo baxa ayaa waxaa loo isticmaali doonaa inay gacan ka geystaan qaabeynta siyaasadaha laga yaabo in lagu bilaabo helitaan iyo kafaaiideysi horumarsan oo ah qorsheyn qoys oo loogu tala galay haweenka bulshadiina.

Dhammaan jawaabaha waxaa laga dhigayaa qarsoodi waxaana la tusinayaa xubnaha kooxda cilmi baarista oo kaliya. Waxaanu xaqiijin doonaa in wixii xog ah oo lagu soo daro warbixinteena aysan muujinayn in adigu aad jawaabo bixisay.

Hadii aad foomkaan aqrisay aadna goaansatay inaad ka qeybqaadato mashruucaan, fadlan faham in ka qeybqaadashadaadu tahay iskaa wax u qabso aadna xaq u leedahay inaad ogolaanshahaagii dib uga laabato ama ka qeybqaadashada aadan sii wadin waqtigii aad doonto ayadoon wax ciqaab ah jirin. Waxaad xaq u leedahay inaad diido inaad ka jawaabto suaalo gaar ah. Magacaaga laguma xusi doono macluumaadka la daabacayo ama la qorayo ee daraasadaan.

Qofka aad la xiriiri karto

Hadii suaalo aad ka qabto xaquuqda aad leedahay maadaama aad tahay qof ka qeybqaadanaya daraasada, ama aadan kuqanacsanayn waqtigii ay ahaataba wax ka mid ah daraasadaan, durba la soo xiriir:

a) Cabdiqaadir Cumar oo laga helo sanduuqa boosto 103122 - 00101 Nairobi, Nambarka taleefanka gacanta. 0720-567425

b) Wixii suaalo ah oo kusaabsan xaquuqda ka qeybqaataha cilmibaarista waxaad kala soo xiriireysaa:

xoghayaha Guddiga Dibueegida Anshaxa ee KEMRI

Sanduuqa boosto 54840-00200, Nairobi. Taleefanada 0202722541, 0722295901, 0733400003

E mail: ercadmin@kemri.org

Saxiixa

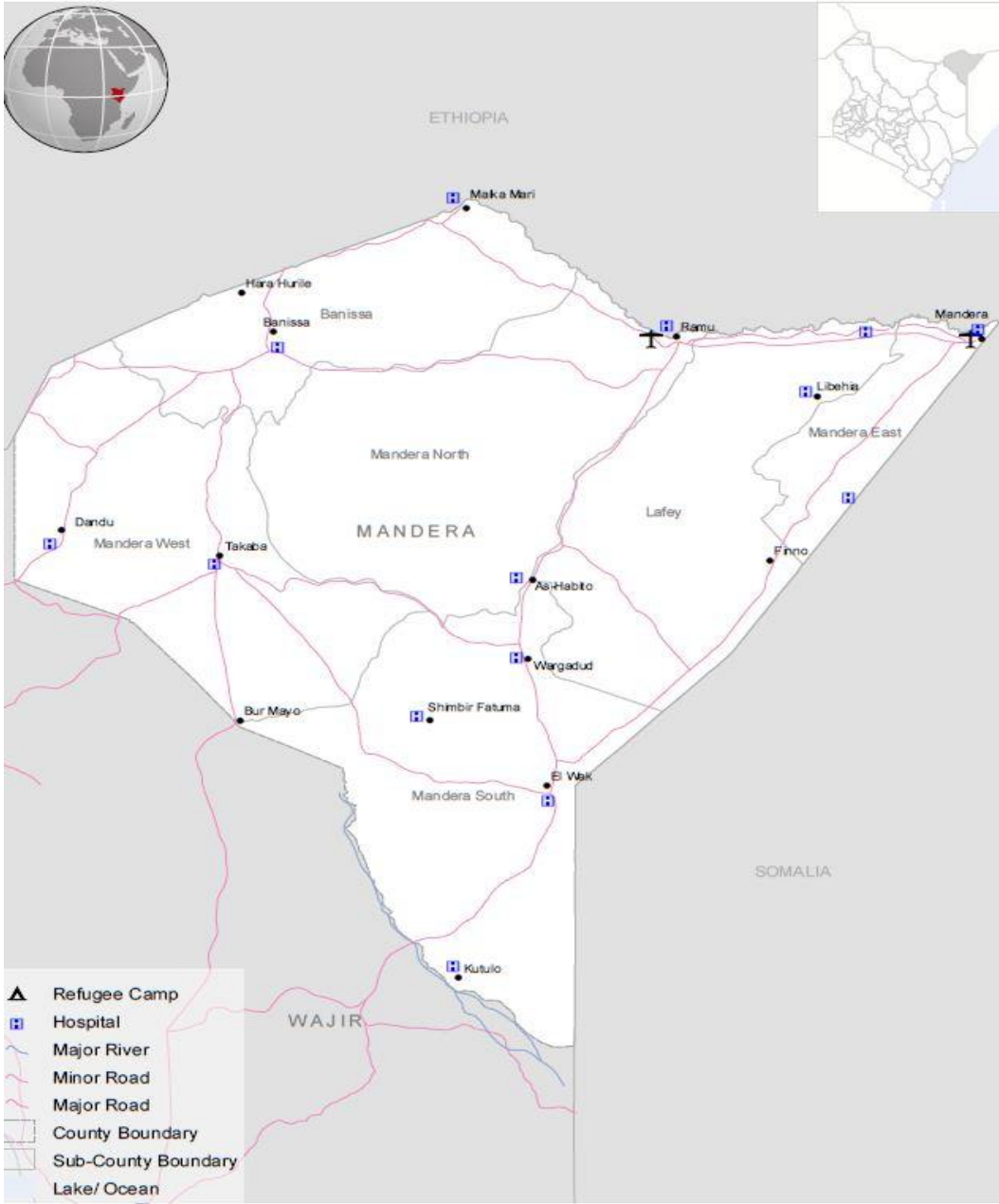
Anigoo ah waan aqriyay/fahmay waxa ku qoran foomkaan. Suaalahaygii waa laga jawaabay. Waan aqbalay inaan ka qeybqaato daraasadaan.

