

**PREVALENCE AND FACTORS ASSOCIATED WITH UPTAKE OF LONG-ACTING REVERSIBLE  
CONTRACEPTIVES IN KIAMBU LEVEL FIVE HOSPITAL KIAMBU COUNTY**

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**DECLARATION**

This is to declare that this research report is my original work and has not been presented in any institution leading to the award of a degree or any other award.

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## TABLE OF CONTENTS

DECLARATION .....	i
LIST OF TABLES .....	iv
LIST OF FIGURES .....	v
ABBREVIATIONS AND ACRONYMS .....	vi
ABSTRACT.....	vii
CHAPTER ONE .....	1
1. INTRODUCTION .....	1
1.1 Background of the study .....	1
1.2 Statement of the problem .....	3
1.3 Study Justification .....	4
1.4 Research Questions .....	5
1.5.1 General Objective .....	6
1.5.2 Specific Objectives .....	6
CHAPTER TWO .....	7
2. LITERATURE REVIEW .....	7
2.0 Introduction .....	7
2.1 A global overview of trends of postpartum LARC methods use .....	7
2.2 Trends of postpartum LARC methods among all and married women in Kenya.....	8
2.3 Socio-demographic and reproductive factors associated with uptake of postpartum LARCs8	
2.3.1 Facilitators of uptake of postpartum LARC methods .....	9
2.3.2 Barriers to uptake of postpartum FP .....	10
2.7 Conceptual Framework .....	12
CHAPTER THREE .....	13
3. METHODOLOGY .....	13
3.0 Introduction .....	13
3.1 Study Design .....	13
3.2 Study Site .....	13
3.3 Study Population .....	13
3.4 Sampling Size Determination.....	14
3.5 Study Procedures.....	14
3.5.1 Counseling .....	14
3.5.2 Study Flow .....	15
3.6 Variables and Measures .....	15
3.6.1 Independent variables - sociodemographic covariates .....	15

3.6.2	Independent variables – obstetric or reproductive baseline variables .....	15
3.6.3	Independent variables – Knowledge and utilization of LARC methods .....	16
3.6.4	The dependent/Outcome variable .....	16
3.6.5	The operational definition of variables .....	16
3.7	Data Collection Procedures .....	16
3.8	Quality Assurance Procedures .....	17
3.9	Ethical Considerations.....	17
3.10	Data Management and Analysis .....	17
CHAPTER FOUR.....		19
4.	RESULTS .....	19
4.0	Introduction .....	19
4.1	Sociodemographic and reproductive profiles of postpartum women.....	19
4.2	Prevalence of postpartum long-acting reversible contraceptives .....	22
4.3	Univariable and Multivariable analyses of socio-demographic and reproductive factors associated with uptake of postpartum LARC .....	24
4.4	Barriers to the use of postpartum long-acting reversible contraceptives .....	30
CHAPTER FIVE .....		32
5.	DISCUSSION AND CONCLUSIONS .....	32
5.1	Discussions.....	32
5.2	Limitations .....	34
5.3	Recommendations .....	34
5.4	Future research .....	34
5.5	Conclusions .....	34
REFERENCES .....		35
APPENDICES .....		44
Appendix 1: Participant Information and Consent Form.....		44
Appendix 2: Questionnaire.....		46
Appendix 3: Budget .....		51
Appendix 4: Timeline .....		52
Appendix 5: ERC Approval Letter .....		53

## **LIST OF TABLES**

Table 1. Sociodemographic characteristics of postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019.....	19
Table 2. Reproductive characteristics of postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019.....	20
Table 3. LARC utilization among postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019.....	23
Table 4. Univariable and Multivariable logistic regression analyses of factors affecting LARC use among postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019 .....	25
Table 5. Comparison of sociodemographic and reproductive characteristics by postpartum contraception among women in Kiambu Level Five Hospital, Kiambu County, 2019.....	29

## **LIST OF FIGURES**

Figure 1: Conceptual Framework .....	12
Figure 2. Flowchart of recruitment and selection process .....	15
Figure 3. Current utilization of LARC.....	23
Figure 4. Reasons for not wanting/choosing immediate postpartum LARC .....	31

## **ABBREVIATIONS AND ACRONYMS**

<b>AIDS</b>	Acquired Immunodeficiency Syndrome
<b>ERC</b>	Ethical Review Committee Kenyatta National Hospital
<b>FP</b>	Family Planning
<b>HIV</b>	Human Immunodeficiency Virus
<b>IUCD</b>	Intrauterine Contraceptive Devices
<b>KDHS</b>	Kenya Demographic and Health Survey
<b>PMTCT</b>	Prevention of Mother to Child Transmission
<b>UoN</b>	University of Nairobi
<b>WHO</b>	World Health Organization

## ABSTRACT

**Background:** Postpartum long-acting reversible contraceptive (LARC) methods provide effective contraception. However, little is known about the socio-demographic and reproductive factors associated with postpartum, its uptake and barriers to the use of postpartum LARC.

**Objective:** To determine the prevalence of, socio-demographic and reproductive factors associated with uptake of, and barriers to the use of postpartum LARCs among women seeking FP services at Kiambu Level Five Hospital, Kiambu County, Kenya.

**Methods:** A cross-sectional study was employed from May to June 2019 among women visiting Kiambu Level Five Hospital in Kiambu County, Kenya. A total of 172 married women were selected using systematic random sampling method and interviewed about their postpartum contraceptive use. Data was collected using semi-structured interviewer-administered questionnaire. Descriptive statistics were used to estimate the prevalence of LARC, chi-square statistic was used for comparisons. Univariable and Multivariable logistic regression were used to isolate associations/effect of postpartum LARC predictors with the outcome.

**Results:** The prevalence of postpartum LARC was 31.4% (95% CI: 22.7, 41.4%). The women in age group 25–34 years old [COR: 0.346; 95% CI=0.236, 0.952,  $p<0.05$ ] and 35+ years old [COR: 5.08; 95% CI=1.26, 20.46] were less likely and more likely respectively to take up postpartum LARC than those in 15–24 years' age group. Women who ever used LARC [COR: 26.81; 95% CI=3.31, 217.35,  $p=0.002$ ] were also more likely to currently use LARC than those who didn't. Women whose spouses/partners completed secondary school [AOR: 0.06; 95% CI=0.001, 0.97] and tertiary [AOR: 0.05; 95% CI=0.001, 0.87] were less likely to currently use LARC than those who completed primary school. The postpartum women who had resumed menstruation [AOR: 0.34; 95% CI=0.12, 0.98] were less likely to use LARC than their counterparts who hadn't resumed their menses. Resumption of menstruation ( $p<0.05$ ) and sexual activity ( $p<0.001$ ) had statistically significant differences in women using and those not using contraceptive since delivery. Significant differences in proportions of both sexual intercourse and menstrual resumption ( $p<0.05$ ) in postpartum any contraceptive users and non-users were found. The major barrier to lack of uptake was side effects.

**Conclusions:** Nearly  $\frac{1}{3}$  of women utilized LARC during the postpartum period. Age group, ever used LARC, highest level of education completed by partner and resumption of menstruation were all associated with the current use of postpartum LARC. The major barriers to lack uptake were side effects, lack of knowledge of postpartum family planning.

**Recommendations:** Increasing access through counseling would be a highly effective strategy to meet the unmet needs of postpartum LARC.



## CHAPTER ONE

### 1. INTRODUCTION

#### 1.1 Background of the study

To attain the goal of “leaving no one behind” [1], measuring social inequalities is necessary. Importantly, universal access to sexual and reproductive health (SRH) is central to improving the quality of life for all [2,3]. One of the important issues discussed at the International Conference on Population and Development (ICPD) held in Cairo, in 1994 is reproductive rights and reproductive health [4]. The ICPD recognized the basic right of couples and individuals to make decisions freely and responsibly on the “number and spacing of their children and to have the information and means to do so and to ensure informed choices and make available a full range of safe and effective method” [4]. Family planning (FP) is therefore central to women’s SRH, given the risk of maternal mortality.

Globally, maternal mortality is a public health problem. The 2013 statistics showed that 289,000 women had died from pregnancy, childbirth or from the postpartum period complications [5,6]. In sub-Saharan Africa, the lifetime risk of maternal mortality of women is 1 in 39 live births, and this is the highest compared to other WHO regions [7]. Yet FP can improve child survival and reduce maternal mortality [8] and is considered an effective primary prevention strategy in developing countries [9]. Maternal mortality and morbidity can mainly be avoided through the provision of reproductive health services, including contraception [10].

Family planning is, therefore, one of the most significant health interventions. It has profound benefits for couples, individuals, households, communities/society, as well as important implications for maternal and child health, advances in education, poverty reduction and women empowerment [11]. Importantly, there is a growing demand in developing countries for SRH programmes for women. These women may face a variety of reproductive health risks such as too-early pregnancy and unintended pregnancy, often leading to unsafe abortion and associated complications. Unintended pregnancy happens at a time that a woman doesn’t want to get pregnant [12], that is, occurring sooner a woman would have desired or when she desired no (or no more) children.

SRH is a human right [2] and integration of FP services into maternal health services can be an effective strategy for substantially reducing unmet need, particularly in situations where maternity care is a woman’s primary contact with the health care system [13]. And by clarification, the unmet need for FP refers to the desire to postpone or avoid childbearing, without the use of any means of

contraception [14] and emphasizes the gap between some women's reproductive intentions and their contraceptive behaviour [15].

The postpartum period, also known as the puerperium, refers to the time after delivery when maternal physiological changes related to pregnancy return to the non-pregnant state [16]. The postpartum period, therefore, provides a critical window of opportunity suitable for addressing unmet contraceptive needs. Postpartum contraceptive use has far-reaching benefits, for instance, research evidence has indicated a positive association between increased birth interval and child survival and reduced risk of undernutrition [17], reduced risk of low birthweight and preterm birth in infants conceived 18–23 months after a live birth [18]. Postpartum contraceptive use can further reduce the risk of subsequent maternal morbidity and mortality [19,20].

During the postpartum period, it is important to use contraception to prevent unintended pregnancies. However, a significant proportion of women don't use contraception during this time resulting in unwanted childbirths and pregnancies. Eighty million of the unwanted childbirths globally are a result of low intake of contraceptives during the postpartum period [21]. Postpartum period also provides opportunities for interactions between those seeking FP and health service providers. Therefore, information and knowledge about contraceptives are disseminated and availed.

Family planning (FP) is an essential and cost-effective aspect of child health and maternal services globally. FP can be achieved through the use of different modern contraceptive methods which includes long-acting reversible contraceptives (LARCs) such as intrauterine device (IUDs), implants and injectables. LARCs have been previously reported to be the most effective reversible methods of contraception, convenient and besides other advantages is also long-lasting [22]. However, uptake of postpartum LARC is still low. For instance, in the slums of Nairobi, a study reported that LARCs were the least used methods during the initial year postpartum, with only 4% of women opting for implants and even fewer choosing an IUD [23].

