DETERMINANTS OF UPTAKE OF LONG-ACTING REVERSIBLE CONTRACEPTIVES (LARC) AMONG WOMEN OF REPRODUCTIVE AGE IN NANDI COUNTY, KENYA

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DECLARATION

This is my own original work, which has never been submitted to any other institution for degree award.

30/11/2022

…… ……

Signature Date

REG NO: **X53/71369/2014**

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This research project has been submitted for examination with our authorization as university supervisors.

2nd December 2022

…… ……

Signature Date

DR. MARTINE OLECHE

DEDICATION

I dedicate this work to my loving wife Violah Chemutai and our son and daughter Mark and Joy for their constant support and encouragement.

May God continue blessing you all.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to my supervisor Dr. Martine Oleche for the constant guidance during all stages this work.

May God bless you abundantly.

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ABBREVIATIONS AND ACRONYMS

CIC	**:**	Combine injectable contraceptives
CPR	**:**	Contraceptive prevalence rate
CVR	**:**	Contraceptive Vaginal Ring
FP	**:**	Family Planning
HIV	**:**	Human immunodeficiency virus
IUCD	**:**	An Intrauterine Contraceptive Device
IUD	**:**	Intrauterine device
KDHS	**:**	The Kenya Demographic and Health Survey
LARC	**:**	Long-Acting Reversible contraceptives
OBA	**:**	Output Based Approach
SSA	**:**	Sub-Saharan Africa

ABSTRACT

Modern methods of family planning include the Long-Acting Reversible Contraception (LARC) and are more effective as well as cost effective than short acting methods. In Kenya, LARC methods are readily available as well as supporting national and county policy frameworks. However the adoption of these methods among the women of child bearing ages (15-49 years) in rural counties especially Nandi County is still poor. Examining the determinants of uptake of long-acting reversible contraceptives (LARC) among women of reproductive age in Nandi County Kenya, were the study's main objectives. The specific objective includes to; determine the pattern of LARC use among women of reproductive age in Nandi County, Kenya. To establish the determinants affecting LARC uptake among women of reproductive age in Nandi County, Kenya. The research used the probity model in estimation given a sample of women derived from Kenya Demographic and Household Health survey of (2014) and significance was tested at 5% level. The results show that LARC use by women of child bearing age in Nandi County was on average six percent. The estimated model indicated that among women of childbearing age in Nandi County, Kenya, there was a significant correlation between age, marital status, education, socioeconomic position, and employment. It was also shown that women of childbearing age in Nandi County, Kenya, were less likely to seek LARC services if they were older (measured by their age squared) and if they wanted more children. Researchers suggest expanding family planning initiatives to reach women of all ages so that they, and their partners, may learn everything they can about LARC services before making a choice. When it comes to increasing LARC service use among reproductive-age women on a county level, empowerment activities are crucial.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Several social indicators, such as birth rates and maternal health data, have a direct relationship with economic growth and stability (Finlay, Norton & Guevara, 2017). Low fertility rates are linked to better outcomes for women and children on a micro level. According to the quantity-quality theory of children, women's reproductive health (RH) is affected by low reproduction rates since mothers have more time and money to devote to their children (Zhang, Qiu & Zhu, 2018). Reproductive health, as defined by the WHO, is more than just the absence of illness; it includes a person's mental, social, and physical well-being as a whole (World Health Organization, 2010). Women's reproductive autonomy is seen as crucial from this point of view. Therefore, reproductive health rights provide women the agency to control their reproduction, while also enhancing healthcare access and promoting health fairness (Godha, Gage, Hotchkiss & Cappa, 2016).

About 221 million women throughout the globe want to but can't take action to lower their risk of having an unplanned pregnancy (Herd, Higgins, Sicinski & Merkurieva, 2018). Pregnancy prevention services are too expensive for the vast majority of women, particularly those living in countries with poor economies. Rising healthcare costs, especially for pregnant women, have a multiplicative effect on poverty (Wekesa, Askew & Abuya, 2018). Oyugi, Kioko, Kaboro, Gikonyo, Okumu, Ogola-Munene & Baltazaar (2017) found that family planning services accounted for 30% of the yearly global reduction in maternal mortality. However, unlike in developed countries, developing

nations lack sufficient reproductive health care for their people. Income, age, gender, geography, and marital status are other major factors in determining who in a country has access to maternity and child health care.

When compared to higher-income women, low-income women have less options when it comes to accessing family planning services (Eschen & Whittaker, 2018). The IUCD is used as a method of birth control by 23% of all female contraceptive users and 13% of all married women worldwide. Long-acting contraceptives are a relatively new family planning tool, and they have been demonstrated to be more successful than shorter-acting methods (as measured by the pearl index). They are also user-friendly, popular, and affordable, which is a win-win (Sileo, 2018).

In many SSA economies, population growth is a major factor. Reasons for this include a lack of access to birth control, a high but decreasing mortality rate, a high birth rate, and a low rate of contraceptive prevalence (Muhindo, Green & Jong, 2018). The predicted annual rate of population increase in these nations is 2.8%, making it one of the highest in the world (Brittain, Briceno & Pazol, 2018). A quarter of couples and women in SSA do not have access to the contraception they need. Despite the widespread availability of contemporary methods of birth control, only 14% of expecting mothers in the area actually utilize them. An estimated 11%-13% of women in Nigeria use some kind of contemporary contraception. In a 2010 research, Chigbu, Aluka, and Feyi-Waboso identified many causes for Nigeria's low rate of contemporary contraception adoption. These included the widespread belief that contemporary contraceptives are unsafe, a lack of political-will to fund comprehensive family planning services, and an underutilization of community-based strategies and information dissemination initiatives to dispel this misconception. Although

34% of Ethiopian women have an unsatisfied need for contraception, just 1 in 6 women actually use it (Tsui, Croft & Trevitt, 2012).

Many international organizations and national governments have reaffirmed their provision for family planning in recent years. In order to provide women and couples with high-quality services for family planning, new resources have been committed, new players have been involved, and new concepts have emerged. However, there is still more to be done in the realm of contraceptives services (Ochako, Mbondo, Aloo & Kays, 2015). According to the WHO, modern birth control choices for women of childbearing age are both long- and short-term techniques, as well as emergency contraceptives (2010). Combination injection or combination injectable contraceptives (CIC), the combined family planning vaginal ring (CVR), the intrauterine device (IUD), emergency contraception, female sterilization, and female condoms, are all prevalent birth control alternatives to the pill.

Family planning (FP) is generally acknowledged as an essential element of reproductive healthcare. Safe and effective methods of decreasing birthrates and high-risk pregnancies are made available, which improves the health of mothers and children (WHO, 2010). While there has been progress in the area of the control of births, there is still a sizable number of reproductive-aged women (15–49) who are not using FP. This happens when women fail to take birth control or when those who do use them are unsuccessful. The majority of women, say Alemayehu, Belachew, and Tilahun (2012), lack the necessary information about contraception, are worried about the effects of using contemporary contraception on their health, or cannot afford or get access to suitable contraceptive supplies and services.

1.1.1 Kenya’s contraceptive use

There are presently 6 in 10 married women who use some kind of contraception, as reported by the KDHS (2014). As much as 26% of all women who use birth control are on injectables, with another 10% on implants and 8% on tablets. Only 3% of all birth control in the nation is administered through other means combined. Increased FP use among women between the age of 15 and 49 in Kenya has led to a decline in the country's unmet demand for birth control. In 2008, 26% of the women of the childbearing age did not have access to contraception (KDHS, 2008), however by 2014, this percentage had decreased to 18% (KDHS, 2014). The decline clearly demonstrates the rise in contraceptive usage in Kenya. Conversely, there was an uptick in the rate of improvement for maternal health. Six out of every ten births in Kenya occur at a health clinic (15% in private clinics and 46% in public facilities), indicating high levels of clinic-based obstetric care in Kenya. The majority of home births (37%), however, occurred in hospitals (Newmann, Rocca & Dworkin, 2018).

