

Utilization Pattern of Long-Acting and Permanent Family Planning Methods and Associated Factors: A Community-Based Cross-Sectional Study in Ethiopia

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Background: Long-acting and permanent family planning methods (LAPMs) are modern contraceptive methods that can prevent pregnancy for greater than one year and include long-acting reversible contraceptive methods (LARCs) (Intrauterine device and subdermal implants), and permanent contraceptive methods (Tubal ligation and Vasectomy). The current study aimed to assess the utilization pattern of long-acting and permanent contraceptive methods and factors associated with their utilization in Lay-Armachiho district, Amhara regional state, Ethiopia.

Methods: A community-based cross-sectional study was conducted. Data were collected by using an interview method and the collected data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 20. Both binary logistics and multivariable logistic regression analyses were used to analyze predictive variables with the utilization of contraceptives. A 95% confidence interval (CI) and a P-value of <0.05 were used to declare statistical significance.

Results: A total of 460 women have participated in the study. The proportion of women that utilize long-acting and permanent contraceptives was found to be 65.4%. Educational statuses, residence, attitude towards long-acting contraceptives, discussion, and joint decision-making with their spouse were factors significantly associated with the utilization of long-acting contraceptive methods.

Conclusion: The current study showed that there is high utilization of LAPMs. Women's attitude, educational status, residency, frequent discussions, and a joint decision with their partners about LAPMs were significantly associated with the utilization of long-acting and permanent contraceptives. There is a significant impact of husbands (sexual partners) on the utilization and choice of contraceptive methods by women.

Keywords: contraceptive, long-acting, fertility, maternal health, family planning

Introduction

Long-acting and permanent family planning methods (LAPMs) are modern contraceptive methods that can prevent pregnancy for greater than one year and include long-acting reversible contraceptive methods (LARCs) (Intrauterine device and subdermal implants), and permanent contraceptive methods (Tubal ligation and Vasectomy), also called sterilizations.¹ The World Health Organization (WHO) has categorized contraceptive methods based on their efficacy and LAPMs (IUCDs, Implants, Vasectomy, and Tubal ligation) constituted the first tier and

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Table 1 Socio-Demographic Characteristic of the Prevalence of Utilization for LAPMs at Lay- Armachiho District, 2017

Variables	Category	Frequency	Percentage (%)
Age	15–25	104	22.6
	26–35	171	37.1
	35–49	185	40.2
Marital status	Not married	56	12.2
	Married	355	77.1
	Divorced	43	9.3
	Widows	6	1.3
Educational	No formal education	146	31.7
	Read and write only	112	24.3
	Grade 1–6 (primary education)	93	20.2
	Grade 7–8 (junior secondary education)	40	8.6
	Grade 9–12 (senior secondary education)	38	8.2
	College/, university	31	6.7
Occupation	Unemployed	296	64.3
	Employed	65	14.1
	Student	52	11.3
	Merchant	25	5.4
	Daily laborer	22	4.7
Family size	1–5	274	59.6
	6–10	170	37
	11–15	13	2.8
	16–20	3	0.6
Religion	Orthodox	396	86
	Muslim	60	13
	Catholic	4	0.9
Ethnicity	Kimant	372	80.9
	Amhara	88	19.1
Residency	Rural	160	34.8
	Urban	300	65.2
Income	<750birr	244	53
	751–1500 birr	113	24.6
	1501–2250 birr	42	9.1
	2251–3000 birr	40	8.7
	>3000	21	4.6

Abbreviation: LAPMs, long-acting and permanent family planning methods.

have the highest efficacy; combined hormonal and progesterone-only methods have moderate efficacy, while barrier methods and fertility awareness are the least effective.²

For the year 2017, it was estimated that there were 295,000 maternal deaths globally (uncertainty Interval 279,000 to 340,000) among which about 86% (254,000) were in sub-Saharan Africa and Southern Asia.³ Sub-Saharan Africa alone accounted for around 66% (196,000) of the total maternal deaths registered.³ In the least developed countries (LDCs), Maternal Mortality