Saxiixa kaqeybqaataha.....

Saxiixa Wareysigaadaha

Taariikh

Appendix IX: Map of mandera county



Source: CCK

Appendix X: Scientific steering committee approval letter



KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840-00200, NAIROBI, Kenya
Tel (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website: www.kemri.org

ESACIPAC/SSC/103429

5th December, 2014

Abdikadir Omar

Thro'

Director, CPHR
NAIROBI

*Forwarded to
9/12/2014*

REF: SSC No. 2954 (Revised) – Factors Associated with the Utilization of Family Planning among Women of Reproductive Age (15-49 years) in Mandera County, Kenya

Thank you for your letter dated 4th December, 2014 responding to the comments raised by the KEMRI SSC.

I am pleased to inform you that your proposal now has formal scientific approval from SSC.

The SSC however, advises that work on the proposed study can only start after ERC approval.

Sammy Njenga, PhD
SECRETARY, SSC



Appendix XI: Ethical review committee approval letter



KENYA MEDICAL RESEARCH INSTITUTE

P.O. Box 54840-00200, NAIROBI, Kenya
Tel (254) (020) 2722541, 2713349, 0722-205901, 0733-400003; Fax: (254) (020) 2720030
E-mail: director@kemri.org info@kemri.org Website:www.kemri.org

KEMRI/RES/7/3/1

March 24, 2015

**TO: ADBIKADIR S. OMAR,
PRINCIPAL INVESTIGATOR**

**THROUGH: DR. CHARLES MBAKAYA,
THE DIRECTOR, CPHR,
NAIROBI**

Dear Sir,

RE: SSC PROTOCOL NO. 2954 - (RESUBMITTED INITIAL SUBMISSION): FACTORS ASSOCIATED WITH UTILIZATION OF FAMILY PLANNING AMONG WOMEN OF REPRODUCTIVE AGE (15-49 YEARS) IN MANDERA COUNTY, KENYA - (VERSION 2.0 DATED 6TH MARCH, 2015)

Reference is made to your undated letter and the revised documents received at the KEMRI/Scientific and Ethics Review Unit (SERU) on 13th March, 2015.

This is to inform you that the Committee notes that the issues raised at the 235th meeting of the KEMRI/Ethics and Review Committee held on 20th January, 2015 have been adequately addressed.

Consequently, the study is granted approval for implementation effective this **24th March, 2015** for a period of one year. Please note that authorization to conduct this study will automatically expire on **March 23, 2016**. If you plan to continue data collection or analysis beyond this date, please submit an application for continuation approval to SERU by **February 9, 2016**.

You are required to submit any proposed changes to this study to SERU for review and the changes should not be initiated until written approval from SERU is received. Please note that any unanticipated problems resulting from the implementation of this study should be brought to the attention of SERU and you should advise SERU when the study is completed or discontinued.

You may embark on the study.

Yours faithfully,

**PROF. ELIZABETH BUKUSI,
ACTING HEAD,
KEMRI/SCIENTIFIC AND ETHICS REVIEW UNIT**

Appendix XII: Approval letter



REPUBLIC OF KENYA
OFFICE OF COUNTY EXECUTIVE FOR HEALTH
MANDERA COUNTY GOVERNMENT
Box 13 – 70300, Mandera

COUNTY/HEALTH/1/VOL.1/17

MONDAY, 20th April 2015

Dear Abdikadir

Re: Research Authorization

ABDIKADIR SULEIMAN OMAR (TM-310/1069/2013)

We are in receipt of your application for authority to carryout research project on *Factors Associated with Utilization of Family Planning Services among Women of Reproductive Age (15-49) In Mandera County.*

The department of Health Services, Unit of Reproductive Health has considered your request and I am pleased to inform you that you been authorized to undertake the research at the health facilities in the county.

You are advised to report to the Department of Health Services, Unit of Reproductive health services before embarking on the research project for further guidance. On completion of research you are expected to submit one hard copy and soft copy of the research report/ thesis to our offices for our reference and use.

Best Regards,

A handwritten signature in blue ink, appearing to read 'H. Eymoy'.

Hon. Hassan A. EYMOY
CEC, Health Services.

Appendix XIII: Publication

Family planning utilization and correlates; perspective of women aged 15-49 years from Mandera County of North Eastern Kenya

Abdikadir S. Omar^{1*}, Joseph K. Mutai², Florence M. Kyallo³, Musa Otieno Ngayo⁴

¹College of Health Sciences, Jomo Kenyatta University of Agriculture and Technology, off Thika Road, P.O. Box 103122 - 00101, Nairobi, Kenya; ²Centre for Microbiology Research, Kenya Medical Research Institute: (CMR-KEMRI), Kenyatta National Hospital Complex off Ngong Road, P.O. Box 19464 - 00202, Nairobi, Kenya; ³Centre for Public Health Research, Kenya Medical Research Institute (CPHR-KEMRI) Kenyatta National Hospital Complex off Ngong Road, P.O. Box 20752 - 00202, Nairobi, Kenya; ⁴Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology, off Thika Road, P.O. Box 62000 - 00200, Nairobi, Kenya; ⁵Centre for Microbiology Research, Kenya Medical Research Institute: (CMR-KEMRI), Kenyatta National Hospital Complex off Ngong Road, P.O. Box 19464 - 00202, Nairobi, Kenya;

ABSTRACT

Background: Unmet need for modern family planning methods is an important health issue for women. The purpose of this study was to evaluate family planning awareness, utilization and associated factors among women aged 15-49 years from Mandera County, an arid part of North Eastern Kenya.