According to the latest statistics from the KDHS (2014), injectables (26% of users) are the most popular contemporary approach, followed by implants (10%) and the tablet (8%). Figure 1, shows that the usage of contraceptives in Kenya has increased during the previous two decades. As a consequence of the government of Kenya's unrelenting efforts, healthcare is now accessible to everyone in the country (Oyugi et al., 2017).

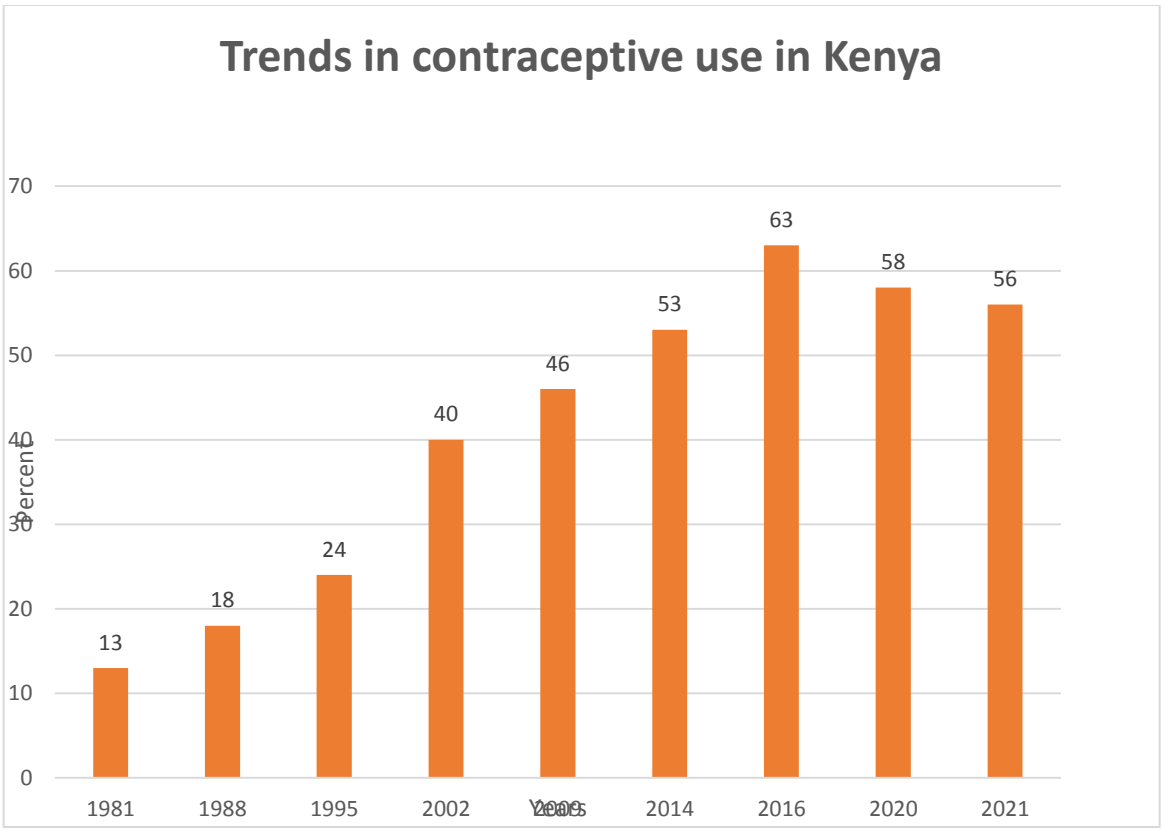

Figure 1. 1: Trends in contraceptive use in Kenya

The adoption of current approaches, particularly LARC, has progressively increased. The method that has been preferred by women of childbearing age is injectable contraceptives with a prevalence rate of 50% triple the use of implant which follows the injection (Kungu, 2021). LARC comprises of highly effective contraceptive methods and hence its uptake of LARC contributes in prevention of high number of undesirable pregnancies in LMICs. One of the explorations done to enhance the uptake of LARC in LMICs including Kenya is through provider trainings. After providing healthcare practitioners with training, the studies show an 89% adoption rate for LARC. LARC uptake was measured by enlisting first-time contraceptive users and women switching to LARC (Stokholm et al., 2021).

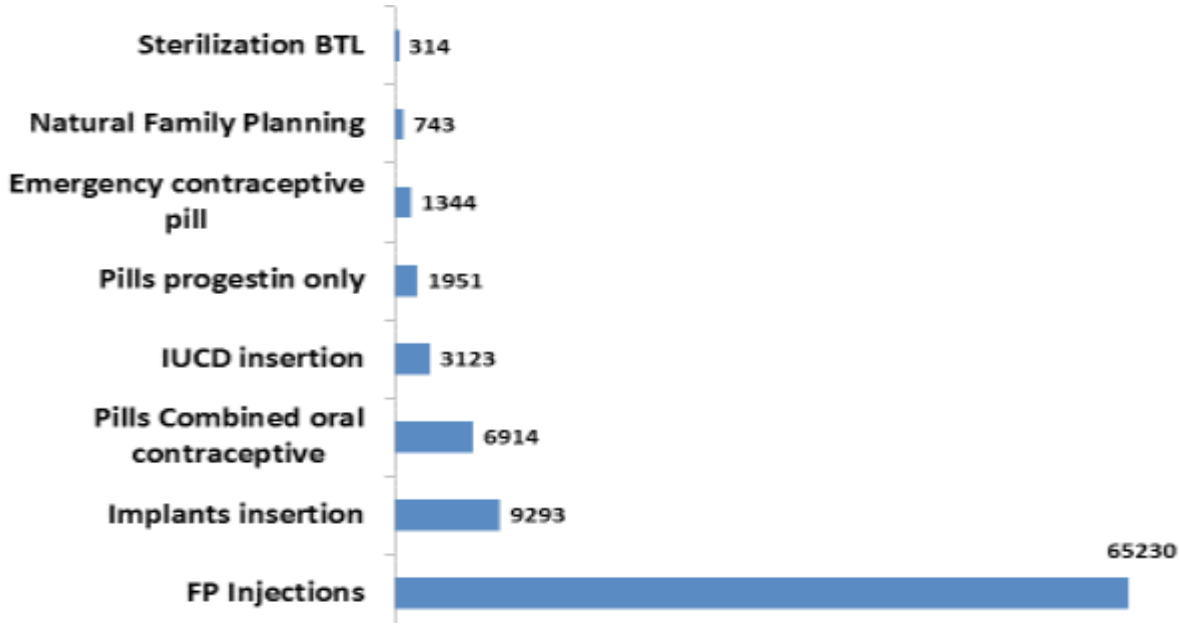

Figure 1. 2: Nandi County Family planning per method category

1.2 Statement of the Problem

About one-third of the disease and mortality among the women of the childbearing age is attributable to disparities in reproductive health/contraceptive and sexual health care (Dev, Woods & Drake, 2019). The current use of contraceptives stands at 58% nationally with the highest use being recorded in Central Kenya at 73 per cent with the least being Northeastern at 3 percent. Other counties where use of contraceptives is low include Turkana, Marsabit, West Pokot, Samburu, Baringo, Tana River and Nandi (Oketch, 2018).

Long-acting contraceptive techniques are very effective, although they are rarely used in the nations of sub-Saharan Africa. Available evidence shows that the preferred method for family planning are the short-term methods compared to long-acting contraceptive ones (Andreea & Duff, 2018). For example, the IUCD accounted for 3% of total contraceptive usage in 1998, 2% in 2003, and 2% in 2009, all according to the KDHS (2014), which

demonstrates a falling trend in the use of LARC methods. According to Nandi County Family Planning Costed Implementation plan 2017-2021, the percentage of contraceptive coverage as at 2014 in the whole county was 42.4 percent with little focus on LARC. The use of injectables on the other hand has been increasing, from 12% in 1998 to 22% in 2009 (Cisek, Klein, Koseki & Wood, 2019). This demonstrates that despite efforts by national and county governments and other international agencies to make LARC methods available to all eligible users, a large proportion of women who express a preference to limit their reproductive potential continue to rely on short-acting methods for extended periods of time. (WHO, 2010). Largely unclear is the rationale for the persistent preference of short acting procedures over long acting ones.

