

Acceptance of Long Acting Reversible Contraceptive Methods and Associated Factors Among Reproductive Age Women in *Adama Town, Oromia Regional State, Ethiopia*

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Abstract: The global population is expected to reach between 7.5 and 10.5 billion by the year 2050. Ethiopia is the second most populous country in Sub-Saharan Africa next to Nigeria. Total Fertility Rate of Ethiopia is 4.1 children per women; contraceptive prevalence rate is 29% for all child bearing age women. The prevalence of long acting reversible contraceptive methods (LARCs) in Ethiopia was very low (4.2%). The cause for low prevalence of LARCs is not known. This study assessed the acceptance and factors associated with acceptance of long acting reversible contraceptive methods (LARCs) among reproductive age women in Adama Town, Oromia regional state, Ethiopia, 2016. Institution-based cross-sectional study was employed. A total of 644 women attending family planning clinics in health facilities in Adamatown in March 2016 were randomly selected. Structured, pretested and interviewer administered questionnaire was used to collect data. Univariate and Multivariable logistic regression analysis was employed to identify factors associated with acceptance of LARCs methods. Adjusted Odds ratios (AOR) with 95% confidence interval (CI) were used to assess the association among study variables. The acceptance of LARCs methods was found 27.9%. Respondents' age (25-34 years) (AOR, 0.19; 95% CI: 0.07, 0.54) were negatively associated, occupation (govern employed) (AOR, 8.80; 95% CI: 1.38, 56.13), Supportive partners attitude (AOR, 30.26; 95% CI: 10.52, 87.03), time taken to arrive the health facility (AOR, 5.68; 95% CI: 2.11, 15.27), partners discussion (AOR, 23.23; 95% CI: 8.55, 63.08) and ever using LARCs before (AOR, 5.50; 95% CI: 2.11, 14.31) were found to have significant and positive association with acceptance of LARCs. Current LARCs acceptance is low (27.9%). Regional Health Bureau, Adama Town Health Office and other stakeholders should continue promotion of LARCs. Health professionals should teach both the clients and their partners about the benefits and disadvantage of LARCs. Partners should discuss on benefits of using LARCs.

Keywords: Acceptance, Long Acting Reversible Contraceptive, Adama, Ethiopia

1. Introduction

The continuing growth of the world population has become an urgent global problem. Current projections show a continued increase in population with the global population expected to reach between 7.5 and 10.5 billion by 2050 [1]. In 2014, the twentieth anniversary of the conference, the world's population has already surpassed 7 billion [2]. Ethiopia is the second most populous country in Sub-Saharan Africa, with a steadily growing population of 85.8 million in

2013, with a growth rate of 2.6 percent per annum [3]. Human population growth is perhaps the most significant cause of the complex problems the world faces; climate change, poverty and resource scarcity [4].

The World Health Organization (WHO) estimated that 289,000 maternal deaths occurred worldwide in 2013, Sub-Saharan Africa and Asia accounts for 62% of the global maternal deaths [5]. The maternal mortality ratio is the number of maternal deaths per 100,000 live births. Globally, this ratio dropped from 380 deaths to 210 deaths per 100,000

live births between 1990 and 2013 [5], [6]. Ethiopia is one of the sub-Saharan African countries with the highest maternal mortality rate (MMR) which is 420 maternal deaths per 100,000 live births [5], [7], [8].

Today more than 200 million women and girls in developing countries who do not want to get pregnant lack access to contraceptives, information, and services which, for many, will cost them their lives [9]. Contraceptive prevalence was high in the world, 70% or higher in Europe, Latin America and the Caribbean and Northern America but lowest in Africa 31%, and less than 25% in Middle Africa and Western Africa. In 2011 (East Africa?), nine in ten contraceptive users worldwide relied on a modern method of contraception [10]. Family planning has been defined in different ways, essentially it implies enabling individuals and couples to attain the desired number, spacing and timing of children through the use of modern or traditional contraceptive methods. Family planning has many benefits; 1) FP services save lives. 2) FP services reduce abortion. 3) FP services have major “secondary” benefits to families and communities [11].

Long-acting reversible contraceptive methods (LARCs) typically include intrauterine devices (IUDs) and Implants [12]. These methods are all more than 99% effective. There is a rapid return to usual fertility as soon as LARCs are removed. LARCs can be used by most women of reproductive age, including those who: can't use contraceptives containing the hormone estrogen due to health problems, are heavy smokers, have never had a baby, are breastfeeding or have recently had a baby, have recently had an abortion, are overweight, have diabetes, have epilepsy, are HIV-positive, have inflammatory bowel disease. The implant is inserted directly under the skin, on the inner arm above the elbow, where it continually releases a low dose of a progestogen hormone into the blood stream over a 3 year time frame. Both Implant and IUD insertion and removal involves a small procedure, with local anesthetic, by a doctor or nurse or health officer trained in this procedure. IUD needs to be replaced every 5-10 years, depending on their type. IUDs can be removed easily at any time by a health professional and are immediately reversible on removal. There are two types of IUDs, hormonal IUD (Mirena) and Copper IUD [13], [14]. There are many types of implants: Implanon (one rod containing 68 mg of progestin etonogestrel); Jadelle (two rods, each containing 75 mg of levonorgestrel); and Sino-implant (II) (two rods, each containing 75 mg of levonorgestrel) [15]. LARCs are gaining popularity due to their high efficacy in preventing unintended pregnancies [16]. LARCs are easy to use and extremely effective once in place [17]. Knowledge of contraceptive methods is nearly universal in Ethiopia (95.6%). However, the contraceptive prevalence rate is 29 percent for all women and 42 percent for currently married women [18]. In Ethiopia, only 27.8% of women (15-49 years) use modern contraceptives. Out of this only 4.2% uses LARCs (0.8% and 3.4% uses IUD and Implant respectively) [18]. This is lower compared to USA (10.2%), most European countries

