

Long-acting Reversible Contraceptive Utilization and Its Associated Factors among Family Planning Users in Pastoral Communities of Afar Region, Ethiopia: A Facility-based Cross-sectional Study

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: Long-acting reversible contraceptives (LARC) have been very effective in the reduction of unintended pregnancies at least for 3 to 12 years. However, the use of LARC is low in developing countries, including Ethiopia. This study aimed to assess LARC utilization and associated factors among family planning users in public health facilities in the Afar region, northeast Ethiopia.</p> <p>Methods: This facility-based cross-sectional study was carried out on 524 participants using systematic sampling method during December 15 to February 15 in 2018. The data collection was performed using a structured interviewer-administered questionnaire. The data were entered into EpiData software (version 3.1) and analyzed using SPSS software (version 21). Multiple logistic regression analysis was used to identify the association between the independent variables and outcome variable with a 95% confidence interval (CI).</p> <p>Results: Overall prevalence of LARC utilization was observed to be 33.4%. The factors significantly associated with the utilization were knowledgeability (AOR=2.7; 95% CI: 1.7-4.4), positive attitude toward LARC (AOR=1.5; 95% CI: 1.1-2.3), discussion with husbands about LARC (AOR=2.4; 95% CI: 1.5-3.8), and women's age ≥ 35 years (AOR=0.3; 95% CI: 0.2-0.7).</p> <p>Conclusion: Utilization of LARC was low in the study area. Factors related to utilization suggested that strengthening maternal knowledge, creating a positive attitude, and encouraging discussion between the husband and wife about LARC are important to increase the use of LARC.</p>
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Introduction

Family planning is a process that usually involves a discussion between a woman, a man, and a trained family planning service provider focusing on family health and desires of the couple to either limit or enlarge their family (1). There are different family planning methods grouped into two categories. These are long-acting and permanent methods (i.e., the use of intrauterine devices, implants, and sterilization), as well as short-term methods (i.e., use of pills, condoms, spermicide, injection, other modern methods, and all traditional techniques) (2).

Providing family planning services is an important strategy for the reduction of maternal morbidity and mortality. Results of multicountry studies showed that accessing family planning can decrease mortality rates among women by 40% (3, 4) and prevent from two million newborn and child mortalities (5). Main causes of maternal mortality are hemorrhage, hypertension disorders, obstructed labor, infection, and unsafe abortion (6, 7). Family planning interventions have helped to achieve the Millennium Development Goals and are

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expected to help achieve the newly established Sustainable Development Goals (1).

Long-acting reversible contraceptives (LARC) is a family planning method that prevents from a higher number of pregnancies (i.e., unintended pregnancy), compared to short-acting contraceptives. The LARC include the use of the intrauterine contraceptive device (IUCD) and implants (8). The LARC prevent from unwanted pregnancies at least for 3 years (i.e., the use of implants) and for 12 years (i.e., copper IUCD). This method of contraception is immediately reversible after removal (8, 9) and the most effective modern contraceptive method for preventing unintended pregnancy. The LARC are long-acting, reliable, safe, cost-effective, and have additional non-contraceptive benefits for a broad range of women seeking enlarging or limiting methods of contraception. The LARC do not depend on users' adherence and are suitable for women with medical disorders. Specifically, in clinical trials, IUCD and implants were reported with failure rates within the ranges of 0.6-1.0% and 0.05%, respectively (10).

Although the use of contraceptives has witnessed a significant increase since the 1970s (11), the prevalence of LARC methods has remained very low, particularly in low-income countries (11, 12). Globally, the prevalence rate of LARC method is approximately 14.4% different from region to region, namely 17.8% in Asia, 11.5% in Europe, 6.1% in Africa, 6.9% in Latin America and the Caribbean, 5.6% in North America, and 3.5% in Sub-Saharan Africa (12). Results of studies revealed that the prevalence rate of LARC in different regions of Ethiopia is within the range of 13.1-38% (13-19).