1.3 Research questions

This research aims to address the following research questions:

i. What is the pattern of LARC use among women of reproductive age in Nandi County, Kenya?
ii. What are the determinants affecting use of LARC among women of reproductive age in Nandi County, Kenya?

1.4 Objectives of the Study

1.4.1 General Objective

This study aims at investigating the determinants of uptake of long-acting reversible contraceptives (LARC) among women of reproductive age in Nandi County, Kenya.

1.4.1 Specific objectives

i. To determine the pattern of LARC use among women of reproductive age in Nandi County, Kenya.
ii. To establish the determinants affecting LARC uptake among women of reproductive age in Nandi County, Kenya.
iii. To recommend policy implications based on study findings (i) and ( ) above.

1.5 Significance of the study

The reproductive Health Act (2017) states that every Kenyan woman has the right to safe, acceptable, effective, and cost-effective contraceptive treatments. The WHO advised the use of LARC owing to its safety and appropriateness for women of reproductive age, including nulliparous girls (WHO 2015). Most of the recent family planning policies have emphasized on the prioritization of LARC. This is due to ability to avert the unmet need for contraceptives in resource-constraint regions. LARC adoption is still low especially in Nandi County. The present study seeks to inform key stakeholders, policy makers and academicians on determinants of uptake of LARC among the women of the reproductive age in Nandi County. Further, key findings and recommendations generated in this research will help in informing health authorities and leaders on best reproductive health practices that will help in promoting increased uptake of modern contraceptives especially LARC in rural counties in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the relevant literature, theories related to the present research and empirical literature where previous studies have been reviewed. The overview of the literature review is also presented summarizing key outcomes from theories reviewed and studies considered in relation to uptake of Long-Acting Reversible Contraceptives (LARC).

2.2 Theoretical Literature

This section describes theories which are relevant to the current study. These theories include; the Andersen's Health Behavior Model, Theory of Human Capital and Health Belief Model (HBM). These theories aided in explaining determinants influencing use of LARC services by the women of reproductive age.

2.2.1 Andersen's Health Behavior Model

Anderson's (1995) health behavior model classifies reasons for seeking medical care into three categories: predisposition, opportunity, and necessity. Health beliefs about health and health care are an example of a mental predisposing factor. Other types of predisposing factors include demographic factors (such as sex and age), social factors (including occupation, educational levels, ethnicity, and social relationships, such as family status), and biological factors (such as sex and age). Individuals' propensity to use health care services is impacted by a variety of contextual variables, such as the demographic and sociological make-up of communities, cultural norms, collective and organizational values,

and political attitudes. Two more types of facilitators are personal financial variables like earnings and organizational ones like travel and appointment times. The last component is the need factors whereby, individuals perceive need to utilize health services. This model reflects the association between health behavior in services utilization and predisposing factors, enabling factors and perceived need.

2.2.2 Theory of Human Capital

According to Grossman's (1972) model, health capital is a kind of human capital that serves as an individual's starting stock of health. Further the model postulates that health capital is not only a durable consumption good but also an investment good. Overtime the health capital starts depreciating and health stock falls below a certain level. Hence health stock needs to be replenished to avoid being depleted to zero. Therefore, an efficiency investment in health is not only of essence but inevitable. Socio-demographic characteristics, such as an individual's age, work position, and education level, are a major factor in influencing the effectiveness of health care spending. Increased uptake of LARC was noted to not only lead to a successful reduction of unintended pregnancies but also induced abortion rates, maternal-infant mortality and morbidity (Ferreira, et al., (2017).

2.2.3 Health Belief Model (HBM)

This model is a cognitive and interpersonal framework in which people are seen as rational creatures capable of making choices over whether to engage in health behavior (Rosenstock, 1974). The HBM utilizes two parts of an individual's health behavior in relation to illness danger, namely views of disease danger and evaluations of action to counteract this threat. The model adds that threat perceptions rely on two beliefs: perceived vulnerability to the disease and perceived severity of illness result. These two factors, which may be affected by a person's social and demographic characteristics, impact a

person's choice to engage in a particular health-related action. The specific intervention is selected by an appraisal of the available alternatives, their perceived costs, the behavior's effectiveness, and the obstacles to doing the action. Two other variables that have been incorporated in the model are cues to action (which may include physical symptoms or advise from others to the individual) and health motivation. Overall, the HBM has been applied in diverse contexts such as explaining contraceptive behavior. When evaluated through the lens of HBM, contraceptive behavior is driven by: 1) the desire to prevent unexpected pregnancy; 2) future childbearing wishes; and 3) the perceived capacity to manage fertility and lower pregnancy danger after contraceptive usage.

2.3 Empirical Literature

There have been significant efforts globally, to ensure universal access to modern contraceptives of high quality among sexually active women of childbearing age. Modern contraception is an essential life-saving tool for enhancing mother health by lowering unwanted pregnancies, maternal and newborn death (WHO 2017). Approximately 74 million the women of childbearing age living in middle and low-income countries get pregnant unintentionally each year (WHO, 2019) with Sub Saharan Africa being 14 million unplanned pregnancies (Ameyaw, eta l., 2019). The contraceptive prevalence rate in SSA is 29%, which is low (UN, 2020). The unintended pregnancies can be associated to either contraceptive failure or non- use of contraceptive methods. However, most sexually active women are most likely to abandon LARCs than contemporary contraceptives of shorter duration, which has been linked to an increase in unwanted births. In recent years, the demand for contemporary contraception has risen, although LARC has been demonstrated to help reduce this gap. This is attributed to being highly efficacious intervention which is not only cost effective but also non- reliant on client's compliance

(Pandya, 2021). Further, Increased use of LARC has been shown to decrease rates of unplanned pregnancy, abortion, maternal and newborn mortality, and other adverse outcomes (Ferreira, et al., (2017).

Female sex workers (FSWs) who are interested in having children in the future have few, if any, contraceptive options that are as effective and dependable as LARC. LARCs have a lower level of user participation than other reversible contraceptive techniques, requiring simply time spent applying and reapplying the treatment. Ouma et al. (2022) performed a cross-sectional study of FSWs working there. In the years after the end of hostilities in Northern Uganda's Gulu area. Quantitative data were submitted by 280 FSWs between the ages of 18 and 49 who were not pregnant and were not using any kind of permanent contraception for this study. In-person interviews with a pre-tested semi-structured questionnaires were employed to gather data from each participant. Participants' demographic information, sex work details, reproductive history, HIV status, and LARC use were all recorded. Adjusted prevalence ratios were calculated after entering data into EPI INFO 7, cleaning it up, and running multivariate Poisson regression in STATA 14.0. The average age (standard deviation and range) of the study population was 26.5 years, 48.6% of participants reported having at least one unplanned pregnancy related to sex work, and 37.4% of participants had one abortion that was induced. Contrarily, just around 60% of people were really making use of LARC. Longer sex work experience, greater parity, a history of unwanted pregnancies during their work, and living in a brothel or lodge were all characteristics that remained independently linked with LARC adoption at the multivariable level.

Mare et al. (2022) analyzed the variables influencing LARC usage among sexually active women of the childbearing age in a pastoral community in Northeast Ethiopia. The

information was gathered with the use of a predesigned questionnaire delivered by an expert interviewer, Epi-info version 7 data were input, and Stata 16 data were exported for statistical analysis. Several types of binary logistic regression analysis, including univariate and multivariate, were run to determine which factors were significantly associated with LARC use. Overall, the data demonstrated that the use of LARC was (24.3%; 95% confidence range = 20.9%-28.0%). It was also found that women who identified as Orthodox or Protestant, had completed some college, or whose husbands had completed some college were more likely to employ LARC. Use of LARC was also related to a combination of positive attitude and excellent, intermediate understanding of the techniques.

