

**PREDICTORS OF UPTAKE OF MODERN FAMILY PLANNING SERVICES  
AMONG PASTORALIST WOMEN IN GARBATULLA SUB-COUNTY, ISIOLO  
COUNTY, KENYA**

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EL/ESM/01342/2018**

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

**SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT**

**MASENO UNIVERSITY**

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**DECLARATION**

**By Student**

This thesis is my original work and has not been presented for any Degree in any other university

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## **ACKNOWLEDGEMENTS**

I give thanks to Allah whose mercies and grace has been sufficient for me as I partook in this extremely tasking, but interesting work. Accomplishing a task of this magnitude requires support and co-operation of many. I am extremely grateful to my supervisors; Dr. Doreen Othero of Maseno University, School of Public Health and Community Development, Dr. Dickens Omondi of Jaramogi Oginga Odinga University of Science and Technology, Department of Public Health who have always offered guidance, support, and morale, which facilitated me through this work.

## **DEDICATION**

I dedicate this work to my parents, my family, and Isiolo County Health Management Team for the support.

## ABSTRACT

Family Planning (FP) improves the quality of life for women, however, global unmet need for family planning remains high, especially in developing countries. In Kenya, health care delivery, including delivery of FP services, for pastoralist communities has serious shortcomings as often it must be delivered under difficult circumstances. In Isiolo County, where majority are pastoralists, Modern Contraceptive Prevalence (mCP) is too low; 26.3% compared to the country's 58.0%. While this is attributable to the high maternal mortality rate of 790 deaths per 100,000 live births in Isiolo, no documented studies have been done to determine the predictors of the low mCP. This study investigated predictors of uptake of modern FP services by pastoralist women in Isiolo County. The study objectives were to; determine socio-cultural, health system, and knowledge and perceptions factors that predict uptake of FP services by pastoralist women in Garbatulla Sub-County, Isiolo County. A cross-sectional descriptive survey utilizing quantitative and qualitative data collection approach was undertaken a sample of 419 women aged 14 to 49 years. Key Informant Interviews collected qualitative data. A structured questionnaire was used to collect quantitative information on study variables. Quantitative data were summarized descriptively and presented in charts; qualitative data were analysed manually based on emerging themes. Chi-square test was used to establish associations between study variables at  $\alpha \leq 0.05$ . Binary logistic regression was used to identify predictors of FP uptake. Most of the participants were young; aged 25 to 35 years. Almost all of the participants were Muslims and mCP was 25.3%. There were no significant associations between both religion and male involvement and FP uptake;  $p=0.082$ ,  $p=0.574$  respectively. Health system factors; time taken to reach health facility and type of health facility were predictive of FP uptake (OR=1.6, 95% CI,  $p=0.024$ , and OR=1.4, 95% CI,  $p=0.000$ ) respectively. Likelihood of knowledge on contraception methods influencing FP uptake was low (OR=0.4). Perceptions on use of FP by fecund women to post pose child birth showed a high likelihood of predicting FP uptake. The study provides useful insights on appropriate interventions that can be designed to enhance uptake of FP in Isiolo County, Kenya. The study concludes that health systems factors are core predictors of family planning uptake by the pastoral population of Isiolo County. The study recommends that the Department of Public Health, Isiolo County should come up with health promotion programs intended to enhance knowledge and positive perceptions on modern family planning.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

<b>AFIDEP</b>	:	African Institute for Development Policy
<b>AOR</b>	:	Adjusted Odds Ratios
<b>CHVs</b>	:	Community Health Volunteers
<b>CHUs</b>	:	Community Health Units
<b>CI</b>	:	Confidence Interval
<b>CPR</b>	:	Family planning Prevalence Rate
<b>FP</b>	:	Family Planning
<b>GoK</b>	:	Government of Kenya
<b>ICRH</b>	:	Isiolo County Referral Hospital
<b>KDHS</b>	:	Kenya Demographic and Health Survey
<b>KNBS</b>	:	Kenya National Bureau of Statistics
<b>MCH</b>	:	Maternal and Child Health
<b>mCP</b>	:	Modern Contraceptive Prevalence Rate
<b>NCPD</b>	:	National Council for Population and Development
<b>RH</b>	:	Reproductive Health
<b>SCT</b>	:	Social Cognitive Theory
<b>TBAs</b>	:	Traditional Birth Attendants
<b>TFR</b>	:	Total Fertility Rate
<b>UDHS</b>	:	Ugandan Demographic and Health Survey
<b>WHO</b>	:	World Health Organization

## OPERATIONAL DEFINITION OF TERMS

**Contraceptive Prevalence Rate:** The percentage of women who have previously or are currently using, or whose sexual partner is currently using, at least one method of family planning, regardless of the method used. It is usually reported for married or in-union women aged 15 to 49.

**Modern family planning services:** This referred to contemporary health care services aimed at controlling the number of children one has and the intervals between their births, particularly by means of a product; drug or device, intended to prevent pregnancy (Bhatt et al., 2021).

**Health Systems Factors** has been operationalized to refer to time taken to reach facility, waiting time at the facility, type of facility where family planning service(s) were sought, and experiences related to accessibility of family plannings at health facilities where services were sought.

**Unmet Need for FP:** Unmet need is the number or percentage of women expressing a desire to space births for at least two years or limit the number of births, and thus do not want to become pregnant but are not using contraception (Ewerling et al., 2018).

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## **CHAPTER ONE**

### **INTRODUCTION**

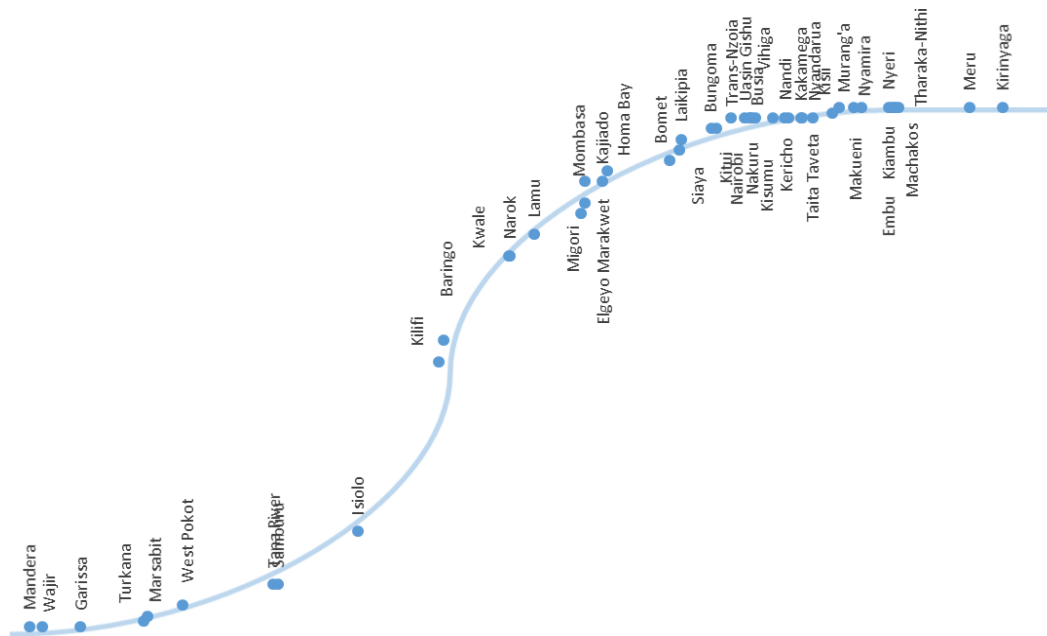
#### **1.1 Background to the Study**

Family planning (FP), at times known as contraception, has been identified by the World Health Organization (WHO) as one of the essential reproductive health interventions needed to achieve safe motherhood by reducing maternal and child mortality (World Health Organization, 2004). According to the United Nations (2019), globally, it is estimated that 1.1 billion women require or are users of FP. Of this number, close to 80 million opt for traditional methods of FP as opposed to modern methods, which means they have unmet need for FP. Family planning use has substantially increased in many developing countries and in some, is approaching that practiced in developed countries (Dehingia et al., 2019). In Africa, from the year 2015 to 2020, 55% to 58% of women had their needs for FP met through use of modern family plannings (WHO, 2020). However, in Sub-Saharan Africa, the use of FP remains low and even disproportionately lower among women of the pastoral communities, for instance, Modern Contraceptive Prevalence (mCP) is reported to be 9.1% among pastoralist women of Afar region in Eastern Ethiopia against a national mCP of 29% (Alemayehu et al., 2016). In a qualitative study in Samburu, Kenya, men agreed that a compromise of smaller families should be made but majority did not intend to practice FP in their own homes (Kock & Prost, 2017). Only 4% of married young women aged 20-24 in Turkana County used a modern family planning method and 19% had an unmet need for family plannings compared to 50% and 19%, respectively, at national level (Ochako et al., 2015).

Health care delivery for pastoralist communities in Kenya has serious shortcomings as often it must be delivered under difficult circumstances (Caulfield et al., 2016). Often these communities live in areas characterized by low population densities and extensive geographical dispersion with long distances between service deliveries points, which makes it challenging to satisfy even the most basic requirements (Adelekan et al., 2014a). Women make a major contribution to the pastoralist lifestyle, but do not generally participate in decision-making, including decisions directly affecting their own lives. Pastoralist societies are patriarchal, and pastoralist women have limited access to and control over productive assets including livestock and land (Borgerhoff Mulder et al., 2010). In many patriarchal societies, the health status of women and children is poor, particularly in communities where women's decision-making abilities and control over money is limited (Caulfield et al., 2016).

Primary reasons attributable to the low family planning prevalence rate among pastoral communities have demonstrated mixed results across studies. For example, while women's educational attainment was reported to increase family planning use among pastoralist women in Ethiopia (Worku et al., 2019), family planning training of a few women and the development of a family planning video in the Maasai language increased uptake among women irrespective of their educational attainment in the small town of Nainokanoka in Kenya (Prata et al., 2017). In the same town, commodity availability was reported as the key predictor to uptake. In Bale region, uncomplimentary perceptions towards religious and cultural acceptability of modern family planning method were the major reasons for lesser utilization of the methods by married pastoralist women (Belda et al., 2017). On the contrary, Chekole et al. (2019) women's engagement in community networks that are aimed at increasing the knowledge of the women with regards to family planning in Afar did not yield any substantial increase in uptake. Instead, husband's involvement was a key determinant. Those who reported receiving support for family planning from their husbands (AOR: 5.56; 95%CI: 1.92–16.07) were higher likely to use a method compared to their counterparts.

Among the targets of Sustainable Development Goal (SDG) three on “Good Health and Wellbeing” is the need to ensure universal access to Sexual and Reproductive Health (SRH) such as FP. In line with this, United Nations (2019) observes that women whose needs for modern contraception are met are 76%. Despite this, disparities are notable in different contexts. In Kenya as reported by (Kenya National Bureau of Statistics, 2015) disparities are notable among different counties with regards to uptake of modern family planning. While some counties like Kirinyaga report a family planning prevalence rate as high as 76 percent, counties inhabited by communities of pastoralist backgrounds lag behind. Turkana, Mandera, Garissa, Wajir, Samburu, Marsabit and Isiolo have demonstrated poor uptake of family planning services (Figure 1.1).



**Figure 1.1: Kenya's s-curve for mCP (Kenya National Bureau of Statistics, 2015)**

With an overall family planning prevalence rate of 26.3% against a national estimate of 53.2%, Isiolo county has one of the highest total fertility rates at 4.9 which is projected to be well above the national average total fertility rate of 3.9 (Kenya National Bureau of Statistics, 2015). However, it is worth noting that even though Isiolo has a low mCP and high Total Fertility Rate (TFR), it tops counties dominated by pastoralist communities in the curve. Understanding what seem to be working for Isiolo County may help improve uptake for the 8 pastoral counties at the bottom of the curve. Against this background, the current study seeks to explore specific factors that predict pastoral women's FP services uptake in Isiolo County.

## 1.2 Problem Statement

Globally, the Reproductive Health (RH) needs and challenges in pastoralist populations are different from elsewhere. People from these communities live in very traditional settings and adhere strongly to traditional cultural values and beliefs. Some of these beliefs are known to lead to poor sexual and RH outcomes (Henok & Takele, 2017). In Africa, reproductive health outcomes such as uptake of modern family planings are often compromised due to limited adoption, access, and acceptance of modern family planings (Caulfield et al., 2016). In case of adoption of modern family planings, short-term acting methods such as injectables are preferred in Africa (United Nations, 2019). In East African region, mCP is low and with a wide range of disparity between countries. Levels of unmet need for FP are generally higher than family planning use in most countries in Eastern Africa. But countries that are predominantly inhabited by pastoralist communities show much lower rates of family



planning use and very high unmet need for FP. Somalia for example reports a mCP of 3.3% and an unmet need of 29.3% (Gele et al., 2019). Low mCP is a concern because it indicates limited use of FP, which results in unintended pregnancies that may lead to maternal mortality. In Kenya, there has been a great progress toward increased uptake of modern family planning, recently exceeding the 2020 national target of 58% modern family planning use by married women of reproductive age to 61% (Ojiambo et al., 2013). Regardless of the overall national progress in FP however, disparities in FP utilization rates are still visible among different regions and specific population groups. For example, the CPR in some counties of central Kenya is 75% whereas in some counties of Northern region, where majority lead a pastoral way of life, it is as low as 1.9%. Counties inhabited by pastoral communities have reported the lowest family planning utilization rates (Kenya National Bureau of Statistics, 2015), and Isiolo is one of them with an overall family planning prevalence rate of 26.3% and a total fertility rate of 4.9 which is projected to be well above the national average total fertility rate of 3.9.

While factors assumed to contribute to the low uptake of FP in these communities including culture, religion, lack of formal education, low empowerment of women, long distance to health facilities and partner support have been confirmed, these factors have not been confirmed or contextualized to the study area; Isiolo County. Low mCP has a direct consequence on maternal and child health and a direct relation to a population's high total fertility rate. This leads to a rapid population growth whose consequences such as economic strain are transferred nationally impacting achievement of sustainable development goals. There are no documented studies exploring low mCP amongst pastoralist women of Isiolo County. The predictors of modern family planning utilization by pastoralist women in Isiolo County could be specific and are not well known and this is important to address any existing challenges and build on opportunities for better RH outcomes. Therefore, this study sought to bridge this gap by assessing socio-cultural factors, health system factors and user knowledge factors and perceptions that predict uptake of family planning in the county.

