

# Utilization of Long Acting and Permanent Contraceptive Methods and Associated Factors among Women of Modern Contraceptive Users in Debre Markos town, North West Ethiopia, 2016

Habtamu Chanie (BSc)<sup>1</sup> Haymanot zelege<sup>2\*</sup> Mulunesh Abuhay( MPH, Assistant professor)<sup>3</sup>  
Marta Berta (BSc, MSc)<sup>3</sup>

1. Department of Midwifery, College of Medicine and Health Sciences, Debre Markos University, Ethiopia.

2. Department of Nursing, College of Medicine and Health Sciences, Debre Markos University, Ethiopia.

3. Department of Midwifery, College of Medicine and Health Sciences, University of Gondar, Ethiopia

\*These authors contributed equally to this work

## Abstract

**Introduction:** Globally utilization of long acting and permanent contraceptive methods is high in which more than fifty percent of contraceptive users were practicing female sterilization and intrauterine contraceptive device, but in sub-Saharan countries the proportion of women using long acting and permanent contraceptive methods is significantly lower than the proportion using short-acting methods. Particularly in Ethiopia, despite the fact that utilization of long acting and permanent methods are believed to be low, there are limited evidences on the real magnitude of utilization of the methods and associated factors. **Objective:** This study was aimed to assess utilization of long acting and permanent contraceptive methods and associated factors among women of modern contraceptive users in Debre Markos town, North West Ethiopia, 2016 **Methods:** Community based cross sectional study was conducted from January 13-29, 2016. Systematic random sampling technique was used to select 455 study participants. Pre tested structured Amharic version questionnaire was used to collect the data through interview. Both bivariate and multiple logistic regressions were used to identify associated factors. **Results:** Out of the total modern contraceptive users 213(46.8%) were using long acting and permanent contraceptive methods and from them 165(77.5%) were using implants. modern contraceptive user mothers who had information about other contraceptive methods that could be used from FP service providers were 14 times more likely to utilize long acting and permanent contraceptive methods as compared to participants who hadn't information about other contraceptive methods from family planning service providers(AOR=13.77; 95% CI: 6.30, 30.10). Desired number of children, future reproductive plan, and having common choice of contraceptive method by discussion were also significantly associated with utilization of long acting and permanent contraceptive methods. **Conclusion and Recommendations:** Long-acting and permanent contraceptive methods utilization in this study was relatively high. To further increase and meet the national plan involving husbands during counseling service, ensuring sustainable availability and accessibility of long acting and permanent contraceptive methods is needed.

**Keywords:** contraceptive users, Long acting and permanent contraceptive methods, Modern contraceptive methods, Utilization

## 1. Introduction

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. Globally contraceptive prevalence for women ages 15 to 49 who were married or in union rose from 58.4 percent in 1994 to 63.6 percent in 2012. From all contraceptive methods utilization of long acting and permanent contraceptive methods (LAPMs) was high in which more than fifty percent of contraceptive users were practicing female sterilization and intrauterine contraceptive device (IUCD) (1-4).

In sub-Saharan countries the proportion of women using LAPMs is significantly lower than the proportion using short-acting methods. In the region fewer than 5 percent of women who were using contraception were using LAPMs (5).

According to the national reproductive health strategy of Ethiopia, the provision of all contraceptive methods, especially LAPMs without compromising safety or quality of care is the main action to reduce unwanted pregnancies and enable individuals to achieve their desired family size (2). The government tries to increase awareness and utilization of LAPMs by using different communication channels. In addition there is pre service counseling to help users to choose the appropriate method of contraceptive, but utilization of LAPMs is still low. Despite the free availability of all MCMs including most effective, convenient and cost effective LAPMs and the nation's high emphasis on LAPMs only 15.4% and 32% of modern contraceptive users were using LAPMs in the country and in the study area respectively(6, 7).

When choosing a method of contraception, women are faced with a wide range of options and various attributes associated with these options. Sociodemographic characteristics, partner involvement, accessibility of

modern contraceptive method (MCM) types and knowledge on existing methods, experience and fear of side effects, number and sex of living children and pre service counseling are some of the factors suspected to affect utilization of LAPMs.

Some women inevitably choose a method that does not optimally fit their personal circumstances which may result the women to stop using contraceptives despite a continuing desire to avoid pregnancy; become pregnant while using contraception; or switch from highly effective contraceptive methods to less effective methods.

The number of studies examining what factors influence contraceptive use has recently grown, but what factors influence utilization of long acting and permanent contraceptive methods has been limited.

## 2. Objectives

### 2.1. General objective

To assess utilization of long acting and permanent contraceptive methods and associated factors among women of modern contraceptive users in Debre Markos town, North West Ethiopia, 2016.

### 2.2. Specific objectives

- To determine levels of utilization of long acting and permanent contraceptive methods among women using modern contraceptives in Debre Markos town, North West Ethiopia, 2016.
- To identify factors associated with the utilization of long acting and permanent contraceptive methods among women of modern contraceptive users in Debre Markos town, Northwest Ethiopia, 2016.

## 3. Methods

### 3.1. Study design and period

Community based cross sectional study was conducted from January 13-29, 2016.