Interestingly, according to the Kenya Demographic Health Survey (KDHS) of 2014, the need for family planning increased from 25.6% in 2009 to 58% in 2014. The 2014 KDHS reports that 53% of women surveyed use modern contraceptives while 5% use traditional methods [24]. This is an indication that 6 out of every 10 married women are using FP. Importantly, Kenya has agreed and signed regional and universal agreements such as International Conference on Population and

Development, Maputo, Abuja, and Family planning 2020 which seeks to improve access to contraceptives and therefore tracking progress is critical.

In Kenya, there is a rapid unregulated and unmet demand and need for spacing and limiting of pregnancies during the postpartum period. Given the effects of births that are closely spaced and the merits of extended pregnancy spaces, sound policies must be developed and implemented to reach the target population of postpartum women. Two-thirds of maternal and neonatal mortalities occur during the postpartum period [25]. However, if postpartum family planning is used, the number of mortalities can be reduced significantly.

This study aims at determining the prevalence of postpartum LARC methods. It also examined the socio-demographic and reproductive factors associated with postpartum LARCs uptake as well as barriers to the use of postpartum LARCs among clients of family planning services at Kiambu Level Five Hospital, Kiambu County, Kenya.

## **1.2 Statement of the problem**

Unintended pregnancies have been a long-standing global and national public health problem. National percentages hover around 40% for at least the past five years [26] and with about a similar lingering percentage ending in an abortion [27]. Unsurprisingly, family planning (FP) practice has increased in Kenya since the early 1980s, when a series of population guidelines were implemented [28]. The current contraceptive prevalence rate for all methods is at 62 % [24]. Despite the milestones, the unmet need for FP during the postpartum period poses a risk of unwanted conception associated with increased neonatal and maternal mortality [29]. This is because closely spaced pregnancies are associated with a higher risk of abortion and poor pregnancy outcomes [30].

In spite of the efforts by the government, generally in accessing family planning services, the unmet need for postpartum FP in Kenya is still high ranging from 90% in the first 3 months to 68% by the end of the first year [31] from previous estimates. Although the availability of contraceptives is increasing, unintended pregnancies still remain a worldwide problem. Different strategies have been proposed to reverse this worrying trend, more so increased use of the safe and highly effective postpartum LARC methods. Evidence also indicates that increasing the use of postpartum LARC has the potential of reducing unintended pregnancy [32].

In Kenya, only a small proportion of sexually active women use LARC Methods [33]. So, understanding the socio-demographic and reproductive factors associated with LARCs use amongst postpartum women would provide insight into the obstacles that affect the uptake of postpartum contraceptive, especially LARCs. Equally, assessing the prevalence of postpartum LARC methods utilization would help in discussing interventions to address unmet needs.

### **1.3 Study Justification**

According to WHO Global Health Observatory (GHO) 2015 data, about 830 women died every day from pregnancy complications and childbirth [34]. The GHO data points that almost all these preventable deaths were from low-resource settings of which pregnancy was among the major causes. Kenya has had very high maternal mortality ranging from at 400-600 deaths per 100,000 live births over the past decade as of the year 2015, and achieved “no progress” in Millennium Development Goal 5 [35] – however, the 2014 KDHS report showed 362 maternal deaths per 100,000 livebirths accounting for 14% of deaths among women aged 15–49 years old [24]. WHO identified FP as among the critical interventions to counter maternal mortality [35].

Determining the prevalence of FP, particularly postpartum LARCs, would be an important aspect in policy formulation to address expanded access to appropriate contraceptive options for women, therefore, decrease the numbers of unintended pregnancies as well as maternal deaths. The postpartum period, therefore, provides an important opportunity for addressing unmet contraceptives needs. Postpartum contraception is recommended to reduce subsequent unwanted pregnancy and recourse to unsafe abortion, however little is known about the sociodemographic and reproductive factors associated with postpartum LARC use.

Kenya has made remarkable achievements in FP with recent statistics showing that 58% of currently married women and 65% of sexually active unmarried women use an FP method [36]. However, the improvements in unmet need for FP have been inconsistent. The unmet need for contraception grew by 1.1% to 25.6% between 2003 and 2008–2009, but it reduced to 18% by 2014.

Healthy timing and spacing of births decrease maternal morbidity and mortality risks [9]. With the introduction of free maternity services in public health facilities in June 2013 by the government of Kenya [37], the number of facility-based deliveries increased [38] and this further presents an opportunity for contacts with FP health service providers at the facilities to disseminate the FP related information.

The long-acting contraceptive prevalence rate in Kenya is 15.2% and 23.6% for all women and married women of age 15–49 respectively [26] and 12.2% and 15.9% are the corresponding unmet need in these categories. Low contraceptive use is associated with high maternal morbidity and mortality rates, unwanted pregnancies, short birth interval and a higher risk of obstetric and newborn complications [39]. Importantly, Kenya has also committed to Family Planning 2020 (FP2020) from the London summit in July 2012 and this requires that modern contraceptive prevalence rate is tracked in the country, as an indicator of fulfilling this commitment [36]. Again, research in postpartum contraception is a remains a priority in low and middle-income countries [40] due to unmet needs of FP.

Family planning (FP) an essential and cost-effective aspect of child health and maternal services globally [41]. However, uptake of postpartum LARCs is still low among women. This has resulted in an increase in unwanted and unplanned pregnancies. Again, the high unmet need for postpartum FP, if not checked, could as well reverse the gains Kenya has put toward the reduction and elimination of maternal and child mortalities, such as the free maternal health care policy [37]. And as Gitobu et al. (2018)'s study suggested, it's necessary to concurrently address factors that lead to pregnancy-related and neonatal mortalities as their study found no significant changes in the maternal mortality ratio and the neonatal mortality rate before and after implementation of the free maternal health care policy. The Gitobu et al.'s study, though FP is not implied, is a call to action to address maternal and child health of which postpartum LARC is a useful component. This is where this study comes in.

Despite extensive accessibility, safety, effectiveness, and benefits, use of LARCs is still low. Owing to this low coverage, unwanted pregnancy is still a threat to the individual health of the women at postpartum as well as the country's public health and this poses socio-economic challenges for all – to the women and to the country at large. Additionally, there are very few reliable studies on postpartum LARCs and sociodemographic and reproductive factors associated with it and barriers to use. This study was conducted to fill this information gap and inform policy. The output of this study enables policymakers to develop and implement policies that would improve access and uptake to long-acting reversible contraceptives and reduce unintended pregnancies.

#### **1.4 Research Questions**

- i) What is the prevalence of postpartum long-acting reversible contraceptives among women seeking family planning services in Kiambu Level Five Hospital?
- ii) What are the socio-demographic and reproductive factors associated with uptake of postpartum long-acting reversible contraceptives in Kiambu Level Five Hospital?

- iii) What are the barriers to the use of postpartum long-acting reversible contraceptives among clients of family planning services at Kiambu Level Five Hospital?

## **1.5 Objectives**

### **1.5.1 General Objective**

To determine the prevalence of long-acting reversible contraceptives, socio-demographic and reproductive factors associated with uptake, and barriers to the use of postpartum long-acting reversible contraceptives among postpartum women seeking family planning services at Kiambu Level Five Hospital, Kiambu County, Kenya.

### **1.5.2 Specific Objectives**

- i) To determine the prevalence of postpartum long-acting reversible contraceptives among postpartum women seeking family planning services in Kiambu Level Five Hospital.
- ii) To examine the socio-demographic and reproductive factors associated with uptake of postpartum long-acting reversible contraceptives in Kiambu Level Five Hospital.
- iii) To determine barriers to the use of postpartum long-acting reversible contraceptives among postpartum women seeking family planning services at Kiambu Level Five Hospital.

## CHAPTER TWO

### 2. LITERATURE REVIEW

#### 2.0 Introduction

This chapter presents a review of literature on trends in prevalence of postpartum LARC, socio-demographic and reproductive factors associated with postpartum LARC uptake, and barriers to the use of postpartum LARC FP methods globally and narrows to the Kenyan case. It begins by presenting the global context of postpartum LARC methods use and delves on trends in the prevalence of postpartum LARC methods in Kenya.

#### 2.1 A global overview of trends of postpartum LARC methods use

Globally, unintended pregnancy is a public health problem even though substantial advances have been made on contraceptive technologies. Currently, an estimated 214 million women are not using any method of contraception to stop or delay childbearing [42]. According to WHO (2018), global use of modern contraception rose slightly, from 54% in 1990 to 57.4% in 2015. Regional trends indicate that the proportion of women aged 15–49 using a modern methods of contraception increased minimally between the year 2008 and 2015. It moved from 23.6%–28.5% in Africa, rose slightly from 60.9%–61.8% in Asia, and remained stable at 66.7% in Latin America and the Caribbean [42,43].

In 2003, 9% and 18% of women aged 15–49 years who were either married or in a consensual union reported using LARC methods in high- and low- resource countries, respectively [43]. However, in several sub-Saharan African countries, fewer than 5% of women reporting using contraception in the past decade were using LARC methods [44]. The low uptake of LARCs is attributed to misperceptions about its safety and efficacy, inadequately trained service providers, perceptions on lack of demand and the complexity of providing LARC methods compared with short-acting methods of contraception [45].

A study conducted in Uganda among 400 women reported that only 8.5% were using a LARC method [46] and IUD and implant use was 1.8% and 10.4% respectively. In a prospective study aimed at the incidence of postpartum LARC use among Malawian women, the incidence rate for implant uptake was found to be 35.6 per 100 person-years [47]. A retrospective study opting for reversible birth control methods in a Ghanaian tertiary hospital reported that of 5946 clients, 71% chose LARCs, and the rest 29% resorted to shorter-acting contraceptives [48].

Another cross-sectional study assessing the prevalence of LARC use in FP clients at Jimma Town health institutions, Ethiopia, found that of 422 participants 23% were on LARC of which, 83% and 17% were using implants and IUD respectively, and 22% ever used LARC methods [49]. Uptake of the postpartum IUD was found to be 41% among 300 women attending antenatal care in eleven private health care facilities in Nigerian [50]. A study in Mekelle, Ethiopia from 348 FP users on acceptability and uptake of LARC reported 16.4% [51].

## **2.2 Trends of postpartum LARC methods among all and married women in Kenya**

The use of modern contraceptives among women increased from 39% in 2009 to 53% in 2014 enabling the government of Kenya's Population Policy for National Development has achieved its target of 52% of currently married women using a modern contraceptive method by 2015 [52]. Few recent studies available in Kenya show an increase in the prevalence of modern method and of LARC use [53]. At the same time, the use of traditional contraceptive methods decreased from 8% in 2003 to 5% in 2013 [52].