A number of previous studies have attempted to identify factors associated with modern contraceptive use in different countries. These associated factors have been examined in several settings in developing countries. Recognized associated socio-demographic factors include high the level of maternal education (18, 20-23), high living standards (23) and low living standards (24), maternal age < 20 (23) and ≥ 35 years (23, 25), and high level of paternal education (20).

Findings of a study conducted in Dembi revealed that LARC utilization increased among mothers who were government employees (26). In

contrast, the results of a study performed in the Gambia indicated the relation between being housewives and LARC utilization (22). In other studies conducted in Arba Minch, Mekelle City, and Goba, the factors such as supportive attitude, high level of knowledge, and media exposure, were also associated with LARC utilization (13, 14, 27).

Government of Ethiopia has developed different strategies in this regard. The strategies include the training of health extension workers, counseling on the IUCD and implant insertion, organizing a health development army to discuss health issues and act accordingly, giving exemption in services for family planning, and training of health workers in LARC to increase the prevalence of LARC use. However, in Ethiopia similar to many other African countries, LARC utilization is still very low (10% in the whole country and 1.8% in the Afar region) (28).

According to the evidence, no study has been conducted up to now to recognize the prevalence of LARC use and associated factors in the Afar region in Ethiopia (i.e., a pastoral community). Therefore, this study aimed to assess the prevalence and associated factors of LARC among the family planning users in the public health facilities of the Afar region.

Materials and Methods

This facility-based cross-sectional study was carried out at public health facilities in the Afar region during December 15 to February 15 in 2018. The samples were family planning users randomly selected from the health facilities of the Afar region during the study period. The inclusion criteria were all family planning users in the health facilities of the Afar region during the study period. On the other hand, family planning users who could not communicate were excluded from the study.

The single population proportion formula was used to determine the sample size with several assumptions, including the proportion of LARC taken from a study conducted in Debremarkose as 13.1% (13), with a 95% confidence interval (CI), margin error of 3%, and 10% nonresponse rate. Finally, the sample size was obtained at 535 for the present study using the systematic sampling technique. Firstly, all hospitals and seven health centers were randomly selected. By considering the average number of family

planning users who performed family planning programs daily during the data collection period, estimated based on a previous day, the client flow to the units was obtained by referring to the family planning registration centers for 6 months prior to data collection.

Probability to proportional size allocation technique was utilized for determining the number of respondents in each health facility. The first subject from each health center was randomly selected. Then, the subsequent respondents were chosen from every eight clients until the final sample size was obtained. Eleven respondents were refused to participate in this study among whom the response rate was 98%.

Data collection was carried out using a pretested structured interviewer-administered questionnaire. The research instrument was developed based on the instruments applied in other related studies (13-22). The questionnaire was structured into five parts, namely sociodemographics, reproductive history, source of information, as well as knowledge and attitude toward LARC use.

Knowledge level of the participants was measured regarding the benefits and contraindications of using LARC for mothers through six items. Content validity was used for evaluating the validity of the questionnaire. The reliability test was conducted in terms of the knowledge and attitude items, and after performing the pretest, the Cronbach's alpha coefficients were obtained at 0.86 and 0.78, respectively. In addition, ten nurses with diplomas and two with a bachelor's degree were hired for the data collection and supervision.

To ensure the quality of data gathered from the study subjects, the questionnaire was firstly translated to the local language and then translated back to English by experts to check its consistency. The questionnaire was pretested on 5% of the calculated sample size before the actual data collection period in comparable settings. Moreover, data collectors and supervisors were trained in this regard. Furthermore, the supervisors and the principal investigators checked the filled questionnaires at the end of data collection every day for completeness. The data were carefully entered and cleaned before the beginning of the analysis.

The data were entered into EpiData software (version 3.1) and analyzed using SPSS software (version 21.0). Descriptive statistics, frequency, and proportions were computed to summarize the data. Logistic regression analyses were conducted to identify the factors associated with the outcome variable. Initially, bivariate logistic regression analysis was performed on all the independent variables. Multivariable logistic regression was then carried out on the variables with a P-value less than 0.25 in bivariate logistic regression analysis. Degree of association between the independent and dependent variables was assessed using odds ratio with 95% CI. In conclusion, P-value less than 0.05 was considered statistically significant in the multivariable model.