### 3.2. Study area

Debre Markos town is located at 300Km Northwest of Addis Ababa and 265 Km Southeast of the Regional capital city, Bahir Dar. The town is divided in to seven kebeles (small local administrative units). The total population size of the town has 107, 254 total population of which 52.1% were females. Out of the total females, 44.9% were in the reproductive age group and the numbers of households in the town was estimated to be 14,528. The town has one Referral Hospital, three Health centers, and two none governmental organizations (NGOs) clinics (Marie stops international clinics and family guidance association clinic (FGA)) providing reproductive health services including family planning services (8).

### 3.3. Source population

All women who have used modern contraceptive methods for child birth spacing or for prevention of unwanted pregnancy lived in Debre Markos town.

### 3.4. Study population

All women who were using modern contraceptive methods for child birth spacing or for prevention of unwanted pregnancy living in Debre Markos town during the study period.

### 3.5. Inclusion criteria

All women who were using modern contraceptive methods for child birth spacing or for prevention of unwanted pregnancy in the town during the study period were included.

### 3.6. Exclusion criteria

Women who were critically ill, unable to hear and emergency contraceptive users were excluded.

### 3.7. Sample size determination

Sample size was determined using single population proportion formula. According to a study done in Debre Markos town in 2012; proportion of LAPMs practiced from all modern contraceptive method types was 32%. By taking this proportion at 95% certainty and marginal error of 4.5%, sample size was determined as follows.

$$n = (Z_{\alpha/2})^2 p(1-p) / d^2 = (1.96)^2 0.32(0.68) / (0.045)^2 = 413$$

After adding 10% non-response rate, the final sample size was 455.

### 3.8. Sampling procedure

First households having modern contraceptive user mothers in each kebele in the town were identified and

temporary house number was given. The total sample size was divided in to each kebele proportional to the number of households. Then systematic random sampling technique was employed to select households from each kebele. The first household was selected by lottery method using the temporary house number given. Dividing the total households by the sample size the households were selected every 23<sup>th</sup> interval. In cases of selected household with more than one eligible respondent, only one respondent was chosen by lottery method.

### 3.9. Variables of the study

#### 3.9.1. Dependent variable

- ❖ Utilization of long acting and permanent contraceptive methods

#### 3.9.2. Independent variables

- Sociodemographic characteristics(age, residence, marital status, income, religion, employment status)
- Partner involvement
- Accessibility of modern contraceptive methods and knowledge on existing methods
- Experience and fear of side effects
- Number and sex of living children
- Pre service counseling

### 3.10. Operational definitions

- **Modern contraceptive user:** A women who was using any of modern contraceptive method types to space child birth and to protect unwanted pregnancy.
- **Long-acting reversible contraceptives:** Contraceptive methods in which their lengths of action ranges from 3-12 years (intrauterine devices and implants).

### 3.11. Data collection tool and procedures

Data were collected through face to face interview using a pre-tested structured Amharic version questionnaire. The questionnaire was adapted by reviewing literatures of similar studies and guidelines. Information on sociodemographic characteristics, reproductive history and plan, knowledge of modern contraceptives and partner's involvement, modern contraceptive practices and pre service counseling were subdivisions of the questionnaire. Seven Debre Markos university 4<sup>th</sup> year midwifery students and 1 BSc midwife were employed as data collector and supervisor respectively. Interviewers introduce themselves and explained the purpose of the study using specific statements in a standard procedure.

### 3.12. Data quality control

To assure the data quality high emphasis was given in designing data collection instrument. The questionnaire first developed in English and translated to Amharic version then back to English to keep its consistence. Before starting the actual survey, the supervisor and data collectors trained for two days about the data collection tool, time of data collection, timely collection and reorganization of the collected data and submission on due time.

Throughout the course of the data collection, interviewers were supervised at each site, regular meetings held between the data collectors, supervisor and the principal investigator together in which problematic issues arising from interviews were discussed and the filled questionnaires checked for consistencies and completeness daily by supervisor and principal investigator. The collected data was reviewed and rechecked for completeness before data entry. The questionnaire was pre-tested by 5% of the sample size on modern contraceptive user women living at Finote selam town, a town near to Debre Markos town. Ambiguities, inconsistencies and misunderstandings were corrected before the actual data collection.

### 3.13. Data processing and analysis

The collected data were checked, coded and entered to Epi-info version 7 and then the data were entered to Statistical Package for Social Science (SPSS)version 20.0 for further analysis. Descriptive findings presented by text, tables, graphs and charts. To determine the association between the dependent and independent variables using statistical analysis, bivariate and multivariate logistic regression was computed. Bivariate analysis was conducted primarily to check the variables which had an association with the dependent variable individually. Then variables associated with the dependent variables at 20% p value were entered in to multivariate logistic regression to control the possible effect of confounders and finally the variables which had significant association with choice of LAPMs were identified on basis of p-value (<0.05) and OR with 95% CI was used to measure their strength of association.

## 4. Ethical consideration

Ethical clearance was obtained from Ethical Review Board of University of Gondar. Letter of cooperation was obtained from Debre Markos town health office. Then the participants of the study were informed about the

purpose of the study, the importance of their participation, and their right to withdraw at any time. Verbal informed consent was obtained from each participants prior to interview. Privacy and confidentiality of information given by each respondent was kept and name of participants was not recorded.