In 2014, Shabiby et al. (2015)'s study at Naivasha and Mbagathi District Hospitals in Kenya found that the overall uptake of immediate postpartum implants was 50.3%, higher among HIV negative (57%) than HIV positive (43%) participants who have a higher risk of contraceptive failure [55]. A recent study in Kakamega County by Ontiri et al. (2019) reported 20.6% use of LARC among women. Other available studies aren't on postpartum LARC.

## **2.3 Socio-demographic and reproductive factors associated with uptake of postpartum LARCs**

A significant proportion of the pregnancies in Kenya during the postpartum period are unintended. More than 4 in 10 pregnancies are unwanted and on average, a woman gives birth to one extra child than planned [57]. The use of LARC methods can be influenced by socio-demographic characteristics. The socio-demographic factors include age, level of educational, religion, ethnicity, residence, employment/income or type the woman's occupation. Reproductive or obstetric factors of the women seeking FP services also play a critical role. All these categories of factors may be facilitators or barriers to LARC use. Reproductive or obstetric factors include parity, age at first birth or age at first marriage, abortion history, pregnancy complications, number of children a woman desires to have. Additionally, there is knowledge or awareness of methods of contraception, these include discussing contraception methods or ever heard about postpartum LARC methods which may as well have profound effects on uptake of postpartum LARC.



### **2.3.1 Facilitators of uptake of postpartum LARC methods**

Factors that promote the use of postpartum family planning articulated in studies in sub-Saharan Africa and other low-income countries include sociodemographic factors, [58] family planning counseling, [59,60] health system factors [61,62] and obstetric and health status during the index pregnancy [54].

Among the demographic factors that may promote postpartum contraceptive use is age and education [56]. Several other studies also report that increase in postpartum family planning uptake with increasing levels of education [58,62–64]. Jalango et al. (2017) reported that there was a significant association between higher education and postpartum family planning uptake in Kenyan women. Equally, lower maternal age may also influence postpartum family planning uptake in Kenyan women [62]. Age was found to be a significant predictor of postpartum family planning use in Rwanda and Burundi [58]

Separately, higher socioeconomic status, as was recently reported, increased uptake of postpartum LARC by between 20% and 50% in Ethiopian women in the two highest wealth quintiles compared to those in the lowest quintile [63]. An earlier study in 2015 had similarly reported disparities in postpartum family planning uptake by wealth quintile in Ethiopia [61] Rwanda and Burundi, [58] and employment status in Kenya [62].

Marital status has been reported to be associated with postpartum family planning uptake in Kenyan women [62]. Apart from marital status, studies also report that mothers who, in addition to being married, report that they currently live with the partner had higher uptake. Similarly, the number of living children and prior use of LARC significantly influences the current use of the contraception method. LARCs were mainly utilized by women who had more living children who had previously used the same contraceptive method [48].

A study reported that mothers who receive antenatal counseling are more likely to take up postpartum family planning [59]. More specifically in the case of postpartum LARC uptake, a Malawian study by Tang et al. (2016) demonstrated that correct implant knowledge was associated with implant uptake. Apart from the widely reported influence of family planning counseling on use of family planning methods in the postpartum period, a recent trial in Guinea showed that reinforced counseling resulted in greater FP uptake compared to routine counseling [65]. In Nigeria, multiple counseling sessions were shown to yield higher uptake compared to single sessions [60].

Regarding health systems, a study analyzing data from three African countries for evidence of missed opportunities of integration of postpartum family planning reported that health sector services that were consistently associated with family planning uptake were institutional childbirth and child

immunization services [61]. Higher postpartum family planning has been reported in mothers who reported the availability of contraceptives at the health facility that they visited in Kenya [62] while professional birth delivery assistance was significant in Rwanda [58]. Both the Kenyan and Rwandan studies reflect the capacity of the health system to offer services and the influence of this on postpartum family planning uptake.

Additionally, the uptake of postpartum long-acting contraception was reported to be higher among the urban women compared to the rural women due to inequality in health services, income, wealth and opportunities [66]. Weston et al. found that women from the rural areas are unable to inquire about the use of contraception due to fear of exposing their sexual experiences which are viewed as a taboo in most communities.

### **2.3.2 Barriers to uptake of postpartum FP**

A significant number of the studies conducted globally on factors influencing the uptake and acceptability of LARC methods have concluded that the uptake is low [67]. Some of the main reasons are a negative attitude towards LARC are fear of side effects, fear of insertion procedure, spouse disapproval and low education levels. But with increased awareness and counseling, it's hoped that the trajectory might change.

The working women with higher education levels are more likely to use LARCs compared to those who are unemployed and have little or no educational level [68]. Women in urban areas are more likely to accept LARCs compared to those in rural areas.

A study by Hubacher, Masaba, Manduku, and Veena (2013) on 671 women in Kenya who were seeking contraception at 6–12 weeks postpartum and provide them an opportunity to use the levonorgestrel intrauterine system found that 16% used Levonorgestrel intrauterine, injectable (36%), subdermal implant (30%), progestin-only pills (15%) and copper intrauterine device (IUD) (3%). Reasons for not choosing the levonorgestrel intrauterine in the Hubacher et al.'s study included fear of pain/injury/discomfort (34%), modesty issues regarding insertion (33%) and fear of hormonal/health side effects (31%). Almost a third of those who accepted levonorgestrel intrauterine reported that they would have chosen a short-acting method if the levonorgestrel intrauterine were not available, and 21% would have chosen the copper IUD.

Similar barriers have been reported in Ethiopia where some of the main reasons for not using LARC are spouse disapproval, fear of insertion procedure – as before, lack of decision making power among

women and the fear of side effects [49]. Health care providers reported that inadequate counseling skills, workload, spouse influence and a lack of understanding about LARC are the major reasons for low uptake of LARC. The primary reasons for not using LARC were fear of developing side effects 128 (44.8%), and fear of infertility after use 117(40.9%)s [51] just as reported in the earlier studies.

A study analyzing data from five countries (India, Pakistan, Kenya, Zambia, and Guatemala) reported barriers to LARC uptake six weeks postpartum [70]. The study reported between 1% and 14.6% uptake for LARC in different countries with significant predictors for unmet need for contraceptives being home deliveries, young age (less than 20 years), and low parity (2 or less).

A West African study reports both participant and provider-related barriers to LARC uptake. The qualitative study conducted in a rural setting in Ghana reported that underutilization of LARC was related to lack of specific knowledge on IUD, incomplete contraceptive counseling and interestingly the lack of confidence with LARC insertion among health workers [71]. The findings in the study closely related to those in an earlier study in Burkina Faso and Democratic Republic of Congo that identified lack of awareness, myths, and misconceptions, lack of access as key barriers to postpartum FP [72]. Lack of male involvement and requirement for out of pocket copayment were also identified as barriers to uptake of LARC during the postpartum period.

Emergent themes on barriers to LARCs have been reported in Uganda to include myths and misinformation, lived experiences by women, the fear of side effects, perceptions of health providers, the influence of relatives and lack of knowledge and women desire for spacing children for a long time [73]. Similarly, a study in Ghana on LARCs, in this case, IUD, found that barriers included lack of IUD-specific knowledge, the discomfort of the provider with insertion, incomplete FP methods counseling as well as a participant- and provider-related barriers contribute to poor uptake of IUDs within the community [71].

The postpartum pregnancies can be minimized with the use of long-acting contraception methods. However, the uptake and acceptability of LARCs are low due to various factors such as ignorance, low education levels, cultural beliefs, geographical location, cost of contraception, inaccessibility to health centers low education levels, age, poverty and inadequate government support [74]. Some countries have tight regulations regarding access to contraceptives that limit uptake and use of the contraceptives. If there is no use of contraceptives during the period, there is a likelihood that the women will experience another pregnancy within a short span reducing the space between subsequent pregnancies [75].

## 2.7 Conceptual Framework

The purpose of this study is to establish the factors that influence the use and uptake of postpartum contraception in Kiambu District Hospital. It focused on the associations between unplanned pregnancy and consumptions of Family planning methods, especially LARCs, socio-economic, facility, and health factors that influence its acceptance and uptake.

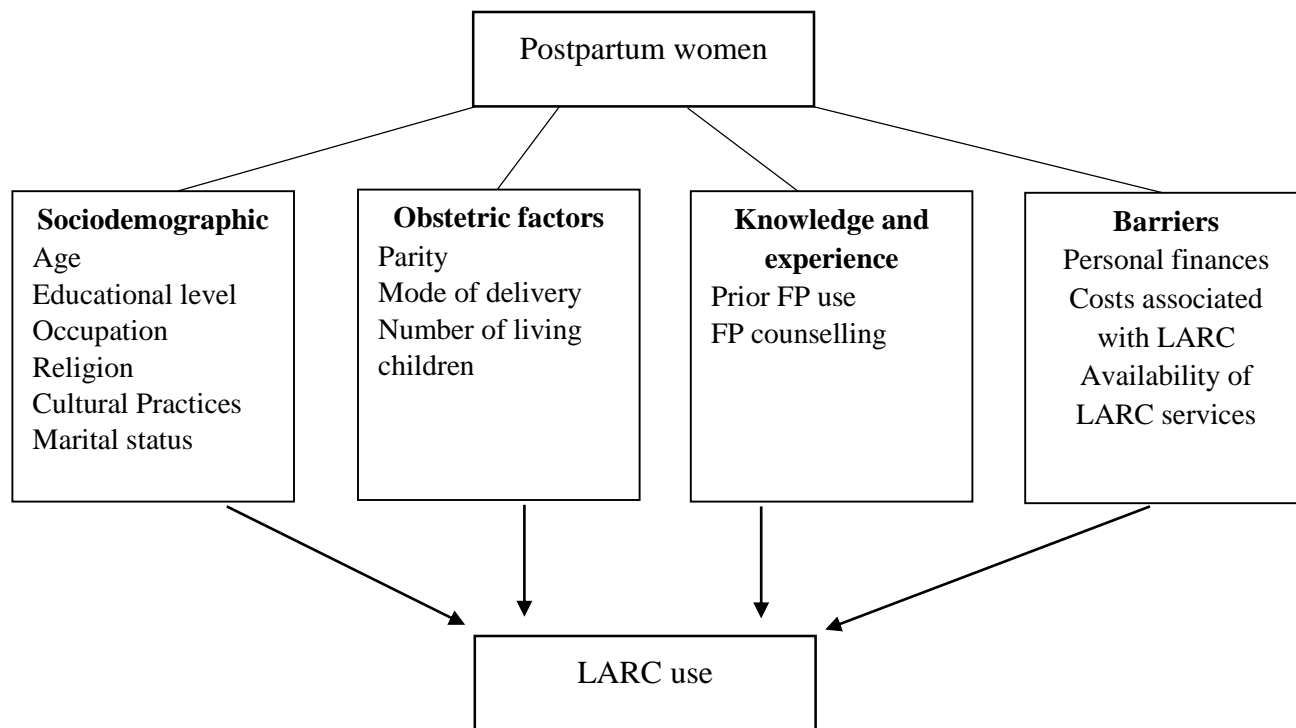


Figure 1: Conceptual Framework

## CHAPTER THREE

### 3. METHODOLOGY

#### 3.0 Introduction

In this Chapter, information on how the research objectives were addressed is presented. This entails a description of the design of the study as well as the setting, study population, sample size calculation and its justification, data collection instrument, ethical approval of the study and data management. It also provides information on data collection procedures, quality control, and assurance and the statistical analysis plans that were used.

