



(RESEARCH ARTICLE)



## Utilization of Long-Acting Reversible Contraceptive (LARC) and its determinants in multiparous women in a Tertiary Hospital

Taiwo Olufunmilayo KUYE-KUKU \*, Oluwakemi Omolara ISEDOWO, Ayokunle Moses OLUMODEJI and Folashade D Haleema OLALERE

*Department of Obstetrics & Gynaecology, Lagos State University Teaching Hospital, Lagos, Nigeria.*

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### Abstract

**Background:** The world population of 7.8 billion with multiparous women are encumbered with unmet need for contraceptives. Long-acting reversible contraceptive (LARC) is one of the interventional tool in curtailing the myriads of complications associated with unwanted pregnancies and its sequelae.

**Objective:** This study aimed to determine the pattern of long-acting contraceptive use and sociodemographic characteristics of the multiparous users of family planning services in a teaching hospital in Lagos.

**Methodology:** A retrospective comparative cross-sectional study of 1296 parous women who had sought contraceptive services at the Family Planning Clinic of LASUTH between January 1, 2019 to December 31, 2021 and 1,177 women opted for LARC during the period under review were identified from the clinic register. Their case notes were retrieved and data on clients' socio-demographic characteristics, and uptake of Long acting reversible contraceptives was extracted using a standardized pro forma Data analysis was done using relevant descriptive and inferential statistics with level of statistical significance set at  $p < 0.05$ .

**Results:** A total of 1296 multiparous women opted to use a form of contraception in the study, within an age range of 18–52 years and with mean age of  $37.5 \pm 7.1$  years. Majority (92.6%) having parity of 2 or more with a greater proportion (67.3%) having at least a tertiary level of education. A large proportion of the women (45.3%) preferred IUCD which was closely followed by implant (45.2%) while the least used method was the IUS (0.2%). There is an association between uptake of LARC and number of years since last pregnancy, parity, desire for more children and previous use of LARC.

**Conclusion:** Contraceptive is of a necessity in reducing poverty and empowering women to improve women's and their children's lives. Educating and implementing of policies that would meet the unmet need for contraceptives.

**Keywords:** Long acting reversible contraceptives; Family planning; Multiparous women; Tertiary Hospital

### 1. Introduction

The world's population has increased over time, and this had greatly imparted negatively on maternal and neonatal outcomes along with the socioeconomic development of the world. Family planning is key in alleviating these burdens of population explosion. The desire of most reproductive-aged women for a family planning method has increased from 900 million in 2000 to nearly 1.1 billion in 2020.<sup>1</sup> 842 million are using contraceptive methods, and 270 million have an unmet need for contraception.<sup>2</sup> Contraceptive gives women the autonomous power to make an informed decision in

\* Corresponding author: KUYE-KUKU Taiwo O

relation to childbearing. Contraceptive is a key in achieving the SDG goals for women, target 3.1 which focuses on improving maternal health.<sup>3</sup> Modern contraceptives such as Long-acting reversible contraceptives (LARCs) have proven to be effective in spacing birth and preventing unwanted pregnancy.

Long-acting reversible contraceptives (LARCs) are 99% effective, durable, cost-effective and convenient, with low failure rates and little interference from users.<sup>2,3</sup> They give 3-10yrs of protection, even among women with medical conditions like diabetes, hypertension, systemic lupus erythematosus, and endometrial hyperplasia, or by women with a history of solid organ transplantation, current or past venous thromboembolism.<sup>2</sup> The long-acting reversible contraceptives (LARCs) comprise of progesterone depot, subdermal implants, a copper-bearing intrauterine device (Cu-IUD), and the levonorgestrel-releasing intrauterine system (LNG-IUS).<sup>4,5</sup> Implants and IUDs are 120 times more effective than injectables and 180 times more effective than the pill.<sup>5</sup>

The benefits of LARC include preventing unintended pregnancy, short inter-pregnancy intervals, abortions, and limiting family size consequently reducing maternal and perinatal morbidity and mortality. LARC alleviates the economic burden on women, families and the government.<sup>6</sup> The non-contraceptive benefits include reduced menstrual pain and bleeding.