## 5. Results

### Socio demographic characteristics of respondents

A total of 455 modern contraceptive users in Debre Markos town were responded for the study making the response rate of 100%. The mean age of respondents was 28.34 years with 4.52 years Standard deviation (SD). More than two third (70%) of the respondents were between 25-34 years old. Almost all of the respondents were Amhara in ethnicity (98.7%) and 85.5 % of the respondents were orthodox in religion. Concerning educational status; 54(11.9%) of the respondents can't read and write and 216(47.5%) had reached secondary school and above. On the other hand, half of respondents' husband had educational status of above tertiary education and only 4.7% of husbands can't read and write. One hundred fifty six (34.3%) of the respondents were house wife and 30.8 % of respondents were private employee. Regarding husbands occupation 45.3% and 42.7% were gov't and private employee respectively. Two hundred eighty six(84.8%) of respondents were residing within 40 minutes walking distance from family planning service and all the rest were within 60 minutes far from FP services (Table 1).

**Table-1: Socio-demographic characteristics of modern contraceptive users in Debre Markos Town, North West Ethiopia, January 2016 (n = 455)**

Variables	Category	Number(percent)
Age	15-19	6(1.3)
	20-24	87(19.1)
	25-29	197(43.3)
	30-34	123(27.0)
	35-39	36(7.9)
	40-44	3(0.7)
	45-49	3(0.7)
Marital status	Single	21(4.6)
	M& live together	407(89.5)
	M& but live together	15(3.3)
	Divorced	9(2)
	Widowed	3(0.7)
Religion	Orthodox	389(85.5)
	Protestant	6(1.3)
	Muslim	57(12.5)
	Catholic	3(0.7)
Ethnicity	Amhara	449(98.7)
	Tigre	6(1.3)
Educational status	Can't read and write	54(11.9)
	Can read and write	24(5.3)
	Primary education	161(35.4)
	Secondary education	105(23.1)
	Tertiary education	111(24.4)
Husband's educational status (n=422)	Can't read and write	20(4.7)
	Can read and write	11(2.6)
	Primary education	78(18.5)
	Secondary education	102(24.2)
	Tertiary education	211(50.0)
Occupation	Farmer	21(4.6)
	Government employee	111(24.4)
	Private/NGO employee	140(30.8)
	House wife	156(34.3)
	Daily laborer	9(2.0)
	Student	18(4.0)
	Farmer	36(8.5)
Husband's occupation	Government employee	191(45.3)
	Private/NGO employee	180(42.7)
	Daily laborer	12(2.8)
	Student	3(0.7)
	Farmer	36(8.5)
Distance of F/P service from residence on foot	10-20minute	120(26.4)
	21-30minute	140(30.8)
	31-40minute	126(27.7)
	41-50minute	51(11.2)
	51-60minute	18(4.0)

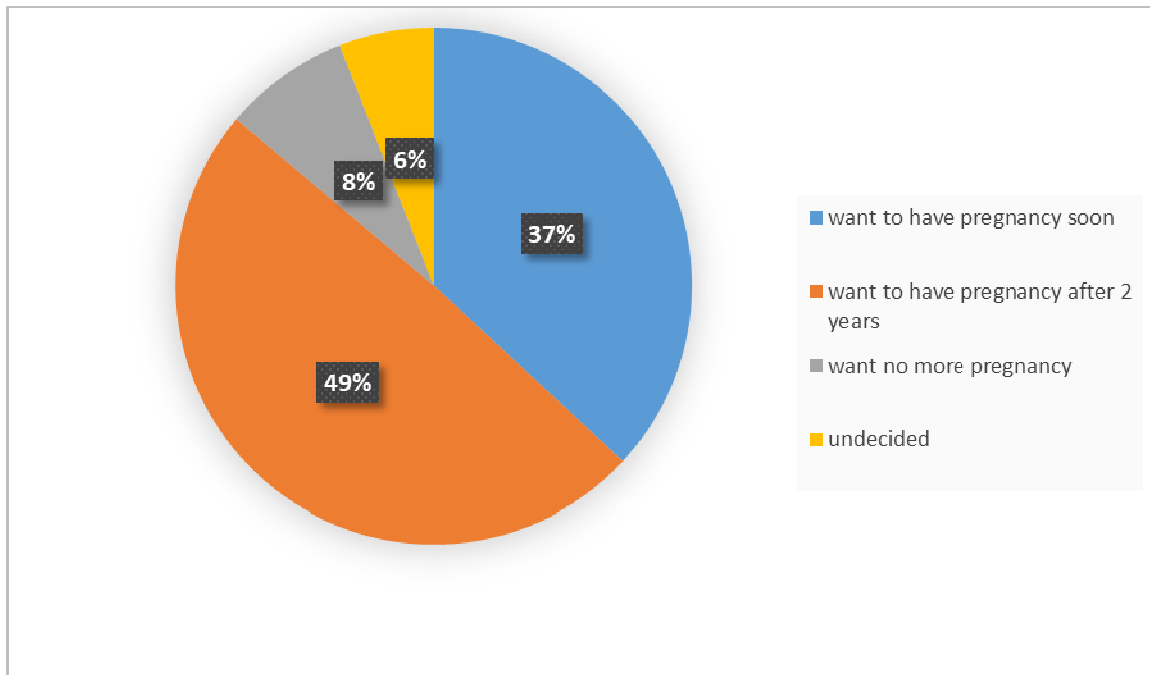
### Reproductive history and plan of the respondents

