EAS Journal of Nursing and Midwifery
Abbreviated Key Title: EAS J Nurs Midwifery
ISSN: 2663-0966 (Print) & ISSN: 2663-6735 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-7 | Issue-5 | Sep-Oct -2025 | DOI: https://doi.org/10.36349/easjnm.2025.v07i05.001

Original Research Article

Level of Knowledge on Long-acting Reversible Contraceptives Among Women of Reproductive Age Attending Meru Teaching and Referral Hospital, Meru, Kenya

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Article History
Received: 24.06.2025
Accepted: 25.08.2025
Published: 05.09.2025

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background*:** The most efficient and cost-effective forms of birth control are long-acting reversible contraceptives (LARC). In spite of their effectiveness, less than 15% of women globally who are of reproductive age use LARC while in Kenya, 18% of women of reproductive age are using LARC methods. The objective of the study was to determine the level of knowledge on LARC among Women of Reproductive Age (WRA) receiving care at the Meru Teaching and Referral Hospital. ***Methods*:** This study used analytical cross-sectional survey research design to collect data from ten key informants chosen through purposive sampling, and 170 women were chosen by systematic random sampling using a semi-structured questionnaire. Embu Teaching and Referral Hospital served as the pretesting site for the research tools. Chi-square tests were utilized to examine the relationship, at a 95% confidence interval, between the uptake of LARC and level of knowledge of LARC. The strength of association was tested using regression analysis. ***Results***: The majority of the mothers (51.2%) were in the 20–29 age range, with a small percentage (n=5, 2.9%) being older than 40; the married women were more (n=106, 62.4%) and half of the mothers had secondary level of education (n=85, 50%) unlike that of the partner that was found to be mostly tertiary level of education (n=102, 60%). A larger proportion of the women had 1-2 living children (n=106, 62.4%). However, majority of the women were either house wives or students (n=63, 37.1% and n=60, 35.3%) respectively. A high percentage of the women were Christian (n=153, 90%) with a larger proportion residing on rental houses (n=122, 71.8%). The uptake rate for LARC among women who were of reproductive age was 11.2%. Good level of knowledge influenced LARC uptake at x2(N=170), 5.16, p=.018. ***Conclusion***: The study concluded that LARC uptake among women of reproductive age was impacted by individual level of knowledge on LARC. The study recommends, the ministry of health to launch widespread campaigns to raise awareness and knowledge about LARC among women of reproductive age.

Keywords: Contraceptives, Family planning methods, Implants, IUCDs.

INTRODUCTION

Family planning refers to the use of contraceptives or other methods by intimate partners to plan for the number and spacing (birth interval) of children they hope to have [1]. Sterilization, abortion, contraception, and using other natural methods of preventing conception are some examples of the different types of contraceptives. The choice of family planning method aids married couples in having the ideal number of children and the appropriate amount of time (space) between them. Long-acting reversible contraceptives (LARC) aid in wider spacing of children, and when withdrawn from use, fertility quickly returns. They prevent unplanned conception for at least three years and are very effective, reversible, and mostly independent of users' compliance [2].

According to the United Nations, the prevalence rate of LARC varies by roughly 20.6% throughout different regions of the world. These regions include Asia (17.8%), Europe (11.5%), Africa (6.1%), Latin America and the Caribbean (6.9%), North America (5.6%), and Sub-Saharan Africa (3.5%) [3]. Data from

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the World Health Organization indicate that 40% of the estimated 185 million births that take place each year in developing countries are assumed to be unwanted. Research from the United States shows that postpartum women's use of LARC is correlated with "not trying for pregnancy at the time of conception" and "not desiring another pregnancy within two years" [4].

Worldwide, the percentage of married or in-union women of reproductive age who use LARC rose from 55% in 2010 to 63% in 2017 [5]. Married or in-union women use LARC at a rate of 36% in the lowest-income nations and at a rate of 66% in high-income countries [6]. The prevalence of LARC usage in Europe, as for the rest of the world, varies by country, with estimates in 2019 ranging between 2.9% for Poland and 18.0% for France [7].