Methods: This cross sectional study randomly enrolled 117 eligible women from April to September 2015. Data was collected using structured questionnaire, key informant interviews (KII) and focused group discussions (FGD) guides. Up to 36 FGDs were conducted among women in health, leadership, education and religious sectors. 12 KIIs among influential and knowledgeable members of the county were also conducted to gather qualitative data. STATA version 11 was used for qualitative data analysis. The thematic content analysis was used to analyze qualitative data.

Results: The mean age of the 117 women who responded was 29.9 (SD± 9.8) years. About 79.5% of these 117 women were aware of contraceptive and family planning methods mainly through family and friends (52.1%). Of the 41.9% who reported using family planning (FP) methods, 26.5% used condoms. In multivariate analysis, women who were from either the Northern (OR 4.3, 95% CI 1.1 to 18.2), Southern (OR 7.5, 95% CI 1.7 to 33.4) or Eastern of Madera County (OR 4.7, 95% CI 1.1 to 20.8); had either secondary (OR 11.1, 95% CI 2.7 to 46.1) or tertiary (OR 11.9, 95% CI 2.6 to 55.9) level of education; were employed (OR 4.3, 95% CI 1.2 to 19.1); used either condoms (OR 5.7, 95% CI 1.3 to 24.5) or hormonal family planning methods (OR 5.8, 95% CI 1.4 to 25.2) were independently associated with utilization of FP. The FGD and KII confirms the low level of utilization of FP. These discussions identified location of origin, awareness, income, employment, religion and cultural practices as some of the factors limiting the utilization of FP.

Conclusion: Remarkably, a high proportion of women from Mandera County; an arid, region in the North Eastern Kenya, were aware and embraced FP. If deterrents such as socio-cultural, lack of education and awareness are tackled, this region is poised to record one of the highest up take of modern family planning methods in Kenya.

Keywords: Family Planning, Utilization, Women of Reproductive Age.

INTRODUCTION

Globally, improved utilization of family planning contributes in achieving the 5th Universal Sustainable Development Goal (USDG), which focuses on achieving gender equality and empowering all women and girls by 2030 (ICSU, ISSC, 2015). Fostering family planning has been associated with acceleration of socio-economic development, promotion of gender equality, and decreased maternal and infant mortality (UNFPA & PATH, 2008). The past five decades have been marked by significant decrease in fertility rates in Asia, Latin America and North Africa. Sub-Saharan Africa, however, has not experienced the same rapid trend, and today, the region still has total fertility rates (TFR) of around five births per woman (Bongaarts, 2011). Kenya, like many developing economies, is characterized by exponential population growth. This is partly attributed to high fertility and birth rates, steady decline in death rates, low contraceptive utilization rate and high but declining mortality rate (Oyedokun, 2007; Lawoyin *et al.*, 2007; Cleland *et al.*, 2012; Population Reference Bureau, 2013). High population growth rate has been an impediment in the reduction of child mortality, improvement of maternal health, achievement of universal primary education, environmental sustainability and combating HIV and AIDS and other diseases as part of the Millennium Development Goals (MDGs) (Health Policy Initiatives,

2013). In response, Kenya concentrated on birth control measures using family planning (FP) services which enable couples to determine whether, when, and how often to have children (USAID, 2011). FP has a profound effect in controlling population growth. At the micro level, FP contributes critically to birth spacing and controlling family size. Some forms of FP also play the dual role of controlling family size and protection against sexually transmitted diseases (STDs) (Mayo, 2004; Asiimwa *et al.*, 2013). Other benefits include improved maternal and child health, reduced cases of induced abortion and improved household welfare. At the macro level, the benefits of a well-controlled population growth include improved infrastructure and reduced burden on national budgets (USAID, 2011).

Since the Kenya Government incorporated FP into the country's overall development policy in 1965, FP use increased from 18% (1987) to 58% (2014) with a decline in the fertility rates from 8.1 children per woman in 1977 to 3.9 in 2014 (Kenya Demographic and Health Survey, 2014). However, this increase has not been matched with a reduction in the unmet need for FP which has stalled at around 25% and is highest among the less privileged women and those in rural areas (Ojakaa, 2008). The fertility rate in Kenya is lowest in Nairobi County (2.7 children per woman) and highest in North Eastern region (where Mandera county is located) (6.4 children per woman) (Kenya Demographic and Health Survey, 2014). Challenges facing reproductive health in the Mandera County include, but are not limited to inaccessibility to FP services, inadequate health personnel, lack of youth friendly clinics, high incidence of female genital mutilation (FGM), reluctance to accept modern FP methods and lack of sufficient education (National Coordination Agency for Population and Development Ministry of Planning and National Development, 2005). The sustained increase in the use of FP services among women aged between 15 and 49 years, is a major factor in fertility transition, providing women and couples with the means to help them plan pregnancies (Campbell *et al.*, 2006; Republic of Kenya, 2007; USAID/HPI, 2009). With the 2013 devolution of political power and economic resources from the Central government to the Country's 47 Counties, Mandera County is ranked among the top 3 among Counties receiving the largest share of budgetary allocation. In the 2014/2015 financial year (FY) Mandera County received KES 7.8 billion (about USD 78 million) which was increased to KES 8.9 billion (about USD 87 million) in the 2015/2016 FY, representing 3.5% of Kenya total revenue collection (Republic of Kenya, 2015). The World Bank, Danish International Development Agency (DANIDA) among other agencies contribute significantly to Mandera County's health needs. All these are allocated to mitigate the health challenges in Mandera county; upgrade of existing hospitals and construction of others, increase supplies of both pharmaceutical and non-pharmaceutical items, increased health personnel, enable free maternal health care, public health education campaign, improve public education, service delivery, restore public confidence in public health facilities and improve service utilization (Mandera County Government, 2015). This study sought to evaluate the utilization of FP services amongst women of reproductive age in Mandera County.