Kateregga and Oluka's (2022) conducted a research to identify the barriers to LARC utilised among women in the age range of 18 to 45 at Maanyi health facility in Mityana district. The researchers used a cross-sectional design and a random sample method for their investigation. Using an English-language semi-structured questionnaire, the research gathered information from 50 participants, which we then processed by hand with the utilization of tally sheets and displayed in distribution table, figures, and narratives. The study revealed that insufficient assistance from family members, insufficient counseling on LARC from healthcare professionals, far distances, lengthy wait times, and less-than-pleasant behavior on the part of healthcare staff were all factors. Fear of adverse effects, worries among those already using the LARC technique, the location of participants' houses, their spouses' low levels of education, and life decisions over which family planning method to choose were all identified as variables.

However, sexually active women between the age of 15 and 49 have a low adoption rate of LARC. LARC adoption has been shown to be highly correlated with socio-demographic

variables. Though the utilization of modern contraceptives has expanded significantly throughout the Caribbean and in a number of Latin American nations, significant inequities persist. De Leon et al. (2019) analysed twenty-three countries in the Caribbean and Latin America to establish the prevalence and disparities of the utilisation of LARC. Surveys of many indicators, including reproductive health surveys, cluster surveys, and health and demographics surveys, completed since 2004 were evaluated. Reproductive females between the ages of 15 and 49 were considered for inclusion. The association between LARC adoption and contributing variables was estimated utilizing a logistic regression model. The findings showed that in 17 of the 23 Latin American nations studied, the prevalence of LARC usage was less than 10%. Women between the ages of 15 and 17, those from lower socioeconomic groups, those who live in rural regions, and those with a lack of education were all blamed for the low LARC adoption rate.

There has been a slow increase in the usage of LARCs in the region of Sub-Saharan Africa (SSA). Bolarinwa et al. (2021) evaluated the predictors and frequency of LARC utilisation among reproductive women in 26 sub-Saharan African nations. The research used information gathered from 26 different SSA nations' 2010-2019 Demographic and Health Surveys. The research included 56, 067 childbearing women between the ages of 15 and 49. The utilization of LARCs in SSA was estimated using bivariate and multivariate regression models. It was shown in the research that 21.73 % of sexually active women have used a LARC at some point. Women with postsecondary education or higher, cohabitation, and a larger family size were all predictors with more LARC adoption. Trends and variables linked with LARC in Kenya were investigated by Kungu, Khasakhala, and Agwanda (2020). This research used secondary data from the 2014 KDHS and binary logistic regression to examine what factors would lead to the adoption of LARCs. Poor uptake of LARC among this group was shown to be highly associated with

variables such as women's age, marital status, religion, number of living children, and location of residence.

A cross-sectional study done by Nasri (2020) explored relationship between LARC uptake and prevalence and linked factors among 172 post-partum married women visiting Maternal and Child Health (MCH) clinic for contraceptives services, Kiambu hospital in Kenya. Data was gathered through a semi- structured questionnaires. Multivariate and univariate Logistic regression analysis were utilised to estimate the determinants influencing LARC uptake. In this study, it was shown that among women who had recently given birth, the LARC technique was used by 31.4% of the population. Women who were older (>35 years), with history of LARC use had a higher likelihood of utilizing LARC. However, women whose partners/spouses had completed secondary and tertiary education had reduced odds of LARC uptake. Side effects, desire for other methods Lack of understanding about postpartum contraception was highlighted as a major obstacle to LARC method adoption.

Isa et al., (2020) examined trends, utilization of LARC and further identify the reason for discontinuation of the methods. The study was a 5-year retrospective study from 2015 – 2019. Data was retrieved from all available client health records from the family planning clinic from the contraceptives clinic of University of Maiduguri Teaching Hospital Nigeria. Chi square was employed to test of link between contraception method used and demographic attributes. The findings revealed who were older, with secondary or higher had a higher likelihood of utilizing LARC method. In addition, women who chose LARC were multiparous (with ≥5 children). The study further noted that LARC acceptance was high among those who had never used any form of contraception before and those who ever used sub dermal implant and wished to continue with the contraceptive method.

Gashaye et al. (2020) conducted a case control research to determine what factors influence the use of LARC in Northwest Ethiopia. During July 2016 and September 2016, data was gathered from 14 different public hospitals in Northwest Ethiopia. In order to evaluate the factors that lead women who use family planning services to start utilizing LARCs, a binary logistic regression model was developed. Higher education, affluence, a desire to restrict family size, fewer visits to the doctor, professional guidance, a previous spontaneous or induced abortion, and a favorable attitude toward LARCs were all shown to be positively correlated with LARC use.

However, research has revealed that women's parity is a major influence in how they respond to LARC. Gayatri, (2020) investigated the use of LARC and related determinants among Indonesian women. The 2017 Indonesia Demographic and Health Survey provided information on the number of women who utilised a contemporary method of contraception. The utilisation of a Logistic Regression Model was made. The findings showed that women who met the criteria for using LARC were older, had more education, fewer children, were employed, and wanted to restrict future pregnancies.

Post-partum is a critical period for intervention for women to avoid short interval pregnancy by using modern contraceptives. Omona and Namuli (2020) did a cross-sectional research on factors of utilization LARC specifically intra-uterine device among postpartum mothers at Gombe Hospital, Butambala district, Uganda. Between July 4 and August 16, 2018, 202 postpartum women aged 15 to 45 years old who utilised the healthcare services offered by the institution were included in the research. Thematic and verbatim analysis were used for data analysis was used in the study. The results revealed that the proportion rate of IUCD utilization was 16.3% among postpartum mothers. The study further adds that the women had attained tertiary education were less likely to

employ IUCD compared to those who had attained primary education. On the other hand, inadequate health education, women's beliefs about severe complication like fibroids and cancer contributed to underutilization of IUCD.

Kang et al., (2018) carried out a research on the prevalence of postpartum contraceptive utilization and the adoption of LARC among rural Chinese women. The study included 423 mothers with children younger than two years old. Information was gathered by a questionnaires, and a multivariate logistic regression model was utilised to determine the reproductive and demographic characteristics related with LARC uptake. Among the women of childbearing age, the results showed that 9.9% were LARC users. Vaginal delivery, maternal age, and the absence of breastfeeding were all significant predictors of LARC use.

Further Kiondo et al. (2020) conducted a cross-sectional research to identify variables related to postpartum usage of LARC in Bukombe District, Geita Region, Tanzania. Researchers interviewed 768 new mothers face-to-face between May and June of 2018. A standardized questionnaire was utilised to gather information, and a multivariate logistic regression model was employed to evaluate the data. The findings showed that 10.4% of mothers used LARC after giving birth. Using LARC was more common among women who were employed, lived in metropolitan areas, and had access to family planning services.

2.4 Overview of the Literature

From the theoretical literature Anderson (1995), postulates that health service utilization is divided into 3 major components; predisposing factors such as individual social and demographic attributes, health beliefs and social and demographic composition of a community inclusive of organizational and political perspective. The other two

components include enabling factors such as financial resources and perceived need to utilize health services. On the other hand, Grossman (1972) model, describes that an individual inherits health capital which over time starts depreciating with age among other factors. However, efficiency investment in health such as education attainment and employment are needed to replenish the health stock. According to the health belief model proposed by Rosenstock (1974), a person's conduct in the face of a health hazard is influenced by their beliefs about their own vulnerability to the threat and the severity of the result of contracting the sickness. The two variables are modified by individual's social and demographic variables. The other two variables include cues to action (which may include physical symptoms or advise from others to the individual) and health motivation.