Ratio (MMR) is found to be very high; which is estimated at 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.³ Fortunately, the vast majority of maternal and newborn deaths can be prevented with proven interventions to ensure that every pregnancy is wanted using modern contraceptives and every birth is safe.⁴ Moreover, avoiding barriers to the use of contraceptives and enhancing the demand for family planning could avert

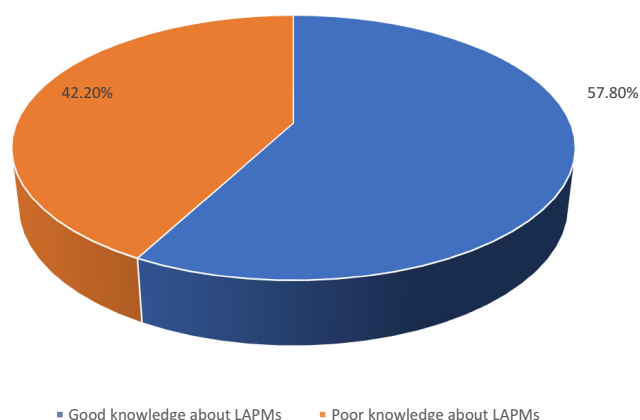


Figure 1 Knowledge assessment of study participants about LAPMs.

54 million unintended pregnancies, over 79,000 maternal deaths, and greater than one million infant deaths each year.⁵

The utilization of LAPMs in sub-Saharan Africa was very low.⁶ In Ethiopia, according to the 2014 Ethiopian demographic health survey (EDHS) mini-report, the prevalence of LAPMs methods was found to be low, 40.4%.⁷ Some of the factors that contribute to the low prevalence rate were; lack of access to LAPMs methods, side effects of the methods, lack of information on the methods, and low level of maternal education.^{8–10} Women's knowledge about contraceptives was a significant factor that determines their utilization of modern contraceptive methods and this was demonstrated by a study conducted in Mekelle, Ethiopia, which showed that women who had high knowledge of contraceptive methods were 8 times more likely to use LAPM's as compared with those who had low knowledge.¹¹ Similar findings were reported by other studies conducted in Assosa and Jinka, Ethiopia, which showed that Knowledge about long-acting and permanent contraceptive methods was found an important predictor of their utilization.^{12,13} Currently, family planning service in Ethiopia is free of cost and different types of contraceptive methods are available in the country.¹⁴ FP services are also available in both governmental and non-governmental health facilities such as hospitals, clinics, health centers, and health posts. However, the contraceptive utilization rate in Ethiopia is very low, as evidence showed that there was only 14% national contraceptive utilization rate among married women and 16% in Amhara National Regional State respectively.^{15,16}

Given the current low contraceptive utilization rate in Ethiopia, it will be very challenging for the country to

achieve its millennium development goals (MDGs); reducing under-five child mortality by two thirds per 1000 live births (Goal 4), and improve maternal health by reducing the maternal mortality ratio by three quarters per 100,000 live births (Goal 5). Therefore, identifying the exact prevalence and factors associated with the utilization of contraceptives will have a greater input to program managers for designing programs, proper implementation, and evaluation of their contribution regarding family planning. The current study aimed to assess the utilization pattern of long-acting and permanent contraceptive methods and factors associated with their utilization in Lay-Armachiho district, Amhara regional state, Ethiopia. The study is a primary study for future quality improvement work and will also be used as a baseline for future studies in the area.