{Germany (11%), Romania (10%), France (27%), Bulgaria (18%) and Austria (23%)} (32.3%) and study conducted in Lubaga division, Kampala district, Uganda shows 31.7% reproductive age women are using LARCs method [19], [20]. Whereas study conducted in Meckelle Town, Ethiopia, shows 16.4% acceptance of LARCs which is very low utilization as compared to 31.7% in Uganda [19], [21]. Again in study conducted in Jimma Town shows that LARCs method utilization was 16%. This shows that there is discrepancy in acceptance of LARCs [22]. This shows differences in LARCs acceptance among African countries including Ethiopia, but the major cause and related factors for low acceptance is not well known.

2. Methods and Materials

2.1. Study Design and Period

Health institution based cross sectional study design was employed. The study was conducted from March 1-30, 2016.

2.2. Study Area

The study was conducted in in Adama Town, Oromia Regional State in governmental, non-governmental and private health institutions. Adama Town is located at about 100 Km South-East of Addis Ababa in the great rift valley of East Africa. Adama Town is the big city of Ethiopia with an area of 13000 square m² and has a total population of 337,556. The health services system in Adama Town incorporates public, private and NGOs health care institutions.

2.3. Source and Study Population

2.3.1. Source Population

Women of reproductive age who live in Adama Town

2.3.2. Study Population

The study populations included all women who live in Adama and are using modern contraceptives at the time of study.

I Inclusion criteria

All women of age 15-49 years who use modern contraceptive and visit the health institutions at the time of study period were included in this study.

II Exclusion criteria

Any women of age 15-49 years who are ill and cannot communicate with the data collector and those who emergency contraceptives were excluded from the study.

2.4. Sample Size Determination and Sampling Procedure

2.4.1. Sample Size Determination

The sample size was determined by using a formula for estimation of a single population proportion. In health institution based cross sectional studies conducted in Mekelle, Ethiopia, the acceptance of LARCs was 16.4% among women of reproductive age. Sample size computed using a 95% confidence level, 3% precision, 16.4%

prevalence of current use of LARC in Mekelle Town and 10% of the sample size was added to compensate for non-response

$$n = \frac{z \alpha/2 p (1 - p)}{d^2}$$

Where:

- n = number of women aged 15-49 years old to be interviewed,
- p = proportion of women aged 15-49 years old who use LARCs (16.4%),
- D = estimated margin of error for the study, 3% and
- z α/2 = the standard normal distribution z value of 1.96 (at 95% level of confidence).

$$n = \frac{(1.96)^2 \times (0.164) (0.836)}{(0.03)^2} = 585$$

10% (59) non response rate was added to the sample. Then the total sample required was 644

2.4.2. Sampling Procedure

To maximize the representativeness of the sample, 50% of Health institutions that provide modern contraceptive service

in Adama Town were included into this study. Out of 5 hospitals, 8 health centers (HC), 11 private medium and higher clinics (PMHC) and 2 special maternity clinics, only 2 hospitals, 6 health centers, 1 private medium and higher clinics and 2 special maternity clinics give family planning service for the population. Therefore, one hospital (AHMC), three health centers (Adama HC, Bokushanan HC, Geda HC) and one FGAE (Family Guidance Association of Ethiopia Adama Clinic), and one special maternity clinic (SMC) (Marie Stopes) were randomly selected as sample institution. The sample size was allocated to the health institutions based on their client size and performance in the last six months (July-December 2015). The selected health institution provides family planning service for 10648 clients (AHMC for 515, Adama HC for 1673, Bokushanan HC for 1573, Geda HC for 1847 and FGAE for 1299, and Marie Stopes for 3741 clients) in the last six months (July-December 2015). Since it is difficult to have lists of names of women appointment for modern contraceptive utilization on daily bases, data collectors made interview for every five women who visit the health institution for the use of family planning service on exit. Sample size was allocated based the following formula;

$$- N = \frac{\text{total sample size required} \times \text{FP service performance of health facility}}{\text{Total FP service by health facilities}}$$