METHODS

Study design and Settings

This cross sectional study conducted from April 2015 to September 2015, recruited consenting women of reproductive age (15-49 years) living in Mandera County for the last two years. Formula for estimating the population proportion with specified relative precision described by Lemeshow *et al.* (1990), was used to determine the number of participants recruited in the study. Setting α at 0.05, and a FP utilization rate of 4% in the Northern region (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2009), a total of 117 women were recruited to achieve 0.90 power. Of the 117 women, 16 were recruited from Mandera North, 18 from Mandera South, 18 from Mandera East, 20 from Mandera West, 23 from Banisa and 22 from Lafey.

Data Collection

A total of 36 focus group discussions (FGD) were conducted to explore further the levels of FP service awareness, utilization and associated factors in this region. Randomly six women (two aged 15 – 25 years; two aged 26 – 36 years and two elders 37 – 49 years) of reproductive age from each of the six Sub-Counties were consented and enrolled. These persons were invited to participate in a FGD on a fixed time and date at a convenient location to them in each sub county. Up to 6 FGDs (depending on saturation point of the issues being probed) were carried out in groups of 12 individuals, each group having been selected to reflect the age groups above. A female moderator was trained to help in conducting these discussions in the preferred language of the group, provided the moderator and note taker were fluent in the language. A guide was used for all FGDs, with appropriate modification for different age groups. The discussions lasted approximately 45 minutes.

Key informant interviews (KIIs) were conducted to confirm and clarify any pending or new issues described in the structured questionnaires and FGDs. Key informant interviews have been shown to provide a valuable

Table 1: Baseline characteristics of study population (n = 117)

Variable	Unit	Number	Percentage
Gravidity	Pregnant	19	16.2
	Lactating	28	23.9
	Pregnant and lactating	4	3.4
	Not pregnant and lactating	66	56.4
Age (Years)	Mean (\pm SD)	29.9 (\pm 9.8)	
	Median (IQR)	29 (21-38)	
	15- 20	27	23.1
	21-30	33	28.2
	31-40	39	33.3
Education level	\geq 41	18	15.4
	Primary	23	19.7
	Secondary	26	22.2
	Tertiary	26	22.2
	Non-Formal	42	35.9
Marital status	Single	23	19.7
	Married	69	59
	Divorced/Widowed	25	21.3
Religion	Christian	16	13.7
	Muslim	101	86.3
Occupation	Employed	23	19.7
	Self employed	36	30.8
	Unemployed	58	49.6
Monthly Income (KES)	Mean (\pm SD)	20331.5 (\pm 22953.2)	
	Median (IQR)	11000 (7250-26000)	
	None	45	38.5
	\leq 20000	50	42.7
Household Headship	\geq 20001	22	19
	Husband	72	61.5
	Respondent's Mother	16	13.7
	Others	29	24.8
Household population	Mean (\pm SD)	5.22 (\pm 2.5)	
	Median (IQR)	5 (4-7)	
	\leq 4	50	42.7
	\geq 5	67	57.3
Parity	Mean (\pm SD)	3.92 (\pm 3)	
	Median (IQR)	3 (2-6)	
	Nulliparous	16	13.7
	1-3	47	40.2
	\geq 4	54	46.2
Children a live	Mean (\pm SD)	3.39 (\pm 2.68)	
	Median (IQR)	3 (1-5)	
	None	19	16.2
	1-3	50	42.7
	\geq 4	48	41

SD- Standard Deviation; IQR - Interquartile range; KES- Kenya Shillings

Awareness of family planning and contraceptive methods

As presented in Table 2, the majority of the study participants (79.5%) were aware of contraceptive and family planning. Slightly over half (52.1%) of participants first heard about reproductive health and contraception from family and friends. About three quarters (74.4%) of them were aware of hormonal (Pills/Intrauterine Device-IUD/Injectable) method of contraceptive. More than half (56.4%) were not aware of the emergency contraceptive methods. Over two thirds (67.5%) of the participants preferred to have their first child before the age of 21 years. 73.5% of them preferred having below two years of spacing between children. Nearly half of the participants (46.2%) had no idea of the cost of family planning services. 60.7% of the participants said it was not common in the society to discuss FP issues with unmarried girls. Nearly half (49.5%) of them avoided or never discussed FP with their husbands/partners.

Table 2: Family planning awareness among study population

Variable	Unit	Number	Percentage
Awareness of contraceptive and family planning (FP)	Yes	93	79.5
	No	24	20.5
First knowledge on FP	Family and Friends	61	52.1
	Media	4	3.4
	School	18	15.4
	Health care/Professional	22	18.8
	Not stated	12	10.3
Known methods of FP	Natural (Calendar/Withdrawal)	2	1.7
	Barrier (Condoms)	14	12
	Hormonal (Pills/IUD/Injectable)	87	74.4
	None	14	12
Awareness of emergency contraceptive methods	Yes	51	43.6
	No	66	56.4
Age of first child	Between 15-18	31	26.5
	Between 18-21	48	41
	Between 22-24	28	23.9
	Between 25-27	10	8.5
Ideal age of child spacing	One year	31	26.5
	One to two years	55	47
	Three to five years	28	23.9
	Five years or more	3	2.6
Cost of FP	Affordable	51	43.6
	Expensive	7	6
	Free	5	4.3
	No idea	54	46.2
Attitude of unmarried girls about FP	Not common in the society to discuss	71	60.7
	Shameful to discuss	31	26.5
	Commonly discussed	11	9.4
	Never thought about this before	4	3.4
Attitude when discussing with husband/partner about FP	Embarrassing to discuss	15	12.8
	Enjoy discussing	44	37.6
	Avoid or never discuss	58	49.6