### **1.3 Study Objectives**

#### **1.3.1 Main Objective**

To investigate predictors of uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County, Kenya.

### **1.3.2 Specific Objectives**

- i. To determine socio-cultural factors associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County.
- ii. To examine health system related factors associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County.
- iii. To determine user knowledge and perceptions associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County.

### **1.3.3 Research Questions**

- i. What socio-cultural factors are associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County?
- ii. What health system factors are associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County?
- iii. What are the user knowledge factors and perceptions associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County of Isiolo County?

### **1.4 Significance of the Study**

Isiolo County is one of the top 15 counties that contribute to over 60% of maternal deaths in the country with an unacceptably high maternal mortality rate of 790 deaths per 100,000 live births against a national estimate of 362 deaths per 100,000 live births (AFIDEP, 2017). Family planning services are an important component of maternal and child health as a strategy to reduce maternal and infant mortality and improve health outcomes for women and their children. Therefore, findings from this study provide more information on the challenges encountered by pastoralist women of reproductive age who want to access and use FP services. This information provides a useful basis on which appropriate interventions can be designed to enhance uptake. Also, results from this study can be utilized to inform policy and strategy design on how to enhance access to FP services to ensure that pastoralist women are able to benefit from the services regardless of their unique way of life.

### **1.5 Study limitations and potential biases**

The study was limited in a few ways as follows. First, data was obtained through self-reported measures, which have inherent limitations related to social desirability and recall bias. However, the researcher addressed this by ensuring that the recall period was reasonable and further ensured that respondents were made as comfortable as possible during data

collection and an assurance of data safety was given through informed consent process. Secondly, the study was conducted in Isiolo County, therefore generalizability to other parts of the country remains limited due to socioeconomic and geographical differences across the country. Lastly, due to limited time and resources, a prospective analysis which would be the best was not possible. The study therefore relied on a cross-sectional design to tackle the research questions. The variables of interests were asked at one point in time.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter provides a review of previous studies and review of theory adopted in explaining the relationships between the study variables. Literature was reviewed based on the study objectives with the sole intent of identifying emerging gaps. As such, the study explored the manner in which gaps identified may be bridged. The chapter further presents the conceptual framework for the study that explains the hypothesized relationship between the dependent and independent study variables.

#### **2.2 Global Context of Family Planning Use**

Globally, it is estimated that at least one in ten married or in-union women in most regions of the world has an unmet need for family planning (Apanga & Adam, 2015). That is, they want to stop or delay childbearing but are not using any method of contraception. In 2015 for instance, 12 per cent of married or in-union women were not using any method of contraception even though they wished to (Moreira et al., 2019). This was even higher, 22 percent, in the least developed countries and highest in sub-Saharan Africa where unmet need for FP was estimated at 24 percent; double the world average (WHO, 2020). In 2018, 57 per cent of married or in-union women of reproductive age used a modern method of family planning, constituting 90 per cent of family planning users (WHO, 2020). When users of traditional methods were counted as having an unmet need for family planning, 18 per cent of married or in-union women worldwide were estimated to have had an unmet need for modern methods in 2018 (Population Reference Bureau, 2020).

Within regions, different settings have been shown to have substantial influence on the use of family planning services by women. For example, disproportionately low family planning prevalence rates have been reported by women of pastoralist background in different regions of the world (İnal, İnal, Küçükkendirici, Oruç, & Güneç, 2017). Tsui et al. (2010) demonstrated a greater use of family planning services among women who live in relative proximity to the service. Research into the barriers faced in accessing reproductive health services now recognizes that problems of access extend beyond physical access to services, and include issues extending beyond factors operating at the individual and household levels, to include characteristics of the social and cultural environment and the health service infrastructure (Chola, Mcgee, Tugendhaft, & Buchmann, 2015). This conceptualization of uptake incorporates factors operating at the individual, household and community level to

influence an individual's ability to utilize a health service, thus framing an individual's access to services in terms of the social and cultural context in which they live. According to Demographic and Health Surveys carried out in 52 countries between 2005 and 2014 by the Guttmacher Institute as reported in Sedgh et al. (2016) if all the unmet need for modern contraception were satisfied in developing countries, there would be three-quarters fewer unintended pregnancies, unplanned births and induced abortions per year, as well as 76,000 fewer maternal deaths. In addition, for each dollar spent on family planning services above the current level, the cost of pregnancy-related care would decrease by \$2.20 because the cost of preventing an unwanted pregnancy is lower than the expense of providing care for mother and baby.

### **2.3 Modern Contraceptive Prevalence and the unmet need among pastoralist women**

In the past decade, there has been a steadily growing understanding of the unacceptable impact of pregnancy and childbirth complications on the health and lives of women and their families (Adelekan et al., 2014b). There has also been an expanding response to address the issue. Nevertheless, despite significant investments globally and after numerous interventions to improve this situation in sub-Saharan African countries, in terms of investment and expenditure, maternal health remains a relatively low priority than it deserves (Dahab & Sakellariou, 2020). Nomadic people in Eastern Africa clearly still lack proper reproductive health services and support. Due to their mobile ways of life and cultural values, nomadic communities are seldom reached by health and development programmes and nomadic people often have limited, if any, access to quality health information and services (Aradom et al., 2020). This is dramatically reflected in high maternal mortality figures in nomadic regions, the primary indicator of health systems failure in such areas (Ali et al., 2014).

### **2.4 Socio-demographic and Socio-cultural Factors Associated with FP Uptake among Pastoralist Women**

Pastoralist communities are deeply rooted in tribal traditions, with strong gender disparities between men and women whereby women rarely make decisions in the family. Often, they marry young, have little or no education and handle large families. Studies agree to the fact that a range of socio-cultural factors influence the use of modern family planning by pastoralist women (Asiimwe et al., 2013). However, these factors have also shown to vary in different regions (Cherotich, 2012). Among pastoralist women in Ethiopia for example, religion related reasons were commonly mentioned in the non-use of family planning in a study that assessed family planning utilization and associated factors among married

pastoralist women of Afar region (Alemayehu et al., 2016). In Garissa, Kenya, partner support and level of education were shown to be closely associated with uptake of family plannings ( $p < 0.0001$ ). A culture that left sexual and reproductive issues to be fully taken care of by women was reported as a barrier to FP use among pastoralist women from Garissa (Chola, McGee, et al., 2015).

Among pastoralist women in Turkana County, a cross sectional study conducted to determine socio-demographic and cultural determinants of FP uptake found that previous use of family plannings was the major motivator while self-efficacy and affordability were reported as major enablers to FP uptake (Cherotich, 2012). Fear of side effects, cultural beliefs and lack of spousal support were also found to bar FP use. A study by Safari et al. (2019) observes that mother's age, religion, and previous history of family planning use pose an influence on uptake of FP. The same study alludes that marital status, education level, and occupation do not pose an influence on uptake of contraception.

In Uganda, Karamoja region, which hosts Uganda's largest pastoral population, remains the least socially and economically developed, with 61 percent of the total population of 1.2 million living in poverty (Asiimwe et al., 2013). Out of the total population of 1.2 million people, half are females. The region has the highest Total Fertility Rate (TFR), with women of reproductive age (15-49 years) giving birth to an average of 8 children, higher than Uganda's of 5, and three times above the average of 3 children per woman in Kampala (Kabagenyi et al., 2016). Modern family planning use is only 6.5 percent way below the national average of 35 percent. Key bottlenecks to family planning use in Karamoja have been reported to include limited access to services due to inadequate number of skilled staff to provide a wide range of methods, stock outs at health facilities; limited community-based service outlets; myths and misconceptions, limited male support, negative socio-cultural and religious values (Nsubuga et al., 2016).

## **2.5 Health System Factors Associated with FP Uptake among Pastoralist Women**

World over, health systems work towards provision of integrated and principled from of care. Across different parts of the world, health care systems are organized in different levels defined by their functions and mandate. Such organization provide a viable means through which health systems are strengthened to attain collective health improvements of the populations (Aradom et al., 2020). In Kenya, health care system is organized in a referral hierarchy, starting from communities, to dispensaries, to health centres, to sub county and

county referral hospitals and finally to national referral hospitals (Barasa et al., 2021). At the community level, the workforce consists of Community Health Volunteers (CHVs) whose biggest role is health promotion and education whereas at the dispensary level service providers dispense basic obstetric care and treatment (Moses et al., 2021). While the pyramidal organization of the health system works well in settled communities, it falls short when it comes to meeting the needs of pastoralist communities living in arid and semi-arid areas (Owili et al., 2015). This could be attributable to low attractiveness of remote posts and difficulty in recruiting health workers to these areas, long distances to facilities posing challenges of access, and poor infrastructure among other issues.

A study in Marsabit, which is one of Kenya's thirteen counties that are dominated by pastoralists, reported that most hospitals were concentrated in urban centres which are more accessible and convenient than the other remote sub counties (Hauck & Rubenstein, 2017). However, limitations in functionality of these facilities were notable. Hospitals that were supposed to serve as referral points for the smaller facilities were often not different from those smaller units (McGivern et al., 2017). While the number of personnel was sufficient, quality was insufficient. Personnel often lacked the appropriate skills and motivation mainly due to the high turnover of those with the proper skills, who preferred to transfer from the county or who resigned to join institutions where they are well paid (Brown, 2016). Dispensaries and health centres often remained closed due to lack of personnel or drugs and supplies that are essential for daily operations. In addition, access to healthcare was complicated by a lack of transportation. The average distance to the nearest health facility was estimated at 60km (Duba et al., 2001).

Similar to the above findings, Caulfield et al. (2016) confirmed the challenge of accessing health services by pastoralist women in Laikipia and Samburu counties as a result of long distances, poor roads and lack of transport. Eliason et al. (2014) reported that the numerous systemic challenges in health system have resulted in the informal health system playing a pivotal role in service delivery among pastoralist communities. The study reports that in nomadic pastoralist settings, community structures provide reproductive health services with the major players being traditional herbalists, local healers and traditional birth attendants (TBAs). Nomadic communities perceive traditional herbalists/healers to be more effective and reliable than modern health care services (Gonie et al., 2018). They are culturally closer to them, consider them trustworthy and very knowledgeable on community health problems.

In yet another qualitative study assessing barriers to access of healthcare services among Kenyan Somali women, high cost of care, distance from health facilities, and lack of a referral system were identified to negatively influence women's access to reproductive health services (Mutumba et al., 2018). Concerns regarding perceived quality of care also presented a barrier. Women questioned health professionals' and health facilities' capacity to offer culturally-sensitive services. Women faced socio-cultural barriers while seeking care particularly cultural taboos against discussing matters related to sexual health with male clinicians (Kimani et al., 2020).

## **2.6 User Knowledge and Perceptions Associated with FP Uptake among Pastoralist Women**

According to a systematic review by, knowledge-based interventions such as health education of the public provide a comprehensive means of enhancing an increase in knowledge on matters contraception. Knowledge on matters methods of contraception is perhaps the reason for variations in use of the various contraception methods across different contexts. As an example, United Nations (2019) notes that in Western Asia and Northern Africa, IUD and pills are the commonly used methods, and in North America and Europe, male condom and pills are the preferred methods. In an assessment in Turkana of family planning uptake among women of reproductive age in Kakuma refugee camp, 487 women were enrolled in a survey to understand the effect of demographic, socio-economic and cultural factors affecting the use of modern family planning (Cherotich, 2012). In the findings of this study, a woman's knowledge on family planning ( $p < 0.0094$ ) and partner disapproval of family planning use ( $p < 0.002$ ) had significant association with uptake of modern family planning (Cherotich, 2012). Similarly, the National Coordinating Agency for Population and Development lists fear of side effects, lack of knowledge and opposition to use by partner or perceived religious prohibition as some of the key factors associated with low uptake of modern family planning among women (National Council Agency for Population & Development, 2010).

The traditional Samburu aspiration to have large families was a key factor that came out in a qualitative study in Samburu Kenya. On one hand, participants cited the benefits of large families and did not feel the need for FP. An elder argued that because of the vast stretches of land available to the Samburu tribe relative to their small numbers, they should continue to populate the region (Kock & Prost, 2017). He therefore opposed the use of FP. Men spoke of the traditional Samburu association between family size and wealth, and how because of this,



giving birth to boys remained an important cultural aspiration (Kassa et al., 2014). On the other hand, some men believed that such traditions should change, and that communities in which they are common are poorer (Adelekan et al., 2014b, 2014a). They thought that there remained many Samburu who held on to traditional desires for large families and multiple wives and wished that FP education would reach these communities so that they could learn the environmental and economic benefits of having smaller families (Kock & Prost, 2017).

In Maasai (Kenya), traditional values are that a woman's social worth is largely determined by how many children she gives birth to (Kara et al., 2019). Most of the key productive and reproductive functions are carried out by women though it is the man who assigns the daily duties and makes decisions including those that directly affect the health of the woman (Mukhongo, 2015; Silumbwe et al., 2018). The Maasai cultural identity values sex with multiple partners and engage in large sex network according to age set and kinship affiliation and the community is characterised with high fertility rates with an average of seven children per woman (Hauck & Rubenstein, 2017). This greatly hinders the use of contraception and calls for deliberate efforts to make family planning culturally acceptable in pastoralist communities such as this.