Long-acting reversible contraceptives utilization: Use of LARC among the mothers who were using either IUCD or implants during data collection period and dichotomized considered a binary outcome variable (i.e., used) or absent (i.e., not used). Knowledge toward LARC was measured using six items, with a minimum score of 0 and maximum score of 6. The knowledge toward LARC was estimated based on the percentage of the knowledge scores of respondents. A score was considered "high" if a woman answered 80% of the knowledge questions and above correctly, "moderate" if a woman answered 60-79% of the knowledge questions, and "low" if a woman answered less than 60% of the knowledge questions correctly (13, 18). Attitudes toward LARC were measured using a 3-point Likert scale. There were six items assessing the attitudes of women. Order of scoring for positive statements included agree: 3, neutral: 2, disagree: 1, and vice versa for negative statements. The total mean score was obtained and computed to be categorized into positive and negative attitudes. A score \geq mean value was considered a positive attitude; however, a score $<$ mean value was regarded a negative attitude (14).

The ethical clearance letter was obtained from the Vice-chancellor of Research and Community Services in Samara University in Samara, Ethiopia (RERC 0145/2018 (10.06.2018)). Moreover, the permission/cooperation letter was obtained from the afar regional Health Bureau and Health Office of each district. Finally,

verbal informed consent was obtained from each participant, included in the study during the data collection time, after explaining the objectives of the study to them. The subjects were informed about the purposes, procedures, potential risks, and benefits of the study. Furthermore, confidentiality terms were maintained through not asking personal identifiers, such as name and address.

Results

Approximately, 50% of the women were aged between 25-34 years, and the age range was between 17-40 years with a mean (\pm SD) score of 26.71(\pm 5.4) years. Majority (n=364; 69.3%) of the participants were housewives. In addition, 213 (40.6%) women had Afar ethnics, and 308 (58.9%) subjects were Muslims. Regarding their educational level, 56 (10.7%) cases were reported with higher educational levels, and 87 (16.6%) respondents' husbands attained higher educational levels (Table 1).

Table 1. Sociodemographic characteristics of family planning users in public health facilities of Afar region from December 15 to February 15 in 2018

Variable	Frequency (n=524) (%)
Age group	
<20	21 (4.0)
20-24	185 (35.3)
25-35	259 (49.4)
35 and above	59 (11.3)
Religion	
Muslim	308 (58.8)
Orthodox	192 (36.6)
Protestant	20 (3.8)
Others	4 (.8)
Ethnicity of mother	
Afar	213 (40.6)
Amhara	180 (34.4)
Tigre	115 (21.9)
Others	16 (3.1)
Educational level of mother	
Unable to read and write	69 (13.2)
Primary	334 (63.7)
High school and preparatory schooling	65 (12.4)
Higher institution	56 (10.7)
Educational level of husband	
Unable to read and write	62 (11.8)
Primary	249 (47.5)
High school and preparatory schooling	126 (24.0)
Higher education	87 (16.6)
Occupation of mother	
Housewife	353 (67.4)
Merchant	77 (14.7)
Daily laborer	39 (7.4)
Government employee	42 (8.0)
Others (i.e., student and pastoralist)	13 (2.5)

Furthermore, among 524 study participants, 429 (81.9%) women were multigravida among whom 99 (18.9%) women were grand multiparous, and 101 subjects (14.5%) had more

than four living children. In this study, one-seventh (13.5%) of the participants experienced abortion. Moreover, the majority of women (n=442; 84.4%) had a functional radio.