Methods

Study Design and Setting

A community-based cross-sectional study was conducted from April- June 2017, among reproductive-age women (15–49 years of age), in Lay-Armachiho district. Lay-Armachiho is located in North Gondar zone, Amhara regional state, Northwest Ethiopia, located at a latitude of 13° or 13° north and longitude of 37.1667° or 37° 10' 0.1" east at an elevation of 1730 meters (5676 feet). It is located 749 kilometers away from Addis Ababa, the capital city of the country, and 207 kilometers away from Bahir Dar, the capital city of the region. It has 25 rural and 1 urban kebeles (the smallest administrative unit in Ethiopia), and with an area of 1,059.33 square kilometers, it has a population density of 149.00, which is greater than the Zone average of 63.76 persons per square kilometer. Based on the 2011 national census conducted by the Central Statistical Agency of Ethiopia (CSA), the total population of the district was estimated to be around 157,836.¹⁷ The majority of the inhabitants (97.9%) are Orthodox Christians, while the remaining 2% of the population are Muslims. At the time of the study, there were 28,406 women in the reproductive age group.

Population

Source population

The source populations of the study were all women of the reproductive age group in Lay-Armachiho district.

Study Population

Women of a reproductive age group that fulfilled the inclusion criteria and who were available at the time of data collection.

Table 2 LAPMs Utilization Practice at Lay-Armachiho District, North Gondar Zone, Northwest Ethiopia, 2017

Variables		Frequency	Percent
Utilization of LAPMs	High utilization	301	65.4
	Low utilization	159	34.6
Type of contraceptive currently utilized	Implanon	154	33.4
	IUCD	29	6.3
	Jadelle	23	5
Perceived Causes not to use LAPMs	Fear of side effect	47	10.2
	Cultural influence	34	7.3
	Religious influence	19	4.1
	Availability/accessibility problems	8	1.7
	Lack of knowledge	71	15.4
	Fear of future miscarriage	31	6.7
	Spouse disapproval	31	6.7
	Fear of implant removal	29	6.3
Type of LAPMs preferred	Due to the prolonged duration of use	12	2.6
	Implanon	308	66.9
	IUCD	110	23.9
	Jadelle	33	7.1
	Tubal ligation	11	2.4
Where do you get LAPMs	Hospital	123	26.5
	Health center	178	38.5
	Health post	144	31.04
	Private clinic	13	2.8
	Other	4	0.86
Experience preventive failure of LAPMs	Yes	138	30.0
	No	322	70.0
Who decide to use LAPMs	Self	182	39.6
	Spouse	97	21
	Both together	181	39.3
Discussions with Spouse on implant contraceptive	Yes	221	48
	No	239	52

Abbreviations: LAPMs, long-acting and permanent family planning methods; IUCD, intra-uterine contraceptive device.

Inclusion and Exclusion Criteria's

Inclusion Criteria

Women of reproductive age who at least stayed in the study area for the past one year as a resident.

Exclusion Criteria

Women who were not able or willing to participate in the study.

Sample Size Determination and Sampling Technique

The sample size was determined using single population proportion formula with the assumption of 95% confidence level, 5% of margin of error, Design effect (DE)

of 2 (since a two-stage sampling technique was used), and adding 10% of non-response rate. A proportion of 16.4% was used from a previous study conducted in Mekelle.¹⁸ The final sample size was 464.

$$\frac{(z\alpha/2)^2 \cdot P(1-P)}{(d)^2} = \frac{1.96 \times 1.96 \times 0.164(1-0.164)}{0.05 \times 0.05} = 210.679 \approx 211$$

$$= 211 \times 2(DE) + (422 \times 0.01(\text{Contingency})) = 464$$

Sampling was performed using a two-stage sampling technique. First, sample kebeles were selected using a simple random sampling method by taking their names from the district office and using it as a sampling frame. Then,