#### 3.1 Study Design

This was a health facility-based, cross-sectional study that was carried out for a period of four weeks between May and June 2019.

#### 3.2 Study Site

The study was conducted at Kiambu Level Five Hospital, a government level 4 health facility located in Githunguri Division, Kiambaa Constituency, and Kiambu County. It is approximately 16 kilometers from Nairobi and 38 kilometers from Thika town. It is located in a cosmopolitan town and serves patients from Nairobi and Murang' counties forcing them to share beds, increase congestion and overstressing medical personnel and drug supply.

The hospital offers both In- and Outpatient services consisting of the following; antenatal and postnatal care, primary emergency obstetric care, family planning, growth monitoring, and promotion, HIV counseling and testing, immunization, prevention of mother to child transmission of HIV (PMTCT), Tuberculosis laboratory and treatment. The average number of births annually is 10,000. The hospital has a Maternal and Child Health (MCH) unit at the outpatient department that offers family planning services. All methods of family planning are offered from condoms, pills injectable to long term methods both reversible like IUCDs, implants and permanent methods like tubal ligation. The MCH clinic attends to approximately 200 women and children monthly. The county government of Kiambu funds the family planning unit.

#### 3.3 Study Population

The cross-sectional study targeted women who delivered in Kiambu Level Five Hospital, Kiambu County among a pool of women attending the Maternal and Child Health (MCH) clinic for FP up to 12 months.

Inclusion criteria:

- Postpartum women after twelfth week and within 12 months of delivery seeking PFPF.
- Postpartum women who agree to sign written informed consent to participate.

Exclusion criteria:

1. Women who had permanent contraceptive methods – hysterectomy and tubal ligation
2. Women before the twelfth week and after 12 months postpartum.
3. Women who do not agree to sign a written informed consent form.

### 3.4 Sampling Size Determination

The sample size that was used is determined using a formula for estimation of single population proportion [76].

$$\text{Sample size} = \frac{Z_{1-\alpha/2}^2 P(1 - P)}{d^2}$$

Where  $Z_{1-\alpha/2} = 1.96$ , the standard normal variate at 5% type 1 error ( $p < 0.05$ ). P is the expected proportion in population based on previous studies and d is the absolute error/precision.

A total of 208 was computed using a 95% confidence interval, 5% desired precision, 15.2% prevalence for current use of LARC in Kenya from the Performance Monitoring and Accountability 2020 fourth round of data collection in Kenya [26]. Addition of 5% for non-response on the computed sample size of 198 gave the final sample size of 208.

As aforementioned, an a priori power analysis showed that the minimal sample size is 198. However, given the facility-based nature of this study, the final sample size was influenced by the practical and administrative issue of time and data collection was interrupted. The study ended before time achieving a sample size of 172. The practical sample size did not affect the findings as they were quite comparable with previous studies.

### 3.5 Study Procedures

#### 3.5.1 Counseling

The counseling on contraception to the postpartum women was conducted by the principal investigator or caregiver (Nurse) at the facility after the questionnaire is complete. It enhanced the patient's future reproductive aims, facts, and fallacies associated with long-acting reversible contraception. The postpartum women were enlightened on different forms of contraceptives and the effects of each method on women who are lactating and those nonlactating. The merits and demerits of each approach

and the postpartum women made their own decision to use the long-acting reversible contraception or not and had it inserted if they met the eligibility criteria.

### 3.5.2 Study Flow

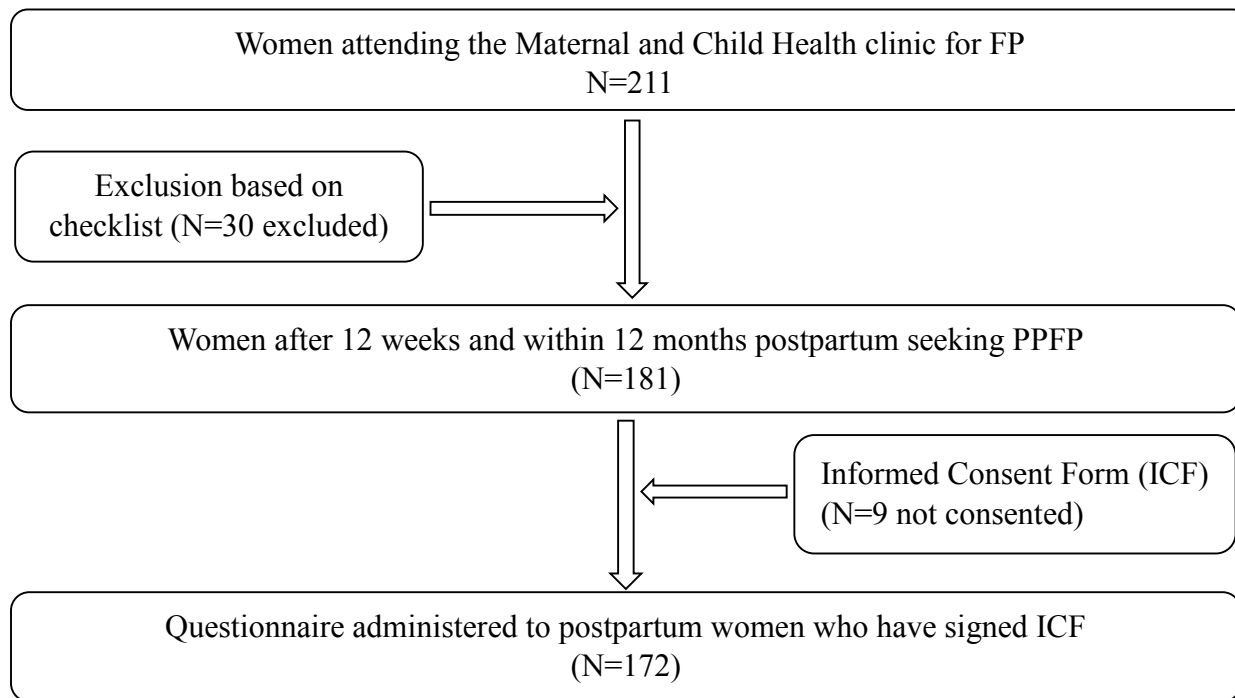


Figure 2. Flowchart of recruitment and selection process

### 3.6.1 Independent variables - sociodemographic covariates

Age in complete years, religion (Christian, Muslim, others), marital status (married, single, widowed, divorced/separated, cohabiting), highest level of school attended (none, primary, secondary, college/university), residence (urban, rural), occupation (unemployed/housewife, self-employed/business, salaried employment, casual, still in the school/college/university), age of spouse, highest level of school attended by your spouse, highest level of school attended by spouse, current occupation of your spouse.

### 3.6.2 Independent variables – obstetric or reproductive baseline variables

Number of live births, number of children, number boys/girls, birth intervals (less than 24 months, 24 to 36 months, 36 and above months), adverse outcome of any previous pregnancy (yes/no), pregnancy intended (intended, unintended, unsure, preterm birth (< 37 weeks gestation)), currently breast-feeding (yes/no), length of time since delivery (1– 3 months, 4 months, 5–6 months, 7–12 months), prenatal contraceptive counseling about LARC (yes/no), pregnancy intention (yes, no, don't know), mode of delivery (vaginal delivery, cesarean section), when likely to have next child (as soon ill possible, in the next year, in 2 years, in 3 years, in more 3 years, when I get married,

don't know), number of children still wanted, resumption of menstruation (yes/no), resumption of sexual activity (not resumed, less than 3 months, 3 to 6 months).

### **3.6.3 Independent variables – Knowledge and utilization of LARC methods**

Contraceptive(s) have you used since delivery, Ever heard of LARCs (Yes/No), ever used LARC (Yes/No), LARC method used previously (Implanon, Sino-implant/Jadelle, IUCD), currently use of LARC method (Yes/No), current LARC using (Implanon, Sino-implant/Jadelle, IUCD), time of LARC adoption since childbirth (Less than 3 months, 3 to 6 months, 6 and above months), own choice of current method (yes/no), reasons for not choosing postpartum LARC (side effects, the idea of a foreign object, the idea of hormones in body, the idea that it cannot be removed by self, fear of being hurt, preferred another kind of birth control, wanted to wait until postpartum visit, worried that LARC method would make breastfeeding harder, partner didn't approve, didn't know I could get one right after delivery – before leaving the hospital, didn't have the money to pay for it, didn't know enough about LARC methods, I want to get pregnant again within a year, other family members and/or friends did not want me to get LARC).

### **3.6.4 The dependent/Outcome variable**

Binary current use of LARC method (yes/no). This was obtained by asking the respondents whether or not they are using any LARC method currently, that is, currently on IUD (yes/no) and currently on implants (yes/no).

### **3.6.5 The operational definition of variables**

Current use of LARC method

- If the client seeking FP service at the health facility is currently using any of LARC methods.

Ever use of LARC method

- If an FP client is not using any LARC method currently but had been using any of LARC methods in her lifetime previously.

Client's awareness of LARC method

- Yes, if a client mentions both implants and IUCD; No: If a client mentions only either of them or none.

## **3.7 Data Collection Procedures**

Considerable effort was put to get valid and reliable data. Data was collected using a pre-tested, semi-structured questionnaire. The questionnaire that was used was prepared after a review of relevant medical literature. The research team familiarized themselves with the study health facility. The



medical superintendent was met and briefed on the purpose and objectives of the study to ensure support and sustainability.

The questionnaire was filled by the respondent or researcher by asking questions to the participant after obtaining written consent from the respondent and translated where necessary for the respondent

### **3.8 Quality Assurance Procedures**

The research assistants were trained to familiarize with the data collection instrument before actual data collection and on interviewing techniques and how to fill the questionnaires. The data collected from the clients were counter checked to ensure completeness and avoid inconsistent responses. The data was also double entered using two data entry clerks to harmonize inconsistencies and ensure quality. The lead researcher was available during data collection to provide clarifications where need be.

### **3.9 Ethical Considerations**

The research proposal was submitted to the Ethical Review Committee of the Kenyatta National Hospital/University of Nairobi (KNH/UoN ERC) and approved, Protocol No. P196/03/2019 annexed at the end of this research report in Appendix 5. Administrative permission to conduct the study was obtained from the management of the Kiambu Level Five Hospital – Kiambu County and the Department of Obstetrics and Gynecology at the University of Nairobi before data collection.