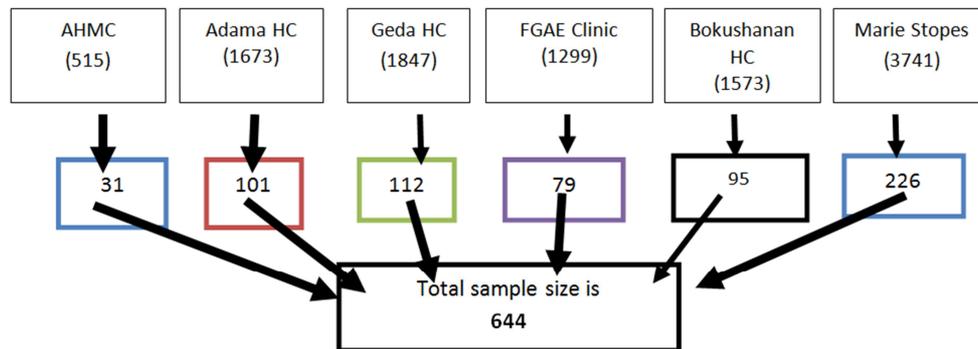


Figure 1. Sampling procedure for assessment of acceptance of long acting reversible contraceptive methods and associated factors among reproductive age women in Adama Town, Oromia regional state, Ethiopia, March 2016.

2.5. Variables

2.5.1. Dependent Variables

LARCs Acceptance

2.5.2. Independent Variables

Independent variables includes: Women’s age, age at marriage (first sex), marital status, religion, ethnicity, educational status of respondent and husband, occupational status, monthly income, age at first birth, history of abortion, number of live children, future intention of having children, contraceptive methods used, use of LARCs before, problem with previous contraceptives use, decision on number of children, Knowledge about LARCs, Attitude about LARCs, myths and believes about LARCs, Discussion with husband, information source, future intention in using LARCs and partner’s feeling toward use of LARCs.

2.6. Data Collection Procedures

Interviewer administered questionnaires were used to collect data from clients. Data were collected by trained female nurses. Clients were interviewed at exit of family planning service use. Questionnaires were adopted from similar studies conducted in Ethiopia and modified based on the objectives of the study [21]. Mixed type of questions (structured and semi-structured) were used to collect the data. The questionnaires were translated into two commonly locally spoken languages, Afan Oromo and Amharic in the study area.

2.7. Data Quality Assurance

Data collection training was given for both data collectors

and supervisors for 2 days including pre-test finding discussion and correction of data collection tools. Pretest of data collection was done in the unselected health institution in Adama Town 1 week before data collection date. About 5% of the sample size was used for pretest. Then the data from pre-test were analyzed and questionnaires were re-adjusted based on the response from the pre-test. The data collection was started after one week of pre-test data collection. The data were checked for completeness and accuracy and corrected on the spot by supervisors. The principal investigator and supervisors meet and discussed daily at the end of working hours of the data collection. Those data found missing in addressing important variables like the outcome and other important variables were discarded and no longer were used as a predictor variable.

2.8. Data Processing and Analysis

Data were coded and entered into computer using SPSS version 21 statistical software. Univariate and multivariate logistic regression were done. Univariate logistic regression analysis was done to determine the preliminary relationship between the independent and dependent variables. Collinearity and assumption of goodness of fit were checked using Hoshmer and Lemshow test and assumption of goodness of fit. Finally, characteristics which were found significant at $P < 0.25$ on Bivariate analyses were taken to multi variable logistic regression to identify the independent predictors of acceptance of long acting reversible contraceptives. Backward logistic regression method was used. Results from the multivariable logistic regression are reported in the form of adjusted odds ratios (AORs), with a 95% confidence interval (CI) at the level of significance of 0.05.

2.9. Ethical Considerations

The ethical approval and clearance were obtained from Arsi University ERC (Ethics Review Committee). Letter from Arsi University was sent to concerned officials and permission was secured. All the study participants were informed about the purpose of the study and verbal consent of all study subjects was obtained before data collection. Participants were informed that they have full right to discontinue or refuse to participate in the study or to be interviewed. To ensure confidentiality, the name of the interviewee was not written on the questionnaire. Each respondent was assured that the information provided by them will be kept confidential and used only for the purpose of research. Moreover, the study participants were informed there was no risk or harm that was anticipated from participation in the study.

3. Results

3.1. Socio-Demographic Characteristics

A total of 644 women of reproductive age (15-49 years) were participated from Adamatown in this study with 100% response rate. The age of respondent's ranged from 15-49

years with mean age was 25.91 (SD±4. 88) years. The majority 327 (50.8%) of the participant was in the age range of 25-34 years, followed by 270 (41.9%) from age group of 15-24 years. Regarding religion and ethnicity of participants little over half 346 (53.7%) of them were Orthodox and 279 (43.3%) of them were Oromo. Concerning their educational status, the majority 250 (38.8%) had attended secondary education. Of those married the majority of their husband 226 (39.2%) had attended certificate level education and above. Out of the total participants, the majority 544 (86.0%) were married and 202 (31.4%) of participants were housewives at the time of study. Regarding participant's monthly income, the majority 207 (32.1%) earns more than 3000 Birr per month. For detailed description see table 1 below.

Table 1. Socio-demographic characteristics of acceptance of LARCs among women of age 15-49 years in Adama Town, Oromia regional state, Ethiopia, March 2016.