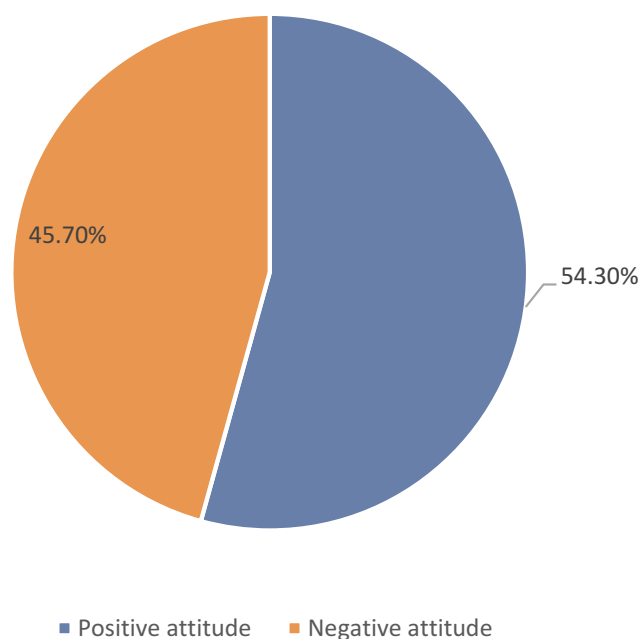


Figure 2 Attitude of the study participants towards utilization of LAPMs.

numbers of households from each kebele were selected based on proportional allocation to the size of the area population of women in a reproductive age group, and specific households were selected using a systematic random sampling method by using household numbers from the kebele offices as a sampling frame. At the household level, if more than one eligible study participants were available, one of them was taken by a lottery method.

Study Variables

The main study variable in the current study was the utilization of LAPM's. This was analyzed with the different independent variables including the socio-demographic characteristics of the study participants as well as knowledge and attitude related factors.

Data Collection Procedure

Data were collected by five health extension workers using a structured and pre-tested questionnaire. An interview with the participants at their premises (house), was conducted using the structured format from the questionnaire. The interviews took an average of 15 minutes to complete. The questionnaire was first developed in English and then translated into Amharic and back-translated to English to check its consistency. The questionnaire consisted of a total of 43 questions arranged in four parts. The first part consisted of 10 questions that assessed the sociodemographic characteristics of the study participants (age,

marital status, Educational, Occupation, Family size, Religion, Ethnicity, Income, Residency). The second and third parts consisted of 9 and 11 questions respectively that assessed the knowledge and attitude of study participants regarding LAPM's. The knowledge part consisted of dichotomous questions to assess the knowledge of the participants towards the main types of LAPMs; (IUCD can prevent pregnancies for more than 10 years, IUCD is not appropriate for female at high risk of getting STIs, IUCD has no interference with sexual intercourse or desire, IUCD is immediately reversible (quick pregnancy possible after removal), IUCD can cause cancer, Implant can prevent pregnancies for 5 years, Implants require minor surgical procedure during insertion and removal, Implant is immediately reversible (quick pregnancy possible after removal), After tubal ligation pregnancy is not possible). The attitude part composed of trichotomous questions (agree, disagree, and neutral), that assess the respondent's perception and tolerance towards the common side effects and procedures involved in the applications of LAPMs. The final part of the questionnaire consisted of 12 questions that assessed the study participant's LAPM's utilization pattern and associated factors.

Data Quality Assurance

Pretest of the data collection instrument was conducted on 23 women of the same characteristics to the study participants before the actual data collection, to check for the applicability of the data collection instrument and make necessary adjustments. Some of the questions from the questionnaire that was not clear to understand were modified and some questions that were vague/or not applicable in the current study set-up were removed. Those study participants who participated in the pilot study were excluded from the actual study. One day training was provided by investigators to both data collectors and supervisors on the general objectives of the study and data collection procedures. The supervision of the data collection process was performed by two supervisors. At the end of each day, the data were checked for completeness, accuracy, and consistency, and those found missing in addressing important variables were discarded.