Written informed consent was obtained from the respondents before data collection during which the study purpose was explained and the study is voluntary/no coercion and can exit or withdraw their participation at any stage without affecting the delivery of service to them at the facility and would still be accorded standard care at the facility. The participants would not be financially compensated financially for taking part in the study, but it was emphasized that the results of the study would be used to inform policy. Trained personnel administered the questionnaire.

Given the sensitivity of the study, careful considerations were made in designing questionnaire and in the selection of research assistants. The questionnaires were anonymized to render it unidentifiable. To make it easy for the patients to respond, they were told that the questionnaire is not an intelligence test but only used for study purposes only.

### **3.10 Data Management and Analysis**

De-identified participant data were collected then entered into an Excel database for data compilation and analysis. Data collected using semi-structured interviewer-administered questionnaire was

cleaned and analyzed using R software version 3.5.1. Descriptive statistics were used to estimate the prevalence of LARC and done for every appropriate study variable, chi-square statistics for categorical data was used for comparisons. Descriptive analyses were used to characterize the study population using the variables. The analyses included the mean age with standard deviation (SD) and discrete age data were categorized accordingly. The overall prevalence of LARC was provided with 95% confidence intervals (CI).

Univariable analysis was applied to the independent variables against the dependent/outcome variable to choose candidate variables for inclusion in the multivariable logistic regression analyses. Univariable/Multivariable logistic regression, in this case, was used to isolate the effect of postpartum LARC factors/predictors. The odds ratios with 95% confidence intervals (CIs) were computed to isolate factors associated with the contraceptive use, while appropriately handling effect modification and confounding.

## CHAPTER FOUR

### 4. RESULTS

#### 4.0 Introduction

This Chapter provides the results of all the descriptive analyses relevant in this of the profiles of the study participants. The Chi-square test for equality of proportions between groups of women who took postpartum contraceptives is looked at. The Chapter also provides the findings of the univariable and multivariable logistic regression for modeling the associations between the current use of postpartum LARC (outcome) and a number of predictors. The Chapter is organized into four sections covering sociodemographic and reproductive profiles, the prevalence of postpartum LARC, statistical analyses (test of equality of proportions, univariable and multivariable).

#### 4.1 Sociodemographic and reproductive profiles of postpartum women

A total of 172 postpartum family planning women participated in the study. The respondent's minimum age was 17 and at marriage 16 while the maximum was 50 and 34 respectively. The mean or median age was 27 and 23 at marriage. Majority of the women were in age category 25-24 (55.8%), were married (68.4%) and had secondary education as shown in Table 1 below. Equally, 65.1% were urban and were mostly of Christian background while 71.8% had their age at first marriage at 15-24 category.

Table 1. Sociodemographic characteristics of postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019.

Variable	Number	Percentage
<b>Age Group (N=172)</b>		
15–24	62	36.0
25–34	96	55.8
35+	14	8.1
<b>Marital status (N=171)</b>		
Single	36	21.1
Married	117	68.4
Divorced/separated	18	10.5
<b>Age at first marriage (N=124)</b>		
15–24	89	71.8
25–34	35	28.2
<b>Age of spouse/partner (N=128)</b>		
15–24	5	3.9
25–34	78	60.9
35+	45	35.2

<b>Variable</b>	<b>Number</b>	<b>Percentage</b>
<b>Highest level of education completed (N=170)</b>		
Primary	30	17.6
Secondary	94	55.3
Tertiary	46	27.1
<b>Highest level of education completed by spouse/partner (N=139)</b>		
Primary	8	5.8
Secondary	45	32.4
Tertiary	86	61.9
<b>Occupation (N=139)</b>		
Salaried employment	25	15.0
Self-employed/business	47	28.1
Casual	23	13.8
Student (in school/college/university)	9	5.4
Unemployed/housewife	63	37.7
<b>Current occupation of your spouse/partner (N=167)</b>		
Salaried employment	57	40.4
Self-employed/business	58	41.1
Casual	21	14.9
Student (in school/college/university)	1	0.7
Unemployed/housewife	4	2.8
<b>Religion (N=141)</b>		
Christian	163	96.4
Muslim	6	3.6
<b>Residence (N=169)</b>		
Urban	110	65.1
Rural	59	34.9

In terms of reproductive profiles exemplified in Table 2 below, most of the women reported birth intervals of 36 and above months (44.8%), reported the likelihood of having next child in more 3 years (41%). Similarly, 113 (67.3%) had postpartum LARC counseling. At the same time, 121 (71.2%) of the women reported that the pregnancies were intended even as 35 (20.6%) had a history of unwanted pregnancies. However, 128 (81.5%) reported an adverse outcome of any previous pregnancy they had.

Table 2. Reproductive characteristics of postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019

<b>Variable</b>	<b>Number</b>	<b>Percentage</b>
<b>Number of live births (N=170)</b>		
1	66	38.8

<b>Variable</b>	<b>Number</b>	<b>Percentage</b>
2	55	32.4
3 or more	49	28.8
<b>Number of children (N=156)</b>		
1	61	39.1
2	52	33.3
3 or more	43	27.6
<b>Number boys/girls (N=339)</b>		
Boys	176	51.9
Girls	163	48.1
<b>Birth intervals (N=116)</b>		
Less than 24 months	21	18.1
24 to 36 months	43	37.1
36 and above months	52	44.8
<b>Adverse outcome of any previous pregnancy (N=157)</b>		
Yes	128	81.5
No	29	18.5
<b>Pregnancy intended (N=170)</b>		
Intended	121	71.2
Unintended	35	20.6
Unsure	9	5.3
Preterm birth (< 37 weeks gestation))	5	2.9
<b>Mode of delivery (N=172)</b>		
Vaginal delivery	127	73.8
Cesarean section	45	26.2
<b>Currently breastfeeding (N=165)</b>		
Yes	156	94.5
No	9	5.5
<b>Length of time since delivery (N=159)</b>		
1– 3 months	114	71.7
4 months	30	18.9
5–6 months	6	3.8
7–12 months	9	5.7
<b>Prenatal contraceptive counseling about LARC (N=168)</b>		
Yes	113	67.3
No	55	32.7
<b>Future pregnancy intention (N=164)</b>		
Yes	124	75.6
No	21	12.8
Don't know/not sure	19	11.6
<b>When likely to have the next child (N=139)</b>		
In the next year	4	2.9

<b>Variable</b>	<b>Number</b>	<b>Percentage</b>
In 2 years	7	5.0
In 3 years	37	26.6
In more 3 years	57	41.0
When I get married	16	11.5
Don't know	18	12.9
<b>Number of children still wanted (N=124)</b>		
1	53	42.7
2	54	43.5
3 or more	17	13.7
<b>Resumption of menstruation (N=168)</b>		
Yes	107	63.7
No	61	36.3
<b>Resumption of sexual activity (N=165)</b>		
Not resumed	67	40.6
Less than 3 months	73	44.2
3 to 6 months	25	15.2

#### **4.2 Prevalence of postpartum long-acting reversible contraceptives**

Majority of the women had heard of postpartum LARC 153 (90.5%) and 72 (43.1%) ever used LARC. The study participants were also asked if they used LARC “currently” and 32 (31.4%; 95% CI: 22.7, 41.4%) out of 102 reported current use as shown in Figure 3 below. When asked about contraceptives used since delivery, 26 (21.7%) out 120 reported use of Implanon, Sino-implant/Jadelle, and IUD – including dual use with some few short-acting reversible contraceptives since delivery.

Specifically, Implanon was the LARC method reported by 41 (57.7%) having been mostly used previously and with 16 (57.1%) reporting current usage, likewise IUD was currently being used by 8 (28.6%) but among the LARCs used since delivery, it (IUD) was the least used. Four (14.3%) reported current uptake of Sino-implant/Jadelle. Importantly, among short-acting reversible contraceptives (SARCs) used since delivery, pills were highly reported by 36 (49.3%). Forty (95.2%) of the women made their own choice of the current LARC they adopted.

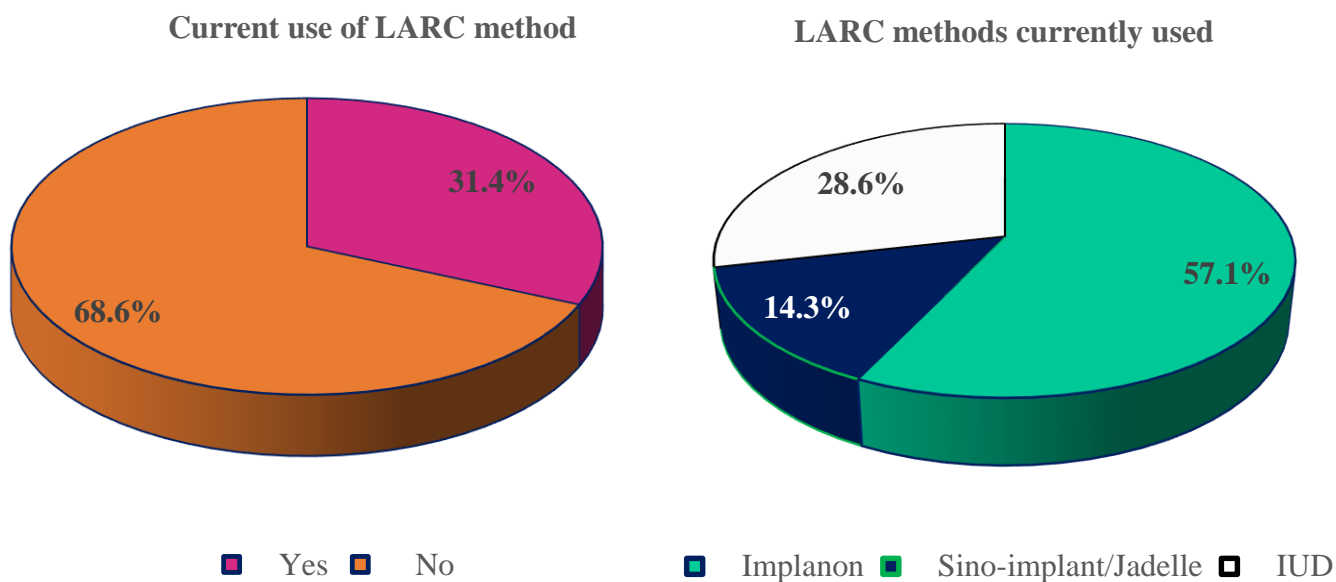


Figure 3. Current utilization of LARC

Table 3 below shows the frequencies and percentages by the variables considered. Adoption of postpartum LARC appears to be low compared with the SARC methods postpartum, however, uptake of a barrier method (condom) was considered the lowest. The time of adoption of LARC methods since childbirth was reported by 23 (54.8%), 17 (40.5%), 2 (4.8%) as 3 to 6 months, less than 3 months and 6 and above months respectively.