Socioeconomic variables	Number	Percent
Age of Respondents (N= 644)		
15-24 years	270	41.9
25-34 years	327	50.8
35-49 years	47	7.3
Religion (N=644)		
Orthodox	346	53.7
Muslim	167	25.9
Catholics and Protestant	131	20.3
Ethnicity (N=644)		
Oromo	279	43.3
Amhara	141	21.9
Gurage	115	17.9
Others*	109	16.9
Educational Status Of Respondent (N=644)		
No formal education	64	9.9
Can read and write	55	8.5
Primary education	144	22.4
Secondary education	250	38.8
Certificate and above	131	20.3
Husband Educational Status (N=577)		
No formal education	33	6.0
Can read and write	89	15.7
Primary education	68	11.6
Secondary education	161	27.6
Certificate and above	226	39.2
Marital status (N=644)		
Married	554	86.0
Not Married/Single*	90	14.0
Occupational status (N=644)		
Student	99	15.4
Merchant	154	23.9
Government employ	130	20.2
Housewife	202	31.4
Daily laborer	59	9.2
Monthly Family Income (N=644)		
< 1000 Birr	136	21.1
1001 - 2000 Birr	182	28.3
2001 -3000 Birr	119	18.5
3000+ Birr	207	32.1

*:- include those who do not marry, are divorced and widowed.

3.2. Birth History and Related Factors

The mean age of marriage was 19.94(SD ± 2.67) years,

majority 381 (66.7%) of respondents married at age greater than 18 years. The mean age of participants' first sex and mean age of first birth for those who gave birth was 19.01 (SD \pm 2.16) years and 21.24 (SD \pm 2.56) years respectively. The majority 340 (52.8%) of study participant said that they made their first sex at the age above 18 years. Most 413 (85.2%) of respondent give their first birth after the age of 18 years. Regarding the number of their children they have at the time of the survey, majority 382 (59.3%) of them had 1-2 children. Of the total participant, the majority 480 (74.5%)

did not face abortion, of those who had an abortion 142 (86.6%) had only one abortion.

Most 529 (82.1%) of respondents want to have children in the future, out of those who want to have children in the future, the majority 275 (52.0%) of participant want to have 1-2 children in the future. Regarding decision making on the number of children they want to have, the majority 481 (74.7%) of decision was made by both wife and husband. Table 2 shows a detail description about the birth history of respondents.

Table 2. Birth history of study participant of assessment of acceptance of LARCs among women of age 15-49 years in Adama Town, Oromia regional state, Ethiopia, March 2016.

Birth history variables	Number	Percent
Age of First Marriage (N=571)		
Less than/Equal to 18	190	33.3
Greater than 18	381	66.7
Age of First Sex (N=644)		
18 and less	304	47.2
Above 18	340	52.8
Age of First Birth (N=485)		
Less than/Equal to 18	72	14.8
Greater than 18	413	85.2
Number of Alive Children (N=644)		
0	162	25.2
1-2 Children	382	59.3
3-4 Children	92	14.3
5 and more	8	1.2
History of Abortion (N=644)		
Yes	164	25.5
No	480	74.5
Number Of Abortion (N=164)		
1	142	86.6
2 +	22	13.4
Future intention of having Children (N=644)		
Yes	529	82.1
No	115	17.9
Number of Children wanted to have in the future (N=529)		
1-2	275	52.0
3-4	226	42.7
5+	28	5.3
Decision made on numbers of children to have (N=644)		
By wife	95	14.8
By husband	22	3.4
By both with discussion	481	74.7
Others*	46	7.1

* God

3.3. Acceptance of LARCs

The result of this study shows that acceptance of LARCs among study participant was 180 (27.95%), out of which 142 (22.0%) use implant and only 38 (5.95%) uses IUD. Most of the respondents 489(75.9%) had ever used LARCs before the interview date, only 155 (24.10%) did not use LARCs before this study and out of those who used LARCs before about 128 (82.6%) were used implant, again out of those who used LARCs before, the majority of them 104 (67.1%) used LARCs for child spacing. Only 134 (20.8%) of the participant faced problem with previous use of contraceptives.

Concerning the discussion about the use of LARCs with partner/husband, from the total respondents who had

partner/husband, only 141 (25.2%) of the participants had discussed with their partner/husband. Regarding the attitude or feeling of the respondent's husband toward the use of LARCs, 233 (42.1%) participant's husband showed neutral attitude followed by 153 (27.6%) supportive attitude toward use of LARCs. Future intention to use of LARCs was assessed by this study, majority 395 (61.3%) of the study participant wants to use LARCs in the future, out of those who want to use LARCs in the future the majority 324 (82.0%) want to use an implant. Regarding the reason for not using LARCs in the future, 91 (36.5%) of those who do not want to use LARCs presents a medical issue as a reason.

Regarding the myths and believes or misconception heard in use of LARCs in the community only 202 (31.4%) of respondents heard some myths and beliefs about the LARCs.

Out of those who hear myths and beliefs about LARCs, the majority 55 (30.6%) of respondents heard that LARCs causes infertility and followed by that 51 (28.3%) of participant heard LARCs causes irregular means. Concerning the time to reach health institution and to get service, the majority 434(67.4%) of the participant reach health facility within 30 minutes and most 542 (84.2%) of the respondent get service

within 30 minutes. Regarding the availability of the service, almost all 626 (97.2%) of participant got the method they want to use. But 18(2.8%) of the total respondent did not get the method they want to use. Out of this 9 (50%) of participant said it was because of unavailability of the method they want to use and the rest 9 (50%) said it was because of unavailability of the service provider.