LARC is well accepted in most developed countries such as the USA and Europe, a contrast of this in Sub-Saharan countries. Globally, 13 percent of the world population utilizes long-acting reversible contraceptives but only 2 percent of the Sub-Saharan African population, which is rather low.<sup>7,8</sup> The outcomes of this in the Sub-Saharan region include high maternal morbidity and mortality rates, unwanted pregnancies, short birth interval unsafe abortions and higher risk of obstetric and newborn complications. Developing regions account for approximately 99% (302 000) of global maternal deaths in 2015, with sub-Saharan Africa alone accounting for roughly 66% (201 000), followed by Southern Asia (66 000).<sup>9</sup> In most Sub-Saharan countries the maternal mortality ratio is about 415 -maternal deaths per 100,000 live births, that is more than 40 times higher than that of most of the European countries, and almost 60 times higher than in Australia and New Zealand.<sup>10,11</sup> Family planning is one of the intervention tools in achieving the SDG target 3.1.<sup>2</sup> The use of appropriate contraceptive methods plays a major role in reducing maternal deaths.

In Nigeria, the contraceptive prevalence rate is 17% among currently married women aged 15-49 years and 37% among sexually active unmarried women.<sup>12</sup> while the unmet need for family planning is 19%.<sup>12</sup> In Nigeria, knowledge about LARC is poor, only 36.8% and 49.5% of women, for intrauterine devices and implants respectively. The unmet need for family planning in Nigeria is (21.8%).<sup>13</sup> In Nigeria, Nigerian Urban Reproductive Health Initiative (NURHI) revealed the need for the government to embark on sustainable long-term mechanism on sustaining the availability of modern contraceptives to all women.<sup>5</sup> The country like many of its counterpart African countries has failed to achieve its projected prevalence of modern contraceptive of 27 % by 2020. This is also reflected in the number of women that subscribed to LARC despite being the most cost-effective contraceptive. In Nigeria, knowledge about LARC in terms of intrauterine devices (IUD) and implant shows that 36.8% of women have knowledge of IUCD and 49.5% of implants.<sup>12,13</sup>

Nigeria like most sub-Saharan African countries has a low life expectancy, high fertility rate and low contraceptive uptake.<sup>11</sup>

Many maternal deaths are associated with unplanned pregnancies<sup>13</sup> with low- and middle-income countries accounting for 99% of global maternal deaths which is 14 times higher than that of high-income countries. Increasing LARC access and encouraging its use has the potential to fill this gap and reduce the unmet need for contraception, as well as, the maternal mortality rate and Unplanned pregnancy rate.

The use of long-acting reversible contraceptives can contribute to the reduction of unintended pregnancies. Our study examined factors associated with LARC use/uptake long-acting reversible contraceptives among attendees of the family planning unit of a tertiary hospital in an urban setting.

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## 2. Material and methods

A retrospective comparative cross-sectional study of 1296 parous women who had sought contraceptive services at the Family Planning Clinic of LASUTH between January 1, 2019 to December 31, 2021 and 1,177 women opted for LARC during the period under review were identified from the clinic register. They were attended to by trained family planning service providers, which include nurses, resident doctors, and consultants in the Department of Obstetrics and Gynecology.

The multiparous clients who had visited the family planning clinic and were offered LARC during the period under review were identified from the clinic register. Their case notes were retrieved and data on clients' socio-demographic characteristics, and uptake of Long-acting reversible contraceptives was extracted using a standardized pro forma. Inclusion criteria included women who gave consent, women who had either depo injectable, Implants Intrauterine device and Levonegestrel intrauterine system (LNG-IUS). Exclusion criteria included women on short acting contraceptives including pills cyclical rhythm, norethisterone injectable and barrier methods. Also women who did not give consent