Utilization and attributes of family planning methods

As shown in Table 3, 41.9% of the respondents were using contraceptive and modern family planning methods; with 32.5% of these participants were themselves users of these family planning methods. About 26.5% were using condoms, 12% were using the hormonal method, 3.4% were using Natural method. Majority (62.4%) of the participants believed that FP services can be obtained only at the health facilities, with about 35% ranking the quality of FP services as good. About two thirds (67.5%) of the participants lived more than 5 kilometers from the family planning service providers, and 53% identified cultural issues as the major hindrance to women seeking reproductive health services.

Table 3: Utilization and attributes of family planning methods

Variable	Unit	Number	Percentage
Utilization of FP	Yes	49	41.9
	No	68	58.1
Who uses contraceptives	Self	38	32.5
	husband	11	9.4
	None	68	58.1
FP methods used	Natural (Calendar/Withdrawal)	4	3.4
	Barrier (Condoms)	31	26.5
	Hormonal (Pills/IUD/Injectable)	14	12
	None	68	58.1
Provider of FP	Health facility	73	62.4
	Work Place	9	7.7
	Other sources	11	9.4
	None	24	20.5
Quality of FP	Best	9	7.7
	Better	19	16.2
	Good	41	35
	Fair	17	14.5
	Poor	31	26.5
Distance to FP provider	Mean (\pm SD) (Km)	6.75	(\pm 7.734)
	Median (IQR) (Km)	3	(1-10)
	Range (Km)	40	(1-40)
	>5 KM	79	67.5
	< 5.1 KM	38	32.5
Barrier to utilization of FP	Unaware of provider	36	30.8
	Expensive/Costly	5	4.3
	Distance	10	8.5
	Cultural/Shame issues	62	53
	Poor provider attitude	4	3.4

Factors associated with utilization of FP services

Table 4 summarizes the socio-demographic factors associated with utilization of family planning services. In the bivariate analysis, participants who were more likely to utilize the family planning services were those from Mandera North (OR 3.3, 95% CI 1.2 - 9.4); those who had either secondary (OR 4.8, 95% CI 1.8 - 13.3) or tertiary (OR 7.4, 95% CI 2.8 - 19.5) level of education; those that were Christians (OR 2.3, 95% CI 1.6 - 6.1); or employed (OR 3.2, 95% CI 1.6 - 6.1). On the other hand, participants who had non monthly income (OR 0.3, 95% CI 0.1 - 0.6) and those with less than 10,000 KES monthly income (OR 0.5, 95% CI 0.2 - 0.9) were less likely to utilize family planning services.

In multivariate analysis, after adjusting for region, gravidity, age, education level, marital status, religion, occupation, monthly income, household headship and population, parity and number of children alive, participants who were from Mandera North (OR 4.3, 95% CI 1.1 - 18.2), Mandera South (OR 7.5, 95% CI 1.7 - 33.4), Mandera East (OR 4.7, 95% CI 1.1 - 20.8); those with secondary (OR 11.1, 95% CI 2.7 - 46.1) and tertiary

level of education (OR 11.9, 95% CI 2.6 - 55.2) as well as those who were employed (OR 4.3, 95% CI 1.2 - 19.1) remained associated with utilization of family planning services.

In Table 5, participants who were more likely to utilize the family planning services were those who were aware of family planning services (OR 6.1, 95% CI 1.5 - 24.9), those whose first knowledge about family planning was either at school (OR 7.9, 95% CI 1.1 - 61.5) or health care workers (OR 7.6, 95% CI 1.0 - 58.1); those who had heard hormonal (Pills/IUD/Injectable) as method of contraceptive (OR 7.1, 95% CI 1.1 - 51.4); Participants who were aware of emergency contraceptive methods (OR 3.2, 95% CI 1.7 - 6.1). Those who stated that the cost of family planning services were either affordable (OR 4.8, 95% CI 2.2 - 10.3) or expensive (OR 3.8, 95% CI 1.2 - 12.8); Participants whose partners had positive attitude or enjoyed discussing reproductive health and family planning (OR 3.1, 95% CI 1.7 - 5.8); Participants who used female FP methods (OR 7.4, 95% CI 3.4 - 15.9) or their husbands (male FP methods) (OR 6.2, 95% CI 2.3 - 16.5); those who were using the natural (OR 6.9, 95% CI 1.4 - 35) or barriers (OR 12.9, 95% CI 4.9 - 33.4) or hormonal (OR 13.8, 95% CI 4.9 - 38.3) methods of FP. Lastly participants who believed the quality of family planning services were good and were more likely to utilize the FP services (OR 5.4, 95% CI 1.9 - 15.6). On the other hand, participants who were less likely to utilize the family planning services were those whose ideal age to have first child was between 15 to 18 years (OR 0.1, 95% CI 0.03 - 0.6) or between 18 to 21 years (OR 0.4, 95% CI 0.2 - 0.9); those whose ideal years of child spacing was \leq one year (OR 0.2, 95% CI 0.05 to 0.8).