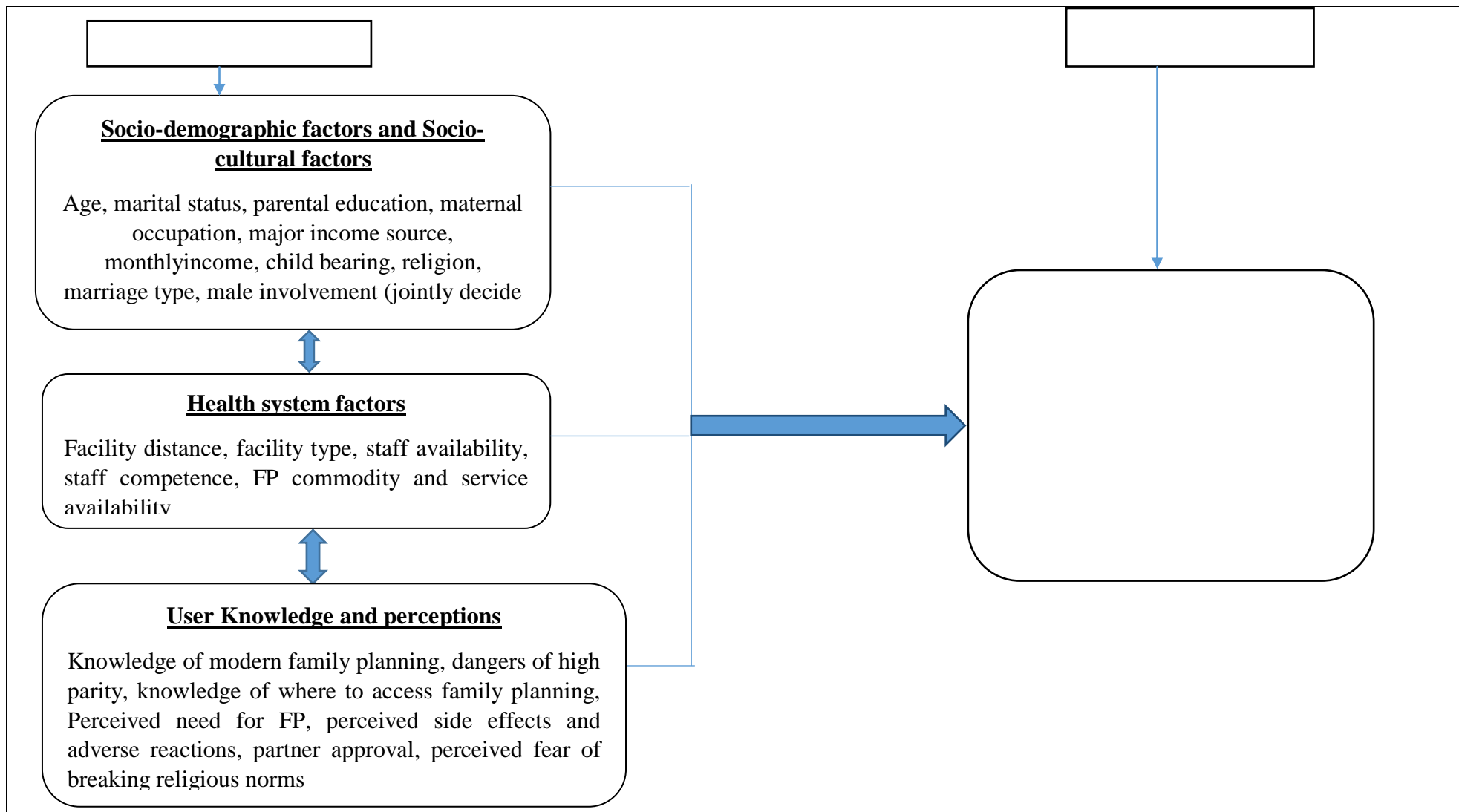
## **2.7 Gap from the Literature**

The above literature of previous research into the use of FP service has highlighted the importance of looking beyond physical access to examine the influence that arises from the social-cultural and health systems environments in which an individual resides, as well as the knowledge and perception factors attributable to an individual. It is also notable that, in Kenya most of the FP studies have been done in areas where there are low levels of economic development like the arid lands of upper eastern Kenya but no strict cultural norms. From the reviewed literature, there are apparent gaps in the provision of FP for the pastoral communities. While it is true that certain factors predicting use of FP have been confirmed, such factors are specific to areas where empirical studies on these predictors have been done. Information on FP use in pastoral communities of Kenya are scanty. As a result, there is little information about demand for FP and the predictors of use of FP in such areas. This study helps bridge the knowledge gaps on the relationships between socio-demographic and socio-cultural, health system factors, and user knowledge and perceptions with FP services uptake in context of low levels of economic development and strict cultural norms.

## **2.8 Conceptual Framework**

The concept of this study is built on two theories that try to explain health seeking behavior. First is the World Health Organization's three-delay model used to explicitly define factors that hinder access to healthcare in the context of Maternal and Child Health (MCH). The model explains three delays tied to inadequate access to healthcare that subsequently results into maternal deaths. Delay number one is in decision making by the woman to seek care due to factors such as lack of awareness. In the context of this study, this compares to the user knowledge and perceptions that influence uptake of modern family plannings. Delay number two is in reaching care due to factors such as cost of transport that may be influenced by a woman's income level or socioeconomic status. Thus, this compares to the socio-cultural characteristics of the woman. Lastly is the delay in receiving adequate healthcare due to factors such as poor facilities or lack of medical supplies, inadequately trained and poorly motivated staff and inadequate referral systems. This compares to the health system factors considered in this study.

The second theory that resonates with this study's concept is the Social Cognitive Theory (SCT), and specifically, the reciprocal determinism construct of SCT which explains the dynamic and reciprocal interaction of person, environment and behavior. The study framework thus modifies personal factors to relate to the socio-cultural factors and user knowledge and perceptions in this study, and environmental factors to relate to the health system factors. The desired behavior is utilization of or uptake of modern family plannings. According to this framework, a woman's likelihood to take up modern family plannings was influenced by an interaction between her socio-demographic and socio-cultural characteristics, the health system factors and her knowledge and perceptions about modern family planning (Figure 2.1).



**Figure 2.1: Conceptual framework on relationship between study variables**

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This section presents a description of the study site, the research design, the target population, sampling procedure, methods of data collection and analysis as well as ethical considerations that guided this study.

#### **3.2 Study Area**

This study was conducted in Garbatulla Sub-County of Isiolo County; Garbatulla is one of the three Sub-Counties of Isiolo County and has the highest rural population. It borders Merti and Isiolo Sub-Counties and is located in the Northern part of Isiolo town, approximately 78 kilometers away. Garbatulla has 3 administrative wards namely Sericho, Kinna and Garbatulla. There are a total of 19 village units in the Sub-County with a total population of 53,933 persons. The number of women of reproductive age is approximated at 11,897 women (Appendix III). Livestock production is the main economic activity in Garbatulla with approximately 80% of the population relying on it. Inhabitants are mainly Boranas, Turkana and Somali. The Boranas form the largest portion of the population and have a nomadic pastoralist background.

#### **3.3 Research Design**

A community based cross-sectional descriptive survey was undertaken at ward-level among women of reproductive age from Garbatulla Sub-County of Isiolo County. Quantitative and qualitative data were collected from sampled women of reproductive age and health care providers respectively. This design was considered appropriate because the study entailed collection of data from a population putting into consideration multiple variables at a specific point in time in order to explain uptake of modern family planning services.

#### **3.4 Study Population**

The target population for this study included women of reproductive age (between 15 to 49 years) in Isiolo County. Women enrolled to partake in the study were sampled according using sampling procedures presented in section 3.5.

### 3.4.1 Inclusion Criteria

- i. The study comprised of women of reproductive age residing in Garbatulla Sub-County, Isiolo County for not less than six (6) months and leading a nomadic pastoral way of life.
- ii. Pastoralist women of reproductive age who were not sick at the time of the study.
- iii. Women of reproductive age consenting to the study and who were available during the whole study period were enrolled.

### 3.4.2 Exclusion Criteria

- i. The study excluded women ailing from mental illness and chronic illnesses (bed-ridden) from the study because of their inability to consent independently. A brief medical history session was administered by the researcher to determine the existence of mental and chronic illness concerns amongst the eligible study participants.
- ii. Eligible women visiting (non-residents) the study area during the study period were also be excluded.

### 3.5 Sample Size

Sample size for this study was derived by computing the minimum sample size required for accuracy in estimating proportions by considering the standard normal deviation set at 95% confidence level (1.96), percentage picking a choice or response (50% = 0.5) and the confidence interval (0.05 =  $\pm 5$ ). (Godden, 2004) formula for sample size determination of a single population was used as follows:

$$n = \frac{z^2(P)(1-P)}{c^2}$$

Where:

z = standard normal deviation set at 95% confidence level = 1.96

p = maximum variability of the population at 50%. i.e. (0.5)

c = confidence interval = 0.05

$$n = \frac{1.96^2(0.5)(1-0.5)}{0.05^2}$$

$$n = \frac{0.9604}{0.0025}$$

n = 384 patients + 10%

= 419 women

For qualitative data, key informant interviews were conducted with 7 of purposively identified health care in-charges representing the 7 GoK sponsored health facilities in Garbatulla and 8 Community Health Volunteers (CHVs) from randomly picked community health units (CHU's) per ward to elicit information on system's factors.

### 3.6 Sampling Procedure

Sample was obtained from all the 3 wards in the Sub-County; Sericho, Kinna, and Garbatula. Eight (8) out of the nineteen (19) village units were identified through simple random with the use of a STAT Trek random number generator. To find the total number of women who were interviewed in each village, proportionate sampling was employed. This was done by dividing the total eligible women in the village by the total eligible women in all the sampled villages using a formula illustrated below (Elfil & Negida, 2017);

$$\frac{n_i}{n} \quad \text{where } n_i = \text{eligible women in a village}$$

$$n = \text{total eligible women in all the sampled villages}$$

In order to generate the sample size for the village, this proportion was multiplied by the desired sample size for the study (419 women) as shown in the formula below (Table 3.1).

$$x N$$

Systematic random sampling was then used to select respective number of participants from each village at household level.

**Table 3.1: Eligible respondents in the sample villages in the three wards**

Ward Name	Village	No. of eligible women (15-49 years)	Village sample size
Sericho	Modogashe South	525	36
	Iresa-Ha-Boru	593	41
	Sericho	797	55
Garbatulla	Garbatulla	1117	77
	Gafarsa	573	40
Kinna	Kinna South	904	63
	Korbasa	705	49
	Kulamawe	831	58
<b>Total</b>		<b>6045</b>	<b>419</b>

For qualitative data, key informants were purposively sampled for the interviews because they are perceived to understand better the factors that influence uptake of family planning.

### **3.7 Data Collection Tools/Instruments**

Two instruments were used for data collection in this study. This was a researcher administered questionnaire for women respondents and an interview guide for the key informants. The instruments are described in sub-sections 3.6.1 and 3.6.2 below.

#### **3.7.1 Questionnaire for women**

A questionnaire (Appendix V) was structured according to the three objectives of this study. The questionnaire comprised of four main sections. Section one contained questions addressing socio-demographic factors. Variables of interest included; age, marital status, maternal and paternal education, maternal and paternal occupation, number of children alive and number of children dead. Section two contained questions addressing socio-cultural factors including religion, marriage type, and male involvement (jointly decide to use FP). Section three addressed health system factors. Variables of interest included; facility distance, facility type, staff attitude, staff competence, commodity availability and services availability. The last section looked at user knowledge and perception factors that exhibit influence on FP use.

#### **3.7.2 Interview Guide for Key Informants**

A Key Informant (KI) interview guide (Appendix VIII) was developed and used for qualitative data collection (in-depth interviews) that was administered on seven (7) healthcare providers and 8 CHVs randomly selected from respective Community Health Units (CHUs). The guide comprised of questions on the health system factors and their perceived influence on uptake of modern FP use.

### **3.8 Validity and Reliability of Instruments for Data collection**

#### **3.8.1 Validity of the Instruments**

Validity refers to the extent to which an instrument measures what it is intended to measure. In order to ensure construct and content validity of the data collection instruments for this study, the tools were piloted to address issues such as vagueness or items that may come out as being insensitive to the respondent. Important questions and suggestions were captured from respondents to enable the researcher improve efficiency of the instruments and adjust strategies and approaches in order to maximize the response rate. Secondly, university supervisors examined the instruments to verify the content.

### **3.8.2 Reliability of the instrument**

Reliability is the degree to which a tool produces stable and consistent results. To test for reliability of data collection instrument in this study, test- retest technique was applied. This test involved 10% of the sample population recruited from Eldera village, which is one of the villages in Garbatulla but not sampled for the main study. The questionnaire was administered twice to the same group of participants after an interval of two weeks, by appointment. A test-retest correlation between the two sets of scores was computed by graphing the data in a scatter plot and computing Pearson's *r*. A correlation of +.60 or greater shall be considered to indicate good reliability for the study instruments (Puth et al., 2014).

### **3.8.3 Pilot Study**

A pilot study was conducted prior to the main study. This included 10% of the study population (Connelly, 2008) selected for the reliability test above. The questionnaire were then be administered to check for vagueness and familiarize with its content. Adjustments were reviewed before the actual data collection.

### **3.9 Data Collection Procedures**

With the administrative permission to carry out the study, an introductory visit and inception meetings were conducted with the target facilities and the respective village elders. Interviews were scheduled with the health care providers for qualitative data collection. With the help of trained research assistants, they were visited and interviewed as scheduled. On the other hand, households were identified and visited for quantitative data collection with the help of village elders and/or the CHVs. Once eligible participants were identified, consent was sought, and the questionnaire administered at household level in a language that the respondents were comfortable with. All filled up questionnaires were reviewed daily to ensure accuracy and completeness.

### **3.10 Data Analysis**

Quantitative data collected using the questionnaires were checked for completeness, coded, entered and analysed using SPSS version 23. Both descriptive and inferential statistics were used. For descriptive statistics, tables, means and charts were used to summarize the results. While for inferential statistics, chi-square test of association was conducted to establish the association between dependent and independent variables at  $\alpha = 0.05$  (95% confidence interval). All independent variables that showed association with the outcome variable at bivariate analysis were introduced into a logistic regression model to examine the degree of



the relationship. Qualitative data generated from the Key Informant Interviews (KIIs) were summarized and analysed manually as a means of establishing emerging themes. The emerging themes were organized into coherent categories, which explain some components of the study findings in relation to the study objectives. Table 3.1 gives details on the analysis process for each objective of the study.