With a prevalence rate of 21% and 15%, respectively, female sterilization and intrauterine devices (IUDs) accounted for 57% of total contraceptive usage in Africa [3]. A study carried out in Kenya found that the utilization of the LARC approach has grown by 17.6% [8]. The Kenya Health Act restored women's right to safe, effective, acceptable, and affordable contraceptive services, and recent policy documents have emphasized the importance of LARC due to their long-acting, highly effective, safe, and convenient nature [9]. Furthermore, a global declaration supported LARC as part of the method mix for all women who are or may become pregnant. Despite the method's efficacy, barriers such as health workers' counseling skills and competence are to blame for the limited acceptance of LARC [10].

Myths and misunderstandings regarding LARC have been shown to be a primary obstacle in several studies. For instance, research in Yemen revealed false beliefs regarding the adverse consequences of IUDs, ranging from higher risk of cancer to weight gain and heavy bleeding [11]. Similarly, in Morocco, the usage of LARCs was restricted by false information and worries about negative effects [12]. Qualitative investigations have examined health facility characteristics that can affect LARC acceptance [13]. Despite evidence of the safety and effectiveness of LARCs, uptake in developing countries like Kenya could be low due to user characteristics, technology, socioeconomic status, and general knowledge of contraceptive methods [14].

Women must first be informed about the availability of contraceptive methods before they can consider using them; previous exposure to the process has been associated with subsequent use [15]. After learning about the various forms of contraception, women evaluate which one might be best for them based on factors such as hormone dosage, ease and duration of usage, and compatibility with their lifestyle [16]. A decision on contraception use is often made after consulting friends, family, and healthcare professionals, whose opinions frequently play a significant role in decision-making [16].

Qualitative studies have demonstrated a lack of understanding about the use of LARC [17]. A study in a Midwestern state in the United States among women aged 18 to 30 found that respondents believed LARC methods were for older women who had attained their desired family size [18]. Participants stated they could not afford the expense of these methods, particularly implants and IUDs [18]. They reasoned that older women, already mothers, could accept the small risk of method failure since they already had children.

In the USA, research on rural primary care providers found that 9% used implants while 35% used IUDs; 87% of physicians had been trained on implants, but 41% had no training on IUDs [19]. Although healthcare providers lacked the necessary knowledge, there appeared to be a demand in rural areas. Thematic content analysis revealed that young females aged 16–25 seeking abortion services often avoided LARC due to concerns about side effects or hormone content, which were mostly unfounded [20].

Research in China indicated a lack of sexual and reproductive health information, low LARC use, and high unintended pregnancy rates among teenage and young commercial sex workers [21]. In Malawi, marriage was found to be a predictor of LARC use [22], while in Ghana, mothers with more live children used LARCs more frequently [23]. Among young people, inadequate understanding fosters rumors, misconceptions, and fears about birth control techniques [21].

In Meru County, the adoption of LARC decreased from 14.2% in 2014 to less than 12% in 2022. Among women of reproductive age, injectables account for 28%, pills for 22.2%, and condoms for 4.4% of short-term contraceptive use. LARC methods are the least used, with implants at 18.8% and IUDs at 3.6% [24]. The Kenyan population policy advocates family planning as a right based on informed and voluntary choice to achieve a balance between resources and population [25].

The purpose of the current study was to establish the relationship between mothers' level of knowledge on LARC and the uptake of long-acting reversible contraceptives by women of reproductive age visiting Meru Teaching and Referral Hospital in Kenya.

METHODOLOGY

This study was conducted in Meru Level 5 Teaching and Referral Hospital (MeTRH), a public county referral hospital and a medical training and research institution serving citizens of Meru County and beyond. An analytical cross-sectional survey design was used. Women of reproductive age (WRA) seeking

contraceptive services in MeTRH at the Mother and Child Health (MCH) clinic in the family planning department were targeted in this study. Eligible participants included women aged 15–49 years who consented to participate, while mentally handicapped individuals and those who did not consent were excluded. The sample size was determined using Cochran's (1977) formula [26].

The study site was purposively selected due to its lower LARC uptake statistics compared to the national average. Systematic random sampling was used to select participants. The sampling interval (K) was obtained by dividing the study population (260) by the adjusted sample size (170), yielding K = 2. The first participant was randomly selected through a secret ballot containing one "Yes" and four "No" labels; the person who picked "Yes" was enrolled first, after which every 2nd WRA was recruited until the sample size of 170 was reached.