Determinants such as women's age, educational attainment, occupation, marital status, approval of partner/husband, residence, wealth quantiles, and religion significantly influenced the prevalence rate of LARC utilisation among reproductive women of the reproductive age, according to empirical literature (De Leon, et al., 2019; Bolarinwa, et al., 2021; Kiondo, et al., 2020; Gashaye, et al.,2020). They entail sociodemographic factors. Women's parity, number of surviving children, age at first birth, planned number of children, history of spontaneous or induced abortion, nursing, prior contraceptive usage, and fertility aim were all strongly related to LARC use (Kang et al., 2018; Gashaye, et al., 2020; Gayatri, 2020; Isa et al., 2020). Contraceptive counseling, provider prejudice, a lack of acceptable skills in the contraceptive services provision, and a scarcity of human resources were health system and structural issues that affected LARC use.

Different studies gave varied and mixed results in regards to effect of determinants of LARC uptake. One such study is by (Kungu, Khasala & Agwanda 2020) which noted that women who were in marriage set up were less likely to use LARC unlike the women who

were not married. This contradicts with previous studies done which established that probability of married women utilizing LARC was high (Bolarinwa et al., 2021). Bolarinwa et al., (2021), noted women who were on the older age cohort (>35 years) had lower odds of LARC adoption compared to women in younger cohort (15- 22 years). The study differed with studies previously done whose findings showed that LARC uptake is positively associated with women in the older age group (Nasri, 2020; Isa et al., 2020; Gayatri, 2020). The estimation techniques that have been conspicuously been used are Chi square and logistic regression models (Bolarinwa et al., 2021, De leon et al., 2018; Kiondo, et al., 2020). There is need to utilize other econometric models like probit models. There are few studies done in Kenya to establish determinants of LARC uptake among women of reproductive age in North rift Kenya specifically Nandi County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents an overall theoretical and model specification which was utilised to assess determinants of uptake of LARC among women of reproductive age in Nandi County. Further, the description of the variables, dataset, data source and diagnostic tests were conducted.

3.2 Theoretical framework

The research was built on utility maximization theory model whereby a consumer is faced with two competing alternatives. A consumer thereafter chooses an option that maximizes highest total future utility. In relation to uptake of long acting reversible contraceptive the first option is; where an individual utilizes LARC which is cost effective and highly effective therefore, alleviating the increased unmet need for modern contraception following an uptake of LARC. The other option is low uptake of LARC leading to high rates of discontinuation of other contraceptives leading to unintended pregnancies, induced abortion rates, maternal-infant mortality and morbidity and hence high cost implication.

Utility maximization utility derived from individual seeking family planning health services can be expressed as follows;

$$U = f(H_F, C) \quad \text{..... (3.1)}$$

Where;

U is the expected future utility that an individual anticipates to get following use of health services.

H_F is the individual's consumption of contraceptive health care services from health care providers.

C is the consumption of non-health care goods

An individual maximizes their utility subject to subject to budget constraint.

The budget constraint as follows

$M = P_F F + CP_C$ ..... (3.2)

Where;

Where M is the individual's income, P_F is the costs associated with using a family planning method and P_C is the price of non-health goods.

The health production function after utilizing family planning health care services is given by;

$H = f(H_0, F)$ ..... (3.3)

Where; H_0 is the initial health status and F represents family planning utilization

Lagrangian function using Equation 3.1, 3.2 and 3.3 can be expressed as follows;

$L = U\{C, f(H_0,F)\} + \lambda (Y - P_F F - CP_C)$ ..... (3.4)

The reduced form of the Lagrangian Equation for demands for family planning method and consumption of non-medical goods (C) when solved it maximizes the utility of an individual whose health demand function expressed as follows:

$H = f(F, P_C, P_F, M, H_0)$ ..... (3.5)

Where, H is the health status after looking for family planning health services P_F and P_C are the prices of family planning method and consumption of non-health care goods, M is exogenous income and H_0 is the initial health capital.

3.3 Model Estimation and Specification

Low uptake of LARC has led to unintended pregnancies, induced abortion rates, maternal-infant mortality and morbidity. Factors linked with the use of LARC in women of reproductive age include age, marital status, religion, education level, employment, wealth Index, desire for children and distance to health facility (De Leon, et al., 2019; Bolarinwa, et al., 2021; Kiondo, et al., 2020; Gashaye, et al.,2020).

This study employed of probit regression model which lie between (0, 1) to estimate the association between utilization of LARC and the predictor variables among women of reproductive age. The response variable in this research was utilization of LARC. The specified model is as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 \beta_2 + \beta_3 X_3 + \beta_4 \beta_4 + \beta_5 X_5 + \beta_6 \beta_6 + \beta_7 X_7 + \beta_8 \beta_8 + \beta_9 X_9 + \beta_{10} \beta_{10} + \beta_{11} X_{11} + \varepsilon$$

Where Y is the dependent variable LARC use, X_1 represents marital status, X_2 represents religion, X_3 represents education level of a women of reproductive age, X_4 represents employment, X_5 represents wealth Index, X_6 represents desire for children, X_7 represents distance to health facility.

3.4 Description of Variables and Measurement

Table 3. 1: Description of variables

Variable	Definition	Measurement	Hypothesized sign
Dependent variable			
Uptake of Long Acting Reversible Contraceptive (LARC)	Women of reproductive aged 15–49 years in Nandi County Kenya who has ever used LARC	1 if utilized LARC 0 If otherwise	
Independent variable			
Age	Discrete variable. Number of complete years	Age in complete years	Positive
Age Squared	Determines effectiveness depending on a woman's prior use of a LARC. This is calculated by squaring age of the woman.	Continuous variable	Negative
Education level	Categorical variable. highest level of formal education achieved; categories are; no education, primary, secondary and tertiary	1 if education 0 if otherwise, 1 for primary i0 if otherwise, 1 if secondary 0 otherwise and 1 if tertiary level 0 otherwise	Positive
Wealth index	Categorical variable indicating socioeconomic status of an individual	1 if poor, 0 otherwise, 1 if middle, 0 otherwise 1 if rich, 0 otherwise	Positive
Employment status	Dummy variable indicating whether an individual is employed (formal or informal) or not	1 if employed 0 if otherwise	Positive
Marital status	Categorical variable categorized as married, single divorced and widowed	1 if married 0 if otherwise 1 if single 0 if otherwise 1 if divorced 0 if otherwise 1 if widowed 0 if	Positive

		otherwise	
Medical Insurance	Dummy variable where; 1 if has a medical insurance cover and 0 if otherwise	1 if covered by medical insurance, 0 if otherwise	Positive
Religion	Categorical variable categorized as Catholics, Protestants and Muslims.	1 if catholic 0 if otherwise 1 if Protestant 0 if otherwise 1 if Muslim or otherwise	Negative
Desire for More Children	Dummy variable measured as 1 for women indicating they wants children within 2 or more years and 0 otherwise	1 if women indicating they wants children within 2 or more years 0 if otherwise	Positive
Distance to Health Facility	Dummy variable where; 1 if 5km or less, and 0 if more than 5kms	1 if ≥5km, 0 if otherwise	Positive
Exposure to Mass Media	Dummy variable where 1, if frequently listens to radio, or watching television or reading newspaper and 0 if not	1 if access to radio, TV or newspaper, 0 otherwise	Positive

3.5 Data Sources

The study employed Kenya Demographic Health Survey (KDHS) 2014, a nationally representative survey conducted by the national Kenya National Bureau of Statistics (KNBS). This is extracted from the Fifth National Sample Survey and Evaluation Programme's master sampling frame (NASSEP V). The survey contains a total of 31,079 Kenyan women of childbearing age (15–49 years) who were surveyed. The dataset is ideal because it entails data on general health, fertility levels, fertility preferences, contraceptive prevalence and preference information which was useful in this study.

3.6 Diagnostic test

3.6.1 Multicollinearity test

Multicollinearity exist when explanatory factors are linearly related on one another. If that's the case, the inconsistency of estimated parameters increased, resulting in a higher proportion of inaccurate estimations for coefficients and signs, which may lead to bad and incorrect conclusions. To establish its existence, a correlation analysis was performed. If a correlation is found, but the two variables are not highly correlated, and the sample size is large enough, then just one of the variables will be retained. Likewise, if these requirements aren't satisfied, it may be canceled (Alita, Putra & Darwis. 2021).