**Table 3.2: Data analysis processes undertaken**

<b>Objective</b>	<b>Independent Variables</b>	<b>Analysis technique</b>
To determine socio-demographic factors associated with uptake of family planning services among pastoralist women in Garbatulla Sub-County	<ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Marital status</li> <li>▪ Maternal education</li> <li>▪ Paternal education</li> <li>▪ Maternal Occupation</li> <li>▪ Paternal education</li> <li>▪ Household income</li> <li>▪ No. of children alive</li> <li>▪ No. of children dead</li> </ul>	First, frequencies and descriptions were used to summarize the quantitative results. Chi square test of association was performed to establish statistical association between these seven independent variables and uptake of modern FP services at $\alpha \leq 0.05$ . Variables that show significant association was introduced into a logistic regression model to determine the strength of association. Odds ratios was used to indicate likelihoods. Qualitative data touching on any of these factors was analyzed thematically and presented as verbatim alongside the quantitative results.
To identify health system factors associated with uptake of modern family planning services among pastoralist women in Garbatulla Sub-County	<ul style="list-style-type: none"> <li>▪ Facility distance</li> <li>▪ Facility type</li> <li>▪ Staff attitude</li> <li>▪ Staff competence</li> <li>▪ Commodity availability</li> <li>▪ FP services availability</li> </ul>	Just as in objective one, frequencies and descriptions were used to summarize the results. Similarly, chi square test was conducted to establish associations between health system factors and FP uptake. At $\alpha \leq 0.05$ . Variables that were have shown statistical significance was included into a logistic regression model and odds ratios was used to indicate likelihoods. Qualitative data was analyzed thematically and presented as verbatim alongside the quantitative results.
To determine user knowledge and perceptions associated with uptake of modern family plannings among pastoralist women of reproductive age in Isiolo County	<ul style="list-style-type: none"> <li>▪ Perceived need for FP</li> <li>▪ Perceived side effects and adverse reactions</li> <li>▪ Partner approval</li> <li>▪ Perceived fear of breaking religious norms</li> <li>▪ Knowledge of modern family plannings</li> <li>▪ Dangers of high parity</li> <li>▪ Knowledge of where to access family plannings</li> </ul>	Descriptive statistics were used to summarize the results. Chi square test was conducted to establish associations between user knowledge and perceptions and FP uptake at $\alpha \leq 0.05$ . Variables that were have shown statistical significance was included into a logistic regression model and odds ratios was used to indicate likelihoods. Qualitative data were analyzed thematically and presented as verbatim alongside the quantitative results.

To determine socio-cultural factors associated with uptake of family planning among pastoralist women in	<ul style="list-style-type: none"> <li>▪ Religion</li> <li>▪ Marriage type</li> <li>▪ Cultural norms and values on FP use</li> <li>▪ Child rearing practices</li> </ul>	Descriptive statistics were used to summarize the results. Chi square test was conducted to establish associations between user knowledge and perceptions and FP uptake at $\alpha \leq 0.05$ . Variables that showed statistical significance was included into a logistic regression model and odds ratios were used to indicate likelihoods.
To establish predictors of uptake of FP among pastoralist women of reproductive age in Isiolo County	All variables that were have shown a significant association ( $p < 0.005$ ) at bivariate analysis	Logistic regression model to determine strength and direction of association between the independent and dependent variables and odds ratios were used to indicate likelihoods.

### 3.11 Ethical Consideration

#### 3.11.1 Ethical Approval

Approval to carry out this study was obtained from School of graduate studies, Maseno University and clearance from Maseno University Ethics and Research Committee (Appendix IX). Also, a research permit was sought and obtained from National Commission for Science, Technology, and Innovation (NACOSTI) (Appendix X). Administrative permission was sought from leaders of the wards and villages involved as well as hospital administrators of the health facilities from where key informants was recruited.

#### 3.11.2 Informed Consent Process

Informed consent was obtained from participants before the administration of the research questionnaire and before the interviews with key informants (Appendix IV). This was done based on appropriate information given in the consent form and adequate time given to consider the information and ask questions. The consent was a written form with details on ethical considerations, procedure of the study, confidentiality, benefits, risks and the right not to participate or withdraw at any time. The respondents were screened for eligibility and those who meet the inclusion criteria was informed, explained to and requested to sign the consent form. For minor minors parents approved their participation after they assented to participate. This was silent on explanation to the study participants until they were fully informed prior to consent, thus constituting the informed consent.

#### 3.11.3 Risks and Discomfort

Participants in this study were likely to experience some risks during data collection process. For instance, discomfort while interacting with the researcher, asking questions that might

be considered personal. The researcher minimized this risk through procedures to protect participants' privacy and confidentiality. In addition, time taken by a participant in this survey may have caused some inconveniences to their schedule of the day, and there was a possibility that a participant may find one or more of the questions asked to be upsetting or emotionally sensitive. In such a case, they may not have had to respond to any question that made them feel uncomfortable. All these anticipated risks and discomforts were explained to the participants during the consent process.

#### **3.11.4 Benefits**

The researcher clarified during the consent process that there were no direct benefit to the participants. They were not to be paid nor were they required to pay for their participation in the study. However, study findings heighten awareness of the predictors of uptake of modern family planning services among pastoralist women in Isiolo County and may expectedly inform policy and intervention programming.

#### **3.11.5 Confidentiality and Data Management**

All the information shared by study participants was kept confidential. Only the researcher and school supervisors had access to the information gathered during the survey and the KIIs. No personal details were reconnected to the data for analysis. Actual names were not required during the interview sessions. Filled hard copy questionnaires were stored under lock. This way participants' information was protected, and all identifiable information was encrypted and stored on password-protected computers. No individual identities were used in any reports or publications that may result from this study.

#### **3.11.6 Voluntary Participation**

The decision to participate in this study was personal. Participants were free to join the study or not. If they decide to join, they were also free to change their mind and stop their participation in the study at any time for any reason. There was no penalty for such, and this was clarified in the consent process.

## **CHAPTER FOUR**

### **RESEARCH FINDINGS**

#### **4.1 Introduction**

The findings of the study are presented in this section as per the study objectives. The study targeted 419 respondents (mothers of reproductive age) and 15 Key Informants (KIs); 7 health care in-charges purposively identified and 8 Community Health Volunteers (CHVs), all of whom were accessible.

#### **4.2 Socio-Demographic Features**

##### **4.2.1 Age Distribution**

Slightly less than half, of the respondents 199 (47.7%) ages ranged between 25-35 years. A few of them, 28 (6.7%) were aged 45-49 years.

##### **4.2.2 Marital Status and Marriage Type**

The majority of the study participants; 411 (98.1%) were observed to have been married or had ever lived with a man at one time in their lives. A huge proportion of them, 357 (85.2%) indicated that they were married. Of this, most; 261 (62.3%) were in monogamous marriages.

##### **4.2.3 Education**

About half, 219; (52.3%) of the participants had attained primary school level of education, while only 118 (28.2%) of the spouses had primary school as the highest level of education they had attained.

##### **4.2.4 Occupation**

Regarding occupation, 341 (81.4%) of the participants reported that they did not engage in any form of occupations. This was also the case for most of the spouses; 258 (61.6%) who reported lacking a form of occupation.

Table 4.1 provides a summary of the findings on socio-demographic features of the participants.

**Table 4.1: Socio-Demographic Features of the Study Participants**

<b>N=419</b>		<b>n</b>	<b>Percentage (%)</b>
<b>Socio-Demographic Feature</b>			
<b>Age</b>			
15-24 Years		53	12.6
25-34		199	47.5*
35-44		139	33.2
45-49		28	6.7
<b>Marital Status</b>			
Married		357	85.2*
Not married		62	14.8
<b>Marriage Type</b>			
Monogamous		261	62.3*
Polygamous		96	22.9
<b>Participants Education Level</b>			
None		121	28.9
Primary		219	52.3*
Secondary		54	12.9
Tertiary		25	6.0
<b>Spouse's Education Level</b>			
None		94	22.4
Primary		118	28.2*
Secondary		106	25.3
Tertiary		39	9.3
*Major finding			

#### **4.2.5 Major Source of Income**

As shown in Table 4.2, livestock rearing was the major source of income for most of the participants; 233 (55.6%). Business venture was the second as reported by 86 (20.5%), followed by employment reported by 61 (14.6%), and lastly casual labour reported by 39 (9.3%).

#### **4.2.6 Average Monthly Income**

Table 4.2 shows that for a high number of the participants; 163 (38.9%), the average monthly income less than five thousand (5000) Kenyan Shillings (Kshs.).

**Table 4.2: Socio-economic Features of the Study Participants**

<b>N=419</b>		
<b>Socio-Economic Features</b>	<b>n</b>	<b>Percentage (%)</b>
<b>Participant Occupation</b>		
None	341	81.4*
Casual labor	41	9.8
Formal employment	37	8.8
<b>Spouse's Occupation</b>		
None	258	61.6*
Casual labor	48	11.5
Formal employment	51	12.1
<b>Major Income Source</b>		
Casual labor	39	9.3
Business	86	20.5
Employment	61	14.6
Livestock	233	55.6*
<b>Average Monthly Income</b>		
>20000	17	4.0
15000-20000	41	9.8
10000-15000	36	8.6
5000-10000	162	38.7
<5000	163	38.9*
*Major finding		

#### 4.2.7 Child Bearing

Most of the participants; 150 (35.8%) reported to have had three or four children. Child spacing for a large number of the participants; 234 (55.8%) was one to two years (Table 4.3).

**Table 4.3: Child Bearing amongst Participants**

<b>N= 419</b>		
<b>Child Bearing</b>	<b>n</b>	<b>Percentage (%)</b>
<b>Children ever born (gave birth to)</b>		
None	43	10.3
One or Two	110	26.3
Three or Four	150	35.8*
More than Four	116	27.7
<b>Child Spacing</b>		
<1 Year	14	3.3
1-2 Years	234	55.8*
>3 Years	91	21.7
*Major finding		

#### 4.2.8 Socio-demographic factors and FP uptake

Chi-square test was performed to establish association between socio-demographic factors and FP use (ever or currently using FP) at  $\alpha \leq 0.05$ . As shown in Table 4.4, being married (85.2%) showed an association with FP use (Chi-square:  $p=0.044$ ). There was no significant association having primary school as the highest level of education (52.3%) and uptake of FP (Chi-square:  $p=0.082$ ). Table 4.3 further shows that there was no association between spouse having no occupation (81.4%) and FP uptake (Chi-square:  $p=0.369$ ). There was an association between highest number of children ever had; three or four (35.8%) by the participants and FP use (Chi-square:  $p=0.001$ ). There was no significant association between most of the participant's age; 25-34 (47.5%) and use of FP (Chi-square:  $p=0.053$ ).

**Table 4.4: Associations between Socio-demographics and FP uptake**

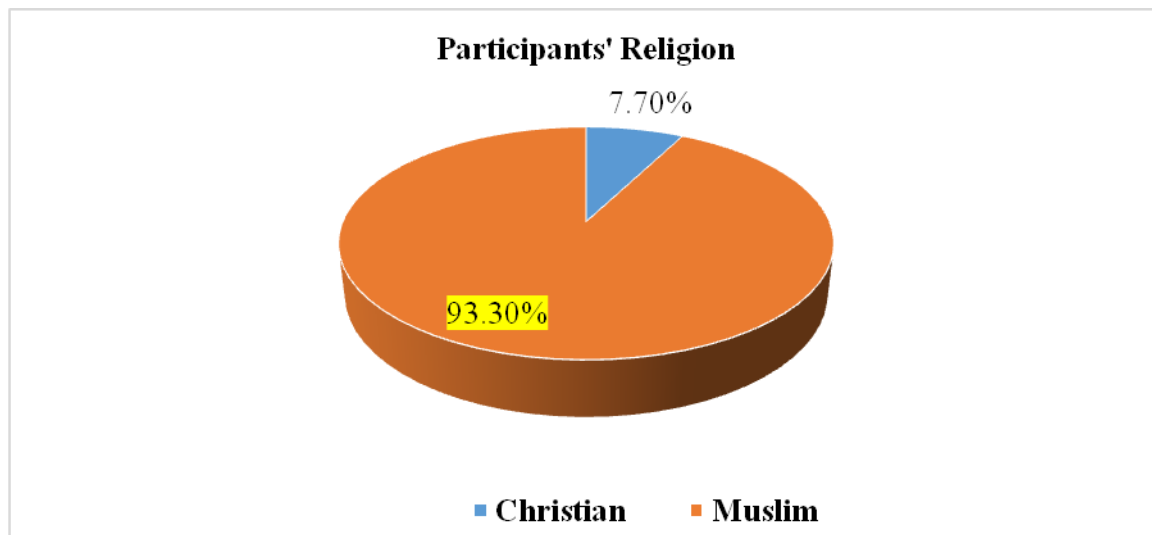
	N=419			Chi-square	p value
	FP Uptake (ever/current use)				
	Total n (%)	Yes n (%)	No n (%)		
<b>Marital Status</b>					
Married	357(85.2)	166 (46.5)	191(53.5)	8.092	0.044*
Not married	62(14.8)	28(45.2)	34(54.8)		
<b>Highest Level of Education</b>					
None	121(28.9)	67(55.4)	54(44.6)	6.701	0.082
Primary	219(52.3)	97(44.3)	122(55.7)		
Secondary	54(12.9)	23(42.6)	31(57.4)		
Tertiary	25(5.9)	8(32)	17(68)		
<b>Nature of Spouse's Occupation</b>					
None	258(61.6)	126(48.8)	132(51.2)	3.151	0.369
Casual	48(11.5)	22(45.8)	26(54.2)		
Formal Employment	51(12.2)	18(35.3)	33(64.7)		
<b>Age</b>					
15-24 Years	53(12.6)	16(30.2)	37(69.8)	7.689	0.053
25-34	199(47.5)	98(49.2)	101(50.8)		
34-44	139(33.2)	70(50.4)	69(49.6)		
45-49	28(6.7)	11(39.3)	17(60.7)		
<b>Number of Children ever had</b>					
None	43(10.3)	7 (16.3)	191(83.7)	19.012	0.001*
One or Two	110(26.3)	60(54.5)	50(45.5)		
Three or Four	150(35.8)	71(47.3)	79(52.7)		
More than Four	116(27.6)	57(49.1)	59(50.9)		

\*Significance at  $\alpha \leq 0.05$ .

### 4.3 Socio-Cultural Features

#### 4.3.1 Religion

The study examined religion as a probable predictor of uptake of Family Planning (FP) services by the respondents. The study observed that almost all; 391 (93.3%) of the participants were Muslims (Figure 4.1), most; 201 (71.8%) reported that their religious affiliation did not support the use of FP. A high proportion; 294 (70.2%), reported that the communities they belonged to did not support the use of FP.