In multivariate analysis, after adjusting for awareness of FP, first knowledge of FP, Known methods of FP, awareness of emergency contraceptive, ideal age of first child, ideal age of child spacing, cost of FP, attitude when discussing with husband/partner about FP, who uses contraceptives, methods used for FP, provider of FP and quality of FP; participants who used either barrier (condoms) (OR 5.7, 95% CI 1.3 - 24.5) or hormonal (Pills/IUD/Injectable) FP (OR 5.8, 95% CI 1.4 - 25.2) remained associated with utilization of family planning.

DISCUSSION

This study is first of its kind to investigate the awareness and uptake of family planning and associated factors among women of reproductive age in Mandera County; an arid, region in the North Eastern Kenya. The study was conducted two years post the 2013 devolution of political power and economic resources from the central government to the devolved county governments. Although initial surveys have associated the county with low utilization of FP at 1.9% in 2014 (Asiimwe *et al.*, 2013), this study has shown that the proportion of women aged 15 to 49 years embracing FP is considerably higher than previous studies standing at 41.9%. This rate was slightly lower than that of married women of reproductive age in Kenya (58%) who reported using FP in 2014 (Kenya Demographic and Health Survey, 2014).

During the study period, about 40.1% of these participants were either lactating or pregnant with more than 4 children, pointing to high fertility rate in the region. More than half of the participants were married, with close to 67.5% preferring to have children before the age of 21 years. This is a confirmation of a previous survey that indicated that in this region women have younger ages of sexual debut, young age of motherhood and younger age of first birth pointing to the unmet need for family planning services (Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2009).

The FGDs and KIIs discussions confirms the young age of marriage and child birth. One participant in an FGD participant confirms the young age of marriage "*women here are married at a really young age...for me I was married at my 14th birth day*". One KII participant said "*if it were not for the current government administration...my husband's clans' men would have married off my three daughters before they attended secondary school, personally I have witnessed a lot of these cases before*".

Although 79.5% of the participants were aware of family planning only about half of them (41.9%) were currently using contraceptive and family planning. This is not unique to this region. In many developing countries reports shows that despite the campaign on the usefulness of family planning in having smaller and healthier families, contraceptive use is still low (Adeleye *et al.*, 2010; Kenya Demographic and Health Survey, 2014; Lasisi *et al.*, 2014; Nettey *et al.*, 2015). One study in the Kintampo Districts of Ghana reported even higher family planning awareness level (97%) but lower (25.3%) utilization of any modern family planning method (Nettey *et al.*, 2015). Our results and these others show that awareness does not necessarily influence utilization.

Table 4: Association between utilization of FP services and socio-demographic characteristics of study participants from Mandera County

Variable	Sample size	Utilization of Family Planing		Bivariate OR (95% CI)	Multivariate OR (95% CI)
		No	%		
Region					
Mandera North	16	12	24.5	3.3(1.2-9.4)	4.3(1.1-18.2)
Mandera South	18	8	16.3	1.9(0.6-5.9)	7.5(1.7-33.4)
Mandera East	18	6	12.2	1.4(0.4-4.8)	4.7(1.1-20.8)
Mandera West	20	9	18.4	1.9(0.7-5.9)	2.6(0.8-8.9)
Banissa	23	9	18.4	1.7(0.6-5.1)	1.8(0.6-6.1)
Lafey	22	5	10.2	Referent	Referent
Gravidity					
Pregnant	19	5	26.3	0.5(0.2-1.2)	0.5(0.2-1.4)
Lactating	28	9	32.1	0.6(0.3-1.3)	0.6(0.3-1.4)
Pregnant and lactating	4	0	100	ND	ND
Not pregnant and lactating	66	35	53	Referent	Referent
Age (Year)					
15- 20	27	7	14.3	0.9(0.3-2.9)	0.5(0.1-2.8)
21-30	33	14	28.6	1.5(0.5-4.2)	1.1(0.3-4.6)
31-40	39	23	46.9	2.1(0.8-5.6)	2.1(0.6-6.8)
> 41	18	5	10.2	Referent	Referent
Education level					
Primary	23	6	26.1	2.1(0.7-7.2)	1.7(0.4-6.2)
Secondary	26	15	57.7	4.8(1.8-13.3)	11.1(2.7-46.1)
Tertiary	26	23	88.5	7.4(2.8-19.5)	11.9(2.6-55.2)
Non-Formal	42	5	11.9	Referent	Referent
Marrital status					
Single	23	13	56.5	1.5(0.7-3.7)	1.6(0.4-5.8)
Married	69	27	39.1	1.1(0.5-2.3)	1.2(0.5-3.6)
Divorced/Widow	25	9	36	Referent	Referent
Religion					
Christian	16	13	81.3	2.3(1.2-4.3)	0.5(0.2-1.4)
Muslim	101	36	35.6	Referent	Referent
Occupation					
Employed	23	20	87	3.2(1.6-6.1)	4.3(1.2-19.1)
Self employed	36	13	36.1	1.3(0.6-2.7)	1.4(0.5-4.2)
Unemployed	58	16	27.6	Referent	Referent
Monthly Income (KES)					
None	45	10	22.2	0.3(0.1-0.6)	2.8(0.5-16.1)
≤10000	35	14	40	0.5(0.2-0.9)	1.9(0.5-6.9)
10001-20000	15	7	46.7	0.5(0.2-1.4)	1.8(0.5-6.1)
20001-30000	8	6	75	0.9(0.3-2.3)	1.1(0.4-3.1)
>30001	14	12	85.7	Referent	Referent
Household Headship					
Husband	72	29	40.3	0.9(0.5-1.7)	1.2(0.6-2.8)
Respondent's Mother	16	7	43.8	1.1(0.4-2.4)	1.1(0.4-3.1)
Others	29	13	44.8	Referent	Referent
Household population					
≤4	50	21	42	1.1(0.6-1.8)	0.9(0.5-1.8)
>5	67	28	41.8	Referent	Referent
Parity					
None	16	10	62.5	1.8(0.8-3.8)	1.9(0.1-25.1)
1-3	47	20	42.6	1.2(0.6-2.3)	1.1(0.3-3.7)
>4	54	19	35.2	Referent	Referent
Children a live					
None	19	11	57.9	1.7(0.8-3.7)	0.9(0.1-11.7)
1-3	50	22	44	1.3(0.7-2.5)	1.3(0.4-4.6)
>4	48	16	33.3	Referent	Referent