Out of the total respondents 386(84.5%) had history of pregnancy and out of them 33(8.5%) had pregnancy

before marriage. From all those who had history of pregnancy, 63(16.3%) and 18(4.9%) had abortion and still birth history respectively. From those who had given birth two times and above, more than two fifth (40.9%) had 24 - 35 months birth interval between the last and the preceding birth. The mean age of the last child of participants was 17.87 with SD of 9.84 and more than 56% of them were between 12 and 23months of age. Three hundred ninety two (86.2%) of respondents desired to have child in the future. Among those who desired to have child in the future 57.1% of them wanted after 2 years. The average numbers of children desired to have in life was 3.34 with SD of 0.98 and 311(68.4%) of the respondents wants to have 3-4 children (Table 2).

**Table-2: Reproductive history and plan of modern contraceptive users in Debre Markos Town, North West Ethiopia, January 2016**

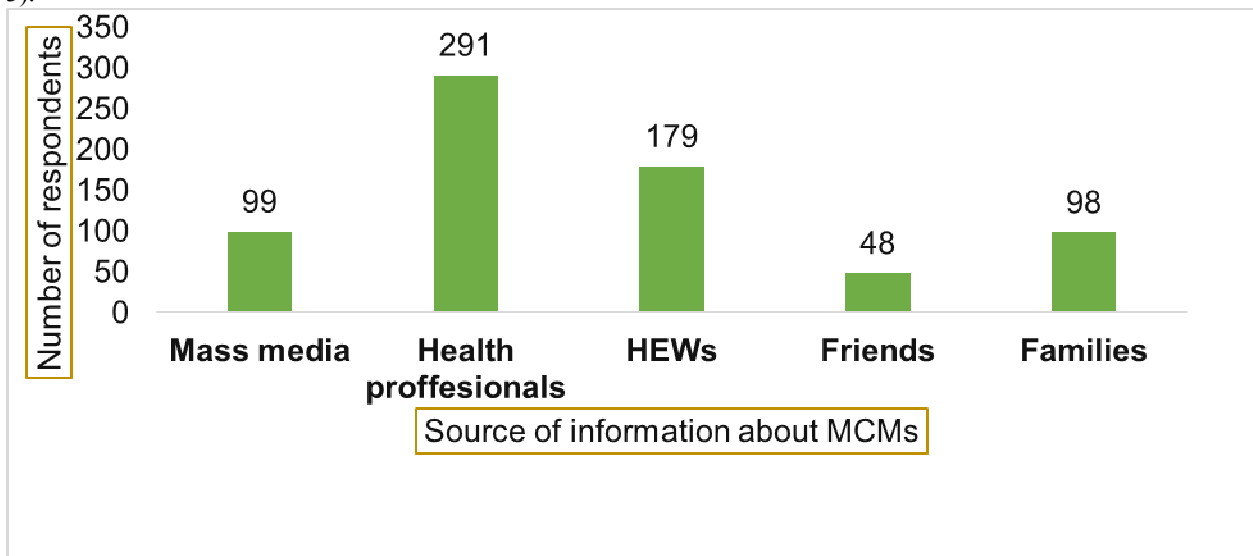
Variables	Category	Number(Percent)
Had pregnancy (n=455)	Yes	386(84.5)
	No	69(15.2)
Pregnancy in relation to marriage (n = 386)	Before marriage	33(8.5)
	After marriage	353(91.5)
Number of pregnancies (n= 386)	1-2 times	293(75.9)
	3-4 times	69(17.9)
	5and above	24(6.2)
History of abortion	Had no abortion	323(83.7)
	Had induced abortion	63(16.3)
History of still birth	Had no still birth	18(4.9)
	Had still birth	351(95.1)
Number of female living children (n=386)	Have no female child	99(25.6)
	One female child	212(54.9)
	Two female child	57(14.8)
	Three and above	18(4.7)
Number of male living children (n=386)	Have no male child	149(38.6)
	One male child	192(49.7)
	Two male child	45(11.7)
Birth interval (n=198)	<12 months	3(1.5)
	12–23 months	12(6.1)
	24–35 months	81(40.9)
	36–47 months	75(35.9)
	48–59 months	27(13.6)
Age of recent child (n=383)	Less than 1 year	75(19.6)
	1-2 year	215(56.1)
	2 years and above	93(24.3)
Future reproductive plan (n=455)	Want to have another child soon	168(36.9)
	Want other child after two years	224(49.2)
	Want no more children	36(7.9)
	Undecided	27(5.9)
Number of desired children (n= 455)	1-2 children	87(19.1)
	3–4 children	311(68.4)
	5–7 children	57(12.5)



**Figure 1 Fertility intention of modern contraceptive users in Debre Markos town, North West Ethiopia, January 2016(n=455)**