Table 3. LARC utilization among postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019

Variables		Frequency	Percent (%)
<b>Contraceptive(s) used since delivery</b>			
<b>Short-acting reversible contraception</b>	Barrier	1	0.8
	Pills	36	30.0
	Injectable	10	8.3
<b>Long-acting reversible contraception</b>	Implanon	16	13.3
	Sino-implant/Jadelle	4	3.3
	IUD	6	5.0
<b>None</b>		47	39.2
<b>Ever heard of LARCs</b>			
Yes		153	90.5
No		16	9.5
<b>Ever used LARC</b>			
Yes		72	43.1
No		95	56.9
<b>LARC method used previously</b>			
Implanon		41	57.7

<b>Variables</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Contraceptive(s) used since delivery</b>		
Sino-implant/Jadelle	10	14.1
IUD	20	28.2
<b>Current use of LARC method</b>		
Yes	32	31.4
No	70	68.6
<b>LARC currently using</b>		
Implanon	16	57.1
Sino-implant/Jadelle	4	14.3
IUD	8	28.6
<b>Time of LARC adoption since childbirth</b>		
Less than 3 months	17	40.5
3 to 6 months	23	54.8
6 and above months	2	4.8
<b>Own choice of current LARC method</b>		
Yes	40	95.2
No	2	4.8

#### **4.3 Univariable and Multivariable analyses of socio-demographic and reproductive factors associated with uptake of postpartum LARC**

A univariable logistic regression model was fitted to examine the socio-demographic and reproductive factors associated with uptake of postpartum long-acting reversible contraceptives. The findings demonstrated that age group ( $p < 0.05$ ), ever used LARC ( $p = 0.002$ ) were statistically significant and associated with the current uptake of postpartum LARC. The women in the age group 25–34 years old [COR: 0.346; 95% CI=0.236, 0.952] and 35+ years old [COR: 5.08; 95% CI=1.26, 20.46] were less likely and more likely respectively to take up postpartum LARC than those in 15–24 years' age group. Similarly, the postpartum women who ever used LARC [COR: 26.81; 95% CI=3.31, 217.35] were also more likely to currently use LARC than those who didn't. Table 4 shows the results of the analysis.



Table 4. Univariable and Multivariable logistic regression analyses of factors affecting LARC use among postpartum women in Kiambu Level Five Hospital, Kiambu County, 2019

Variables	Current LARC use		COR <sup>1</sup> (95% CI) and p-values	AOR <sup>2</sup> (95% CI) and p-values
	Yes	No		
<b>Age Group</b>				
15–24	8	18	Reference	
25–34	22	43	2.9 (1.53, 5.5) 0.001	0.54 (0.15, 1.93) 0.342
35+	2	9	5.08 (1.26, 20.46) 0.022	0.1 (0.01, 1.74) 0.114
<b>Marital status</b>				
Divorced/separated	1	11	Reference	
Married	25	47	0.8 (0.3, 2.16) 0.660	NA
Single	6	11	0.45 (0.15, 1.34) 0.152	
<b>Age at first marriage</b>				
15–24	16	35	Reference	
25–34	5	19	1.63 (0.71, 3.73) 0.252	NA
<b>Age of spouse/partner</b>				
15–24	1	1	Reference	
25–34	9	29	1.43 (0.19, 10.78) 0.732	NA
35+	16	20	6 (0.7, 51.77) 0.103	NA
<b>Highest level of education completed</b>				
Primary	5	9	Reference	
Secondary	18	42	2.02 (0.89, 4.59) 0.094	NA
Tertiary	9	19	1.78 (0.68, 4.67) 0.243	NA
<b>Highest level of education completed by spouse/partner</b>				
Primary	3	1	Reference	
Secondary	10	17	0.2 (0.02, 2.54) 0.213	0.06 (0, 0.97) 0.048
Tertiary	14	39	0.12 (0.01, 1.32) 0.083	0.05 (0, 0.87) 0.040
<b>Occupation</b>				
Casual	2	10	Reference	

<sup>1</sup> Crude Odds Ratio for univariable logistic regression

<sup>2</sup> Adjusted Odds Ratio for multivariable logistic regression

Variables	Current LARC use		COR <sup>1</sup> (95% CI) and p-values	AOR <sup>2</sup> (95% CI) and p-values
	Yes	No		
Salaried employment	7	11	3.18 (0.63, 16.04) 0.161	NA
Self-employed/business	11	23	2.39 (0.51, 11.13) 0.267	NA
Student (in school/college/university)	2	2	5 (0.47, 52.99) 0.181	NA
Unemployed/housewife	8	23	1.74 (0.39, 7.67) 0.465	NA
<b>Current occupation of spouse/partner</b>				
Casual	4	6	Reference	
Salaried employment	11	25	0.66 (0.12, 3.5) 0.625	NA
Self-employed/business	12	24	0.75 (0.16, 3.49) 0.714	NA
Student (in school/college/university)	0	0	–	
Unemployed/housewife	0	3	0.000000096 (0, 0) * < 0.001	NA
<b>Religion</b>				
Muslim	1	0	Reference	
Christian	31	68	< 0.001**	NA
<b>Residence</b>				
Rural	7	26	Reference	
Urban	25	42	2.21 (0.76, 6.41) 0.144	2.06 (0.67, 6.35) 0.208
<b>Number of live births</b>				
1	6	18	Reference	
2	15	26	1.73 (0.54, 5.52) 0.354	NA
3 or more	11	24	1.37 (0.42, 4.47) 0.597	NA
<b>Number of children</b>				
1	4	17	Reference	
2	13	25	2.21 (0.59, 8.22) 0.237	NA
3 or more	10	22	1.93 (0.5, 7.41) 0.337	NA
<b>Birth intervals</b>				
24 to 36 months	6	22	Reference	
36 and above months	10	28	1.26 (0.43, 3.64) 0.673	NA

Variables	Current LARC use		COR <sup>1</sup> (95% CI) and p-values	AOR <sup>2</sup> (95% CI) and p-values
	Yes	No		
Less than 24 months	1	5	0.44 (0.04, 4.64) 0.495	NA
<b>Adverse outcome of any previous pregnancy</b>				
No	27	48	Reference	
Yes	4	13	0.55 (0.16, 1.9) 0.343	NA
<b>Pregnancy intended</b>				
Intended	30	49	Reference	
Preterm birth (< 37 weeks gestation))	1	1	1.63 (0.09, 28.88) 0.738	NA
Unintended	1	15	0.11 (0.01, 0.9) 0.04	NA
Unsure	0	4	0.0000001044 (0, 0) * < 0.001	NA
<b>Mode of delivery</b>				
Cesarean section	4	13	Reference	
Vaginal delivery	26	57	1.48 (0.45, 4.91) 0.519	NA
<b>Currently breastfeeding</b>				
No	2	4	Reference	
Yes	27	64	0.84 (0.17, 4.23) 0.836	NA
<b>Length of time since delivery</b>				
1– 3 months	17	51	Reference	
4 months	1	11	2.45 (0.81, 7.41) 0.111	NA
5–6 months	9	1	3 (0.15, 61.02) 0.475	NA
7–12 months	3	2	4.5 (0.88, 23.11) 0.072	NA
<b>Prenatal contraceptive counseling about LARC</b>				
No	5	19	Reference	
Yes	26	50	1.98 (0.57, 6.9) 0.286	NA
<b>Future pregnancy intention</b>				
Don't know/not sure	2	8	0.25 (0.04, 1.47) 0.125	NA
No	3	9	1.33 (0.2, 8.98) 0.768	NA

Variables	Current LARC use		COR <sup>1</sup> (95% CI) and p-values	AOR <sup>2</sup> (95% CI) and p-values
	Yes	No		
Yes	24	52	1.85 (0.28, 12.27) 0.526	NA
<b>Number of children still wanted</b>				
1	12	28	Reference	
2	11	17	1.51 (0.49, 4.63) 0.471	NA
3 or more	3	6	1.17 (0.25, 5.34) 0.843	NA
<b>Resumption of menstruation</b>				
No	11	16	Reference	
Yes	20	54	0.54 (0.21, 1.37) 0.193	0.34 (0.12, 0.98) 0.045
<b>Resumption of sexual activity</b>				
3 to 6 months			Reference	
Less than 3 months			1.12 (0.29, 4.42) 0.866	NA
Not resumed			0.45 (0.12, 1.69) 0.237	NA
<b>Ever heard of LARCs</b>				
No	1	3	Reference	
Yes	31	66	1.41 (0.14, 13.84) 0.769	NA
<b>Ever used LARC</b>				
No	1	32	Reference	
Yes	31	37	26.81 (3.31, 217.35) 0.002	NA

From the univariable logistic model, variables with  $p < 0.25$ , large standard errors and those deemed to be of clinical significance were fit into the multivariable model, that is age group, the highest level of education completed by spouse/partner, residence, resumption of menstruation and respondent's highest education level. The highest level of education completed by spouse/partner ( $p < 0.05$ ) and resumption of menstruation ( $p = 0.045$ ) had statistically significant association with current uptake of postpartum LARC. The postpartum women whose spouses/partners completed secondary school [AOR: 0.06; 95% CI=0.001, 0.97] and tertiary [AOR: 0.05; 95% CI=0.001, 0.87] were less likely to currently use LARC than those whose spouses/partners were in primary school. Equally, the postpartum women who had resumed menstruation [AOR: 0.34; 95% CI=0.12, 0.98] were less likely to currently use LARC than their counterparts who hadn't resumed their menses. Table 4 above shows the CI, p-values and the Adjusted Odds Ratios.

Table 5 below shows the Chi-square comparisons of the equality of proportions of sociodemographic and reproductive characteristics by postpartum contraception or none use of contraceptives.

Among the variables analyzed, the proportion of women experiencing menstrual resumption was statistically significant ( $p=0.04269$ ). Since the  $p$ -value is less than the standard/conventional 0.05, it indicates a statistically significant difference in the proportion of women experiencing their menses in the two groups. This means that many women in the postpartum contraception group have resumed their menses than those in the none postpartum contraception group. Similarly, in terms of resumption of sexual activity, a statistically significant difference ( $p<0.001$ ) was found. This implies that the proportion of women using postpartum contraceptives is not equal in each group of those resuming 3 to 6 months, less than 3 months after childbirth and those not resumed sexual activity.

There appears that the proportion of women using contraceptives at postpartum is equal in each category highest education level ( $p=0.3532$ ), age group ( $p=0.76$ ), prenatal LARC counseling ( $p=0.3393$ ) and future pregnancy intention ( $p=0.07826$ ).