Table 3. Acceptance of LARCs among women of age 15-49 years in AdamTownOromia regional state, Ethiopia, March 2016.

Variables	Frequency	Percent
Methods of contraceptives used		
Oral Pills	67	10.4
Depo Provera	361	59.2
Implant	142	22.0
IUCD	38	5.9
Others	16	2.5
Have Ever Used LARCs before (N=644)		
Yes	155	24.1
No	489	75.9
Types of LARCs Used before (N=155)		
Implant	128	82.6
IUCD/IUD	27	17.4
Reason For Using LARCs (N=155)		
Child Spacing	104	67.1
Birth is limiting	51	32.9
Problem With Previous Use of Contraceptives (N=644)		
Yes	134	20.8
No	510	79.2
Discussion with Partner/Husband (N=555)		
Yes	141	25.2
No	414	74.6
Husband's Attitude toward LARCs use (N=554)		
Oppose	98	17.7
Supportive	153	27.6
Neutral	233	42.1
Unknown	70	12.6
Future intention to Use LARCs (N=644)		
Yes	395	61.3
No	249	38.7
Type of LARCs wants to use in Future (N=395)		
IUCD/IUD	71	18.0
Implant	324	82.0
Reason for Not Using LARCs in the future (N=249)		
Fear of side effect	60	24.1
Fear of infertility	44	17.7
Husband Opposition	24	9.6
Medical Reason	91	36.5
Others *	30	12.0
Heard Myths and Believes about LARCs (N=644)		
Yes	202	31.4
No	442	68.6
Time taken to arrive HF (N=644)		
<=30 Minutes	434	67.4
> 30 Minutes	210	32.6
Waiting Time to get service (N=644)		
<=30 Minutes	542	84.2
> 30 Minutes	102	15.8
Get Method they want To Use (N=644)		
Yes	626	97.2
No	18	2.8
Reason for not getting Method they want (N=18)		
Not Available	9	50.0
No Service provider	9	50.0

* 10% did not give birth, 2% service not Available

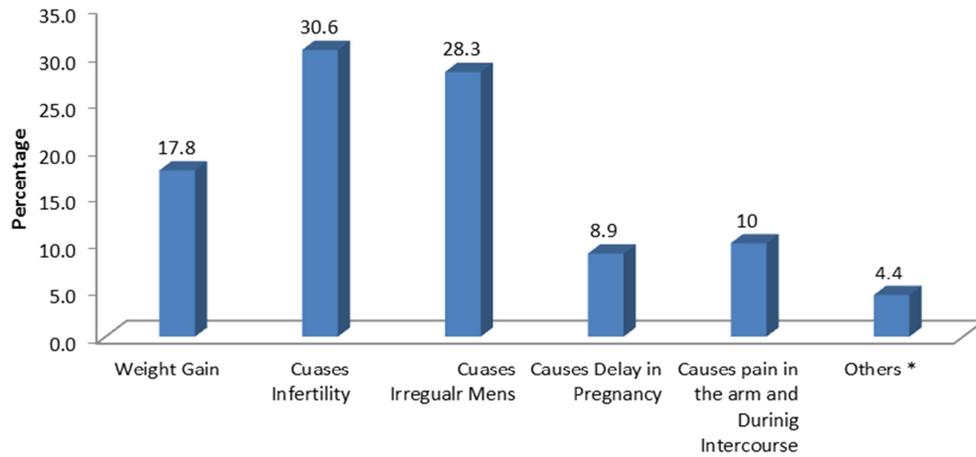


Figure 2. Type of Myths and Beliefs Heard by women of modern contraceptive user in Adama, March 2016.

3.4. Knowledge and Attitude Study Participant Toward Use of LARCs.

Knowledge of women that they have about the use of LARCs was assessed using interview questionnaires and the result is explained in the table below. In general, to set

knowledge level of respondent the knowledge score of respondent was analyzed into quartile. Based on this 227(35.2%), 222(34.5%) and 195(30.4%) of respondent had higher knowledge, moderate knowledge and low knowledge, respectively.

Table 4. Knowledge characteristics about LARCs among reproductive age women in Adama Town, Oromia regional state, Ethiopia, March 2016.

Variables	Frequency (n=644)	Percent
Ever Heard about LARCs		
No	46	7.1
Yes	598	92.9
Know Duration Of LARCs Protection		
No	135	21.0
Yes	509	79.0
Implant Prevents Pregnancy for 3-5 years		
No	146	22.7
Yes	498	77.3
IUD prevents pregnancy for 5-10 years		
No	236	36.6
Yes	408	63.4
Knew Site of IUD administration		
No	292	45.3
Yes	352	54.7
Knew site of Implant Administration		
No	228	35.4
Yes	416	64.6
Pregnancy immediately after removal of IUD		
No	322	50.0
Yes	322	50.0
Pregnancy immediately after removal of Implant		
No	250	38.8
Yes	394	61.2
Source of information about LARCs		
Health institution	390	60.6
Mass Media	112	17.4
Pears	123	19.1
Partner	19	3.0
Knowledge level		
Higher Knowledge	227	35.2
Moderate Knowledge	222	34.5
Low Knowledge	195	30.4

Concerning the attitude of the respondent towards use of LARCs, ten questions were used to assess the attitudes of respondents.