Data Processing and Analysis

The collected data were coded, cleaned, edited, and finally entered and analyzed using SPSS version 20. Data cleaning was performed to check for accuracy

Table 3 Bi-Variable and Multivariable Logistic Regression of Factors Affecting the Utilization of LAPMs at Lay-Armachiho District, 2017

Variables		LAPMs Utilization		COR (95% CI)	AOR (95% CI)
		High Utilizer	Low Utilizer		
Educational status	No formal education	80	66	1	1
	Read and write only	74	38	1.60(0.97,2.67)	1.36(0.93,2.87)
	Grade 1–6 (1 ^o education)	64	29	1.82(1.05,3.14)	1.56(0.84,2.88)
	Grade 7–8 (junior 2 ^o education)	29	11	2.17(1.01,4.68)	1.42(0.57,3.51)
	Grade 9–12 (senior 2 ^o education)	28	10	2.32(1.04,5.10)	1.09(0.42,2.77)
	College/university	26	5	4.29(1.56,11.79)	1.47(1.40,5.37)*
Occupation	Unemployed	185	111	1	1
	Employed	49	16	1.83(0.99,3.38)	0.75(0.34,1.63)
	Student	30	22	0.81(0.45,1.48)	0.74(0.37,1.48)
	Merchant	18	7	1.54(0.62,3.81)	1.15(0.43,3.07)
	Daily laborer	19	3	3.8(1.09,13.13)	1.92(0.502,7.38)
Residence	Rural	129	31	1	1
	Urban	169	131	0.28(0.06,1.35)	1.69(1.12,3.78)*
Income	<750birr	159	85	1	1
	751–1500 birr	59	54	0.60(0.38,0.95)	0.83(0.50,1.39)
	1501–2250 birr	29	13	1.13(0.57,2.26)	1.07(0.48,2.38)
	2251–3000 birr	22	18	2.58(1.09,6.07)	1.60(0.60,4.29)
	>3000	20	1	5.31(1.21,23.29)	3.88(0.74,20.28)
Decision on LAPMs use	Self	130	52	1	1
	Spouse	72	25	2.07(1.34,3.19)	1.32(0.70,2.48)
	Both	99	82	2.38(1.38,4.09)	1.60(1.36,3.00)*
Discussion with Spouse on contraceptive choice	Yes	159	62	1.75(1.18,2.59)	2.28(1.45,3.59)*
	No	142	97	1	1
Preventive failure on using LAPMs	Yes	108	30	0.41(0.26,0.66)	0.65(0.38,1.10)
	No	193	129	1	1
Attitude towards LAPMs	Positive attitude	156	94	1.34(0.50,1.09)	3.70(1.50,5.21)*
	Negative attitude	145	65	1	1

Note: *Variables significant at $P \leq 0.05$.

Abbreviations: LAPMs, long-acting and permanent family planning methods; COR, crude odds ratio; AOR, adjusted odds ratio.

and consistencies and missed values and variables. Both bi-variable and multivariable logistic regression analyses were used to identify the factors associated with the utilization of LAPMs. Those variables that had p -value < 0.2 in the bi-variable analysis were fitted into the multivariable analysis. The result of P -value < 0.05 in Multivariable logistic regression model would be considered as statistically significant. Crude and Adjusted Odds ratio with 95% CI was calculated to see the strength of association of each independent variable with the dependent variable.

Ethics Approval and Consent to Participate

The study was performed following the Declaration of Helsinki as revised in 2013 and ethical approval was obtained from the research and ethics review committee of the School of Pharmacy, University of Gondar; with a reference number SoP 799/2017. The study participants were well informed about the purpose of the study and verbal consent, in which the process was approved by the ethical committee, was obtained before the commencement of the data collection. All the study participants had

provided the verbal consent themselves, as approved by the ethics committee and the Information provided by each respondent was kept confidential.

Operational Definitions

High LAPM's Utilization

Participants that respond to LAPM's utilization questions above the mean (above 0.96).

Poor LAPM's Utilization

Participants that respond to LAPM's utilization questions below the mean (above 0.96).

Good Knowledge

Participants that respond $\geq 50\%$ of LAPM's knowledge questions.

Poor Knowledge

Participants that respond $< 50\%$ of LAPM's knowledge questions.