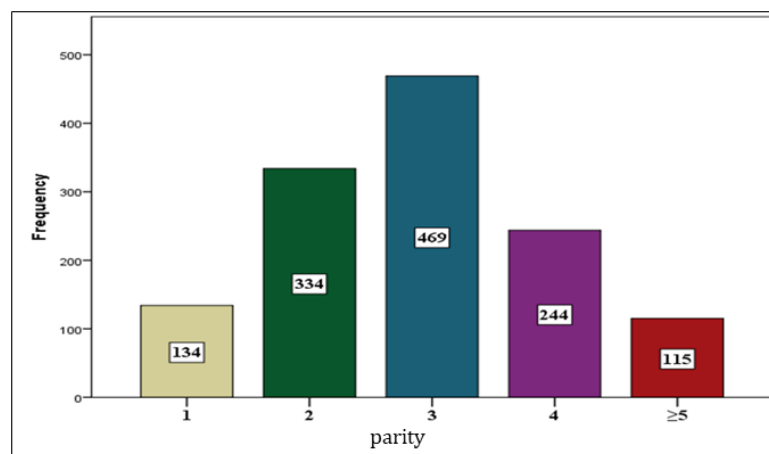
The data obtained were analyzed using the Statistical Package for Social Sciences, (SPSS) version 19. Percentages, means and standard deviation of numerical variables Descriptive statistics was used for each of the socio-demographic variable and were reported in frequencies and relative proportions. Student t-test and ANOVA was utilized to compare means of ages across other demographic variables to compare means. Chi square independence (with Fisher's approximation when necessary) was used to determine associations between variables to evaluate attitudes and perception. Variables and associations were described in frequencies, tabulations and relevant graphs. Multiple option variables were analyzed across respondents and frequencies of response reported in tables and graphs. Level of statistical significance was set at  $p < 0.05$ .

### 2.1. Ethical Approval and Consent

Ethical approval was obtained from the Health Research Ethics and Committee of the Lagos State University Teaching Hospital. The study was carried out according to the declaration of Helsinki. The participants consented to participating in the study after being informed of the study. Ref NO:LREC /06/10/1460.

## 3. Results

A total of One thousand five hundred and ninety-seven (1597) women were seen at the family planning clinic during the period under review. 48.9% of them visited the hospital in 2019, while 26.5% and 24.5% visited in 2020 and 2021, respectively. Only 1296 client's data were analyzed and those who were nulliparous, did not take up any form of contraception or had missing details were left out. Of the 1296 clients, 90.8% took up a form of long-acting reversible contraceptives while 9.2% opted for non-LARC methods. Of this number, 93.9% of clients had used a form of LARC previously.