Table 5. Comparison of sociodemographic and reproductive characteristics by postpartum contraception among women in Kiambu Level Five Hospital, Kiambu County, 2019

<i>N</i> = 117	Postpartum contraception <sup>3</sup>	No postpartum contraception	<i>p</i> -value <sup>4</sup>
	<i>n</i> (%)	<i>n</i> (%)	
	70 (59.8%)	47 (40.2%)	
<b>Highest education level</b>			
Primary	15 (62.5)	9 (37.5)	0.3532
Secondary	40 (65.6)	21 (34.4)	
Tertiary	15 (50.0)	15 (50.0)	
<b>Age Group</b>			
≤27	39 (61.9)	24 (38.1)	0.76
>27	31 (57.4)	23 (42.6)	
<b>Menstrual resumption</b>			
Yes	50 (67.6)	24 (32.4)	0.04269
No	19 (46.3)	22 (53.7)	
<b>Prenatal LARC counseling</b>			
Yes	51 (63.0)	30 (37.0)	0.3393
No	18	17	
<b>Future pregnancy intention</b>			

<sup>3</sup> Contraceptives taken after the delivery

<sup>4</sup> Tests for differences in proportions. Chi-square test for categorical variables to compare women who had taken any form of postpartum contraception and none after delivery

<i>N</i> = 117	Postpartum contraception <sup>3</sup>	No postpartum contraception	<i>p</i> -value <sup>4</sup>
	<b>n (%)</b>	<b>n (%)</b>	
	<b>70 (59.8%)</b>	<b>47 (40.2%)</b>	
Yes	56 (65.9)	29 (34.1)	0.07826
No/Don't know/not sure	12 (44.4)	15 (55.6)	
<b>Resumption of sexual activity</b>			
3 to 6 months	10 (66.7)	5 (33.3)	<0.001
≤3 months	50 (87.7)	7 (12.3)	
Not resumed	7 (17.5)	33 (82.5)	

#### 4.4 Barriers to the use of postpartum long-acting reversible contraceptives

Figure 3 below shows the reasons for the lack of uptake of postpartum LARC. The postpartum women were also asked to provide the reasons for not taking up LARC. Out of 194 responses, 32.5% of the study participants reported that the side effects were the major barriers for their uptake of postpartum LARC followed by lack of knowledge of postpartum family planning (13.4%), that is, being unaware that LARC could be provided immediately after birth before leaving the hospital. Preference of another method (10.3%) and waiting until postpartum visit was also cited as the reasons. Lack of money to pay for postpartum LARC were the least (1% each) reasons mentioned by the participants.

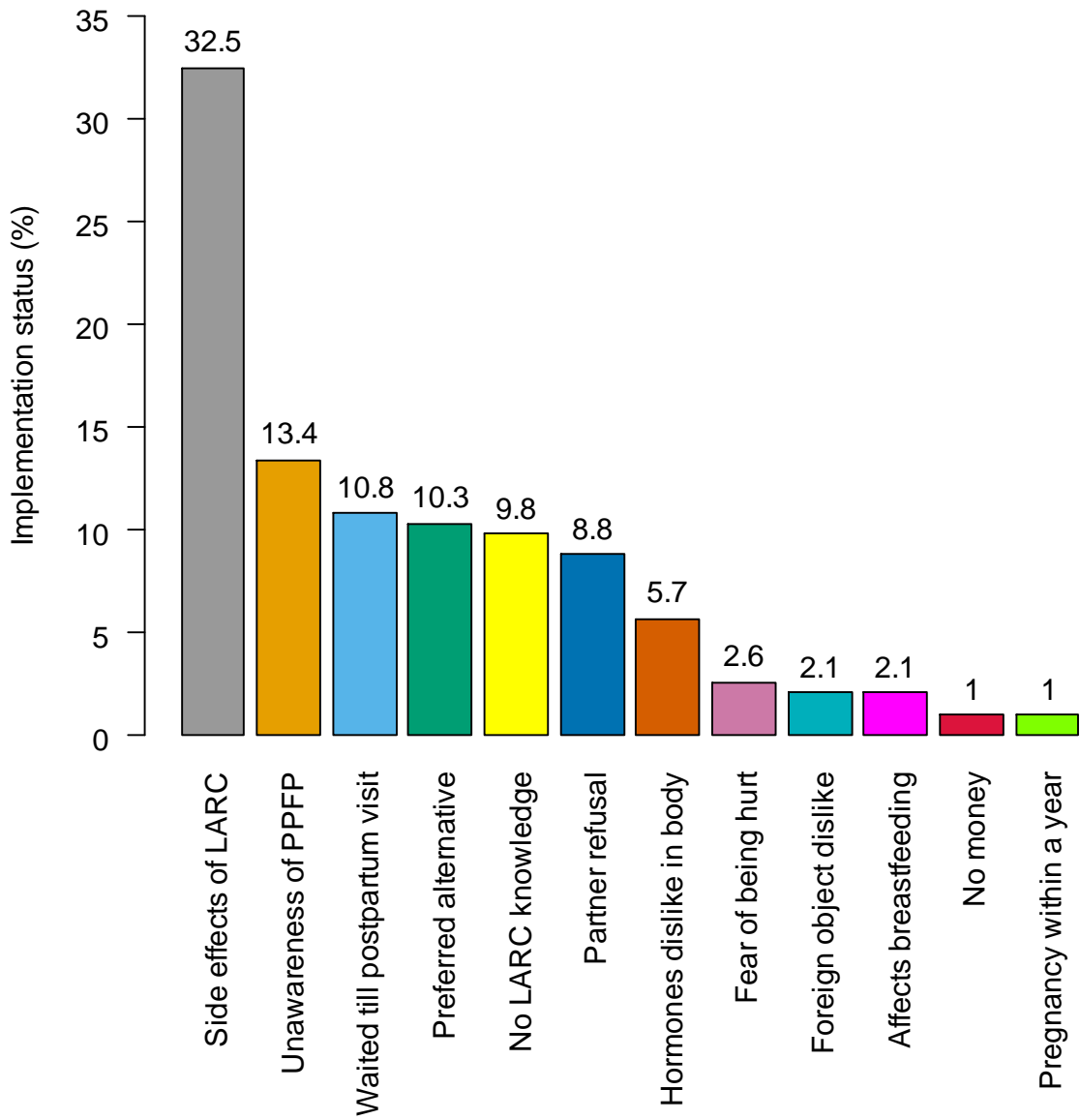


Figure 4. Reasons for not wanting/choosing immediate postpartum LARC

## CHAPTER FIVE

### 5. DISCUSSION AND CONCLUSIONS

#### 5.1 Discussions

Unintended pregnancies have been a long-standing global and national public health problem. Even so, LARC is the most effective reversible methods of contraception, convenient and besides other advantages is also long-lasting [22]. This study determined the prevalence of long-acting reversible contraceptives, socio-demographic and reproductive factors associated with uptake, and barriers to the use of postpartum long-acting reversible contraceptives among postpartum women. The prevalence of LARC was 31.4% (95% CI: 22.7, 41.4%). This prevalence is not far off from those previously reported in Kenya, for instance prevalence rates of 15.2% and 23.6% for all women and married women of age 15–49 respectively [26], 20.6% in Kakamega County, Kenya [56] 22.9% (95% CI: 18.9, 26.9%) in Ethiopia [49] and 22.5% in [77].

Majority of the women studied were relatively young of the median age of 27 and ranged from 17 to 50 and were mostly married (68.4%) and with secondary education and Christian (65.1%). It's possible that the increasing number of educated women could have led to a reduction of unmet needs of family planning including of uptake of LARC, which though inconsistent is quite impressive for Kenya [36]. It's noteworthy that the birth intervals mostly reported by the participants were of 36 and above months (44.8%) representing a relatively wide interval when taken hand in hand with the likelihood of having the next child (in more 3 years (41%)) equally reported. The pregnancies were intentional (71.2%). However, adverse pregnancy events (81.5%) presented challenges for the study participants and this highlights challenges and opportunities for health policymakers to formulate policy frameworks that would ease this burden.

This study also found out that most of the women had heard of postpartum LARC 153 (90.5%) while 72 (43.1%) had ever used LARC. This high proportion, however, doesn't match the unmet need previously reported of 12.2% (and 15.9% for married women) [26] and 20.6% unintended pregnancies reported in this study, including the high numbers of short-acting reversible contraceptives used since delivery, such as pills at 36 (49.3%).

Importantly, a huge percentage of women (95.2%) made their own choice of the current LARC they adopted. However, the major barriers include side effects (32.5%), lack of knowledge of postpartum family planning (13.4%), unawareness of the fact that LARC could be provided postpartum at the hospital, characteristically method preference (10.3%) played apart owing what works for every



woman at postpartum. It also appears that LARC methods require contact by FP healthcare providers when compared with other short-acting methods that the participants reported to have used since delivery. Some of these barriers have been previously reported though to varying percentages and aligns well with studies [51] and lack of decision-making powers of the women [49] including lack financial resources reported in this study that curtails access to postpartum LARC.

Chi-square tests of the equality of proportions of sociodemographic and reproductive characteristics by postpartum contraception (those who used either LARC or SARC) and none use of any of the contraceptives showed that women in the postpartum contraception group resumed their menses than those in the none postpartum contraception group ( $p < 0.05$ ). A statistically significant difference ( $p < 0.001$ ) was found for the resumption of sexual activity. This implies that the proportion of women using postpartum contraceptives is not equal in each group of those resuming 3 to 6 months, less than 3 months after childbirth and those not resumed sexual activity.

The tests of the equality of proportions underscore the matrix of postpartum sexual activity (or abstinence), birth spacing and early pregnancies [78] and affirm that early resumption of sexual intercourse postpartum has an influence on the contraceptives utilization evidenced from a Chinese study [79]. Similarly, Ugandan study found that postnatal women with low parity, high income, whoever used contraception or had a partner/spouse with high level of education were more likely to resume sexual intercourse early [80], as depicted in the regression analyses discussed below, emphasize the differences that exist between contraceptive users and non-users postpartum. Descriptive analyses of time of adoption of LARC methods since childbirth was reported by 23 (54.8%), 17 (40.5%), 2 (4.8%) as 3 to 6 months, less than 3 months and 6 and above months respectively further reinforces the influence.

The univariable logistic model revealed that both age group and ever used LARC ( $p < 0.05$ ) were associated significantly with the current uptake of postpartum LARC. The FP clients in the age group 25–34 years old [COR: 0.346; 95% CI=0.236, 0.952] and 35+ years old [COR: 5.08; 95% CI=1.26, 20.46] were less likely and more likely respectively to take up postpartum LARC than those in 15–24 years' age group. This seems to agree with previous studies [77]. Similarly, the postpartum women who ever used LARC [COR: 26.81; 95% CI=3.31, 217.35] were also more likely to currently use LARC than those who didn't.

The highest level of education completed by spouse/partner and resumption of menstruation ( $p < 0.05$ ) were all statistically significant in multivariable logistic regression model indicating an association with current uptake of postpartum LARC. Equally, the FP clients participating in this

study whose spouses/partners completed secondary school [AOR: 0.06; 95% CI=0.001, 0.97] and tertiary [AOR: 0.05; 95% CI=0.001, 0.87] were less likely to currently use LARC than those whose spouses/partners were in primary school. At the same time, the women who had resumed menstruation [AOR: 0.34; 95% CI=0.12, 0.98] were less likely to currently use LARC than their counterparts who hadn't resumed their menses. This study's findings are well corroborated by a number of previous studies [49,56,81–86].