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

The empirical results examining determinants of uptake of Long Acting Reversible Contraceptives among women of reproductive age in Nandi County, are presented in this chapter. Specifically, the research analyses; the pattern of LARC use among women of reproductive age in Nandi County, Kenya as well as established the factors affecting LARC uptake among women of reproductive age in Nandi County, Kenya. The empirical findings are shown in tables and figures.

4.2 Descriptive Statistics

The research purposed to examine the frequency with which LARCs were used by women of reproductive age in Nandi County, Kenya. Only 6.3% of women in Nandi County, Kenya, who are reproductive age, have reported to using the LARC method; the remaining 93.7% of women use either the short-term method, the barrier method, or the permanents. Results are shown in Table 4.1.

Table 4. 2: Pattern of LARC Use and Profiles for Women in Nandi County, Kenya

Variables	Observations	Mean	Std	Min	Max
Long Acting Reversible Contraceptives	1,087	0.0631	0.2761	0	1
Age	1,087	28.94	9.39	15	49
Marital Status (Married=1)	1,087	0.5712	0.4949	0	1
Education Level	1,087				
No education	1,087	0.1346	0.3413	0	1
Primary education	1,087	0.5024	0.5000	0	1
Secondary education	1,087	0.2766	0.4473	0	1
Higher education	1,087	0.0865	0.2811	0	1
Wealth index	1,087				
Poorest	1,087	0.2337	0.4232	0	1
Poorer	1,087	0.1921	0.3940	0	1

Middle	1,087	0.1913	0.3933	0	1
Rich	1,087	0.1917	0.3936	0	1
Richest	1,087	0.1912	0.3933	0	1
Employment status	1,087	0.5740	0.4945	0	1
Medical Insurance	948	.1520	0.3591	0	1
Religion					
No religion	1,087	0.0163	0.1266	0	1
Christians	1,087	0.8463	0.3607	0	1
Muslims	1,087	0.1339	0.3405	0	1
Desire for More children	1,087	0.5704	0.4950	0	1
Distance to health facility	956	0.7361	0.4408	0	1
Exposure to Mass Media	1,087	0.8267	0.3785	0	1

Source: Author based on KDHS (2014)

Table 4.1 shows that, on average, the participants are 29 years old. Between the ages of 15 and 49, there were a wide range of female ages present. For this reason, the research contrasted the health and well-being of married and single women. A total of 57.1% of the sample was found to be married.

Fifty-two percent of the participants had only completed primary school, while 27.6 % had completed high school, and 13.5 % had never attended school. The percentage of college graduates was just 8.7 %. When considering wealth quintiles, a constant distribution was discovered throughout all wealth levels. Distributions were almost same throughout the wealth quintiles with the exception of the lowest-wealth quintile (consisting of 23.4% of the population). In addition, 57.4% of participants claimed they were employed, whereas just 15.4 % said they had health insurance.

Roman Catholics and Protestants made up the vast majority of respondents (84.6 %, on average), followed by Muslims (13.4 %, on average) (table 4.1). It was out that just 1.6% of people were not even religious at all. In addition, over 57% of respondents stated that they intend to expand their family size during the next two years.

Most respondents (73.6% on average) said that getting to a hospital or medical facility quickly was more significant. Close to a quarter, or 26.4%, of respondents said that access to healthcare was difficult to get because of the distance to the closest hospital. In addition, 82.7 % of Kenyan women reported having exposure to the media in the research.

4.3 Diagnostic Test

4.3.1 Multicollinearity test

To assess the existence or absence of multicollinearity, correlation coefficients were calculated and shown in the correlation matrix (table 4.2). All pairs of variables were determined to have moderate correlations based on the calculated correlation coefficients. Except for the correlation coefficients for one pair (age of the woman and desire for more children), the majority of relationships had absolute values below 0.5. According to Mukras (1993), the difference is minor; hence, the pair was maintained for further examination. Education, age, wealth index, marital status, employment, distance, exposure to the media and medical insurance were linked positively with LARC, whereas religion and a desire to have more children were negatively correlated. Added data can be accessed in Table 4.2 below.

Table 4. 3: Correlation Matrix

Variables	LARC	Age	Marital Status	Education	Wealth index	Employment	Medical insurance	Religion	Desire for more children	Distance	Exposure to mass media
LARC	1.0000										
Age	.0805	1.0000									
Marital Status	.1367	0.3435	1.0000								
Education level	.0782	-0.1101	-0.1523	1.0000							
Wealth index	.1004	0.0158	-0.0582	0.5108	1.0000						
Employment status	.1062	0.3885	0.1796	0.1157	0.1193	1.0000					
Medical insurance	.0838	0.1290	0.0984	0.3443	0.3280	0.1652	1.0000				
Religion	-.0525	-0.0329	0.0503	-0.2079	-0.0656	-0.1889	-0.0584	1.0000			
Desire for more children	-.1081	-0.6158	-0.2009	0.0944	0.0212	-0.2929	-0.0471	0.1161	1.0000		
Distance	.0253	-0.0549	-0.0613	0.1831	0.2703	0.0182	0.1138	-0.0298	0.0412	1.0000	
Exposure to mass media	.0708	-0.0348	-0.0724	0.3965	0.4187	0.1413	0.1597	-0.1659	-0.0222	0.1681	1.0000

4.4 Estimating the determinants of LARC among women of reproductive age in Nandi County, Kenya

The second objective of the research was to identify the factors of LARC uptake among women of reproductive age in Nandi County, Kenya. The evaluation of the developed Probit model and its corresponding indices yielded the results shown in Table 4.3. From model estimation, the total p_{value} was less than the 5% significance level (Prob > chi2 was .0000), demonstrating that the discovered determinants explained the response variable strongly (use of utilization of LARC among LARC among women of childbearing age in Nandi County, Kenya). In addition, the pseudo R^2 value of 0.1211 (12 percent) shows the percentage of explanatory factors that explain LARC use among women.

Table 4.3 illustrations the regression results. At the 5% significance level, we found that the coefficient on age was positive and significant (β=.1940, p=.000), while, the cube of age was shown to have a negative coefficient that was statistically significant at the 5% level (β= -.0031, p=.000). Marital status had a positive and significant coefficient (β= 0.4109, p value=0.000). On various levels of education, the coefficient for primary education was 0.4790 with a p_{value} of 0.000, suggesting that participants with a primary education had a 0.479% greater likelihood of using LARC service than those with no education. The coefficient on secondary education was 0.4463 with a p-value of 0.000, indicating that respondents with secondary education used LARC services 0.4463 more than respondents with no secondary education. The tertiary education coefficient was also positive and statistically significant (β =0.5778, p=0.000) this indicates that individuals who stated a higher level of education utilized LARC service at a rate 0.4847 points greater than those with no education.

Table 4. 4: Probit Regression Results

Probit Regression

No of obs = 931
LR chi2(17) = 884.26
Prob > chi2 = 0.0000
Log likelihood = -3649.2551
Pseudo R2 = 0.1211

LARC	Coefficients	Std. Err.	z	P>z	[95% Conf.	Interval]
Age	.1940**	.0162	11.98	0.000	.1623	.2257
Age Squared	-.0031**	.0002	-12.44	0.000	-.0035	-.0026
Marital Status (Married=1)	.4109**	.0384	10.71	0.000	.3357	.4862
Education Level						
Primary	.4790**	.0840	5.70	0.000	.3143	.6437
Secondary	.4463**	.0907	4.92	0.000	.2685	.6241
Higher	.5778**	.1016	5.69	0.000	.3786	.7770
Wealth Index						
Poorer	.2105**	.0612	3.44	0.001	.0906	.3304
Middle	.2315**	.0623	3.71	0.000	.1093	.3536
Rich	.2791**	.0634	4.40	0.000	.1549	.4034
Richest	.4113**	.0668	6.16	0.000	.2804	.5422
Employment Status	.0918**	.0388	2.37	0.018	.0159	.1678
Medical insurance	.0534	.0448	1.19	0.233	-.0344	.1412
Religion						
Christian	.0490	.1475	0.33	0.740	-.2402	.3381
Muslim	-.1592	.1597	-1.00	0.319	-.4721	.1537
Desire for More Children	-.2612**	.0397	-6.59	0.000	-.3389	-.1835
Distance	.0204	.0398	0.51	0.609	-.0577	.0985
Exposure to Mass Media	.1089	.0599	1.82	0.069	-.0086	.2263
_cons	-5.2618	.3032	-17.35	0.000	-5.8561	-4.6674

(**) Significant at 5% level.