**Knowledge of modern contraceptive methods and partner involvement**

Among modern contraceptive method types injectable was mentioned by 438(96.3%) respondents followed by pills 430(94.5%) and implants 420(92.3%). Sterilization 118 (25.9%) and condom 104 (22.9%) were the least mentioned method types by respondents. From all respondents 431(94.7%) had mentioned at least one type of LACMs. Implanon was mentioned by 382(84%) respondents followed by IUCD 159(34.9%). Highly effective 192(42.2%) and lower side effects 81(17.8%) were the two mentioned advantages of LACMs. Health professionals 360(79%) followed by HEWs 179(39.3%) were the highest mentioned source of information about MCM types (figure 2). From respondents who had husband (n=422), forty eight (11.4%) didn't discuss about using modern contraceptive methods with their husbands. From all husbands who discussed with their wives 334(89.3%) approved of use and 268(71.7%) had similar interest of number of children to have. One hundred ninety two(45.5%) of respondents who had husband choose MCM type by discussion with their husbands(table 3).



**Figure 2 Source of information about modern contraceptive methods mentioned by modern contraceptive user mothers of Debre Markos town, North West Ethiopia, January 2016(n=455)**

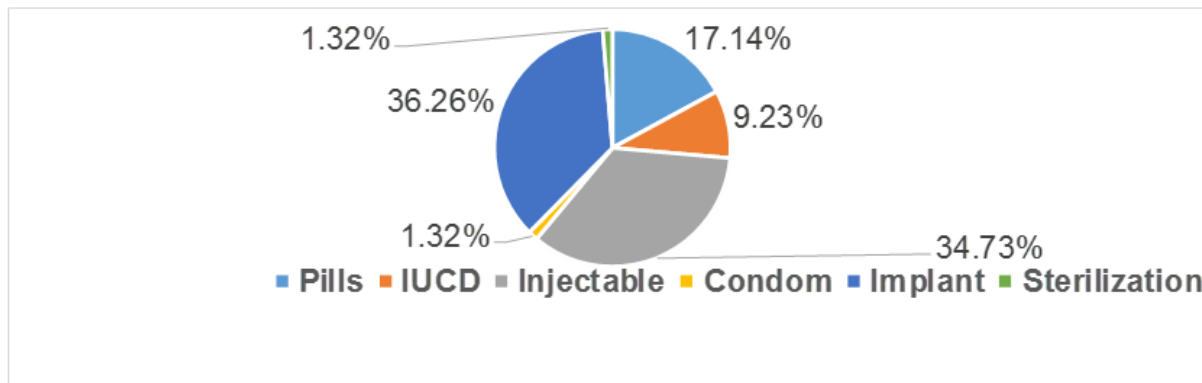
**Table 3 Knowledge of modern contraceptive methods and partner involvement of modern contraceptive users in Debre Markos town, Northwest Ethiopia, January 2016 (n = 455)**

Variables	Number	Percent
Modern contraceptive methods mentioned		
pills	430	94.5
IUCD	260	57.1
Injectable	438	96.3
Condom	104	22.9
Implants	420	92.3
sterilization	118	25.9
LAPMs heard by respondents		
IUCD	260	57.1
Implanon	382	83.9
Jadele	110	24.1
Norplant	111	24.4
Sterilization	118	25.9
Advantage of LAPMS		
I didn't hear	182	40.0
Highly effective	192	42.2
Lower side effects	81	17.8
Discussion with husband (n=422)		
Yes, once or twice	119	28.2
Yes, more often	255	60.4
No, never discussed	48	11.4
Husband's idea (n=374)		
He approves of use	334	89.3
He disapproves use	36	9.6
He has no idea	4	1.1
Husband's children interest(n=422)		
Same number	268	63.5
More children	89	21.1
Fewer children	17	40.3
Don't know	48	11.4
Decide to use contraceptive (n=422)		
Husband	22	52.1
wife	88	20.9
Common decision	312	73.9
Choose CM type (n=422)		
husband	6	14.2
wife	224	53.1
Common choice	192	45.5