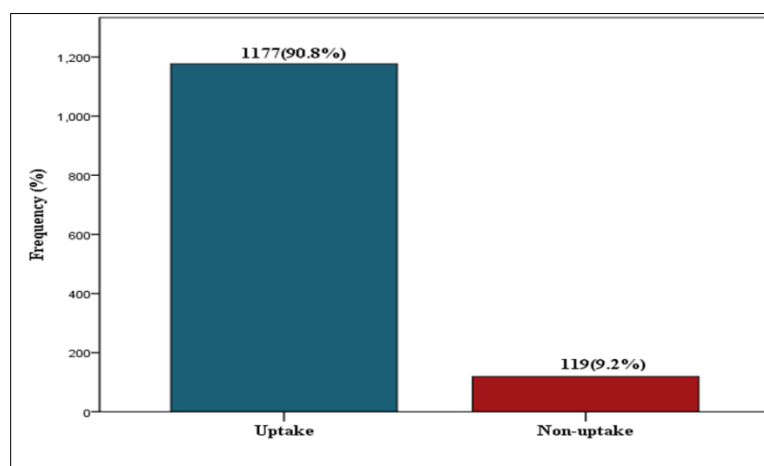


**Figure 1** Uptake of long acting contraceptives according to parity

As shown in Table 1, the age range of the clients reviewed was 18–52 years, and the mean age was  $37.5 \pm 7.1$  years. Majority (48.5%) of the clients were between the ages 30–39 with a larger proportion (92.6%) having more than 2 children, mostly in this group was 3 children and over half (55.2%) of clients did not want more children. Almost a third (32.5%) had a pregnancy interval of 10yrs and above although majority (38.4%) were within 0–4 years from last pregnancy. The mode of last delivery was vaginal delivery in 73.7%. Of A large majority (82.6%) belonged to the Christian faith while 67.3% of the studied clients had up to tertiary level of education, and 29.9 and 2.0% had only secondary and primary levels of education, respectively. Only ten clients did not have any formal education. Clients were referred from various sources for contraceptive services with the largest referrals coming from clinical personnel accounting to 44.1%. There was a similar proportion of clients opting for the implant and IUCD at 45.2% and 45.3% respectively followed by Intramuscular Depo-Provera (9.4%), Mirena (0.2%).

**Table 1** Socio-demographic characteristics of participants

Variable	Frequency (n=1296)	Percentage
<b>Age group (Years)</b>		
<29	170	13.1
30-39	628	48.5
40-49	435	33.6
≥50	63	4.9
Mean± SD	37.50±7.1	
<b>Education level</b>		
None	10	0.8
Primary	26	2.0
Secondary	388	29.9
Tertiary	872	67.3
<b>Religion</b>		
Christianity	1070	82.6
Islam	202	15.6
Others	24	1.9
<b>Source of referral</b>		
Clinical personnel	572	44.1
Community health worker	43	3.3
Friends/ relatives	133	10.3
Not specified	119	9.2
Others	302	23.3
Outreach personnel	37	2.9
Print media	76	5.9
Radio	14	1.1

**Figure 2** Uptake of long acting contraceptive use among multiparous women

**Table 2** Selected characteristics among participants

Variable	Frequency (n=1296)	Percentage
<b>Years since last pregnancy (Years)</b>		
0-4	498	38.4
5-9	377	29.1
≥10	421	32.5
<b>Mode of last delivery</b>		
Caesarean section	341	26.3
Vaginal delivery	955	73.7
<b>Currently breast feeding</b>		
Yes	225	17.4
No	943	72.8
Not specified	128	9.9
<b>Duration of menses</b>		
2-3	309	23.8
4-5	859	66.3
>5	79	6.1
Not specified	49	3.8
<b>Want more children</b>		
Yes	418	32.3
No	715	55.2
Not specified	163	12.6
<b>Previous use of Long-acting contraceptives</b>		
Yes	801	61.8
No	495	38.2
<b>Weight (Kg)</b>		
≤60	259	20.0
61-89	770	59.4
≥90	171	13.2
Not specify	96	7.4
<b>Medical condition</b>		
Yes	15	1.2
No	1281	98.8

**Table 3** Pattern of uptake

Variable	Frequency (n=1177)	Percentage
<b>Types</b>		
DMPA	111	9.4
Implant	532	45.2
IUCD (CuT)	533	45.3
IUS (Mirena)	1	0.2

**Table 4** Association between uptake of LARC and selected characteristics among participants

	Uptake of LARC (n=1177)	Non-uptake LARC (n=119)	$\chi^2$	p-value
<b>Age group (Years)</b>				
<29	146(85.9)	24(14.1)	6.109	0.106
30-39	572(91.1)	56(8.9)		
40-49	401(92.2)	34(7.8)		
≥50	58(92.1)	5(7.9)		
<b>Education level</b>				
None	10(100.0)	0(0.0)	1.491	0.684
Primary	24(92.3)	2(7.7)		
Secondary	349(89.9)	39(10.1)		
Tertiary	794(91.1)	78(8.9)		
<b>Years since last pregnancy (Years)</b>				
0-4	439(88.2)	59(11.8)	6.897	0.032*
5-9	349(92.6)	28(7.4)		
≥10	389(92.4)	32(7.6)		
<b>Parity</b>				
1-2	410(87.6)	58(12.4)	9.057	0.003*
>2	767(92.6)	61(7.4)		
<b>Mode of last delivery</b>				
Caesarean section	303(88.9)	38(11.1)	2.135	0.144
Vaginal delivery	874(91.5)	81(8.5)		
<b>Currently Breast-feeding</b>				
Yes	198(88.0)	27(12.0)	4.997	0.025*
No	873(92.6)	70(7.4)		
<b>Duration of menses</b>				
2-3	280(90.6)	29(9.4)	0.765	0.682
4-5	78(91.4)	74(8.6)		