In General, 79.8% of respondents had supportive attitude and the rest 20.2% have non-supportive attitude toward the use of LARCs among the women. (See table below)

Table 5. Attitude characteristics about LARCs among reproductive age women in Adama Town, Oromia regional state, Ethiopia, March 2016.

Variables	Strongly Disagree	Disagree	Not sure/Neutral	Agree	Strongly Agree
LARCs effectively prevent the occurrence of Pregnancy	6(9.0%)	25(3.9%)	39(6.1%)	137(21.3%)	437(67.9%)
LARC can cause permanent infertility	81(12.6%)	214(33.2%)	295(45.8%)	47(7.3%)	7(1.1%)
LARCs should be used by married women	166(25.8%)	165(25.6%)	43(6.7%)	196(30.4%)	74(11.5%)
Partner Should Decide LARCs use	18(2.8%)	61(9.5%)	26.4(4.0%)	294(45.7%)	245(38.0%)
Health workers should explain about the side effect of LARCs	2(0.3%)	21(3.3%)	24(3.7%)	136(21.1%)	461(71.6%)
IUD restricts from normal activities	52(8.1%)	113(17.5%)	392(60.9%)	72(11.2%)	15(2.3%)
Insertion and Removal of LARCs is pain full	46(7.1%)	114(17.7%)	221(34.3%)	237(36.8%)	26(4.0%)
Implant Causes Irregular bleeding	19(3.0%)	75(11.6%)	261(40.5%)	258(40.1%)	31(4.8%)
IUD interferes with sexual intercourse	61(9.5%)	104(16.1%)	428(66.5%)	42(6.5%)	9(1.4%)
Insertion and Removal of IUD, make Ashamed	295(45.8%)	232(36.0%)	55(8.5%)	44(6.8%)	18(2.8%)
Attitudes Status	percentage				
Non-Supportive	130(20.2%)				
Supportive	514(79.8%)				

3.5. Predictors of Acceptance of Long Acting and Reversible Contraceptives

Bivariate and multivariate logistic regressions were done to assess the determinants of acceptance of long acting reversible contraceptives among study variables. Variables which were significant in the bivariate analysis and variables with p -value < 0.25 were entered into multivariate analysis to examine the association of independent variables after checking for multi-collinearity.

Women of age 25-34 years were 81% (AOR, 0.19; 95% CI: 0.07, 0.54) less likely to accept LARCs compared to women age 15 -24 years old women. Occupational status of women was significantly associated with use of LARCs. Government employed women were 8.8 times (AOR, 8.80; 95% CI: 1.39, 56.13) more likely to accept LARCs compared to students.

Women who had a supportive attitude toward use of LARCs from their husband or partner are higher and 30.26 (AOR, 30.26; 95%CI: 10.52, 87.03) times more likely to accept and use LARCs compared to those who had opposed attitude from their husband or partners. Women who travel more than 30 minutes to arrive health facility were 5.68 times (AOR, 5.68; 95% CI: 2.11, 15.27) more likely to accept LARCs compared to those who took 30 minutes or less to arrive health facility. Women who have ever used LARCs before the study were 5.50 (AOR, 5.50; 95%CI: 2.11, 14.31) times more likely to use LARCs compared to counterpart. Women who had discussed with husband or partner or spouse were 23.23 (AOR, 23.23; 95%CI: 8.55, 63.08) times more likely to accept LARCs compared to those who do not have discussed with their husband or partner or spouse.

Table 6. Bivariate and multivariable logistic regression model predicting the likelihood of acceptance of LARC among women attending FP services at health institution in Adama Town, Oromia regional state, Ethiopia, March 2016.

Variables	Acceptance of LARCS		COR (95% CI)	AOR (95% CI)
	Reject	Accept		
Age Category				
15-24 years	210(77.8%)	60(22.2%)	1.00	
25-34 years	232(70.9%)	95(29.1%)	1.43(0.99, 2.08)	0.19(0.07, 0.54)
35 - 49 years	22(46.8%)	25(53.2%)	3.98(2.10, 7.55)	0.24(0.05, 1.25)
Occupational Status				
Student	81(81.8%)	18(18.2%)	1.00	
Merchants	100(64.9%)	54(35.1%)	2.43(1.32, 4.47)	4.29(0.73, 25.35)
Government Employee	82(63.1%)	48(36.9%)	2.63(1.41, 4.91)	8.80(1.38, 56.13)
House Wife	156(77.2%)	46(23.7%)	1.32(0.72, 2.44)	5.22(0.85, 32.11)
Daily Laborer	45(76.3%)	14(23.7%)	1.40(0.64, 3.08)	1.19(0.15, 9.23)
Husband/Partner's Attitude				
Oppose	70(71.4%)	28(28.6%)	1.00	
Support	20(13.1%)	133(86.9%)	16.63(8.74, 31.61)	30.26(10.52, 87.03)
Neutral	230(98.7%)	3(1.3%)	0.03(0.01, 0.11)	0.03(0.01, 0.12)
Unknown	69(98.6%)	1(1.4%)	0.04(0.01, 0.27)	0.03(0.00, 0.23)

Table 7. Bivariate and multivariable logistic regression model predicting (cont.).