The research analyzed participants' wealth quintiles. The 1st wealth quintile was utilized as a point of reference. Coefficient for the 2nd quintile of wealth was .2105 and statistically significant (p= 0.001). Women in the poorer wealth quintile were 21.05% more likely to

utilize LARC service than those in the first wealth quintile. Coefficient for the 3rd wealth quintile was .2315 (p= 0.000), indicating that women in the 3rd wealth quintile were 23.15% most likely to utilize LARC service than those in the 1st wealth quintile, everything else being equal. Coefficient for the 4th wealth quintile was .2791 and statistically significant at the 5% level (p = 0.000) participants in the 4th wealth quintile were 27.91% more likely to utilize LARC services than those in the 1st wealth quintile, all other factors being constant. In addition, coefficient on 5th wealth quintile was positive and statistically significant at the 5% level (β = 0.4113, p value of 0.000). This indicated those in the 5th quintile were 41.13% most likely to utilize LARC services compared to those in the 1st wealth quintile in Kenya.

The coefficient on employment (β= .0918, p_{value}=.018) had a significant positive effect at 5 percent level. The data revealed that employment raised the probability of employing LARC by 0.0918 points, holding all other factors constant. In addition, the coefficient on the desire for additional children was negative and statistically significant at 5% (= -0.2612, p = 0.000) (= -0.2612, p = 0.000). The data showed that the desire for a second child had a negative impact on the use of LARC services. To assess the findings for policy concerns, the research calculated marginal effects of LARC consumption model components. The marginal effect findings are provided in table 4.4.

Table 4. 5: Average Marginal Effects (Utilization of LARC Services)

LARC	Marginal Effects	Std. Err.	z	P>z	[95% Conf.	Interval]
Age	.0275**	.0023	11.89	0.000	.0230	.0321
Age Squared	-.0004**	.00004	-12.35	0.000	-.0005	-.0004
Marital Status (Married=1)	.0584**	.0054	10.66	0.000	.0476	.0691
Education Level						
Primary	.0528**	.007	7.50	0.000	.0390	.0666
Secondary	.0480**	.0082	5.89	0.000	.0320	.0640
Higher	.0684**	.0114	6.00	0.000	.0461	.0908
Wealth Index						
Poorer	.0253**	.0072	3.53	0.000	.0113	.0393
Middle	.0282**	.0074	3.83	0.000	.0138	.0427
Rich	.0352**	.0077	4.57	0.000	.0201	.0502
Richest	.0565**	.0089	6.32	0.000	.0390	.0740
Employment Status	.0130**	.0055	2.37	0.018	.0022	.0238
Medical insurance	.0076	.0064	1.19	0.233	-.0049	.0200
Religion						
Christian	.0069	.0202	0.34	0.733	-.0327	.0464
Muslim	-.0197	.0212	-0.93	0.352	-.0612	.0218
Desire for More Children	-.0371**	.0056	-6.59	0.000	-.0481	-.0261
Distance	.0029	.0057	0.51	0.609	-.0082	.0140
Exposure to Mass Media	.0155	.0085	1.82	0.069	-.0012	.0321

(**) Significant at 5% level.

The results are shown in Table 4.4 for marginal effects. At the 5% significance level, the coefficient on age (= 0.0275, p = 0.000) was determined to be positive and statistically significant. This reveals that an increase in respondent age increases the likelihood of a person accessing LARC services by 2.75 %, all other factors being held constant. At the 5% level, the coefficient on age squared (β= 0.0275, p = 0.000) was shown to have an inverse significant impact. This depicts that age has a non-linear correlation with LARC

service consumption. The non-linearity of the women's ages in the sample revealed that the impact of using LARC services decreased with increasing age. On the other hand, the coefficient on marital status showed a positive and statistically significant influence on the use of LARC services in Kenya (β= 0.0584, p=0.000). This indicates that married women were 5.84 % more likely to employ LARC services, all other factors being held constant. Therefore, it may be concluded that married women, as opposed to unmarried women, were more likely to choose for this technique in order to attain optimal birth spacing.

On the basis of educational attainment, those with primary, secondary, and tertiary education were compared to those with no education. The coefficient on primary education was (β= 0.0528, p value = 0.000), showing that women with primary education had a 5.28% greater likelihood of accessing LARC services than those with no education. The coefficient on secondary education was (β= 0.0480, p value = 0.000), showing that participants with secondary education used LARC services at a rate that was 4.8% higher than those with no education. In addition, the results demonstrated that the coefficient on higher education (β=0.0684, p=0.000) was positive and statistically significant. This indicates that women with greater levels of education were 6.84%imore likely to use LARC services than those with no education. The results indicate that educated women are more likely than those with no education to comprehend the broader advantages of family planning beyond utilizing FP techniques to avoid having more children.

Wealth quintiles of women who were assessed. The 1st wealth quintile was considered as a reference variable. The coefficient on the 2nd wealth quintile was (β= .0253, p value=.000), statistically significant at 5% level. This means that women in the 2nd wealth quintile were 2.53% more likely to utilize LARC services than women in the first wealth quintile, all other factors being constant. The coefficient on the third wealth quintile was (β= 0.0282, p value = 0.000), indicating that women in the 3rd wealth quintile were 3.52% more likely to utilize LARC services than those in the 1st wealth quintile. The coefficient for the 4th wealth quintile was significant at the 5% level (β= 0.0352, p = 0.000; p value = 0.000). Women in the 4th wealth quintile were about 3.52 percent more likely to utilize LARC services than women in the 1st wealth quintile, all other factors being constant. Likewise, the effect for the 5th wealth quintile was significant and positive at five percent significance level(ß = .0565, p=.000). Women in the richest index were 5.65% more likely to utilize LARC compared to women in the poorest category. The data on wealth quintiles suggest that women of reproductive age in Nandi County, Kenya, are more likely to use LARC services if they belong to a higher wealth quintile. Considering the nature of empowering processes in relation to gains in maternal health status, it is crucial to monitor contraceptive usage on a large scale in several dimensions.

The coefficient on employment (β= .0130, p =.018) was being significant as well as had a positive effect at 5 percent. Results indicate that employment raised significantly the chance of utilizing LARC by 1.3 percent when other factors were held constant. This finding means that women who are on any employment are likely to cater for the cost of obtaining LARC service as well as other related costs compared to those women who are not under any employment.

The coefficient on the desire for more children was shown to be negative and statistically significant at 5% (β= -0.0371, p=0.000). Women who desired to give birth within two years or more than two years were 3.71% less likely to use LARC services when all other factors were held constant. This may be the perception of women who may believe that utilizing LARC services would have a long-term impact and hence choose short-term approaches.

4.5 Discussion of the Regression Results

The calculated model showed that the age coefficient is positive and statistically significant meaning that an additional age of the woman, increases the probability of an individual utilizing LARC services. The coefficient on age squared was also revealed to have a negative and statistically significant effect. This means that age had a nonlinear relationship with utilization of LARC services. The nonlinearity of women's ages implied that, as women age, the impact of LARC service consumption decreases. The results confirms the findings of Njogu (1991) who conducted research on the past, current state, and potential future of contraceptive usage and selection among Kenyan women aged 15-49. Co Age was shown to be a significant predictor of the overall shift in contraceptive use among women across all regions.