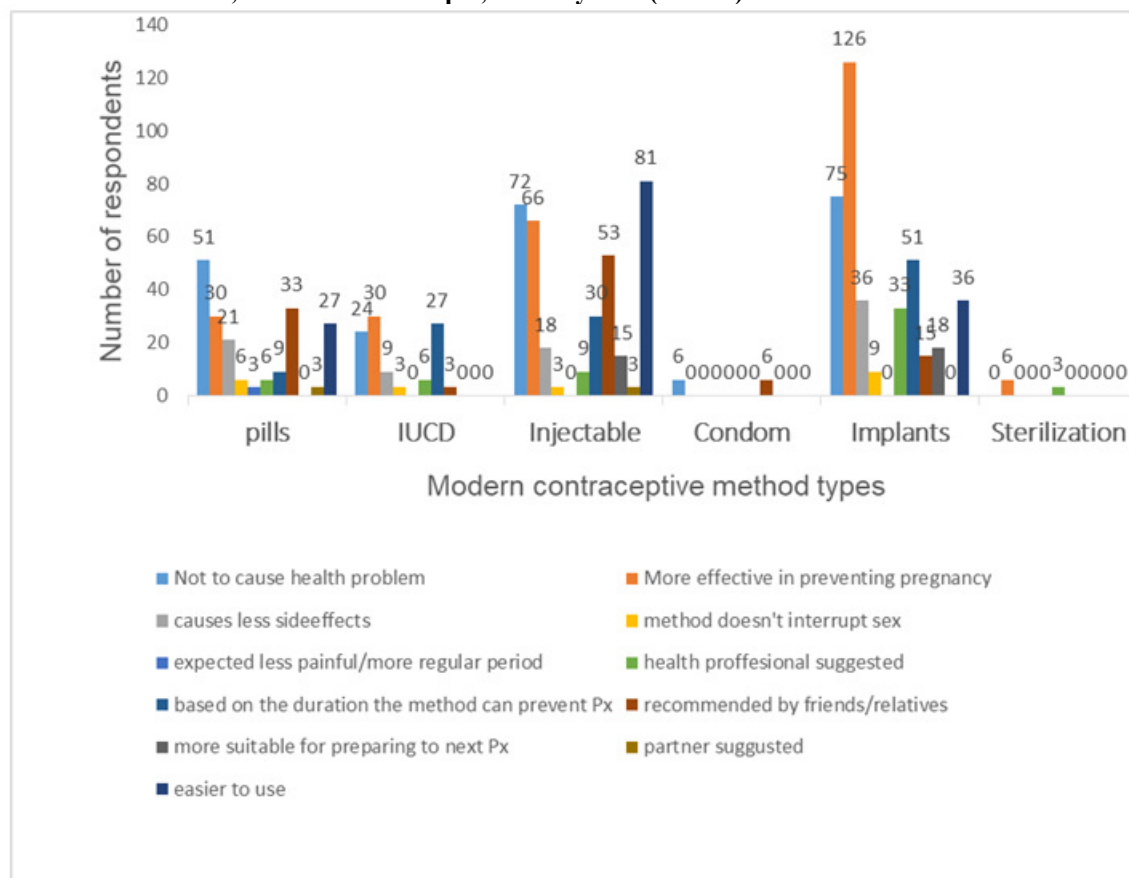
**Information on modern contraceptive practice**

Out of the total modern contraceptive users involved in the study 165(36.3%) were using implants followed by injectable 158(34.7%). Two hundred thirteen (46.8%),95% CI (42.0-51.0) were using LAPMs and from them 42 (19.7%) were using IUCD (Figure 4). Participants were asked why they prefer the method they were using. From all participants who were using pills as a contraceptive (n=78), assuming the method not to cause health problem 51(65.4%) and recommendation by friends/relatives 31(39.7%) were the two main mentioned reasons to choose the method. Assuming the method to be more effective in preventing pregnancy and based on the duration the method can prevent pregnancy were the two common reasons mentioned by IUCD users. Expecting the method is easiest to use and not to cause health problem were the two most mentioned reasons for using injectable. Considering the method to be more effective in preventing pregnancy and no to result health problem were the two most mentioned reasons for using implants (figure 5).

More than half of the participants 228(50.1%) had used another MCM type before changing to the method they were using during the study period. One hundred three (45.2%) of participants who change method of contraceptive had used pills before changing to the method they were using during the study period making it the most discontinued type of MCM followed by injectable 96( 42.1%)(figure 7).



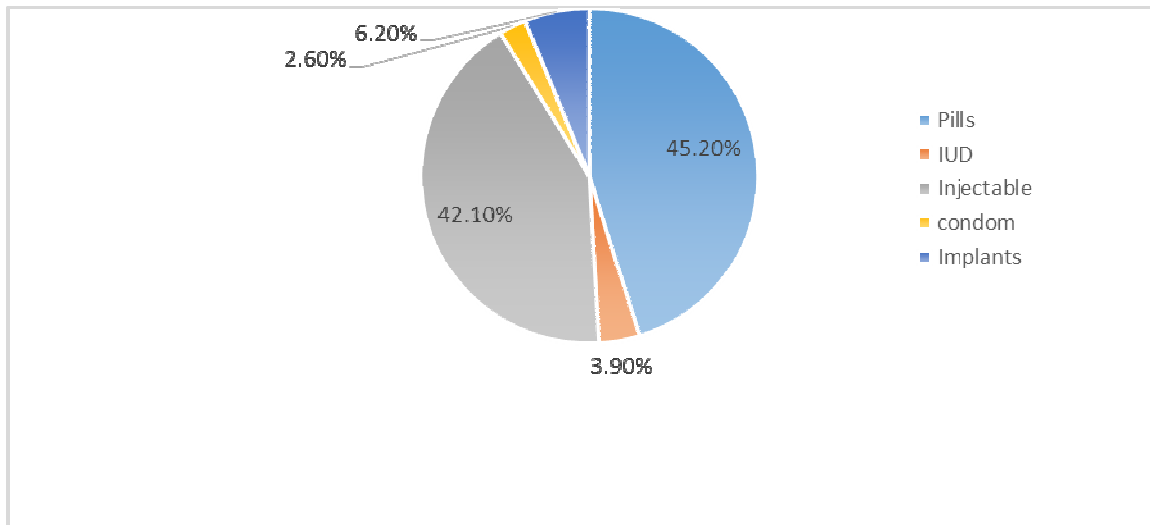
**Figure 3 Modern contraceptive method types practiced among women of modern contraceptive users in Debre Markos town, North West Ethiopia, January 2016(n= 455)**