Table 2. Reproductive characteristics and utilization of modern contraception and long-acting reversible contraceptives among family planning users in public health facilities of Afar region from December 15 to February 15 in 2018

Variables	Frequency (%)
Ever gave birth (n=524)	
Yes	429 (81.9)
No	95 (18.1)
Number of birth (n=429)	
Primiparous	105 (20.0)
Multiparous	225 (42.9)
Grand multipara	99 (18.9)
Number of living children (n=428)	
1	201 (38.4)
2-4	151 (28.8)
≥5	76 (14.5)
Ever had abortion (n=524)	
Yes	71 (13.5)
No	453 (86.5)
Do you have functional radio or television?	
Yes	442 (84.4)
No	82 (15.6)
What type/s of modern contraceptive methods do you know?*	
Tablet	227 (81.5)
Injectable	497 (94.8)
Implant	376 (71.8)
Intrauterine contraceptive device	288 (55.)
Condom	199 (38.0)
Permanent	96 (18.3)
Source of information about family planning	
Friends	225 (42.9)
Health facilities	198 (37.8)
Health extension	66 (12.6)
Husband	18 (3.4)
Others	17 (3.2)
Type of modern contraceptive method ever used*	
Tablet	288 (54.4)
Injectable	467 (89.1)
Implant	16 (3.1)
Less than a year	157 (30.0)
Duration of used contraception	
1-3 years	185 (35.3)
More than 3 years	182 (34.7)
Discussion with their husbands about family planning methods	
No	350 (66.8)
Yes	174 (33.2)
Long-acting reversible contraceptive utilization	
No	35 (66.6)
Yes	175 (33.4)

In addition, 497 (94.8) women heard about LARC, and 16(3.1%) cases used modern contraceptives. A total of 350 (66.7%) subjects reported discussing LARC with their husbands.

With regard to the utilization duration of contraceptives, 182 (35%) women had used it for more than 3 years. In this study, the overall prevalence rate of LARC use was observed to be 33.4% (Table 2).

Regarding misconceptions toward LARC, 258 (49%) women believed that family planning methods cause cancer, and 224 (42.7%) subjects believed that they were forbidden to use contraceptives according to religion. In addition, three-fourth of the family planning method users believed that the decision should be made by their husbands to use LARC.

Knowledge of respondents about long-acting reversible contraceptives

Regarding the knowledge of respondents about LARC, 33.3% of the participants indicated IUCD is not appropriate for females at high risk of getting sexually transmitted infections. Furthermore, 81.9% of the subjects expressed that the use of implant prevents from pregnancy up to 5 years, and 65.1% of the participants stated the IUCD has no interference with sexual intercourse or desire. In addition, 65.8% of the participants said that LARC is immediately reversible (they become pregnant soon after the removal), and 72.7% of the women told that IUCD can prevent from pregnancies for more than 10 years. In this study, 51.7% of the subjects stated that the insertion and removal of implants need minor surgical procedures. Considering the knowledge level of the participants, 29.4% and 40.6% of the women had high and low levels of knowledge toward LARC, respectively (Table 3).

Table 3. Knowledge of family planning users toward long-acting reversible contraceptives in public health facilities of Afar region from December 15 to February 15 in 2018

Items	False	True
	N (%)	N (%)
1. The IUCD is not appropriate for females at high risk of getting sexually transmitted infections.	348 (66.4)	176 (33.6)
2. Implants prevent from pregnancy for 5 years.	85 (18.1)	429 (81.9)
3. The IUCD has no interference with sexual intercourse or desire.	183 (34.9)	341 (65.1)
4. Long-acting reversible contraceptives are immediately reversible.	179 (34.2)	345 (65.8)
5. The IUCD can prevent from pregnancies for more than 10 years.	143 (27.3)	381 (72.7)
6. Insertion and removal of implants requires minor surgical procedures.	253 (48.3)	271 (51.7)
	Frequency (%)	
Knowledge level of respondents (n=524)	Low level of knowledge	213 (40.6)
	Moderate level of knowledge	157 (30.0)
	High level of knowledge	154 (29.4)

Attitudes of women toward long-acting reversible contraceptives

Concerning the attitude of the women toward LARC, 33.3% of the participants agreed that LARC use restricts normal daily activities, and 36.6% of them agreed that the insertion of IUCD is shameful and their privacy will not be preserved. Moreover, 32.4% of the subjects approved that using implants or IUCD store blood in abdomen and causes cancer, and 48.5%

of them agreed that good nutrition is required for the utilization of LARC. Furthermore, 51.5% of the participants accepted that using implants causes heavy irregular monthly hemorrhage, and 42.6% of them agreed that the insertion and removal of IUCD are highly painful. According to the results of the present study, 46% of the studied women had a negative attitude toward LARC use (Table 4).