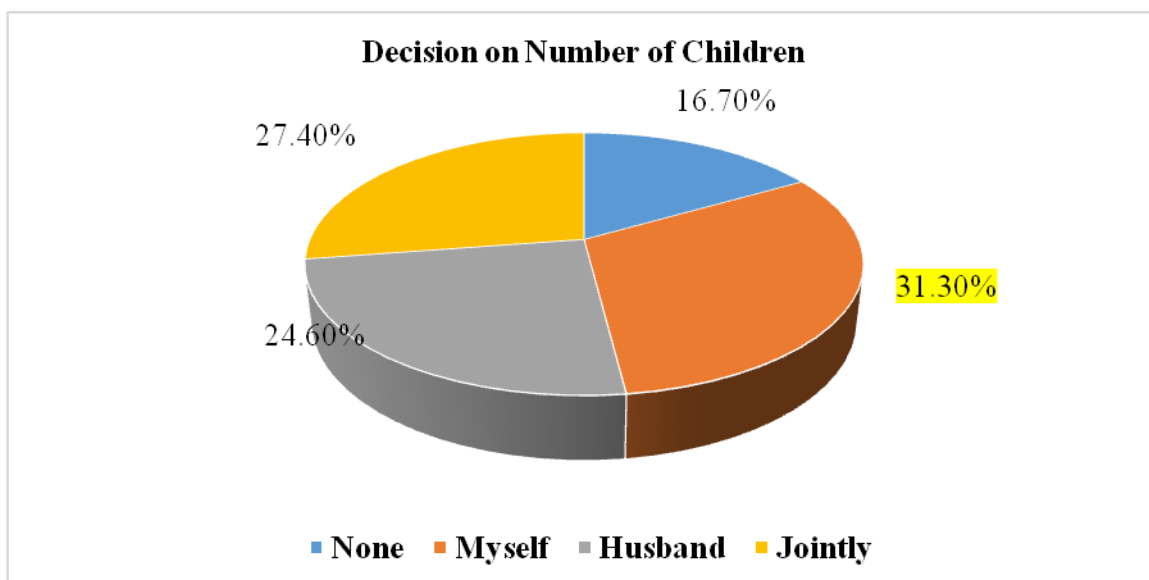


**Figure 4.1: Participant' Religion**

#### 4.3.2 Decisions on Childbearing and use of Family Planning

For a large number of the participants; 131 (31.3%), the decision on number of children to have been vested on the mothers (Figure 4.2).





**Figure 4.2: Decision on Number of Children**

### 4.3.3 Male/Husband Involvement

The study observes that most of the participants; 195 (46.5%) indicated that they wanted the same number of children as their spouses. Besides, a high number; 187 (44.6%) jointly decided with their spouse on FP use, and most of the participants; 179 (42.7%) did not discuss with spouse on FP method. It was further noted that for a huge proportion of the participants; 257 (61.3%) were not accompanied to health facility by spouse when going to get FP. For those accompanied by the spouse, most of them; (14.3%) indicated that the spouse participated in FP counselling.

### 4.3.4 Socio-cultural factors and FP uptake

As shown in Table 4.5, the study established that being in a monogamous marriage (62.3%) had no association to FP uptake (Chi-square:  $p=0.283$ ). Furthermore, participants jointly deciding with spouse to use FP (44.6%) showed no association with FP uptake (Chi-square:  $p=0.574$ ). Similarly, belonging to Muslim religion (93.3%) showed no association with uptake of FP (Chi-square:  $p=0.082$ ). However, information synthesized from the KIs indicated that cultural factors have an influence on FP uptake. KI<sub>11</sub> (2021) reports; “*misconceptions linked to Somali culture and stigma related to Islamic religious beliefs are some of the barriers hindering the use of FP by women.*”

**Table 4.5: Associations between Religious Factors and Uptake of Modern FP**

	N=419			Chi-square	p value
	FP Uptake (ever/current use) Total n (%)	Yes n (%)	No n (%)		
<b>Religious Status</b>					
Muslim	391(93.3)	186 (47.6)	205(52.4)	2.500	0.082
Christian	28(6.7)	9(32.1)	10(67.9)		
<b>Marriage Type</b>					
Monogamous	261(62.3)	128(49.0)	133(51.0)	2.525	0.283
Polygamous	96(22.9)	38(39.6)	58(60.4)		
<b>Jointly decide on FP use</b>					
Yes	187(44.6)	82(43.9)	105(56.1)	1.109	0.574
No	170(40.6)	84(49.4)	86(50.6)		

\*Significance at  $\alpha \leq 0.05$ .

#### 4.4 Health System Factors

##### 4.4.1 Distance to Facility and Waiting Time

Notably, 295 (70.4%) of the participants covered less than one hour's time to reach to a health facility offering FP services. On another note, the time take for most; 264 (63.0%) of them to be attended was less than one hour (Table 4.3). Information synthesized from the Key Informants (KIs) corroborated information on access to health facilities offering FP. *"Clients can easily access health facility as it is in a very strategic area easily accessible at all times"* (KI<sub>2</sub>, 2021).

##### 4.4.3 Type of Facility where FP Service is Sought

FP services were sought mainly from Government hospital facilities by a high number; 307 (73.3%) of the participants (Table 4.3). On type of facility KI<sub>9</sub> (2021) says *"this is a level two hospital; hence, FP service provision is limited, especially surgical FP methods."*

##### 4.4.4 Access to FP services

Slightly more than half; 218 (52.0%) participants indicated that there is no time they have been unable to access FP service due to absence of a health provider. Of the 157 (37.5%) who did not get FP service option of their choice, 56 (13.4%) did not get because there was shortage (stock out). However, the KIs reported that a wide range of FP commodities were always available with exception of certain incidences. *"All commodities available at all times i.e., implants, depo, COC, POC, CD's (female/male), and IUCD's"*(KI<sub>15</sub>, 2021).A

high number; 291 (69.5%) of the participants reported that FP service provision was not restricted to specific days of the week (Table 4.6).

**Table 4.6: Health Systems Factors and FP uptake**

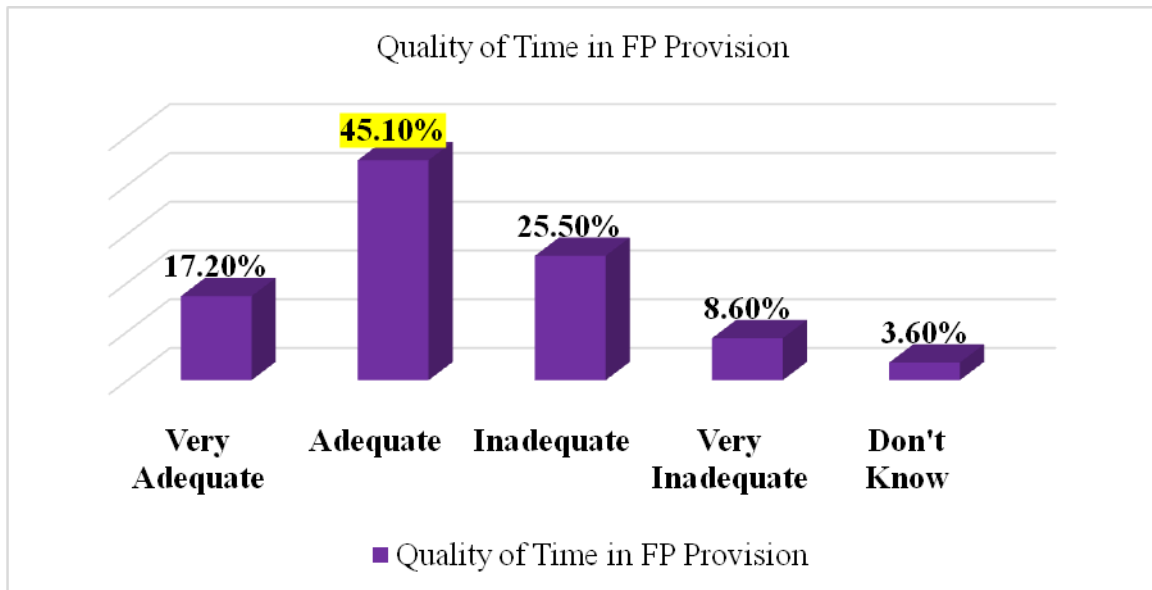
<b>N=419</b>		
<b>Health Systems Factor</b>	<b>n</b>	<b>percentage (%)</b>
<b>Time taken to reach Facility</b>		
<One (1) hour	295	70.4*
>One (1) hour	124	29.6
<b>Waiting time</b>		
<One (1) hour	264	63*
One (1) to Two (2) hours	155	37
<b>Type of Facility</b>		
Private Clinic	56	13.4
GoK Hospital	307	73.3*
Faith-Based Hospital	56	13.4
<b>In-access due to provider absence</b>		
Yes	200	47.7
No	219	52.3*
<b>Time unable to get FP of choice</b>		
Yes	157	37.5
No	262	62.5*
<b>Reason for Unavailability of FP of Choice</b>		
Fatigue/Blood Loss	25	6.0
Long Wait	26	6.2
Natural FP	5	1.2
Stock Out	56	13.4*
Stress	9	2.1
Strike	31	7.4
Use Pills	5	1.2
<b>Restriction on FP service provision of specific days of the week</b>		
Yes	128	30.5
No	291	69.5*

\*Major finding

#### 4.4.5 Rating of Health Care Providers

The study further explored health care provider rating on matters provision of FP services by the participants. As shown in figure 4.7, a large number; 171 (40.8%) of the participants rated health provider behaviour as good. This is in agreement with information from KIs whereby KI<sub>9</sub> says “*Our health care providers always portray a positive attitude in delivery of various health services.*” Similarly, a high percentage; 34.1% (143) rated provider competence as good. Information from the KIs indicated that health care staff providing FP services at different health facility contexts were knowledgeable and competent (KI<sub>10</sub>, KI<sub>7</sub>, & KI<sub>1</sub>). However, understaffing was a major impediment as it resulted in increased workload. “*We are understaffed and the workload is high. This is worsened by frequent*

strikes, which hinder provision of FP service to women (KI<sub>3</sub>, 2021). Rating on availability of FP by a large number; 194 (46.3%) was good. In regards to quality of time rating of provider interacted with during provision of FP, close to average; 189 (45.1%) of the participants indicated that quality of the time was adequate (Figure 4.11).



**Figure 4.3: Quality of time in FP Provision**

#### 4.4.6 Health System Factors and Uptake of Modern FP Services

Chi-square tests further revealed the relationship between health system factors and uptake of modern FP services at  $\alpha \leq 0.05$ . As shown in Table 4.7, taking less than one hour to reach a health facility (70.4%) showed a significant association with FP uptake (Chi-square:  $p=0.024$ ). There was also a significant association between seeking health services in a GoK facility (73.2%) and FP uptake (Chi-square:  $p=0.001$ ). The study further established existence of a significant association between average (31.5%) provider competence and FP uptake (Chi-square:  $p=0.035$ ). However, there was no significant association between good provider behaviour (40.8%) and uptake of modern FP (Chi-square:  $p=0.191$ ).

**Table 4.7: Associations between Health System Factors and FP Uptake**

	N=419			Chi-square	p value
	FP Uptake (ever/current use) Total n (%)	Yes n (%)	No n (%)		
<b>Time taken to reach facility</b>					
< 1 Hour	295(70.4)	14(49.8)	148(50.2)	4.340	0.024*
> 1 Hour	124(29.6)	48(38.7)	76(61.3)		
<b>Type of Facility</b>					
Private Clinic	56(13.4)	15(26.8)	41(73.2)	16.663	0.001*
GoK Hospital	307(73.2)	161(52.4)	146(47.6)		
Faith Based Hospital	56(13.4)	19(33.9)	37(66.1)		
<b>Provider Competence Rating</b>					
Excellent	93(22.2)	45(48.4)	48(51.6)	10.373	0.035*
Good	143(34.1)	61(42.7)	82(57.3)		
Average	132(31.5)	62(47.0)	70(53.0)		
Poor	28(6.7)	20(71.4)	8(28.6)		
Don't Know	23(5.5)	7(30.4)	16(69.6)		
<b>Provider Behavior Rating</b>					
Excellent	68(16.2)	36(52.9)	32(47.1)	6.118	0.191
Good	171(40.8)	71(41.5)	100(58.5)		
Average	142(33.9)	74(52.1)	68(47.9)		
Poor	20(4.8)	7(35.0)	13(65.0)		
Don't Know	18(4.3)	7(38.9)	11(61.1)		

\*Significance at  $\alpha \leq 0.05$ .

## 4.5 Knowledge and Perception associated with uptake of modern FP Services

### 4.5.1 Knowledge on FP Use

Table 4.9 provide findings pertaining knowledge of study participants on matters FP. Almost a three-quarters; 313 (74.7%) of them reported not to be currently using or have ever used FP. A high proportion of the study participants; 292 (69.7%) knew of the three main modern family planning options whereby most; 249 (59.5%) knew of pills, 210 (50.1%) knew of condoms, and 199 (47.5%) knew of Intra Uterine Devices (IUDs). On permanent methods of birth control, more than average; 227 (54.2%) of the participants did not know about such methods. Of those who knew of permanent methods; a high number; 117 (27.9%) knew of tubal ligation method, whereas 86 (20.5%) knew of vasectomy. More than three quarters; 357 (85.2%) of the participants knew of a place or person to approach when in need of FP service, whereby the most commonly known place was a government facility as reported by 177 (42.2%) of the participants. An outmost number; 265 (63.2%) of the participants comprehended the need to wait for at least two years to get pregnant again

whereby 260 (62.1%) knew the benefits of such wait, and 292 (69.7%) understood health problems likely to arise from multiple (more than four) births.

#### 4.5.1.1 User knowledge and FP use

Associations between knowledge and perception on FP and subsequent uptake were further analysed with chi-square test at  $\alpha \leq 0.05$ . There was a significant association between being aware of the three major modern FP methods (69.7%) and FP uptake (Chi-square:  $p=0.001$ ). However, there was no significant association between lack of awareness on permanent family planning methods (45.8%) and FP uptake (Chi-square:  $p=0.358$ ). The study further established no significant association between being aware of problems caused by multiple births (69.7%) and uptake of FP (Chi-square:  $p=0.383$ ). Also, there was no significant association between being aware of the benefits of waiting for two years before a subsequent pregnancy and FP uptake (Chi-square:  $p=0.240$ ). (Table 4.8).

**Table 4.8: Associations between Knowledge on FP and FP uptake**

	N=419			Chi-square	p value
	FP Uptake (ever/current use) Total n (%)	Yes n (%)	No n (%)		
<b>Knows there are three modern FP methods</b>					
Yes	292(69.7)	154(52.7)	138(47.3)	14.886	0.001*
No	127(30.3)	41(32.3)	86(67.7)		
<b>Knows there are permanent FP methods</b>					
Yes	192(45.8)	87(45.3)	105(54.7)	0.214	0.358
No	227(54.2)	108(47.6)	119(52.4)		
<b>Knows benefit of waiting for two years before subsequent pregnancy</b>					
Yes	260(62.1)	125(48.1)	135(51.9)	0.651	0.240
No	159(37.9)	70(44.0)	89(56.0)		
<b>Knows dangers of multiple (more than four) births</b>					
Yes	292(69.7)	134(45.9)	158(54.1)	0.163	0.383
No	127(30.3)	61(48.0)	66(52.0)		

\*Significance at  $\alpha \leq 0.05$ .