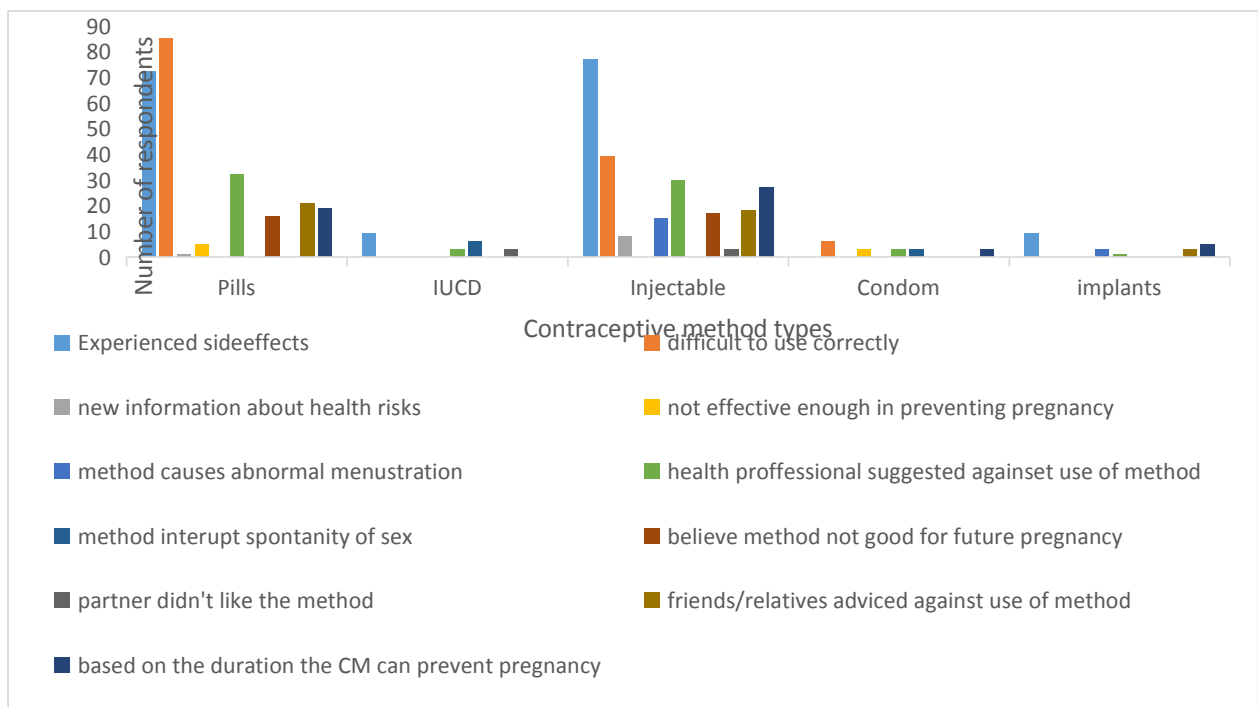
**Figure 4Reasons for choosing the MCM type mentioned by modern contraceptive user mothers in Debre Markos town, Northwest Ethiopia, January 2016 (n = 455)**

Reasons for changing most recently changed type of contraceptive method was mentioned. Difficulty of using correctly, experiencing side effects and suggestion by health professionals to change were the three most common reasons in order mentioned for changing pills. Experiencing side effects followed by difficulty of using correctly were the most common mentioned reason for changing injectable (Figure 8).





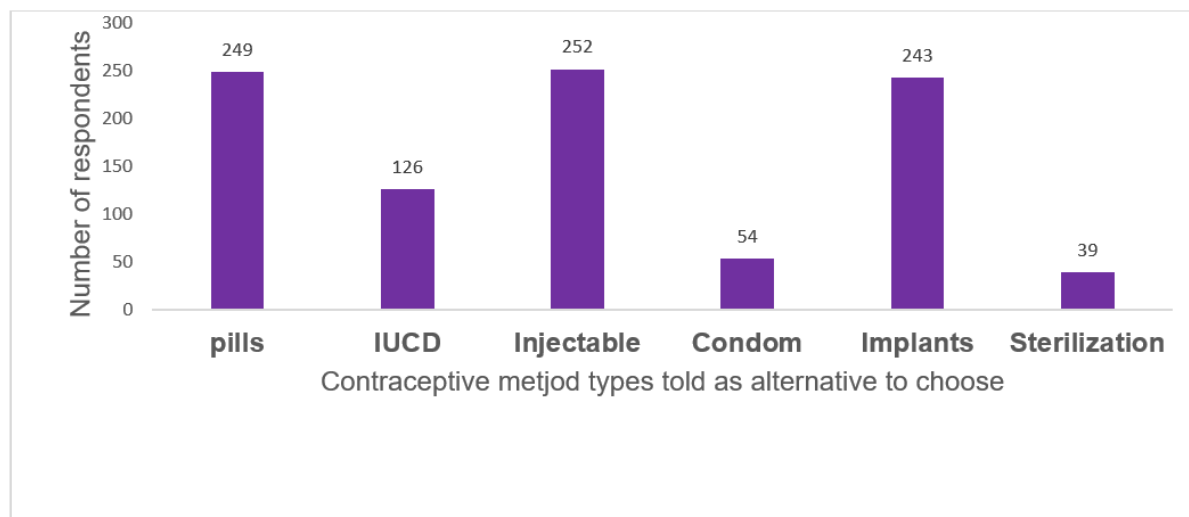
**Figure 5** Modern contraceptive method types most recently changed by modern contraceptive user mothers of Debre Markos town, North West Ethiopia, January 2016 (n=228)