Table 4. Attitudes of contraceptive users toward long-acting reversible contraceptives in public health facilities of Afar region from December 15 to February 15 in 2018

Items	Agree		Not sure		Disagree	
	n	%	n	%	n	%
1. Long-acting reversible contraceptives utilization restricts normal daily activities.	175	33.4	118	22.5	231	44.1
2. Loosing privacy during intrauterine contraceptive device insertion is shameful.	19 2	36.6	51	9.7	281	53.6
3. Using implants or IUCD stores blood in the abdomen and causes cancer.	17 0	32.4	54	10.3	300	57.3
4. Using implants causes heavy irregular monthly hemorrhage.	27 0	51.5	64	12.2	190	36.3
5. Insertion and removal of IUCD are highly painful.	22 3	42.6	84	16.0	217	41.4
6. Utilization of long-acting reversible contraceptives requires good nutrition.	25 4	48.5	67	12.8	203	38.7

Attitude score toward long-acting reversible contraceptives	Frequency		Percentage	
	Negative attitude	Positive attitude	283	46.0
			241	46.0

Associated factors with long-acting reversible contraceptives utilization

In multiple logistic regression analysis, maternal age (≥ 35), level of knowledge and attitude toward LARC utilization, and discussion about LARC with husbands were observed to be the contributing factors toward the adoption of LARC use. The subjects aged ≥ 35 were 70% less likely to opt for LARC in comparison to women within the age range of 20-34 years (AOR=0.3; 95% CI: 0.2-0.7). Similarly, cases who discussed LARC with their husbands were twice or more likely to

utilize LARC than their counterparts (AOR=2.4; 95% CI: 1.5-3.8). Moreover, the likelihood of utilizing LARC increased in mothers whose knowledge scores were higher. In this regard, women whose levels of knowledge were nearly three times higher were observed to be more likely to utilize LARC, compared to those with a lower knowledge score (AOR=2.7; 95% CI: 1.7-4.4). In addition, the participants with a positive attitude were nearly twice more likely to utilize LARC, compared to their equivalents (AOR=1.8; 95% CI: 1.2-2.3) (Table 5).

Table 5. Factors of long-acting reversible contraceptives utilization among family planning users in public health facilities of Afar region from December 15 to February 15 in 2018

Variables	Long-acting reversible contraceptives		Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)
	No	Yes		
Age group				
<20	13	8	0.7 (0.3-2.0)	0.7 (.2-2.1)
20-24	136	49	0.4 (0.23-0.7)*	0.3 (.2- .7)**
25-34	168	91	0.6 (0.4-1.1)	0.6 (0.3-1.1)
≥ 35 (ref.)	32	27	1	1
Educational level of women				
Unable to write and read (ref.)	55	14	1	1
Primary (1-8)	223	111	2.0 (1.1-3.7)*	1.9 (0.8-4.1)
High school and preparatory schooling (9-12)	42	23	2.2 (0.9-4.6)	2.0 (0.7-5.3)
Higher education	29	27	3.7 (1.6-8.1)*	2.6 (0.9-7.6)
Educational level of husband				