>5	70(88.6)	9(11.4)		
<b>Want more children</b>				
Yes	372(89.0)	46(11.0)	5.474	0.019*
No	665(93.0)	50(7.0)		
<b>Previous use of Long-acting contraceptives</b>				
Yes	750(93.9)	51(6.4)	19.929	<0.001*
No	427(86.3)	68(13.7)		
<b>Weight (Kg)</b>				
≤60	238(91.9)	21(8.1)	1.291	0.524
61-89	723(93.3)	47(6.1)		
≥90	159(93.0)	12(7.0)		
<b>Medical condition</b>				
Yes	15(100.0)	0(0.0)	1.534	0.215
No	1162(90.7)	119(9.3)		

**Table 5** Multivariate logistic regression showing independent predictor of LARC uptake

	<b>Odd ratio</b>	<b>95% CI</b>	<b>p-value</b>
<b>Years since last pregnancy (Years)</b>			
0-4	1		
5-9	1.518	0.890-2.590	0.125
≥10	1.249	0.728-2.142	0.420
<b>Parity</b>			
1-2	1		0.048*
>2	1.544	1.003-2.384	
<b>Currently breast feeding</b>			
Yes	1		0.635
No	0.875	0.505-1.518	
<b>Want more children</b>			
Yes	1		0.747
No	0.928	0.588-1.463	
<b>Previous use of Long-acting contraceptives</b>			
Yes	1		<0.001*
No	0.470	0.313-0.703	

There is an association between uptake of LARC and number of years since last pregnancy, parity, desire for more children and previous use of LARC at p-values of 0.032, 0.003, 0.019, <0.001 respectively.

On multivariate logistic regression, only parity and previous use of contraception were of statistical significance at 0.048 and <0.001 p-values respectively.

#### 4. Discussion

Long-acting reversible contraceptive (LARC) methods are increasingly becoming acceptable and available globally including Nigeria<sup>1</sup>The study shows that the uptake among the attendees of the family planning clinic is 90.8 %. This is high and could be due to the post-secondary education attained by most of the women and utilizing a tertiary hospital in an urban setting where information on modern contraceptives are readily available and frequently disseminated. Most of the women in addition have had the desired number of children would rather opt for LARC as a form of permanent contraceptive.

Bilateral tubal ligation or vasectomy are permanent methods of contraceptives are rarely used because most women and men in Nigeria although. have completed their family size are still desirous of retaining their ability to have more children. The result was consistent with the finding by Okafor in an Eastern centre with an uptake of 90% among women in a similar setting.<sup>15</sup> The result was at variance to Mohammed et al study in the northern tertiary hospital where the uptake of LARC was 38.7%.<sup>16</sup> The disparity in acceptance of contraceptives could be attributed to education, religion, tradition, and male dominance in decision making factors linked to the locality. This variation is reflected not only in various part of the country but is seen globally. Uptake in Ghana (70%),<sup>17</sup>Gambia (88.7%)<sup>18</sup> and ACOG among American 75%<sup>17</sup> but lower rates were obtained in Malawi (2%),<sup>19</sup> Ethiopia(29%), Kenya (20.6%)<sup>6</sup>Indonesia (10.66%)<sup>9</sup>,Australia(11%) among contraceptive users<sup>4</sup>. Several factors have been shown to mitigate the utilization of LARCs such as age, education, family income, cost of contraception, , knowledge, woman beliefs, attitude, , availability, contraceptive-related skills, provider bias, support from partners, friends,, and also support from leaders in the community, access to quality services<sup>10,16,17,18,20,22</sup>