Data were collected using a researcher-administered, semi-structured questionnaire to obtain quantitative information. The questionnaire was divided into three sections with both closed and open-ended questions. Section A gathered socio-demographic data such as age, marital status, education level, occupation (participant and spouse), and household income. Section B focused on LARC uptake, including prior use of contraceptives, current use, and the specific type used. Section C assessed knowledge of LARC through 10 questions covering types, benefits, duration of protection, effectiveness, and side effects. Each correct answer scored 1 point (maximum = 20 points, as Questions 5 and 10 had multiple correct responses). Scores were categorized as: good knowledge (≥14 points), average knowledge (10–13 points), and poor knowledge (<10 points).

Before the main study, a pretest was conducted to assess research protocols, tools, recruitment methods, and other procedures [27]. Pretesting was done in Embu Level 5 Hospital, involving 17 WRAs (10% of the study sample). Reliability of the knowledge assessment tool was determined using the split-half method (odd vs. even items) [28]. The Cronbach's alpha value was 0.78, indicating acceptable internal consistency.

Validity was confirmed by expert review involving two consultant gynecologists, two midwives, and two lecturers from the School of Nursing and Public Health, Chuka University. Peers also evaluated content and face validity. Based on pretest feedback, unnecessary questions were removed and the questionnaire refined.

Data collection at MeTRH lasted one month, on weekdays. Permission was obtained from the facility in-charge before data collection began. The researcher explained the study to potential participants, obtained written informed consent, and administered the questionnaire. Responses were recorded directly by the researcher.

Data analysis was conducted using SPSS version 27. Descriptive statistics (frequencies, percentages) were used to categorize knowledge levels. Chi-square tests at a 95% confidence interval determined associations between independent variables and the dependent variable (uptake of LARC). Variables significant in chi-square tests were further analyzed using logistic regression to identify determinants of LARC uptake. Odds ratios (OR) were calculated to assess the strength of associations. Ethical considerations were observed throughout the study.

RESULTS

1.0 Demographic characteristics of study participants

Information was obtained on the age, gender, marital status, number of children each, education level, occupation, and partner's occupation of the selected women of reproductive age for the study. The majority of the mothers (51.2%) were in the 20–29 age range, with a small percentage (n=5, 2.9%) being older than 40. On marital status both the married and those who reported never married came for the services, however, the married women were more (n=106, 62.4%). The participants indicated varied years in marriage with a larger proportion indicating 5-10 years and this included year of union in marriage for those who got married and later got separated or divorced.

Level of education of both the mother and the partner were also assessed and it was found that majority of the mothers had secondary level of education (n=85, 50%) unlike that of the partner that was found to be mostly tertiary level of education (n=102, 60%). There was no explanation for the variation in level of education between the two. A larger proportion of the women reported to have 1-2 living children (n=106, 62.4%).

Source of income and occupation determines the capability of an individual to afford services. In the current study, majority of the women were not employed and reported to be either house wives or students (n=63, 37.1% and n=60, 35.3%) respectively. This implied that they were mostly depending on their partners whose occupation was mainly either business (n=40, 23.5%) or formal employment (n=42, 24.7%). Majority of the women were Christian (n=153, 90%) with a larger proportion residing on rental houses (n=122, 71.8%). Table 1 gives a summary of the findings.

Table 1: Demographic Characteristics of the mothers

Characteristic	Variables	Frequency	percentage
Age	<20 years	19	11.2
	20-29 years	87	51.2
	30-39 years	59	34.7
	40-49 years	5	2.9
Marital status	Never married	56	32.9
	Married	106	62.4
	Separated/widowed	8	4.7
Number of years in marriage	<5 years	25	14.7
	5-10 years	50	29.4
	10-20 years	39	22.9
	Never married	56	32.9
Level of education of the mother	Primary	25	14.7
	Secondary	85	50
	Tertiary	60	35.3
Level of education of the partner	Primary	22	12.9
	Secondary	46	27.1
	Tertiary	102	60
Number of living children	1-2	106	62.4
	3-4	64	37.6
Occupation of the mother	Peasant farming	25	14.7
	Kiosk business	22	12.9
	House wife	63	37.1
	Student	60	35.3
Occupation of the partner	Peasant farming	25	14.7
	Kiosk business	42	24.7
	Big business	40	23.5
	Casual labourer	21	12.4
	Formal employment	42	24.7
Religion	Christian	153	90
	Muslim	17	10
Ownership of accommodation	Owned	48	28.2
	Rented	122	71.8