Variables	Long-acting reversible contraceptives		Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI)
	No	Yes		
Unable to write and read (ref.)	46	15	1	1
Primary	176	72	1.3 (0.7-2.4)	0.9 (0.4-2.0)
High school and preparatory schooling	81	46	1.7 (0.8-3.5)	1.1 (0.5-2.7)
Higher education	46	42	2.8 (1.3-5.7)*	1.5 (0.6-3.7)
Knowledge level of respondents				
Low level of knowledge (ref.)	160	53	1	1
Moderate level of knowledge	107	50	1.4 (0.8-2.2)	1.2 (0.8-2.0)
High level of knowledge	82	72	2.7 (1.7-4.1)*	2.7 (1.7-4.4)**
Attitude toward long-acting reversible contraceptives utilization				
Negative attitude (ref.)	205	78	1	1
Positive attitude	144	97	1.8 (1.2-2.3)*	1.5 (1.1-2.3)**
Discussion with husband				
Yes	210	140	2.7 (1.7-4.1)*	2.4 (1.5-3.8)**
No (ref.)	139	35	1	1
Occupational level of women				
Housewife (ref.)	242	122	1	1
Merchant	53	25	1.0 (0.5-1.6)	0.7 (0.4-1.3)
Daily laborer	29	5	0.3 (0.12-0.9)	0.4 (0.1-1.0)
Government employee	25	23	1.8 (0.9-3.3)	1.3 (0.6-3.1)

Statically significant at *P < 0.25 and **P < 0.05

Discussion

The present study was carried out to assess the prevalence and associated factors that contribute to LARC use among women as an extended-term contraceptive method. In this study, the prevalence rate of LARC was observed to be 33.4%. Prevalence of LARC utilization in the present study is relatively similar to that reported in facilities-based studies conducted in Addis Ababa and Gondor, Ethiopia, as 34% and 33.7%, respectively (16, 28). However, a higher prevalence of LARC utilization was observed in the present this study, compared to those of other studies in Arba Minch town, Mekelle Town, Deberbrhan, and Bati, Ethiopia, as 13.1%, 16.6%, 19.5%, and 29%, respectively (13-15, 17).

The above-mentioned finding might also be due to the study time, study setting, and study design of the present study. In contrast, in the present study, a lower prevalence of LARC was observed, compared to that in a study performed in Harar, Ethiopia, which was 38% (29). This difference may be explained by the variations in study setting and due to various interventions performed between these study areas.

According to the results of the present study, the rate of LARC utilization was lower, compared to those in other countries, such as Nigeria, Gambia, Chad, and Democratic of Congo, reported as

44.7%, 38%, 89%, and 74%, respectively (22, 29, 30). This finding might be due to social, economic, and cultural differences. In addition, in case of Chad and the Democratic Republic of Congo, the project called Supporting Access to Family Planning and Postabortion Care was conducted during 2012 to 2015 with the main strategies of providing competency-based training with follow-up clinical assessment and coaching. Performing this project ensured a continuous supply and facility supervision on a regular basis in partnership with district and zonal health management staff.

As revealed by the results of the present study, the women who had high level of knowledge about LARC were reported with a high odds ratio of LARC use. This finding is again supported in studies conducted in Arba Minch, Mekelle, Goba and Uganda revealing that those women who had high levels of knowledge about LARC were more likely to utilize LARC than those with low levels of knowledge in this regard (13, 14, 27, 31). This might be due to the fact that the more the mother identifies the side effects and benefits of the methods the more they use the methods.

In addition, women who have good knowledge about LARC are more likely to face the risks and benefits of using LARC and make sound decisions. The present study also identified positive attitudes toward LARC as a factor

effective in LARC utilization. This finding is comparable with the results of studies conducted in Mekelle, Uganda, and Goba reporting a similar positive association between positive attitude toward LARC and LARC utilization (14, 25, 27). This finding was almost observed to be a universal fact indicating that as the supportive attitude increases the use of LARC increases.

Finding of the present study revealed that those women who had good discussion with their husbands about contraceptive methods were more likely to utilize LARC method, compared to the mothers who had no discussion with their husbands. This finding is parallel to those of studies conducted in Butajira (32) and in Debre Markos (20) indicating that those women who had no discussion about LARC with their husbands or partners or discussed it once or twice had less demand for it than those who discussed it more thoroughly.