#### 4.5.2 Perceptions on FP Use

The study assessed participants' perception on FP use based on responses on an array of questions assessing different perceptions about FP. Averagely; 210 (50.1%) strongly disagreed that pregnant women should use FP to postpone child birth. Above average; 226 (53.9%), of the participants agreed that FP poses health-related consequences. It is also of the essence to note that more participants; 155 (37.0%) agreed with the perception that there is a

need to discuss FP and family size with spouse, whereas more than average; 230 (54.9%), and almost average; 208 (49.6%) disagreed that pregnancy is dictated by God (Table 4.10).

**Table 4.9: Knowledge on FP use**

<b>N=419</b>		
<b>Ever or currently using modern FP</b>	<b>n</b>	<b>Percentage (%)</b>
Yes	313	74.7*
No	106	25.3
<b>Know Three Modern FP Methods</b>		
Yes	292	69.7*
No	127	30.3
<b>Know Pills as an FP Method</b>		
Yes	249	59.3*
No	43	10.4
<b>Knows Condoms as an FP Method</b>		
Yes	210	50.1*
No	82	19.6
<b>Know IUD as FP Method</b>		
Yes	199	47.5*
No	93	22.5
<b>Knows Permanent Methods</b>		
Yes	192	45.8
No	227	54.2
<b>Know Tubal Ligation as a Permanent Method</b>		
Yes	117	27.9*
No	75	17.9
<b>Know Tubal Vasectomy as a Permanent Method</b>		
Yes	86	20.5*
No	106	25.3
<b>Know Place/Person to Obtain FP</b>		
Yes	357	85.2*
No	62	14.8
<b>Knows which Place/Person to Obtain FP from</b>		
CHV	63	15.0
GoK Hospital	117	42.2*
Mission Hospital	61	14.6
Private	56	13.4
<b>Knows Need to wait for Two Years a subsequent Pregnancy</b>		
Yes	265	63.2*
No	154	36.8
<b>Knows benefit of waiting for Two Years</b>		
Yes	260	62.1*
No	159	37.9
<b>Knows problems of multiple pregnancies</b>		
Yes	292	69.7*
No	127	39.3
*Major findings		

**Table 4.10: Perceptions on FP use**

N=419		
<b>Perceptions on FP Use</b>	<b>n</b>	<b>Percentage (%)</b>
<b>Fecund women use FP to postpone birth</b>		
Strongly Agree	240	57.3*
Agree	35	8.4
Disagree	49	11.7
Strongly Disagree	95	22.7
<b>Pregnant women use FP to postpone birth</b>		
Strongly Agree	90	21.5
Agree	25	6.0
Disagree	94	22.4
Strongly Disagree	210	50.1*
<b>FP causes health-related effects</b>		
Strongly Agree	50	11.9
Agree	226	53.9*
Disagree	114	27.2
Strongly Disagree	29	6.9
<b>There is a need to discuss FP and family size with spouse</b>		
Strongly Agree	107	25.5
Agree	155	37.0*
Disagree	108	25.8
Strongly Disagree	49	11.7
<b>FP use is against my religious beliefs</b>		
Strongly Agree	9	2.1
Agree	131	31.3
Disagree	230	54.9*
Strongly Disagree	49	11.7
<b>Pregnancy dictated by God and I have no control</b>		
Strongly Agree	15	3.6
Agree	126	30.1
Disagree	208	49.6*
Strongly Disagree	70	16.7

**4.5.2.1 Perceptions and FP Use**

Associations between perceptions on FP and FP use were established with chi-square test at  $\alpha \leq 0.05$ . As shown in Table 4.11, the study revealed that there is a significant association between the perception strongly agreeing (57.2%) that fecund women use FP to postpone childbirth and FP uptake (Chi-square:  $p=0.003$ ). There was also an association



between perception disagreeing (22.4%) that pregnant women use FP to postpone child birth and FP uptake (Chi-square:  $p=0.002$ ). However, there was no association between the perception disagreeing (49.6%) that pregnancy is dictated by God and FP uptake (Chi-square:  $p=0.332$ ).

**Table 4.11: Associations between Perceptions on FP and FP Uptake**

	N=419			Chi-square	p value
	FP Uptake (ever/current use)				
	Total n (%)	Yes n (%)	No n (%)		
<b>Fecund women use FP to postpone child birth</b>					
Strongly Agree	240(57.2)	96(40.0)	144(60.0)	13.680	0.003*
Disagree	35(8.4)	17(48.6)	18(51.4)		
Strongly Disagree	49(11.7)	33(67.3)	16(32.7)		
Agree	95(22.7)	49(51.6)	46(48.4)		
<b>Pregnant women use FP to postpone child birth</b>					
Strongly Agree	90(21.5)	51(56.7)	39(43.3)	14.653	0.002*
Agree	25(6.0)	10(40.0)	15(60.0)		
Disagree	94(22.4)	54(57.4)	40(42.6)		
Strongly Disagree	210(50.1)	80(38.1)	130(61.9)		
<b>Pregnancy dictated by God and I have no control</b>					
Strongly Agree	15(3.6)	9(60.0)	6(40.0)	3.415	0.332
Agree	126(30.1)	65(51.6)	61(48.4)		
Disagree	208(49.6)	91(43.8)	117(56.2)		
Strongly Disagree	70(16.7)	30(42.9)	40(57.1)		

\*Significance at  $\alpha \leq 0.05$ .

#### 4.6 Predictors of FP Uptake

Binary logistic regression was performed to determine the predictors of FP uptake at 95% Confidence Interval (CI). Logistic regression was done to establish the manner in which marital status is a predictor of FP uptake. Exposure to marriage had lower likelihood of enhancing uptake of FP (OR=0.0, 95% CI 21.310-21.628;  $p=0.044$ ). The odds of number of children ever had predicting uptake of FP were also low (OR=0.8; 95% CI 0.128-0.154;  $p=0.001$ ). The odds of time take to reach health facility predicting FP uptake in the study

were high (OR=1.6, 95% CI 0.446-0.453; p=0.024). The study has established that type of facility where FP service was sought from had a higher likelihood of predicting FP uptake (OR=1.4, 95% CI 0.339-0.764; p=0.001). Provider competence had lower odds of predicting FP uptake (OR=0.5, 95% CI 0.531-1.743; p=0.035). Knowledge on the three major modern FP methods had a lower likelihood of predicting FP uptake (OR=0.4, 95% CI 0.741-0.850; p=0.001). Perception that fecund women use FP to postpone childbirth had a higher likelihood of predicting uptake of FP (OR=1.6, 95% CI 0.120-0.469; p=0.003). However, perception that pregnant women use FP to postpone childbirth had lower likelihood of predicting FP uptake (OR=0.5, 95% CI 0.080-0.754; p=0.002).

**Table 4.12: Binary Logistic Regression Model showing Odds Ratio and 95% Confidence Interval for Predictors of FP uptake**

Variable	P Value	Odds Ratio	95% C.I. for EXP(B)	
			Lower	Upper
Marital Status	0.044	0.000	21.310	21.628
Number of children ever had	0.001	0.857	0.128	0.154
Time taken to reach facility	0.024	1.573	0.446	0.453
Type of facility	0.001	1.404	0.339	0.764
Provider competence	0.035	0.467	0.531	1.743
Awareness on three modern FP methods	0.001	0.427	0.741	0.850
Perception that fecund women use FP to postpone child birth	0.003	1.598	0.120	0.469
Pregnant women use FP to postpone child birth	0.002	0.471	0.080	0.754

#### 4.7 Summary of Qualitative Data on Key Informant Interviews

As previously mentioned herein, qualitative data were collected from 15 Key Informants (KIs) comprising of seven (7) healthcare providers and 8 Community Health Volunteers randomly selected from respective Community Health Units (CHUs). Table 4.13 provides a summary of key findings triangulated from the Key Informant Interviews (KIIs).

**Table 4.13: Summary of Key Findings Synthesised from the KIIs**

<b>Theme</b>	<b>Description of Theme</b>	<b>Relevant Quotes</b>
Distance to Health Facility	KII's generally indicated that most health facilities were accessible; hence, easing access to FP commodities and services in these facilities	<i>"Clients can easily access health facility as it is in a very strategic area easily accessible at all times"</i> (KI <sub>2</sub> , 2021).
Commodity availability	KII's reported that a wide range of FP services available	<i>. "All commodities available at all times i.e., implants, depo, COC, POC, CD's (female/male), and IUCD's"</i> (KI <sub>15</sub> , 2021)
Facility service and FP availability	KII's indicated that the type of facility dictated range of FP services available	KI <sub>9</sub> (2021) says <i>"this is a level two hospital; hence, FP service provision is limited, especially surgical FP methods."</i>
Health worker attitude	A high number of KII's reported that health care workers demonstrated a positive attitude in provision of FP services	KI <sub>9</sub> says <i>"Our health care providers always portray a positive attitude in delivery of various health services."</i>
FP use influencing factors	KII's reported culture and perceived side effects posed by FPs as some of the commonly known factors influencing uptake; however, culture was the predominant factor perceived to influence uptake	KI <sub>11</sub> (2021) reports; <i>"misconceptions linked to Somali culture and stigma related to Islamic religious beliefs are some of the barriers hindering the use of FP by women."</i>

## **CHAPTER FIVE**

### **DISCUSSIONS**

#### **5.1 Introduction**

Safe motherhood remains elusive in the developing world, due to an array of factors including lack and/or inadequate uptake of essential reproductive health interventions such as modern family planning use as identified by the World Health Organization (WHO) (World Health Organization, 2020). The manner in which contraception assures safe motherhood aligns with the fact that it provides a viable platform that enhances a reduction in child and maternal mortality (Ali et al., 2014). Modern Contraceptive Prevalence(mCP) in the current study was 25.3%. This figure is relatively high when compared with mCP in pastoralist community contexts. As an example, mCP from a study done by Gonie et al. (2018) in pastoralist community in Eastern Ethiopia; Afar region was 9.1%. The observed mCP in the current study is relatively low than that of the study context; Isiolo County, which is 26.3%, and less than the Nation's (Kenya's) mCP, which is 58.0%(Ministry of Health, 2015).

Deductively, the mCP reported in the current study poses diverse implications on matters Maternal and Child Health (MCH) in the study context. More importantly, the rate of unplanned births, unintended pregnancies, maternal and infant deaths, and induced abortions are hypothetically likely to be high in Isiolo. This is in line with notions expressed by Demographic Health Survey (DHS) carried out by Guttmacher Institute, which notes that three-quarters of consequences of lack of proper family planning aligned with family planning use could be reduced if mCP is enhanced(Sedgh et al., 2016). Besides, the mCP observed in the current study has a cost-related implication. According to the above-mentioned DHS by Guttmacher Institute, expenditure in family planning use guarantees a \$2.20 reduction in each pregnancy related costs. Another study by Kabagenyi et al. (2016) argues that family planning tenable through family planning use is a cost-effective strategy in minimising child and maternal morbidity and mortality rates. This means that the health department of Isiolo County and the populations in the county are likely to incur health care related costs (providing care for mother and baby) as a result of the relatively low mCP reported in the current study context.

## **5.2 Socio-Cultural Factors and Uptake of Modern Family Planning**

Arguably, socio-cultural factors are core determinants of health seeking behaviours such as the adoption of family planning as a known health intervention aimed at mitigating pregnancy related health complications. While much has been hypothesized regarding socio-cultural factors, it is of the essence to note that they primarily comprise of community attributes that dictate individual decision-making on various inclusive but not limited to likelihood of using contraception (Mutumba et al., 2018). Religion is a known socio-cultural attribute related to value-belief system, which poses immense influence on matters health whereby there are certain religious prohibitions on particular health interventions (Kassa et al., 2014). Almost all; 391 (93.3%) of the study participants were Muslims. As noted by Alemayehu et al. (2016), Islamic religion is a factor linked to non-use of contraception, notably, this was the case in the current study whereby the fact that most participants were Muslims, use of contraception compromised as evidenced by the reported mCP. However, the study established that there were no significant associations between religion and uptake of FP (Chi-square:  $p=0.082$ ). From these observations, it can be deduced that the influence of religion on use or non-use of contraception varies across different factors. This means that apart from religion, there are other factors that could influence uptake of contraception (Kriel et al., 2019).

Alemayehu et al. (2016); Gonie et al. (2018) further suggest that women drawn from Muslim religion are rarely involved in matters decision-making, particularly on family concerns. Findings from the current study contradict this notion as most of the participants; 31.30% retorted that they (women/mothers) were vested with the decision on number of children to bear or have. The findings, however, support notions expressed by Solanke (2017) arguing that a culture that left Sexual and Reproductive Health (SRH) issues to be fully taken care of by women was a barrier to FP use. Women in the current study made certain decisions on SRH such as deciding the number of children to have, perhaps this was a barrier to FP uptake as most of them reported not to be currently using or had ever used FP. Nonetheless, the current study findings on religious and community support for Family Planning (FP) concur with those expressed by Alemayehu et al. (2016) that Islam does not support FP use. The study established that Muslim religion and communities do not support FP use as reported by 71.8% and 70.2% respondents respectively.

The study further explored male involvement as a concept aligned with socio-cultural beliefs, which could predict FP or contraception uptake. An empirical study done in Turkana by Cherotich (2012) observes that lack of spousal support is a barrier to FP use. Spousal support on matters contraception use in the current study was minimal. Precisely, below average; 187 (44.6%) of the participants jointly decided with spouse on matters FP use, besides, a paltry; 162 (38.7%) were accompanied by the spouse when going to health facility to seek for FP service. Male involvement in the current study could have posed indirect influences on FP uptake. However, male involvement as indicated by “Jointly decide on FP use” did not exhibit a significant association (Chi-square:  $p=0.574$ ). Hypothetically, there are an array of factors that could explain the minimal male involvement in matters FP reported in the current study. More importantly, FP is often perceived as female activity; hence, men are culturally accustomed to partake in FP programs (Adelekan et al., 2014b; Kriel et al., 2019). In addition, men often have limited awareness on matter contraception, which limits their involvement (Kassa et al., 2014). Decisions on child bearing in the study was vested on the women. Male involvement in matters Family Planning (FP) use was minimal whereby FP to use was decided jointly between spouses, however, the FP method to choose was not discussed with spouse, and husbands rarely accompanied women to health facilities. Only a few of those reporting to accompany women to health facility to seek FP partook in FP counselling.