Variables	Acceptance of LARCS		COR (95% CI)	AOR (95% CI)
	Reject	Accept		
Time to arrive Health Facility				
<= 30 minutes	329(75.8%)	105(24.2%)	1.00	
>30 minutes	135(64.3%)	75(35.7%)	1.741(1.22, 2.50)	5.68(2.11, 15.27)
Source of Information				
Mass Media	88(78.6%)	24(21.4%)	1	
Health Institutions	252(64.6%)	138(35.4%)	2.01(1.22, 3.30)	2.39(0.71, 8.10)

Variables	Acceptance of LARCS			
	Reject	Accept	COR (95% CI)	AOR (95% CI)
Pears	108(87.8%)	15(12.2%)	0.51(0.25, 1.03)	0.64(0.11, 3.80)
Partner	16(84.2%)	3(15.8%)	0.69(0.19, 2.56)	0.31(0.03, 3.70)
Discussion with husband or Partner				
No	357(86.2%)	57(13.8%)	1.00	
Yes	33(23.4%)	108(76.6%)	20.50(12.69, 31.62)	23.23(8.55, 63.10)
Heard myths and Misconceptions				
No	297(67.2%)	145(32.8%)	1.00	
Yes	167(82.7%)	35(17.3%)	0.43(0.28, 0.65)	0.38(0.14, 1.03)
Have Ever used LARCs before				
No	392(80.2%)	97(19.8%)	1.00	
Yes	72(46.5%)	83(53.5%)	4.66(3.17, 6.85)	5.50(2.11, 14.31)

4. Discussion

This study focuses on the assessment of determinant factors for acceptance of LARCs methods among reproductive age women in Adama Town. In this study, the acceptance of LARCs method is dominated by the use of short term family planning method. The overall prevalence of LARCs acceptance is 27.9% out of which 22.0% and 5.9% were Implant and IUD, respectively. The result of this study shows higher acceptance of LARCs compared to USA (10.2%), most European countries [Germany (11%), Romania (10%), France (27%), Bulgaria (18%) and Austria (23%)] but its lower compared to Russia (32.3%). In this study, the common type of LARCs used is implant (22.0%) but the common type of LARCs used in USA and most European countries is an IUD [(USA IUD 9.5%, Implant 0.7%), (Germany IUD 10.3%, implant 0.7%), (Romania IUD 9.8% implant 0.2%), (France IUD 25.2%, Implant 1.8%), (Bulgaria IUD 17.6%, Implant 0.4%) and (In Russia IUD 32.3%, implant 0.0%)] [20]. Again the result of this study shows lower acceptance of LARCs compared to study conducted in Lubaga (Uganda) (31.7%) but higher acceptance of LARCs compared to National level; Mini EDHS 2014 which is 4.2% (3.4% implant and 0.8% IUD), study conduct in Mekelle (16.4%; Implant 13.2% and IUD 3.2%), Jimma (16%; 12.2% implant and IUD 3.8%), and Debre Tabor (9.2%; of which 8.2% is implant and 1.0% is IUD) [18], [21], [22], [23]. In general, it was observed that acceptance of LARCs is higher in the study area but still lower compared to national target set. The most popular type of LARCs in Ethiopia is implant, but the most popular LARCs in USA and most European countries is the IUD [18], [20]. The discrepancy may be due to difference in culture so that Ethiopian women may feel discomfort and shame during insertion and removal of IUD and that is why they choose implant rather than the IUD compared to European and American and it may be due to place of residence, educational status, and access to information the respondents have about LARCs.

In this study, the age of the respondent shows statistically significant association with acceptance of LARCs, women of age 25-34 years were 80.6% less likely to accept LARCs compared to women age 15 -24 years old. A similar result was reported by the study conducted in the USA in which

women of age 18-29 years were more likely to use LARCs, even though, the age classification is somewhat different the age of the respondent shows significant association with acceptance of LARCs in general. The similarity may be due to the adolescent and young adults are educated and can access easily information about the benefits of LARCs and adolescent and young adults may not want to be pregnant. But, the study conducted in Mekelle Town, Jimma town, DebreTabor town and Dandi District, the age of the respondent does not show statistically significant association with the acceptance of LARCs [21], [22], [23]. Again the result of this study shows opposite result to community based cross-sectional study conducted in southern part of Ethiopia in Areka Town in which women of age 26-36 years were 3.99 times more likely to use LARCs compared to age 15-25 years [24]. This study shows women of age 24-39 years were less likely to accept LARCs but in study conducted in Areka women of age 26-36 years were more likely to utilize LARCs. This difference may be due difference in culture of respondents, difference in access to information and education especially at adolescent and young adult age among women in Adama and Areka town.