In this study, the women aged ≥ 35 were 70% less probable to utilize LARC in comparison to those within the age range of 20-34 years. Findings of the present study are similar to those of studies conducted in Zimbabwe, Uganda, and Northern Nigeria (23, 25, 29). This result may be related to those mothers who had already attained their plan of family size and wanted to use LARC up to reaching menopause. Therefore, it is not unexpected that women desiring to have more children were less likely to use LARC. Results of the present study will help policy-makers, program designers, and nongovernmental organizations to support the study area. Furthermore, the findings of the present study can also help as secondary data to carry out further studies in a similar area of inquiry.

Study participants were selected using the probability sampling method to ensure the representativeness of the study, and different approaches were used to maintain the quality of data. Limitation of this study included a health facility in scope that might not represent mothers who did not come to health facilities. Moreover, this study was not supported using a qualitative method; therefore, it was not possible to demonstrate detailed reasons from different perspectives for not utilizing LARC. In addition, classification bias may be introduced when

changing attitude scales from a 5- to 3-point Likert scale.

Conclusion

Prevalence of LARC utilization was low in the study area. The obtained findings indicated that the knowledge and attitude of the women, discussion with their husbands about planning, and maternal age were the factors associated with the use of LARC. In general, the similarity of the results to those of previous studies may show the ineffectiveness of surviving national programs in improving the prevalence of LARC. Factors of LARC utilization suggested that strengthening maternal knowledge, creating positive attitude, and encouraging discussion with husbands about LARC are important in increasing the use of LARC. Findings of this study indicated all concerning bodies to focus attention on raising the prevalence of LARC use and collaboration of regional health bureau with different stakeholders, such as Samara University and non-governmental organization.

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Conflicts of interest

Authors declared no conflicts of interest.

References

1. among pregnant women who referred to health Federal democratic republic of Ethiopia ministry of health, UNICEF, AMREF. Family Planning: Blended Learning Module for the Health Extension Programmed. Available at: URL: www.moh.gov.et; 2017.
2. Creanga AA, Gillespie D, Karklins S, Tsui AO. Low use of contraception among poor women in Africa: an equity issue. *Bulletin of the World Health Organization*. 2011; 89:258-266.
3. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *The Lancet*. 2012; 380(9837):111-125.
4. Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. *The Lancet*. 2012; 380(9837):149-156.