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; ND - Not done

Table 5: Association between FP utilization and awareness patterns of participants

Variable	Sample size	Utilization of Family Planing		Bivariate OR (95% CI)	Multivariate OR (95% CI)
		No	%		
Awareness of Family Planning (FP)					
Yes	93	47	50.5	6.1(1.5-24.9)	0.6(0.1-6.2)
No	24	2	8.3	Referent	Referent
First knowledge on FP					
Family and Friends	61	20	32.8	3.9(0.5-29.3)	
Media	4	2	50	5.6(0.5-66.1)	NS
School	18	12	66.7	7.9(1.1-61.5)	
Health care/Professional	22	14	63.6	7.6(1.0-58.1)	
Not stated	12	1	8.3	Referent	
Known methods of FP					
Natural (Calendar/Withdrawal)	2	0	0	ND	
Barrier (Condoms)	14	4	28.6	4.1(0.4-35.8)	ND
Hormonal (Pills/IUD/Injectable)	87	44	50.6	7.1(1.1-51.4)	
None	14	1	7.1	Referent	
Awareness of emergency FP					
Yes	51	35	68.6	3.2(1.7-6.1)	0.6(0.1-6.2)
No	66	14	21.2	Referent	Referent
Ideal age of first child					
Between 15-18	31	3	9.7	0.1(0.03-0.6)	
Between 18-21	48	17	35.4	0.4(0.2-0.9)	NS
Between 22-24	28	21	75	0.9(0.4-2.1)	
Between 25-27	10	8	80	Referent	
Ideal age of child spacing					
One year	31	6	19.4	0.2(0.05-0.8)	
One to two years	55	18	32.7	0.3(0.09-1.2)	NS
Three to five years	28	22	78.6	0.8(0.23-2.6)	
Five years or more	3	3	100	Referent	
Cost of family planning					
Affordable	51	36	70.6	4.8(2.2-10.3)	
Expensive	7	4	57.1	3.8(1.2-12.8)	NS
Free	5	1	20	1.4(0.2-10.8)	
No idea	54	8	14.8	Referent	
Attitude when discussing with husband/partner about FP					
Embarrassing/avoid to discuss	15	5	33.3	1.2(0.3-4.1)	
Positive/we enjoy discussing	44	31	70.5	3.1(1.7-5.8)	NS
A void/never discuss	58	13	22.4	Referent	
Who uses contraceptives?					
Self	38	33	86.6	7.4(3.4-15.9)	1.5(0.4-4.9)
husband	11	8	72.7	6.2(2.3-16.5)	1.2(0.3-4.8)
None	68	8	11.8	Referent	Referent
Methods used for FP					
Natural (Calendar/Withdrawal)	4	2	50	6.9(1.4-35)	4.1(0.7-24.5)
Barrier (Condoms)	31	28	93.3	12.9(4.9-33.4)	5.7(1.3-24.5)
Hormonal (Pills/IUD/Injectable)	14	14	100	13.8(4.9-38.3)	5.8(1.4-25.2)
None	68	5	7.2	Referent	Referent
Provider of Family planning					
Health facility	73	41	56.2		
Work Place	9	7	77.8	ND	ND
Other sources	11	1	9.1		
None	24	0	0	Referent	
Quality of family planning					
Best	9	3	33.3	2.5(0.6-11.5)	
Better	19	6	31.6	2.4(0.6-8.7)	
Good	41	29	70.7	5.4(1.9-15.6)	NS
Fair	17	7	41.2	0.6(0.3-1.3)	
Poor	31	4	12.9	Referent	

No - Number; % - Percentage; OR - Odds ratio; CI - confidence interval; NS - Not significant; ND - Not done

From the FGDs and KIIs discussions this unmatched awareness and utilization of family planning methods was evident. One participant in an FGD participants confirmed awareness *“that most information including family planning issues are discussed in non-formal settings including Madrassa and in the family units”*. Concerning the family planning types known, most qualitative participants were able to mention at least one modern method but not necessarily approving the method. One participant in an FGD participant *“I know method such as condoms which are available at the clinic”*. The second participant in FGD participant said *“I have seen condom shown to me by the village health worker who also told us about cutting off the Uterus...which I cannot use ...I want to die with my whole organs”*.

A participant in an FGD reported that not all women in the region were aware of family planning - *“If I knew family planning before, I would have not given birth to these children.... My children would have been well spaced and much stronger”*. Emergency contraceptives are not known; KII stated *“most women here give birth every year because other than condoms no other family planning methods available can be used quickly to help prevent unplanned children, in fact most pharmacist do not stock these pills”*. A Key informant participant KII stated *“for increased uptake of family planning services, promotion that facilitates awareness about the available family planning services and their possible side effects and benefits is paramount”*.

This study showed utilization of FP was significantly associated women’s: region of origin, education level, wealth status (occupation and income), religion, awareness and exposure to the media, and utilization of reproductive health services including modern hormonal contraceptives, and the perceived importance of family planning.

Women from Mandera North, East and South were more likely to utilize family planning. These regions are the most developed constituencies within the County; Mandera East hosts the County government offices and is by infrastructure the most developed. Mandera South and North follow in that order in terms of infrastructure and developed. As expected socioeconomic status, education level, availability and capacity of health care services as well as supplies of available modern family planning methods are considerably better in these three sub-county compared to the other regions within the County. The relationship between development and use of FP has also been reported by other studies (Gizaw & Regassa, 2011).