1.1Uptake of long-acting reversible contraceptives

The study found that the uptake of LARC was at 11.2% (n=19). Among these mothers using LARC, nine mothers (5.3%) had used implants with only four (3.5%) reporting to have used both implant and IUCD. The main reason reported for use of LARC was spousal decision (n=9, 5.3%) and only three (1.8%) used it because of preferred duration. Majority of the mothers (n=70, 41.2%) who had not used LARC indicated that the method was not fit for them while thirty mothers (17.6%) reported not to be knowledgeable about the method. However, forty-three mothers (25.3%) reported to be willing to use the method if they were provided with adequate information about the method. The summary of these findings is indicated in table 2.

Table 2: Uptake of Long-acting reversible contraceptives

Variable	Category	Frequency	Percentage
Use of LARC	Yes	19	11.2
	No	151	88.8
LARC Method used	None	151	88.8
	Implant	9	5.3
	IUCD	6	3.5
	Both implant & IUCD	4	2.4
Reason for choosing LARC	Convenience	7	4.1
	Spousal decision	9	5.3
	Preferred duration	3	1.8
	Not Using LARC	151	88.8
Reasons for those not using LARC	Fertility related reasons	51	30
	Method related reasons	70	41.2
	Not knowledgeable of the method	30	17.6

	Those using method	19	11.2
Willingness to use the method if provided with adequate information	Unwilling	22	12.9
	Neutral	86	50.6
	Willing	43	25.3
	Those already using	19	11.2

1.2 Knowledge related factors determining uptake of LARC

The study used twenty items to measure level of knowledge of the mothers. For each correct response 1 mark was awarded while incorrect response was awarded a zero. Those who score 14 and above out of the twenty questions were considered having good knowledge, while those who scored 10-13 were considered having average knowledge. Headaches, weight gain and spotting were mainly reported as side-effects of LARC. The total score was computed and categorized as average and good knowledge as indicated in table 3.

Table 3: Mothers' knowledge on LARC

Question	Response	Frequency	Percentage
Ever heard of LARC	Yes	154	90.6
	No	16	9.4
Source of information	Health workers	15	8.8
	Friends & family	119	70
	Radio/TV	16	11.8
	Never heard	16	9.4
Define LARC	Correct response	110	64.7
	Incorrect response	60	35.3
Which LARC do you know	IUCD	88	51.8
	Implant	60	35.2
	Both	22	13
LARC does not require frequent visits to the hospital	Correct response	72	42.4
	Incorrect response	98	57.6
Does not require surgery	Correct response	85	50
	Incorrect response	85	50
Has rapid return to fertility upon removal	Correct response	106	62.4
	Incorrect response	64	37.6
Has low failure rate	Correct response	93	54.7
	Incorrect response	77	45.3
Some are hormonal and others not	Correct response	123	72.4
	Incorrect response	47	27.6
Client don't need to remember every time to use contraception	Correct response	149	87.6
	Incorrect response	21	12.4
Duration of protection offered by LARC	Correct response	145	85.3
	Incorrect response	25	14.7
How effective LARC is in preventing pregnancy	Correct response	124	72.9
	Incorrect response	46	27.1
If LARC can be removed if a woman wanted to have a baby	Correct response	152	89.4
	Incorrect response	18	10.6
LARC has associated side effects	Yes	123	72.4
	No	47	27.6
Knowledge level on users of LARC			
Young women with no children	Correct response	103	60.6
	Incorrect response	67	39.4
Postpartum women	Correct response	149	87.6
	Incorrect response	21	12.4
Women who do not desire any more children	Correct response	170	100
Any woman of reproductive age	Correct response	170	100
Those women who had abortion recently	Correct response	87	51.2
	Incorrect response	83	48.8
Those contraindicated in using other methods	Correct response	170	100
Overall knowledge score	Average	105	61.8
	Good	65	38.2

On cross tabulation of overall knowledge score and uptake of the long-acting reversible contraceptives, it was found that knowledge on long-acting reversible contraceptives significantly determines the uptake of the contraceptives at x^2(N=169) = 5.16, p=0.018. The women who were having good knowledge on LARC were more likely to use LARC than those who had average knowledge. Having good knowledge on LARC was found to be 0.315 times more likely to increase uptake of LARC than having average knowledge at 95% confidence interval [.117-.849] as indicated in table 4.