## **5.2 Limitations**

Since this study also involves self-reporting, recall, and social desirability biases may arise. Given the sensitivity of the study, there may be underreporting arising from socio-cultural norms associated with sexual reproductive health. At the same time, the results that arose from this study may not be generalizable beyond the study site since it was a facility-based cross-sectional study and most participants were from an urban setup. Additionally, there may be some structural or facility-based factors that may have an influence on the use and uptake of LARC methods beyond the scope of this study.

## **5.3 Recommendations**

Coverage of prenatal counseling for postpartum LARC is still low. The policymakers in Kenya need to enhance this at the critical postpartum window to address the unmet contraceptives needs. Provision of access to LARC during the postpartum period would be the highly effective strategy for meeting unmet needs of postpartum LARC.

## **5.4 Future research**

Further research studies are needed to assess the effects of unintended pregnancy on future postpartum LARC utilization. Future studies may be needed to include factors that could as well influence contraceptive decisions, for instance, beliefs and attitudes about contraceptive utilization, family (or individual level) socioeconomic status, contraceptive services accessibility. Longitudinal studies are needed to examine the potential influence of obstetric and sociodemographic factors especially on young women going forward to understand the evolutions of these factors.

## **5.5 Conclusions**

The prevalence of postpartum long-acting reversible contraceptive 31.4% falling within the range previously reported estimates in Kenya and was low. Age group, ever used LARC, highest level of education completed by spouse/partner and resumption of menstruation were the factors identified to be associated with the current uptake of postpartum LARC. The barriers to lack uptake mostly

included side effects, lack of knowledge of postpartum family planning, unawareness of the fact that postpartum LARC in the hospital and preference of other contraceptives.

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## APPENDICES

### Appendix 1: Participant Information and Consent Form ADULT CONSENT

#### FOR ENROLLMENT IN THE STUDY

**Title of Study: Prevalence and factors associated with uptake of long-acting reversible contraceptives in Kiambu Level Five hospital, Kiambu county.**

**Principal Investigator\and institutional affiliation: Dr. Nasri Mohamed Yussuf, Resident, Department of Obstetrics and Gynecology, University of Nairobi.**

#### **Introduction:**

I would like to tell you about a study being conducted by Dr. Nasri Mohamed. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called 'informed consent'. Once you understand and agree to be in the study, I will request you to sign your name on this form. You should understand the general principles which apply to all participants in medical research: i) Your decision to participate is entirely voluntary ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal

May I continue? YES / NO \_\_\_\_\_

#### **Consent for Participation in Interview Research**

I volunteer to participate in a research study conducted by Dr. Nasri Mohamed from the University of Nairobi. I understand that the study is designed to gather information about prevalence and factors associated with uptake of long-acting reversible contraceptives in Kiambu level five hospital Kiambu county. I will be one of approximately 208 women being interviewed for this research.

1. My participation in this project is purely voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue my participation at any time without penalty. If I decline to participate or withdraw from the study, I will not be victimized or lose any benefits.
2. I understand that most interviewees in this study will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end the interview.

3. The interview will last approximately 15–20 minutes. The interview will cover topics such as the utilization of postpartum long-acting reversible contraceptives as well as sociodemographic and reproductive characteristics.
4. I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.
5. I understand that if I agree to participate in this study, I will be interviewed by a trained interviewer in a private area where I feel comfortable answering questions. This precaution will prevent my individual comments from having any negative repercussions.
6. I understand that this research study will be reviewed and approved by the Kenyatta National Hospital-University of Nairobi Ethics Review Committee (KNH/UoN ERC) Protocol No. P196/03/2019.
7. For more information about my rights, research problems or questions about your rights as a research participant, I may contact the KNH/UoN ERC through the Secretary/Chairperson, Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Telephone No. 2726300 Ext. 44102 email uonknh\_erc@uonbi.ac.ke.
8. I have read and understood the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.
9. I have been given a copy of this consent form.

---

My Signature

---

Date

---

My Printed Name

---

Signature of the Investigator

For further information, please contact:

Dr. Nasri Mohamed,

0723678647

**Appendix 2: Questionnaire**

**STUDY TITLE: PREVALENCE AND FACTORS ASSOCIATED WITH UPTAKE OF LONG-ACTING REVERSIBLE CONTRACEPTIVES IN KIAMBU LEVEL FIVE HOSPITAL KIAMBU COUNTY**

**SERIAL NO.**

**SECTION I: SOCIODEMOGRAPHIC CHARACTERISTICS**

1. How old are you? (as of last birthday) 
  - a) In what month and year were you born? Month  , Year
  - b) Probe for inconsistency and correct. Corrected age
  
2. a) What is your marital status?  
Single  Married  Widowed  Divorced/separated 
  - c) If applicable, what was your age at first marriage?
  
3. How old is your spouse/partner (as of last birthday)?
  
4. a) What is the highest level of education you completed?  
Never attended  Primary  Secondary  Tertiary 
  - b) What is the highest level of education completed by your spouse/partner?  
Never attended  Primary  Secondary  Tertiary
  
5. a) What is your occupation?  
Unemployed/housewife   
Salaried employment   
Self-employed/business   
Casual   
Student (in school/college/university)

b) What is the current occupation of your spouse/partner?

Unemployed

Salaried employment

Self-employed/business

Casual

Student (in school/college/university)

6. What is your religion?

Christian  Muslim  Other

7. Residence: Urban  Rural

## SECTION II: REPRODUCTIVE CHARACTERISTICS

1. How many live births have you had so far?

2. a) How many children do you have?

b) How many are boys and how many are girls?

Boys

Girls

3. How long did you wait after giving birth before the next pregnancy (birth intervals)?

Less than 24 months

24 to 36 Months

36 and above months

4. Any adverse outcome of any previous pregnancy?

Yes

No

5. Was this pregnancy intended?

Intended

Unintended

Unsure

Preterm birth (< 37 weeks gestation)

6. Mode of delivery

Vaginal delivery  Cesarean section

7. Currently breastfeeding?

Yes  No

8. How long since delivery?

1–3 months

4 months

5–6 months

7–12 months

9. Prenatal contraceptive counseling about LARC?

Yes  No

10. Do you intend to (get pregnant again and) have (more)children someday?

Yes  No (Skip to section II Question 12)  Don't know/not sure

11. If it were entirely up to you, when would you like to have your next child?

As soon as possible

In the next year

In 2 years

In 3 years

In more than 3 years

When I get married

Do not know

12. How many (more) children do you want?

13. Has your menstruation resumed after current birth?

Yes

No

14. At what time did you resume sexual activity?



- Not resumed
- Less than 3 months
- 3 to 6 months

### SECTION III: KNOWLEDGE AND UTILIZATION OF POSTPARTUM LARC METHODS

1. Which contraceptive(s) have you used since delivery?  
 a) ..... b) ..... c) ..... d) .....
  
2. a) Have you ever heard of Long-Acting Reversible Contraceptives (LARCs)?  
 Yes   
 No
  
3. Have you ever used LARC?  
 Yes   
 No
  
4. Which LARC method have you used previously?  
 Implanon   
 Sino-implant/Jadelle   
 IUCD
  
5. a) Are you currently using a LARC method?  
 Yes  No  (Skip to section III Question 8)
  
- b) Which LARC method are you currently using?  
 Implanon  Sino-implant/Jadelle  IUCD
  
6. At what time did adopt the current LARC since childbirth?  
 Less than 3 months   
 3 to 6 months   
 6 and above months
  
7. Did you make your own decision (by choice) in selecting the LARC method you are currently?  
 Yes  No
  
8. What are the reasons for not choosing/wanting postpartum LARC?

- I had concerns about side effects
- I don't like the idea of a foreign object
- I don't like the idea of hormones in body
- I don't like the idea that it cannot be removed by self
- Afraid it was going to hurt
- I preferred another kind of birth control
- Wanted to wait until postpartum visit
- I was worried that LARC method would make breastfeeding harder
- My partner didn't approve of getting a LARC method
- Didn't know I could get one right after delivery, before leaving the hospital
- Didn't have the money to pay for it
- Didn't know enough about LARC methods
- I want to get pregnant again within a year
- Other family members and/or friends did not want me to get LARC

Thank you for your participation.

END

### Appendix 3: Budget

Item	Quantity	Price	Total cost
Salaries	4	10,000	40,000
Patient cost (ultra sound)	6	2,000	12,000
Eraser	5	20	100
Biro Pens	10	20	200
Stapler	1	500	500
Transport and Accommodation	4	5,000	20,000
Operating Expenses(Report Writing and Postage)	1	10,000	10,000
Miscellaneous	1	5,000	5,000
Contingency	1	3,000	3,000
Grand Total			90,800

#### Appendix 4: Timeline

Activity	January 2019	February 2019	March 2019	April 2019	May 2019	June 2019
Proposal writing and presentation						
Ethical committee approval						
Pretesting of data collecting tools						
Data collection						
Data consolidation and analysis						
Compilation of report						

## Appendix 5: ERC Approval Letter



UNIVERSITY OF NAIROBI  
COLLEGE OF HEALTH SCIENCES  
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### KNH-UoN ERC

Email: [uonknh\\_erc@uonbi.ac.ke](mailto:uonknh_erc@uonbi.ac.ke)  
Website: <http://www.erc.uonbi.ac.ke>  
Facebook: <https://www.facebook.com/uonknh.erc>  
Twitter: @UONKNH\_ERC [https://twitter.com/UONKNH\\_ERC](https://twitter.com/UONKNH_ERC)

4<sup>th</sup> June, 2019

Ref: KNH-ERC/A/209

Dr. Nasri Mohamed Yussuf  
Reg. No. H58/82933/2015  
Dept. of Obstetrics and Gynecology  
School of Medicine  
College of Health Sciences  
University of Nairobi



Dear Dr. Yussuf,

### RESEARCH PROPOSAL: PREVALENCE AND FACTORS ASSOCIATED WITH UPTAKE OF LONG ACTING REVERSIBLE CONTRACEPTIVES IN KIAMBU LEVEL FIVE HOSPITAL, KIAMBU COUNTY (P196/03/2019)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 4<sup>th</sup> June 2019 – 3<sup>rd</sup> June 2020.

This approval is subject to compliance with the following requirements:

- Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
- Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
- Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

Protect to discover

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



**PROF. A.N. GUANTAI**  
**CHAIR, KNH-UoN ERC**

- c.c.    The Principal, College of Health Sciences, UoN  
         The Director, CS, KNH  
         The Assistant Director, Health Information, KNH  
         The Dean, School of Medicine, UoN  
         The Chair, Dept. of Obstetrics and Gynecology, UoN  
         Supervisors: Dr. Alfred Osoti (UoN), Dr. Francis Odawa (UoN)

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