The report of multivariate analysis in the current study reveals that Occupational status of respondents is one of the predictors of acceptance of LARCs. This study showed that government employed women were 8.8 times more likely to accept LARCs compared to students, which is in agreement with study conducted in DebreTaborin which daily laborers show higher demand to accept long acting contraceptive [23]. Even though the category of occupational status of respondent associated to acceptance of LARCs is different, the occupation of respondents shows significant association. Again the result of this study shows similar result with community based cross section study conducted in Areka Town in which government employees were 2.81 times more likely to utilize LARCs compared to merchants and there was statistically significant association with LARC utilization and maternal occupation in general [24]. This could be due to that both governments employed and daily laborer women are too busy and have short time to raise up their children that may be the main reason for being more likely to use LARCs. In contrary the result of this study shows different result with the study conducted Mekele, Jimma and Dandi district in which occupational status was not significantly associated to acceptance of LARCs [21], [22], [25]. This difference may

be due to difference in geographic location and access to information and education about LARCs.

Husbands or partners attitude/feeling toward use of LARCs were found statistically significant and strongly associated with acceptance of LARCs. The result of this study show that women who had a supportive attitude toward use of LARCs from their husband or partner are higher and 30.26 times more likely to accept and use LARCs compared to those who had opposed attitude from their husband or partners, but those women with neutral and unknown husband or partners attitude toward were 97.3% and 97.0% were lesser to accept LARCs compared to those who had opposed attitude from their husband or partners respectively. Women of husband's neutral and unknown attitude may fall into dilemma in accepting LARCs. This could be the reason that they fail to accept LARCs compared to those with husband's opposing attitude. The result of this study is parallel to the study conducted Jimma Town. It may due the fact that Ethiopian wives value and respect the attitude of their partners and supportive attitudes of a husband or partner to may enhance the confidence of wives to accept LARCs.

In this study, service accessibility in terms of distance (time to arrive health facility), waiting time and availability of service (getting methods of their choice) was assessed. Waiting time and availability of service were not statistically significant. The distance was measured in terms of walking hours to reach health institution. It was denoted by time to arrive health facility to receive family planning service. Time to arrive health facility was statistically significant and associated with acceptance of LARCs. That means service accessibility is associated with acceptance of LARCs. Women who travel more than 30 minutes to arrive health facility were 5.68 times more likely to accept LARCs compared to those who travel 30 minutes or less to arrive health facility. This could be the fact that walking long hours to receive family planning service every month does not make comfort. Instead women may prefer to accept LARCs and not to walk to the health institution every month.

Again, during multivariable analysis having ever used LARCs was statistically significantly associated with acceptance of LARCs. Women who have ever used LARCs before the study were 5.50 times more likely to use LARCs compared to counterpart. Our findings were similar result to the study conducted in Lubaga (Uganda) in which previous use of LARCs were 3.05 times more likely to accept LARCs [19]. It may be due to those women who understand the benefits of use of LARCs by using it were more likely to accept LARCs.

Another variable which was found statistically significant and associated with acceptance of LARCs in multivariate analysis were discussion with a husband or partner or spouse. Women who had discussed with husband or partner or spouse were 23.23 times more likely to accept LARCs compared to those who do not have discussed with their husband or partner or spouse. This shows that husband or partner communication on matters pertaining to use of LARCs enables women to use LARCs. The result of this study is

parallel to the study conducted in Dandi district and Jimmatown [22, 25]. This may be due the fact that most Ethiopian partner's discuss together to decide on big issues like use LARCs and discussion among partner may enhance women's confidence to accept LARCs.

Discussion between partners on the issue of using long acting reversible contraceptives may influence the utilization of LARCs among child bearing age women. The issue of discussion among partners was not included in the national reproductive health strategy. Therefore Ethiopian government should include this issue into its reproductive health strategy and policy to its practical application.

5. Strength and Limitation

5.1. Strength

Primary data were collected by trained data collectors (female nurses) at post service (service exist) by interview data collection method. Two days training were given for the data collectors including pretest data collection. Pretest was performed that increases the study's validity and reliability. Structured questionnaires were used to collect data from clients.

5.2. Limitation of the Study

As this study was institution based study and conducted in urban areas among family planning users, it might undermine generalization of the study result to the general population including rural community and non-family planning users. The study design is cross-sectional; therefore it may be difficult to establish a temporal relationship.

6. Conclusion and Recommendation

6.1. Conclusion

Current LARCs acceptance is low (27.9%) among reproductive age in Adama Town. The acceptance of LARCs was totally dominated by short acting family planning methods. Factors like respondents' age, occupation, husband or partner's attitude, distance, discussion with a husband or partner and ever using LARCs before the study was found to be statistically significant and associated with acceptance of LARCs.

6.2. Recommendations

- Oromia regional health bureau, Adama Town health office and other stakeholders working on family planning should strengthen continuous education on the use of LARCs using model LARCs users and advocate for method uptake during clinic visit for Adult clients.
- Health centers need to ensure availability of printed materials like leaflets that help family planning users to understand the benefits of LARCs use and should facilitate youth friendly service delivery point for adolescent, students and young adults.

- Service providers should provide counseling on LARCs during consultation, clients should be provided with complete information on the advantage and disadvantage of LARCs methods including their side effects.
- *A health professional should teach both partners specially husbands, so that they understand the advantage and disadvantage of using LARCs with partners and develop a supportive attitude toward use of LARCs.*
- *Partners should discuss together and understand the benefits of using LARCs for their family.*
- *It is I recommended that researchers to conduct further researches that look into manager and staff opinion towards LARCs use with the emphasis of quantitative study taking this study as reference.*

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