### **5.3 Health Systems Factors and Uptake of Modern Contraception**

Health System Factors such as time take to reach and waiting time at health facility offering FP services, access to preferred FP service, type of facility, and health care provider related factors (attitude and behaviour) pose an influence on FP uptake by the populations (Aradom et al., 2020; Öztürk İnal et al., 2017). Populations residing in close proximity to health facilities providing the needed health services are more likely to uptake in the health services (Wulifan et al., 2016). Time taken to reach health facility for most of the participants; 295 (70.4%) was less than one hour, furthermore, waiting time for a large number of the participants; 264 (63.0%) was less than one hour. These statistics point to the fact that there were limited health systems barriers for the study population, however, this did not guarantee enhanced uptake of FP as evidenced by low mCP reported herein. A study by Duba et al. (2001) done in Marsabit reported that hospitals were more concentrated in urban areas; hence, limiting access to required health service by

populations drawn from remote sub-counties. This was not the case in the present study as health facilities offering FP were easily accessible for populations in the study setting.

Type of facility offering FP services is a health systems factor that was explored by the study. A study Duba et al. (2001) notes existing discrepancies in functionality of hospitals in pastoralist communities. In the current study, government hospital facilities were the commonly used facilities to seek FP services. (Duba et al., 2001) study further notes the limited availability of personnel and commodities in hospitals serving pastoral communities. This was the case in the current study whereby FP service provision was compounded by commodity stock out/shortage reported by 56 (13.4%) as a reason they did not get FP service they sought at a certain time. Deductively, inadequate staffing results in increased waiting time, which is a known barrier to health service access (Tessema et al., 2016; van Zyl et al., 2019). Despite the minimal rates of understaffing and commodity stock out instances reported in the current study; FP uptake was still low. Deductively, health system factors relating to understaffing and stock outs coupled with other factors cumulatively resulted low contraception uptake by the study respondents.

Health system factors relating to health care provider rating were explored to determine their influence on FP uptake. (Tessema et al., 2016) argues that quality of care in FP service provision by health facilities can be measured by satisfaction levels of satisfaction of populations seeking services in the said facilities. Rating of health care providers in various matters by patient's/client's portray their level of satisfaction. Most; 170 (40.8%) of the study participants rated health provider behaviour as good, 143 (34.1%) rated health provider competence as good, and close to average; 189 (45.1) indicated that quality of time during FP provision was adequate. A study by Moses et al. (2021) notes the existence of numerous systemic challenges in health systems, which results in adopted of informal health systems such as traditional health attendants in service delivery by pastoral communities. This was not the case in the current study as most of the participants appreciated the role of formal health systems in health care delivery. Overall, health system factors in the current study were adequate; hence, there were limited instances where health system factors were a barrier to accessing FP services.

#### **5.4 Knowledge, Perceptions, and Uptake of Modern Contraception**

The participants had good knowledge levels on matters modern family planning. Notably, 69.7% of the participants had knowledge on modern Family Planning (FP) methods

whereby 249 (59.5%) knew about pills, 210 (50.1%) knew of condoms, and 199 (47.5%) knew about Intra Uterine Devices (IUDs). These findings agree with those from a study done in Tanzania by Kara et al. (2019), which noted high knowledge levels on matters contraception by women of reproductive age. While it is true that knowledge levels on contraception is expected to enhance uptake, this is not usually the case. This was the case in Kara et al. (2019) study whereby high knowledge levels did not guarantee increased uptake of contraception. The scenario was replicated in the current study, whereby knowledge on the three main modern methods did not guarantee enhanced uptake of FP. Nonetheless, the study findings demonstrate an existence of significant association between FP uptake and knowledge on FP methods (Chi-square:  $p=0.000$ ), however, the likelihood was low (OR=0.4). Therefore, knowledge levels reported by the study had low likelihood of guaranteeing uptake of contraception, which was evident in low FP uptake reported herein.

Worth noting is the fact that there are different knowledge aspects on matters contraception (de Vargas Nunes Coll et al., 2019). Influence of possession of basic knowledge on contraception such as major methods versus possession of sufficient and detailed knowledge on important aspects of contraception such as relative effectiveness of different contraception methods may pose varying influence on uptake (van Zyl et al., 2019). The current study only focused on possession of basic knowledge on contraception; hence, the reported findings may not be conclusive. This notwithstanding possession of any mere knowledge on FP is likely to influence decision to partake in FP (Pazol et al., 2015). Overall, the participants had adequate knowledge on varying aspects of FP such as where to access FP service, adverse implications of low child spacing, and benefits of adequate child spacing. However, these factors did not contribute to an enhanced mCP. On the other hand, a study done in Uganda by Nsubuga et al. (2016) argues that perceived notions on benefits and acceptability of FP are likely to predict uptake. The study confirmed these notions as evidenced by the fact that perceived notion that fecund women utilize FP to postpones child birth had a significant association at  $\alpha \leq 0.05$  (Chi-square:  $p=0.003$ ). Perceptions are often reliant on knowledge; hence, the perceptions held by the participants in the current study could have been as a result of knowledge levels, which were relatively high. Overall, knowledge and perceptions on FP are critical factors that shape subsequent uptake of contraception services (van Zyl et al., 2019).



## CHAPTER SIX

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### 6.1 Summary of the Findings

Most of the participants were young; aged 25 to 35 years. A high number of them were married, with most of them being in monogamous type of marriages. Slightly more than half, had primary level education, with most having no form of occupation. Livestock rearing was the main source of livelihood. Almost all of the participants were Muslims. The study further observed that most of the participants were multiparous. Modern Contraceptive Prevalence (mCP) was 25.3%.

Decisions on child bearing in the study was vested on the women. Male involvement in matters Family Planning (FP) use was minimal whereby FP to use was decided jointly between spouses, however, the FP method to choose was not discussed with spouse, and husbands infrequently accompanied women to health facilities. Only a few of those reporting to accompany women to health facility to seek FP partook in FP counselling.

Time taken to reach health facility offering FP was less than an hour and the time taken to wait to be attended was less than an hour. FP services were often sought from government facilities. Access to FP services was sufficient, however, shortage (stock out) of FP commodities was the commonly cited reason in instances where access was insufficient. Rating on health provider behaviour, competence, and availability of FP services was good. However, understaffing was a notable barrier to efficient access to FP services.

The participants were knowledgeable on various matter relating to contraception. Most of them had knowledge on modern (reversible and non-reversible) contraception methods. In addition, a high number understood the essence and health benefits of child spacing as the primary goal of FP use. Perception on matter FP use were adequate for most of the variables assessed.

#### 6.2 Conclusions

The study observed that mCP was low than the county average and the national average. The study found no significant associations between socio-cultural factors; religion, marriage type, and male involvement (jointly decide on FP use). The dominant religion and community in the study context (Muslim) did not support FP use. The study observed that male involvement in matters contraception was low. The precise relationship between

socio-cultural factors and FP uptake is seldom understood. Nonetheless, socio-cultural factors collectively with other factors create environments whereby individual decisions on sexual activity and contraception flourish. Therefore, socio-cultural factors should often be considered in any inquest on matters Sexual Reproductive Health (SRH) including family planning use.

The study concludes that health systems factors are core predictors of FP uptake as noted by studies done in other contexts. This was evident by the significant associations between health system factors; time take to reach health facility, type of health facility, and health provider competence. Time taken to reach health facility and type of health facility had higher odds/likelihood of predicting FP uptake. From these findings, there is a need to ensure health systems (health facilities and health providers) ensure that FP services are high quality, accessible, and suitable/acceptable to varying individual needs and preferences. This provided a comprehensive platform where populations can adopt the safest and appropriate methods that suit their individual needs.

The study observed that knowledge on contraception methods posed significant associations with FP uptake, however, the likelihood of such knowledge influencing FP uptake was low. Perceptions on use of FP by fecund women to post pose child birth showed significant association. Conclusively, strategies that would augment knowledge and perceptions on matters contraception are likely to enhance objectives aligned to enhancing contraception use.

### **6.3 Recommendations**

Based on the study finding, the study has following recommendations;

#### **6.3.1 Recommendations for Policy**

The study findings demonstrate that socio-cultural factors, especially male involvement in contraception concerns is critical, yet it is often ignored. It is on this basis that the study recommends family planning policies be adopted by county government of Isiolo and the national government that would improve male involvement in FP issues. Such policies will be critical in identifying barriers to male involvement and subsequent mitigation strategies; hence, enhancing FP uptake.

### **6.3.2 Recommendations for Practice**

The study has established that religion and community support for FP is lacking in the study context; Isiolo. It is on this basis that the study recommends that the Department of Public Health, Isiolo County should come up with;

- ✓ Health promotion programs intended to enhance knowledge and improve positive perception on modern contraception. This may be tenable through the implementation of community sensitization programs geared towards improving community and religious support for FP use.
- ✓ In conjunction with national and county government, donors, relevant stakeholders, and non-governmental organizations strengthen efforts towards ensuring access, availability, and sustained advocacy for family planning use as a means of mitigating adverse health implications of unintended pregnancies.

### **6.3.3 Recommendations for Further Research**

The current study provides a glimpse of particular variables that predict contraception use. The study recommends the need for further research on the most crucial factors that would predict sustained FP uptake, especially in pastoralist communities who often present with high unmet needs for FP.



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## APPENDICES

### Appendix I: Study Budget

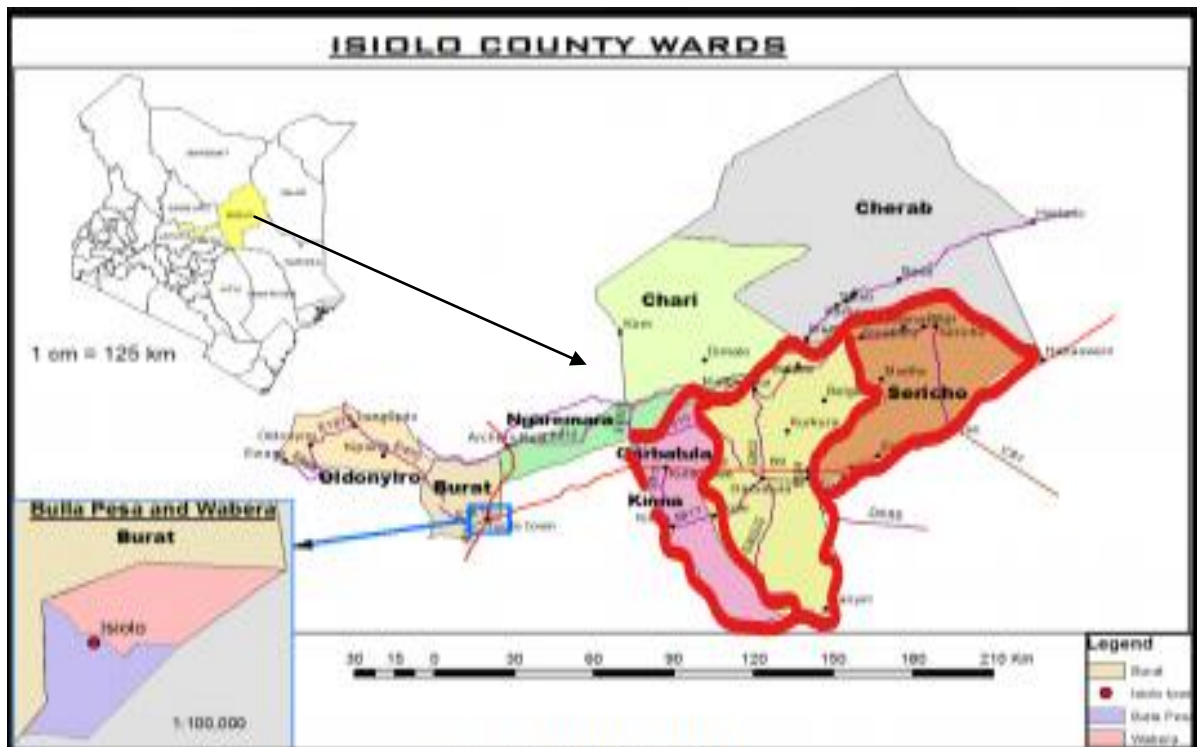
Activity/Item	Quantity	Unit	Cost	Total	Cost
		(Kshs.)		(Kshs.)	
Printing papers	8 reams	800		6,400	
Typing, printing and photocopy	-	15,000		15,000	
Internet browsing	-	6,000		6,000	
Pencils and Erasers	10	50		500	
Calculator	1	1,200		1,200	
Cost of training assistants	7	500		3500	
Lunch and transport	1	500 (5 days)		2500	
Hiring research assistants	7	1,000 (5 days)		35,000	
Typesetting, printing, photocopy and binding	4	2,000		8,000	
MUERC Fees	-	-		3,000	
Contingency 10% of the total cost	-	-		8,810	
<b>Total</b>				<b>115,500</b>	

## Appendix II: Isiolo County Administrative Units

ISIOLO COUNTY ADMINISTRATIVE UNITS							
	Sub County	Ward	Village Unit	Population	WRA (15-49 years)		
1	Isiolo	Bula Pesa	Bula Pesa	18,722	4130		
			Waso	4,000	882		
		Wabera	Kiwanjani	2,996	661		
			Tulu Roba	14,435	3184		
		Burat	Burat	8,590	1895		
			West	4,262	940		
			Odha	5,922	1306		
			Kambi Garba	2,533	559		
		Ngaremara	Ngaremara	3,593	793		
			Gotu	1,927	425		
			Nakupurat	1,697	374		
			Atan	1,424	314		
		Oldonyiro	Oldonyiro	6,972	1538		
			Longopito	2,856	630		
			Lenguruma	2,153	475		
			Kipsing	3,407	752		
			<b>Sub Total</b>	<b>85,489</b>	<b>18858</b>		
		2	Merti	Cherab	Merti North	4,823	1064
					Mata Arba	1,256	277
Merti South	2,520				556		
Korbesa	1,810				399		
Markagala	2,176				480		
Yamicha A	2,571				567		
Yamicha B	1,414				312		
Chari	Bulesa			1,739	384		
	Bisan Biligo			1,349	298		
	Koom			1,528	337		
	Goda			1,165	257		
	<b>Sub Total</b>			<b>22,351</b>	<b>4931</b>		
3	Garbatulla			Sericho	Modogashe north	1,223	270
		Modogashe south	2,382		525		
		Eldera	2,372		523		
		iresa-Ha-Boru	2,690		593		
		Badana	1,131		249		
		Gubatu	1,280		282		
		Sericho	3,613		797		
		Garbatulla	Garbatulla North	3,733	823		
			Garbatulla South	5,066	1117		
			Malkadaka	3,215	709		

		Kombola	2,440	538
		Gafarsa	3,957	573
	Kinna	Kinna North	3,085	681
		Kinna South	4,096	904
		Duse Bibi	2,318	511
		Rapsu	2,278	503
		Kulamawe	3,196	705
		Barambate	2,089	461
		Korbasa	3,769	831
		<b>Sub total</b>	<b>53,933</b>	<b>11897</b>
		<b>Total</b>	<b>161,773</b>	<b>35686</b>

### Appendix III: Study Area Map



Source: GIS Maps, 2017

**Appendix IV (a): Informed Consent Form for study participants-English version**

Hello, my name is Mohamed Abdullahi, I am from Maseno University and I am conducting a study in Isiolo County to establish factors that predict uptake of modern family planning services among pastoralist women. The study is being done in Kinna, Sericho and Garbatulla wards of Garbatulla Sub-County. It is for academic purposes but the findings will also help us to put in place some measures to improve uptake of modern FP services among pastoralist women. You are one of the 419 women of reproductive age (15-49 years) chosen randomly to participate in the study. If you accept to respond to our questions, everything that you tell us was kept confidential. The information that you provide us was combined with information from the other 419 women and will not be identified as coming from you. You can decide to take part in this study or not. Even when you decide to take part, you can withdraw your consent at any time. If you decide to participate, then we will ask you a few questions.