5. Chola L, McGee S, Tugendhaft A, Buchmann E, Hofman K. Scaling up family planning to reduce maternal and child mortality: the potential costs and benefits of modern contraceptive use in South Africa. *PLoS One*. 2015; 10(6):e0130077.
6. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*. 2014; 2(6):e323-e333.
7. Tewodros B, Senait T. Impact of the Ethiopia health sector transformation plan (HSTP) 2015-2019 on key health indicators. Washington, DC: Futures Group, Health Policy Project; 2015.
8. Eisenberg D, McNicholas C, Peipert JF. Cost as a barrier to long-acting reversible contraceptive (LARC) use in adolescents. *Journal of Adolescent Health*. 2013; 52(4):S59-S63.
9. World Health Organization. WHO/UNFPA technical specification and prequalification guidance. Geneva: World Health Organization; 2016.
10. Joshi R, Khadilkar S, Patel M. Global trends in use of long-acting reversible and permanent methods of contraception: seeking a balance. *International Journal of Gynecology & Obstetrics*. 2015; 131:S60-S63.
11. The United Nations. Department of economic and social affairs, population division. New York: World Family Planning; 2017.
12. The United Nations. Department of economic and social affairs, population division. New York: World Family Planning; 2015.
13. Getinet S, Abdrahman M, Kemaw N, Kansa T, Getachew Z, Hailu D. Long acting contraceptive method utilization and associated factors among reproductive age women in Arba Minch Town, Ethiopia. *Greener Journal of Epidemiology and Public Health*. 2014; 2(1):23-31.
14. Gebremichael H, Haile F, Dessie A, Birhane A, Alemayehu M, Yebyo H. Acceptance of long acting contraceptive methods and associated factors among women in Mekelle city, Northern Ethiopia. *Science Journal of Public Health*. 2014; 2(4):349-355.
15. Dessalegn M, Behailu S, Wagnaw M, Yigzaw M. Status of modern contraceptive use among married women in Debre Birhan District, Ethiopia. *Journal of Public Health and Epidemiology*. 2014; 6(10):316-326.
16. Dadi T. Assessment on utilization of long acting reversible contraceptive methods and its associated factors among reproductive aged women in selected health centers in Addis Ababa, Ethiopia. [Doctoral Dissertation]. Ethiopia: Addis Ababa University; 2015.
17. Nejimu Biza MA, Surender Reddy P. Long acting reversible contraceptive use and associated factors among contraceptive users in Amhara region. *Medico Research Chronicles*. 2016; 4:2394-3971.
18. Tulu AS, Gebremariam T. Utilization of reversible long acting contraceptive methods and associated factors among women getting family planning service in governmental health institutions of Gondar city administration, Northwest Ethiopia. *International Journal of Health Sciences & Research*. 2018; 8:2.
19. Shiferaw K, Musa A. Assessment of utilization of long acting reversible contraceptive and associated factors among women of reproductive age in Harar City, Ethiopia. *Pan African Medical Journal*. 2017; 28(1):222.
20. Gudaynhe SW, Zegeye DT, Asmamaw T, Kibret GD. Factors affecting the use of long-acting reversible contraceptive methods among married women in Debre Markos Town, North West Ethiopia 2013. *Global Journal of Medical Research*. 2015; 14(5):9-15.
21. Desta SA, Worku A. Usage of long acting reversible contraceptive methods among women who want no more children, In-Depth analysis of the Ethiopian demographic and health survey. *Science*. 2017; 5(6):428-439.
22. Anyanwu M, Alida BW. Uptake of long-acting reversible contraceptive devices in western region of the Gambia. *African Health Sciences*. 2017; 17(2):409-417.
23. Ngome E, Odimegwu C. The social context of adolescent women's use of modern contraceptives in Zimbabwe: a multilevel analysis. *Reproductive Health*. 2014; 11(1):64.

24. Chaudhury N, Tariq M, Singh A. Determinants of intra uterine device usage among women in reproductive age in three states of North India. Available at: URL: https://iussp.org/default/files/event_call_for_papers; 2015.
25. Kayongo SB. Uptake of modern contraception among youths (15-24) at community level in Busia District. Uganda: Makerere University; 2013.
26. Kebede Y. Contraceptive prevalence in dembia district, northwest Ethiopia. *Ethiopian Journal of Health Development*. 2006; 20(1):32-38.
27. Takele A, Degu G, Yitayal M. Demand for long acting and permanent methods of contraceptives and factors for non-use among married women of Goba Town, Bale Zone, South East Ethiopia. *Reproductive Health*. 2012; 9(1):26.
28. Central Statistical Agency (CSA) [Ethiopia] and ICF. Ethiopia demographic and health survey 2016. Ethiopia: Addis Ababa ; 2017.
29. Mohammed-Durosinlorun A, Adze J, Bature S, Abubakar A, Mohammed C, Taingson M, et al. Uptake and predictors of long-acting reversible contraceptives among women in a tertiary health facility in northern Nigeria. *Journal of Basic and Clinical Reproductive Sciences*. 2017; 6(2):960.
30. Rattan J, Noznesky E, Curry DW, Galavotti C, Hwang S, Rodriguez M. Rapid contraceptive uptake and changing method mix with high use of long-acting reversible contraceptives in crisis-affected populations in Chad and the Democratic Republic of the Congo. *Global Health: Science and Practice*. 2016; 4(Suppl 2):S5-S20.
31. Anguzu R, Tweheyo R, Sekandi JN, Zalwango V, Muhumuza C, Tusiime S, et al. Knowledge and attitudes toward use of long acting reversible contraceptives among women of reproductive age in Lubaga division, Kampala district, Uganda. *BMC Research Notes*. 2014; 7(1):153.
32. Mekonnen W, Worku A. Determinants of low family planning use and high unmet need in Butajira District, South Central Ethiopia. *Reproductive Health*. 2011; 8(1):37.