The role of region of origin to utilization of FP was also shown in the FGD and KII discussion One participant in FGD participant from Lafey said *“I wish I could see these services hear and cheaply, we could be all using these services”*. One participant in the KII participant from Mandera East said *“in this region of Mandera North some of these family planning services thank to devolution are now available in some health facilities”*.

Women who had secondary and tertiary level of education were more likely to utilize FP, which is consistent with other studies (Wanyenze *et al.*, 2011; Creanga *et al.*, 2011; Rutaremwa *et al.*, 2011). Higher education level provides women with a better and wider understanding of the FP options including availability, and invariably the benefits of family planning and regulation. Further, education increases awareness of the side effects of contraceptive methods and preference for the most convenient ones (Mekonnen & Worku, 2011).

One participant in an FGD reported on the importance of education: *“I use modern family planning methods because I was made aware of their importance when I was in college”*.

High monthly income and employment equating to wealth had a direct relationship with women’s utilization of FP. Women from richer households or high wealth quintiles are empowered are able to afford modern FP services and are most likely better exposed to current reproductive health, FP and contraceptive related issues. Wealth and riches are equated to utilization of modern FP even in other studies (Rutaremwa *et al.*, 2011).

One participant in an FGD said *“I am able to use these family planning methods because I buy them on my own”*. Although majority of population in this region are predominantly Muslims, participants who were Christians were more likely to uptake family planning. Christian especially the protestants are often highly accepting of contraceptive use compared to Catholic counterparts. This argument is consistent with literature elsewhere where Christian protestant women were more likely to use highly effective contraceptive methods (Jones & Dreweke, 2011). Singh *et al.*, (2003) notes that there is no mention of contraception in Quran (first source of Islamic law), and only mentioned in the sayings of the Prophet Mohammed (the second source of Islamic law) advocating for coitus interrupts to control family size. Further, most Muslims either do not send their children to school or send them to madrasas run by Muslim trusts, the overall environment of the later institutions helps in the continuation

of their traditional values and thus hindering social changes including family planning (Agadjanian *et al.*, 2009).

The FGD and KII discussions highlights the role of religion on uptake of FP. One KII-5 participant on religion and family planning said “Islam forbids a couple from choosing to practice FP through the use of surgeries which are irreversible”. One participant in an FGD said “we are majority Muslims and we rarely are taught about family planning methods. It is like a taboo for us to talk about sex and issues surrounding family planning among family circles:

Schools and health care as a source of knowledge family planning messages, increased use of FP. Further awareness of modern family planning methods such as emergency contraceptive, condoms and hormonal contraceptives (Pills/IUD/Injectable) were key in the utilization of FP. Exposure to information has been equated to increased demand for learnt services as well as in the long run, behavior change (Wakefield *et al.*, 2010).

Positive attitude of husband/partner on reproductive health and family planning predicted uptake of utilization of FP. The socio-cultural role of husband or partner has been shown to influence family related issues including FP. This and other similar studies shows strong male influencing in the overall family outlook (Rutaremwya *et al.*, 2011). Therefore, male-to-male outreaches and identifying male champions for family planning in various settings are important in promoting modern FP utilization.

Family planning utilization does not all depended on the women: one FGD stated “for a woman to use family planning services, partner’s approval must be granted”. Another FGD participant on barriers to FP stated “even if we are asked to have fewer family size since the economy continues to worsens, the overall say lies on the hands of household head”. “If I use family planning methods without asking my husband, this will be tragedy for me. He will be seen as weak in the community which no man allows here. I must follow his decision; this is the tradition in this area”.

Limitations and Conclusions

This was a cross-sectional study with relatively small sample size of participant in the structured interviews. This could partly explain the observed lack of association of some important factors such as age and FP utilization. Further, we were not able to establish the actual role of devolution and the utilization of FP.

Given the limitation in this geographically defined population, hardship and insecurity significant proportion of women were using FP compared to the Kenya demographic health survey reports. Further, socio-cultural, religion and awareness attribute of the participants, provide an important avenue to evaluate the interplay if any of the multifaceted and multilevel factors that impact availability and utilization of FP. Ultimately for the improvement in the proportion of women embracing FP in Kenya especially in the initially marginalized counties experiencing hardship (such as droughts) and insecurity; all concerted efforts must be undertaken to promote and to tackle the socio-cultural deterrents of FP utilization. Should this be achieved, these regions could record one of the highest utilization of FP compared to other wealthy and affluent regions of Kenya. Further studies will be required to shed more lights on our study findings.

Abbreviations

MDGs: Millennium Development Goals; FP- Family planning; USAID - United States Agency for International Development; STD - sexually transmitted diseases; FGM - Female genital mutilation; KDHS - Kenya Demographic Health Survey; HPI - Health Policy Initiative; FY – Financial years; DANIDA - Danish International Development Agency; USD – United states Dollar; KES – Kenya shilling; FGD - Focus group discussion; KIIs - Key informant interviews; SSC – Scientific Steering committee; OR – Odds ratio; CI – Confidence interval; SD – Standard deviation and IUD – Intrauterine device.

Competing interests

The authors declare no competing interests.

Authors’ contributions

This work was part of Master of Science degree for ASO in public health at the Jomo Kenyatta University of Agriculture and Technology. ASO, conceived and designed the study. ASO conducted field work and collected data, ASO, MON conducted data analysis and wrote the draft manuscript. JKM and FMK designed the study, advised and supervised data analysis and reviewed the manuscript. All authors read and approved the final manuscript.

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