From the literature, sexually active women between the age of 15 and 49 have a low adoption rate of LARC. LARC adoption has been shown to be highly correlated with socio-demographic variables. In their study, De Leon et al. (2019) analyzed twenty-three countries in the Caribbean and Latin America to establish the prevalence and disparities of the utilisation of LARC. Surveys of many indicators, including reproductive health

surveys, cluster surveys, and health and demographics surveys, completed since 2004 were evaluated. Reproductive females between the ages of 15 and 49 were considered for inclusion. The association between LARC adoption and contributing variables was estimated utilizing a logistic regression model. The findings showed that the prevalence of LARC usage was less than 10%. Their findings concurred to this result where they revealed that women between the ages of 15 and 17, those from lower socioeconomic groups, those who live in rural regions, and those with a lack of education were all blamed for the low LARC adoption rate.

There was a statistically and significant positive relationship between marital status and LARC being used in Nandi County, Kenya (where the county is located). Therefore, married women were more likely to make extensive use of LARC services. This indicates that married women may have to adopt the approach in order to adequately space their births compared to those who were not married. There was a difference between the results and those of Coll et al. (2019). They found that married women had the lowest rates of contemporary contraception use in most countries, therefore they should be targeted for intervention.

Individuals with lower levels of education were compared to those with higher levels of education, and the same was done for those with no education at all. Women with greater levels of education, as measured by the coefficient on secondary and higher education, were more likely to use LARC services than those with lower levels of education. These results suggest that women with more education have a decent understanding of the significance of FP and are more likely to implement the appropriate procedures to limit their reproductive potential. Knowledge's influence on method choice and proper,

consistent use of contraception is used as proof for the value of contraceptive education by Pazol et al., (2015). Asimwe (2013) conducted a research to determine the demographic and socioeconomic characteristics linked with the use of contraceptives among young women in Uganda, and our findings corroborated their findings. Women between the ages of 25 and 34 were examined, and the results showed that higher education levels significantly influenced the proportion of women who used contraception. To back this up, Sileo (2015) found that education is a major factor in postpartum women using contraception.

Evaluation of women's wealth by quintiles. As a point of comparison, the first quintile of households by wealth was utilised as a reference variable. When broken down by wealth quintiles, the 2nd, 3rd, 4th, and 5th all had statistically significant positive coefficients. Women of childbearing age in Nandi County, Kenya, are more likely to use LARC services if they are in the highest wealth quintile, according to the data on income distribution. In addition, the employment status had a significant positive effect implying that working women have more chances to cover the expense of LARC services and any other expenditures related to their utilization. Based on the research of Grossman (1972) and Andersen (1995), it is known that women of childbearing age are more likely to use LARC services when their household income is higher. It is believed that reproductive health outcomes will improve if women are given more control over their own lives. The results are supported by those of Asaolu et al. (2017), who found that educated women are more likely to delay marriage, to plan their pregnancies, to have prenatal care, and to have a trained medical professional present during their births. However, Asimwe (2013) found that wealthier families were more likely to have young women utilize contraception.

Lastly, a negative and statistically significant coefficient on the desire for more children was discovered. This may be related to the belief that two years is a short time for women who may perceive using LARC service may have a long term impact, and thus tend to go for short time methods. It's also worth noting that women who have recurrent healthcare-access are more likely to want more children, perhaps due to the fact of knowing to have healthy children. This conclusion was consistent with the findings of Asimwe (2013) in Uganda, who found that young women's desire for a smaller family size was significantly associated with their increased use of birth control. According to research conducted by Withers, Kano, and Pinatih (2010), women who meet the following characteristics are less likely to use contraception: older age, fewer children still alive, lack of consistent healthcare access as well as wish to have more children.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the research results and draws conclusions based on the link between the studied variables and the prevalence of LARC utilization among reproductive-aged women in Nandi County, Kenya. Recommendations for further research and policy changes are included.

5.2 Summary of the study findings

In order to ensure the well-being of women, their families, and the society at large, family planning (FP) is essential. The utilisation of modern contraceptives has greatly contributed to lowering the rates of mother and infant mortality. A form of birth control known as LARC is one that may be used effectively for a prolonged length of time without any intervention from the user. The main objective of this research was sole aim of establishing determinants of uptake of LARC among women of reproductive age in Nandi County, Kenya. The specific objective were; to learn how often used LARCs are among reproductive-aged women in Nandi County, Kenya; the secondary objective was to identify the factors that impact LARC adoption among Nandi County's reproductive-aged females. The research employed data from the 2014 KDHS.

The research employed a probit regression model to examine the impact of several variables on LARC use among Kenyan women of childbearing age. Five percent thresholds of significance were examined. Utilization of LARC services served as the response variable. Among the many factors considered in this analysis are the woman's

age, her age squared, her marital status, her level of education, her family's socioeconomic status, her employment, her health insurance, her religion, her desire to have children, the distance to the nearest health facility, and her exposure to mass media.

5.3 Conclusions

The results of the research show that using LARC is a normal part of a woman's life and leads to remarkable outcomes. Although the research found that LARC services were beneficial, it also found that other factors prevented women of reproductive age in Nandi County, Kenya from making use of them. In Nandi County, just around 8% of women who are capable of having children have admitted to utilizing LARC services, whereas 93.7% of the population has resorted to either temporary or permanent measures. Utilization of LARC services among women of reproductive age in Nandi County, Kenya, was found to be significantly related to factors such as age, marital status, education level, wealth quintile, and employment status. Women of childbearing age in Nandi County, Kenya, had lower rates of LARC service consumption when factors such as age squared and the desire for additional children were included.

5.4 Policy Recommendations

The research recommends providing a variety of ways to women in the county so that they may make an educated decision and have easy access to excellent follow-up services in order to enhance the adoption of LARC services. Using LARC services was also substantially connected or associated with socioeconomic factors such as the wealth index and women's employment. It follows that the research concludes that the government should think about doing something to increase the use of conrtaceptive services by

addressing the demand side characteristics that affect that usage. A woman's access to and usage of contraceptives may be affected by barriers in the healthcare system even if she has high levels of empowerment. Findings from the research imply that addressing quality flaws in contraceptive usage promotion might greatly reduce the impact of such barriers.

Furthermore, the government and NGOs in Nandi County, Kenya need to dedicate themselves to implementing and monitoring family planning programs to guarantee that married women have access to and use the most effective forms of contraception. There is some evidence in the literature to suggest that university women are more likely to work in the contemporary economy, placing them in the front of the contraceptive revolution. Therefore, the government should update the curriculum to include instruction on both current forms of contraception and the advantages of LARC. Understanding that educational initiatives may assist boost understanding of various contraceptive techniques, allowing people to make more educated choices and enhance the effectiveness of their contraceptive usage, is crucial. This is due to the correlation between academic achievement and LARC service use.

In order to better comprehend future reproductive behavior and unmet contraceptives requirements, the research acknowledges the need of analyzing or measuring fertility desires in connection to contraceptive usage. A negative correlation between LARC and the want for more children was observed. This conclusion shows that specialist clinics or contraceptive outreach workers may be needed to lower barriers to service usage among certain demographics, as shown by the research.

5.5 Areas for Further Studies

The main objective of this research was to identify the determining factors behind uptake of LARC among women of reproductive age in Nandi County, Kenya. The

pattern of LARC use among women of reproductive age in Nandi County, Kenya was the focus of this research. Given the current emphasis on male engagement in reproductive health services and men's effect on the utilisation of contraceptives techniques to their women, it is possible that the results might alter if males were also included in the data set utilized. Multiple linear regression model was employed as the estimate method of choice, and this method is highly dependent on a number of assumptions. Accordingly, the results of this study suggest for similar research on the uptake of LARC services in the other counties of Kenya.

More research is required to determine how health system and cultural values determinants impact women's adoption of LARC in relation to measures of women's empowerment. Further, it highlighted that further research into more complex estimating methods, including multinomial logit or probit regression models, is required (apart from probit, logit, or linear probability model). There is a need for more empirical research that controls for any political, social, and other confounding influences.

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