Positive Attitude

Participants that respond for attitude questions \geq the mean (0.54)

Negative Attitude

Participants that respond for attitude questions below the mean (0.54)

Results

A total of 460 participants were enrolled in the study giving an overall response rate of 99.13%. About 185 (40.2%) of the respondents were in the age group of 35–49 years of age and 372 (80.9%) were kimant by ethnicity. The majority of the participants were unemployed 296 (64.3%) and 146 (31.7%) does not have a formal education. About 355 (77.1%) of the study participants were married and 396 (86%) were orthodox Christians by religion (Table 1).

Knowledge and Attitude on LAPM's

About 266 (57.8%) of the respondents had good knowledge of LAPM's and 250 (54.3%) had a positive attitude towards the utilization of LAPM's (Figures 1 and 2). From the total participants, the majority of them 204 (44.3%) reported that health extension workers were the source of information about LAPM's. Other sources of information mentioned by the respondents were family 27 (5.8%), media 32 (6.9%), health professional 128 (27.8%), health development army 72 (15.6%), and other 1 (0.2%).

LAPM's Utilization Practice

A total of 301 (65.4%) participants had high utilization of LAPM's. Regarding the preference of types of contraceptives, some participants preferred more than one method, in which about 308 (66.9%) of the participants reported that they preferred to use Implanon as their choice of LAPM's while 154 (33.4%) of them were currently using Implanon. Lack of knowledge about LAPM's 71 (15.4%) and fear of side effects 47 (10.2%) were reported to be the most common barriers for the non-utilization of LAPM's. Regarding the source of their contraceptives; the majority of them 178 (38.6%) reported that they get their LAPM's from health centers, followed by 144 (31.3) from health posts while some respondents also reported obtaining from multiple sources. A total of 322 (70%) participants reported that their utilization of LAPM's had successfully prevented pregnancy (Table 2).

Factors Associated with Utilization of LAPM's

Those variables which have a significant association with the dependent variable in the bi-variable logistic regression analysis were educational status, occupation, residence, income, a joint decision with their spouse/partner on LAPM's utilization, discussion with their spouse/partner on the choice of contraceptives, Attitude, preventive failure on using LAPM'S. However, only educational status, residence, a joint decision with their spouse/partner for LAPM's utilization, discussion with their spouse/partner on the choice of contraceptive, and attitude were the only significant factors that have an association with utilization of LAPM's.

More educated reproductive-age women were more likely to use LAPM's than the less educated in which women with college/university level education were 1.4 times more likely to use LAPM's than less educated ones, AOR=1.473, (P=0.041). Participants who reside in the urban were 1.7 times more likely to use LAPM's than rural residents, AOR= 1.69 (P=0.002). Women who decide their choice of contraceptive methods together with their spouse were 1.6 times more likely to use LAPM's than individually made decisions AOR= 1.604 (P=0.031). Women who discussed the choice of LAPM's with their spouse/partner were 2 times more likely to use them, AOR=2.285 (P≤0.001). Participants who had a positive attitude to LAPM's were 4 times more likely to use

LAPM's than women with a negative attitude to LAPM's, AOR=3.709 (P=0.042) (Table 3).

Discussion

In the current study, the proportion of the utilization of LAPM's was found to be 65.4%. This finding was much higher than a study conducted in Jinka 39.5%, Arbaminch 13.1%, Nekemte 20%, Harar 38%, and Goba 8.72%.^{13,19-22} This could be because the current study was conducted in Amhara region and due to a long term governmental strategy to improve FP utilization in the region and the significant involvement of health extension workers on the provision of FP education and services, people of Amhara origin were found to have higher odds of FP use (OR = 2.00) than other ethnic groups.^{23,24} It could also be attributed to the fact that in the current study about 86% of the study participants were orthodox Christians and studies show that family planning utilization in Ethiopia is more prevalent in Orthodox Christians (36.72) percent, considerably better than other religions, 31.13% in other Christians, 20.57% in Muslims, and 11.19% in other religious followers.^{23,25} Another possible explanation could also be the fact that the majority of the study participants in the current study (about 65%) were urban residents and being urban and rural resident was found to have a significant association with FP service utilization from 24.71% in rural to 54.18% in the urban resident women.²³ The involvement of non-governmental organizations (NGO's), that worked on family planning strategies in this area could also be a factor for the increased availability and concomitant utilization of these methods.