Among the LARCs, some studies agree that IUCD was the most used, closely followed by implants<sup>4,16,23,24</sup>which is similar to the finding in this study, The study revealed that equal number of women IUCD users used implants. In a federal medical centre in south west Nigeria, IUCD (51.7%) while Implant (48.3) among users.<sup>25</sup> Other studies showed implants as the preferred form of contraception. <sup>18</sup> Aduloju et al in southwestern Nigeria found implants to account for 75% of LARC used.<sup>23</sup> In a multinational study involving several countries, IUCD use was less than 5% and the majority 65% were on implants.<sup>3, 24 20</sup>. For instance in Gambia, Ethiopia , Malawi, Implant was the most commonly used LARC<sup>25,26</sup> similar to finding in Australia. This is adjudged to be due to misconceptions, poor awareness about LARC among women, lack of expertise, provider bias, availability, , intrusion of privacy during insertion and partner's preference. <sup>15,120,22,24,25</sup> Although, IUCD is the preferred form of contraceptive in America according to the contraceptive CHOICE project, and in China. <sup>4,17</sup> China's has one of the highest uptake of IUCD as a result of the government policies that support the its use and this is reflected in places where there is high governmental support .In Nigeria, several non-governmental organization and governmental support such as the Planned Parenthood Federation of Nigeria(PPFA), Marie Stopes International Organization **Nigeria**(MSION) and the International Contraceptive Access (ICA) among others have intervened in the provision and support of contraceptives including IUCD to most family planning centre. It is essential to have continual governmental policies promotes supply and usage, education masses and also promotes training of workers.

LNG-IUS in this study was used by only one woman which is comparable to the findings of other Nigerian studies. <sup>15,18</sup> LNG- IUS is more expensive, not readily available and requires expertise in insertion. Significantly, most of the women had heard or used LARC in the past years, indicating that experience determines decision and lays the foundation for uptake<sup>18</sup> Previous use of LARC is critical to the uptake of LARC, as most women who had prior knowledge or previous experience tend to opt for it. Awareness and knowledge play a major role in reducing the unmet contraceptive need.

The woman's age contributed significantly, women older than 30 years were almost four times more likely to have demand for LARCs than age 29 or less and this was supported by other African studies.<sup>2,3,4,6,25</sup> Naturally, older women would have completed family size and thus tend towards ending or reducing childbirth. In our study, the major contributor to usage of LARC was the number of children birthed by the women consistent with other studies. <sup>14,16-20</sup> informed women would rather choose to limit the birth having obtained the desired number in accordance to the limited available resources. The limited government provision still falls short of needs of the family in caring for the children thus the burden is solely on the family and mostly on the women. Education of women also plays a critical role in the uptake of LARC, most studies within and outside the country showed that education of the women influences the uptake of LARC.



### *Limitation of study*

The study was carried out using the register of attendees of a tertiary hospital in an urban setting, a more informative a comparative study of rural or primary health centre with less bias knowledge. In addition, the registrar study may not capture all participants.

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## **5. Conclusion**

There is increased usage of LARC among multiparous women this influenced significantly by the age, parity and the education as well as prior knowledge of LARC. It is therefore important to strengthen the knowledge of women on LARC in relation to its benefits. All stakeholders should enhance programs and policies that would encourage LARC usage.

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## **Compliance with ethical standards**

### *Acknowledgments*

The family planning clinic of University of Lagos State Teaching Hospital for their support of study.

### *Data availability*

The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary materials.

### *Disclosure of conflict of interest*

There is no conflict of interest.

### *Statement of ethical approval*

Ethical approval was obtained from the Health Research Ethics and Committee of the Lagos State University Teaching Hospital. The study was carried out according to the declaration of Helsinki.

### *Statement of informed consent*

The participants consented to participating in the study after being informed of the study.

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