Do you agree to participate in the study?    Yes                         No  

**(b): Informed Consent Form for study participants–Swahili Version**

Fomu ya Kibali kwa akina mama wanaoishi kwa jamii ya wafugaji katika Kata ya Isiolo Hujambo, jina langu ni Mohamed Abdullahi. Mimi ni mwanfunzi katika chuo kikuu cha Maseno. Ninajishirikisha katika utafiti unaowania kuelewa kwa kina, matumizi ya njia za kisasa za upangaji uzazi katika jamii ya wafugaji, wanaoishi Garbatulla, Isiolo. Tunatarajia kuwafikia akina mama 419 wenye miaka 15-49 wanaoishi Garbatulla ambao maoni yao itafanikisha utafiti huu. Hivi sasa ninakualika katika mahojiano husika ukiwa mmoja wa wale 419. Majadiliano yetu yatabaki kuwa siri. Uko huru kushiriki au kutoshiriki kwenye utafiti huu. Ikiwa utaamua kushiriki, una uhuru wa kujiondoa wakati wowote kwa sababu zozote. Ukikubali kushiriki, nitakuuliza maswali mbalimbali.

Umechagua kuhusika kwenye utafiti huu? Naam                         La  

**(c): Informed Consent Form for study participants–Borana Version**

Akam, maqan kiyin Mohamed Abdullahi Adan, Maseno university gadufe, waan masomo Isiolo county aka naanden ten tunitu dawa ilman gaargar deeresan. Masomo tunlen fulan ititechani; Kinna, Sericho ifi Garbatulla wards taa Garbatulla Sub-County. Wan tiin kunle waan masomo tiyya ammo waanti anin argu jiradu, nuh nuqararqart aka heger ak dassa

dawan sun tumiku. Atin dhuba naaden 419 kaa ganii wara (15-49) keejirta. Hoja atin nura kubalte odhu atin nutii kenituh nunlen fula jabtu keena kaa namin hin argin. Odhu tunle siri taa naaden 419 irafedan, hoja atin kubalt. Waqti atin fetule kesa bahu dhanten. Hoja atin kubalte isi qabari sun nukenuu.

Ama kubalte isi atin kees jiratu?

Eyye

Yoyoh

**Appendix V: Household Questionnaire**

**PREDICTORS OF UPTAKE OF MODERN FAMILY PLANNING SERVICES AMONG PASTORALIST WOMEN IN GARBATULLA SUB-COUNTY OF ISIOLO COUNTY, KENYA**

**GEOGRAPHIC AND RESPONDENT IDENTIFICATION**

<p><b>WARD NAME:</b> .....</p> <p><b>VILLAGE NAME:</b> .....</p> <p><b>HOUSEHOLD NO:</b> .....</p> <p><b>QUESTIONNAIRE NO:</b> .....</p> <p><b>DATE OF VISIT:</b> .....</p> <p><b>NAME OF INTERVIEWEE:</b> .....</p>
--

**INSTRUCTIONS:**

The respondents to this questionnaire are women aged between 15-49 years, residents of Garbatulla Sub-County of Isiolo County. The questionnaire is divided into four sections each addressing the following issues; Demographic, Socio-cultural, health system, user knowledge and perceptions on FP.

*Please circle the appropriate response or fill in the necessary information*

**FP USE:**

Have you ever used or are you currently using any modern FP method? Yes [1] No [2]

<b>SECTION: SOCIO-DEMOGRAPHIC INFORMATION</b>			
	Questions	Coding category	Skip pattern
	How old are you?	15-24 years [ 1 ] 25 – 49 years [ 2 ]	
	Have you ever been married or lived with a man?	Yes [1] No [2]	If No, skip to 1.5
1.3	Are you now married, widowed, divorced or not living together?	Married [1] Widowed [2] Divorced [3] Not living together [4]	
1.4	In what type of marriage are you in?	Monogamous [1] Polygamous [2]	



1.5	What is your highest attained level of education?	None [ 1 ] Primary [ 2 ] Secondary [ 3 ] Tertiary [ 4 ]	
1.6	What is your spouse's highest attained level of education?	None [ 1 ] Primary [ 2 ] Secondary [ 3 ] Tertiary [ 4 ]	
1.7	What is the nature of your occupation?	None [1] Casual Labour [2] Formal employment [3]	
1.8	What is the nature of your spouse's occupation	None [1] Casual Labour [2] Formal employment [3]	
1.9	What is your family's major source of income?	Livestock [1] Employment [2] Business [3] Casual labour [4] Others (specify) [5]	
1.10	On average, what is your monthly income from all the sources that you have?	<5000 [1] 5000 -10,000 [2] 10,000 – 15, 000 [3] 15,000 – 20,000 [4] >20,000 [5]	
1.11	How many children have you ever given birth to?	None [ 1 ] One/two [ 2 ] Three/four [ 3 ] More than four[ 4 ]	
1.12	If more than one child, what is the age difference between your children?	<1 year [1] 1-2 years [2] 3 years or more [3]	
1.13	How many of your children are alive?	Record number of children alive.....	
1.14	How many of your children are dead?	Record number of children dead .....	

## SECTION 2: SOCIO-CULTURAL INFORMATION

Questions	Coding categories	Skip to
2.1 What is your religion?	Christian [1] Muslim [2] Other, specify [3]	

2.2 Does your religion support the use of FP?	Yes [1] No [2]	
2.3 Does your community support the use of FP	Yes [1] No [2]	
2.4 Who between you and your spouse decides how many children you should have in your family?	None [1] Myself [2] Husband [3] Jointly [4]	
2.5 Do you and your husband want the same number of children?	Yes [1] No [2]	
2.6 Do you decide jointly with your spouse on FP use?	Yes [1] No [2]	
2.7 Do you discuss whether to use a family planning method with your husband?	Yes [1] No [2]	
2.8 Does your husband accompany you to the health facility for FP services	Yes [1] No [2]	
2.6 If yes, has your husband ever participated in any family planning counselling with you at a health facility?	Yes [1] No [2]	

### SECTION 3: HEALTH SYSTEM FACTORS

	Questions	Coding category	Skip pattern
3.1	How long does it take you to get to the nearest health facility where you can access family planning services?	Less than one hour [1] One hour or more[2]	
3.2	How long does it take before you get attended to at the facility?	Less than one hour [1]	

		1-2 hrs. [2] More than 2 hrs. [3]	
3.3	What type of facility do you seek FP services from	Private clinic [1] GoK hospital [2] Faith based hospital [3] Other, specify [4]	
3.4	Are there times when you could not get FP services because there was no health care provider in the facility?	Yes [1] No [2]	
3.5	In your opinion, how would rate the behaviour of health care workers at the facility (friendly, caring, listening, arrogant etc.)?	Excellent [1] Good [2] Average [3] Poor [4] Don't know [5]	
3.6	In your opinion, how would you rate the professional competence of health care providers handling your FP needs?	Excellent [1] Good [2] Average [3] Poor [4] Don't know [5]	
3.7	In your opinion, how would rate the quality of time spent by the health care provider addressing your FP needs?	Very adequate [1] Adequate [2] Inadequate [3] Very inadequate [4] Don't Know [5]	
3.8	How would you rate the overall availability of family planning services at your nearest health facility?	Excellent [1] Good [2] Average [3] Poor [4] Don't Know [5]	
3.9	Are there times when you could not get your choice of method of FP in the	Yes [1] No [2]	

	facility?		
3.10	If yes what was the reason?	Explain..... .....	
3.11	Does your facility restrict FP service provision to specific days and/or time?	Yes [1] No [2]	

**SECTION 4 (a): USER KNOWLEDGE ON FP USE**

	Questions	Coding category	Skip to
4.1	I know at least three modern methods of family planning	Yes [1] No [2] If Yes, probe further.....	
4.2	I know at least one long-acting reversible family planning (LARC) or permanent method (PM) of FP	Yes [1] No [2] If Yes, probe further.....	
4.3	I know at least one place or person where I can obtain a modern family planning method	Yes [1] No [2] If Yes, probe further.....	
4.4	I know that a woman should wait at least 24 months after she gives birth before attempting to become pregnant again	Yes [1] No [2]	
4.5	I know one or more benefits of waiting at least 24 months after giving birth before attempting to become pregnant again	Yes [1] No [2]	
4.6	I know at least one health problem that may occur when a woman who has four or more children becomes pregnant	Yes [1] No [2]	

**SECTION 4 (b): USER PERCEPTION OF FP**

	Question	Coding category	Skip to
4.7	Women who are fecund and want to either postpone or avoid their next child need to use FP	Strongly agree [1] Agree [2] Disagree [3]	

		Strongly disagree [4]	
4.8	Women who are pregnant and want to either postpone or avoid their next child need to use FP	Strongly agree [1] Agree [2] Disagree [3] Strongly disagree [4]	
4.9	The use of FP causes health related side effects	Strongly agree [1] Agree [2] Disagree [3] Strongly disagree [4]	
4.10	There is need to discuss family planning and ideal family size with my husband/spouse	Strongly agree [1] Agree [2] Disagree [3] Strongly disagree [4]	
4.11	It is against my religious requirement to use FP	Strongly agree [1] Agree [2] Disagree [3] Strongly disagree [4]	
4.12	Pregnancy is predetermined by God and I have no control over pregnancy	Strongly agree [1] Agree [2] Disagree [3] Strongly disagree [4]	

**Appendix VI: Informed Consent Form for Key Informants**

*(To be read and explained in the language that is understood by the key informant)*

Hello, my name is Mohamed Abdullahi, I am from Maseno University and I am conducting a study in Isiolo County to establish factors that predict uptake of modern family planning services among pastoralist women. The study is being done in Kinna, Sericho and Garbatulla wards of Garbatulla Sub-County. It is for academic purposes but the findings will also help us to put in place some measures to improve uptake of modern FP services among pastoralist women. You are one of the 15 health care providers chosen randomly to participate in the study. If you accept to take part in the study, everything that you tell us was kept confidential. The information that you provide us was combined with information from the other health workers and will not be identified as coming from you. You can decide to take part in this study or not. Even when you decide to take part, you can withdraw your consent at any time. If you decide to participate, then we will invite your opinion on particular questions.

Do you agree to participate in the study?    Yes                          No

**Appendix VII: Interview Guide for Key Informants**

1. In your opinion, how convenient is it for women living in Garbatulla to get family planning services? Please focus your response on:

1.1 Distance travelled to get to the health facilities:.....  
.....

1.2 Commodity availability featuring stock and range of FP methods available:  
.....  
.....  
.....

1.3 Specific days and time when FP services are offered  
.....  
.....  
.....

2. What specific factors do you think encourage women to seek FP services from health facilities? What challenges are there?

Focus your response on

2.1 Staff availability:.....  
.....

2.2. Staff competence: .....  
.....

2.3 Staff attitude:.....  
.....

2.4 Facility type:.....  
.....

3. Why in your opinion don't women use FP?.....  
.....

4. Do you have any recommendations for improving family planning uptake in this area?  
.....  
.....

**Thank you for your participation.**

## Appendix VIII: Ethical Clearance



### MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

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

Private Bag – 40106, Maseno, Kenya  
Email: [muerc-secretariate@maseno.ac.ke](mailto:muerc-secretariate@maseno.ac.ke)

REF: MSU/DRPI/MUERC/00923/20

Date: 7<sup>th</sup> January, 2021

TO: Mohamed Abdullahi Adan  
EL/ESM/D1342/2018  
Department of Public Health  
School Public Health and Community Development  
P. O. Box, Private Bag, Maseno, Kenya

Dear Sir,

**RE: Predictors of Uptake of Modern Family Planning Practices among Pastoralist Women in Garbatulla Sub-County, Isiolo County, Kenya**

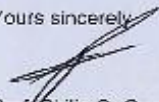
This is to inform you that **Maseno University Ethics Review Committee (MUERC)** has reviewed and approved your above research proposal. Your application approval number is MUERC/00923/20. The approval period is 7<sup>th</sup> January, 2021 – 6<sup>th</sup> January, 2022.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by Maseno University Ethics Review Committee (MUERC).
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Maseno University Ethics Review Committee (MUERC) within 24 hours of notification.
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Maseno University Ethics Review Committee (MUERC) within 24 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 30 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to Maseno University Ethics Review Committee (MUERC).

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,

  
Prof. Philip O. Owuor, PhD, FAAS, FKNAS  
Chairman, MUERC



MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED





# Appendix IX: NACOSTI Permit

  
REPUBLIC OF KENYA

  
**NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **529189** Date of Issue: **28/January/2021**

**RESEARCH LICENSE**



**This is to Certify that Dr. Mohamed Abdullahi Adan of Maseno University, has been licensed to conduct research in Isiolo on the topic: PREDICTORS OF UPTAKE OF MODERN FAMILY PLANNING PRACTICES AMONG PASTORALIST WOMEN IN GARBATULA SUB-COUNTY, ISIOLO COUNTY, KENYA. for the period ending : 28/January/2022.**

License No: **NACOSTI/P/21/8692**

**529189**  
Applicant Identification Number

  
Director General  
**NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY &  
INNOVATION**

Verification QR Code



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