In the current study, educated women (with higher education in college/university) were 1.47 times more likely to use long-acting and permanent contraceptives than the less educated. This finding was in line with a national survey conducted in the country in which women with higher education were found to have a six-fold odds of FP acceptance than those with no education.²³ It is also in line with a study conducted in Southern Nations Nationalities and Peoples (SNNP's) region of Ethiopia, in which having an overall good knowledge and attitude towards contraceptives were positively associated with their utilization AOR 15.51 [95% CI 9.75–24.68].²⁵ Similar results were also reported by other studies; in which women who had a formal education were found about two times more likely to utilize long-acting contraceptives as compared to those who had not attended

formal education in studies conducted in Arbaminch and Nekemte, and 6 times more likely in Bahir dar.^{19,20,26}

Participants who reside in the urban areas were 1.7 times more likely to use LAPM than rural residents. This finding was supported by a study in Malawi which reported that there was a rural-urban difference in the use of LAPM methods in which being a woman from a rural area reduces the odds of using LAPM methods by 14%.²⁷ Similar results were also reported by a study conducted in SNNP's region of Ethiopia.²⁵ A possible reason for these may be women in rural areas may not have a good understanding of LAPM methods and also may not have adequate access to them as compared to women in urban areas.

Women who decide together and discussed long-acting implants with their spouse/partner were 1.6 and 2 times more likely to use LAPM'S than their counterparts respectively. Joint decisions and discussions about long-acting and permanent contraceptives with their Spouses were factors significantly associated with the utilization of long-acting and permanent contraceptives in similar studies conducted in North shoa,²⁴ Bahir dar,²⁶ Dembia,²⁸ Nekemte.²⁰ The number of times discussion on LAPM's was also found to be a predictor of using LAPM's, respondents who discussed more often were more than four times more likely to use LAPM's than those who have discussed once or twice about LAPM's.²²

Women who had a positive attitude to LAPM were found 4 times more likely to use LAPM than women with a negative attitude to LAPM. This finding was in line with a study done in Arbaminch, in which women who had a positive attitude towards long acting contraceptives were 3 times (AOR=3, 95%: [1.43–3.57]) more likely to utilize them than those who had a negative attitude.¹⁹ Similar findings were also reported by studies conducted in SNNP's region of Ethiopia,²⁵ Assosa.¹² This could be attributed to the fact that women who had a good attitude towards LAPM's will know the benefits and the side effects they may encounter and this could lead to good utilization regardless of whatever consequence they may experience.

Limitation of the Study

Since the current study was a cross-sectional study, it does not show the cause and effect relationship between the different independent variables and utilization of LAPM's. Another limitation could be the inability of the study to not adjust for every possible variable associated

with LAPM's utilization and some important variables such as previous pregnancy status (gravidity and parity) were missed.

Strength of the Study

The study utilized an adequate sample size to investigate the study in question. The study also tried to discuss the major findings by comparing it with similar literature and appropriate justification.

Conclusion and Recommendations

The current study showed that there is high utilization of LAPM's. Women's attitude, educational status, residency, frequent discussions, and a joint decision with their partners about LAPM'S were significantly associated with the utilization of long-acting and permanent contraceptives. There is a significant impact of husbands (sexual partners) on the utilization and choice of contraceptive methods by women.

Recommendations

Strategies should be implemented to improve women's knowledge and attitude towards LAPM's. Women should also frequently discuss the contraceptive methods they use and gain support from their partners. Health professionals should counsel their clients in the choice of contraceptive methods and the pros and cons of each contraceptive method. They should also encourage them to discuss the issue with their partners.

Data Sharing Statement

The data sets generated and/or analyzed during the current study are not available in public due to the requirement of confidentiality upon which the study was approved by the institutional review board and consent was secured from the study participants but are available from the corresponding author on reasonable request.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be

published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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