Table 4: Cross tabulation between level of knowledge and uptake of LARC

Variable	Uptake of LARC		P value, Chi square, df
	No	Yes	
Average knowledge	98	7	x^2= 5.16
Good knowledge	53	12	df=1
Total	**151**	**19**	p=.018
			AOR=

DISCUSSION

Use of long-acting reversible contraceptives (LARC) has been proven to offer protection against pregnancy for between three and ten years [29]. Mothers are encouraged to use this method for spacing their children. In the current study, only 11.2% (n=19) of mothers were using LARC. Globally, the uptake of LARC is estimated at 20.6% [30], indicating that the study population's usage was well below the global rate. However, based on analysis of the Kenya Demographic and Health Survey (KDHS) report, the uptake rate in Kenya is reported at 18% [31], representing a progressive increase since 2003.

According to a multi-level examination of LARC uptake in Sub-Saharan Africa, the prevalence was 20.1% overall [32]. The present findings are similar to those from Cape Town, South Africa [33] and Nigeria [34], where uptake levels were reported at 9.4%. This similarity may be explained by comparable characteristics of the study populations.

In contrast, uptake in Uganda has been estimated at 58.6%, higher than the global rate [35], while in Ethiopia it has been reported at 53.2% [36]. The higher rates in these countries have been linked to study populations with high incidences of unplanned pregnancies and, in some cases, women working in brothels. In Ethiopia, additional factors contributing to high uptake included counselling about LARC during antenatal care, prior positive experiences, and the desire to space children for more than two years. The current study population differed, with most mothers being small business owners or housewives, which may partly explain the lower uptake. It is important to evaluate strategies from Ethiopia's success that could be applied in Kenya.

Women of reproductive age must be informed about available family planning methods, including their advantages and disadvantages, to make informed choices. The current study found that participants with good knowledge of LARC were more likely to use it than those with average knowledge, indicating that knowledge was a significant determinant of use. The main source of information about LARC was friends and family members, consistent with findings in Nigeria [37].

Inadequate knowledge about contraception promotes misconceptions, rumours, and anxieties, which may discourage LARC use [38]. Similar findings were reported in Rwanda, where low knowledge levels contributed to low uptake [39].

Many women are unaware of the safety and effectiveness of LARC methods. Misconceptions—particularly regarding infection risk and infertility—are also held by healthcare professionals, who may fail to identify suitable candidates [40]. This misinformation, alongside inadequate counselling, reduces uptake. Research shows that there is an ongoing need to educate healthcare practitioners about LARC efficacy, since providers are often the main barrier [41 - 42]. In Kenya, addressing healthcare providers' lack of training and confidence in intrauterine contraceptive (IUC) insertions, particularly in nulliparous women, could significantly increase utilization [31].

CONCLUSION

Based on the results, the study concludes that increasing knowledge on long-acting reversible contraceptives among women of reproductive age will significantly increase the uptake of these contraceptives.

Acknowledgements

authors would like to appreciate the respondents who voluntarily accepted to take part in this study and for their vital information. The authors are also grateful to the administration of the hospital for granting authority to collect data in their facilities.

Declarations

Funding: The researcher used his own money in funding all the research activities and resources

Conflict of interest: There are no conflicts of interest

Ethical approval: Ethical approval was obtained from Chuka university Ethics and Research Committee

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Cite This Article: Lilian MUNYIRI, Lucy GITONGA, Eugene SUNDAYS, David MURITHI (2025). Level of Knowledge on long-acting Reversible Contraceptives Among Women of Reproductive Age Attending Meru Teaching and Referral Hospital, Meru, Kenya. *EAS J Nurs Midwifery, 7*(5), 127-134.