**Figure 6** Reasons mentioned for changing most recently changed MCM type mentioned by modern contraceptive user mothers in Debre Markos town, Northwest Ethiopia, January 2016

**Information on pre service counseling service**

Three hundred twelve (68.6%) of the participants were told by the health professional about other alternative available contraceptive methods to use. Injectable 252(55.4%), pills 249(54.7%) and implants 243(53.4%) were the top three contraceptive methods told by the health professionals to choose as an alternative by the respondents. Sterilization was the least MCM told by the health professionals to be used as a choice (figure 9). Two hundred ten (46.2%) of the participants had told about the advantage and disadvantage of using each available contraceptive methods.



**Figure 7** Alternative available contraceptive methods told by the health professionals for modern contraceptive user mothers in Debre Markos town, Northwest Ethiopia, January 2016

**Factors associated with utilization of long acting and permanent contraceptive methods**

In bivariate logistic regression analysis; information from FP provider alternative contraceptive methods, occupation of modern contraceptive user mothers, history of abortion, future reproductive plan, decision maker to use contraceptives, contraceptive method type chooser, number of desired child, ever use of other modern contraceptive method type were statistically associated with utilization of long acting and permanent contraceptive methods at p-value less than 0.2 at 95% confidence interval.

However in multivariate logistic regression analysis utilization of LAPMs was significantly associated with information about alternative contraceptive methods from FP service providers, future reproductive plan, contraceptive method type chooser, and desired number of children with P-value( $\leq 0.05$ ) at 95% CI.

Modern contraceptive user mothers who told about alternative contraceptive methods by FP service providers were 14 times more likely to utilize LAPMs as compared to participants who didn't told about alternative contraceptive methods by FP service providers(AOR=13.77; 95% CI: 6.30, 30.10). Modern contraceptive users who didn't want to have more child were 17 times more likely to utilize LAPMs than contraceptive user mothers who didn't decide on their future reproductive plan(AOR=16.86; 95% CI: 2.38, 29.43). Contraceptive user mothers who chooses contraceptive method type by discussion with their husbands were 89% times more likely to utilize LAPMs than those whose contraceptive method type was their husbands' preference only(AOR=0.11; 95% CI:0.01,0.94). In addition, modern contraceptive user mothers whose desired number of children were between 3-4 child were 2.6 times more likely to utilize LAPMs than those whose desired number of children were between 5-7 child(AOR=2.64; 95% CI:1.05,6.65)(Table 4).

**Table 4** Bivariate and multivariate logistic regression analysis of factors associated with utilization of long acting and permanent contraceptive methods of modern contraceptive users in Debre Markos town, Northwest Ethiopia, January 2016 (n = 455)

Independent variables	Category	Use of LACMS		Crude OR (95% CI)	Adjusted OR (95% CI)	P value	
		Yes (%)	No (%)				
Told by FP provider alternative methods of contraceptive	Yes	196(92.9)	116(47.5)	14.42(8.06, 25.81)	13.77 (6.30, 30.10)	<b>0.00</b>	
	No	15(7.1)	128(52.5)	1	1		
Occupation	Gov't employee	75(29.3)	36(18.1)	3.33(2.04, 5.45)	1.473(0.71-3.04)	0.29	
	Private employee	61(23.8)	88(44.2)	1.11(0.72, 1.72)	0.781(0.41-1.50)	0.46	
	House wife	120(46.9)	75(37.7)	1	1		
Abortion history	Yes	21(11.4)	45(21.6)	2.14(1.22, 3.76)	0.46(0.21,1.03)	0.06	
	No	163(88.6)	163(78.4)	1	1		
Future fertility plan	Want to have within 2 years	101(47.9)	67(27.5)	0.19(0.07, 0.49)	9.879 (1.92, 50.84)	0.10	
	Want to have after 2 years	87(41.2)	137(56.1)	0.45(0.175, 1.16)	2.855 (0.56,14.47)	0.21	
	Want no more children	17(8.1)	19(7.8)	0.319(0.104, 0.98)	16.86(2.38, 29.43)	<b>0.01</b>	
	undecided	6(2.8)	21(8.6)	1	1		
Decision maker to use contraceptives	Husband	3(1.4)	94.7)	3.985(1.058-15.004)	1.853(.306,11.220)	0.50	
	Wife	27(13.0)	50(25.9)	2.468(1.464-4.133)	0.73 (.32, 1.62)	0.44	
	Common decision	178(85.6)	134(69.4)	1	1		
Who decide CM type the women using	Husband	3(1.4)	3(1.6)	1.370(0.270-6.964)	0.11 (0.013,0.94)	<b>0.04</b>	
	Wife	94(45.2)	109(56.5)	1.589(1.068-2.365)	0.56(0.30,1.06)		0.08
	Common choice	111(53.4)	81(42.0)	1	1		
Number of desired children	1-2 child	36	51	1.21(0.61, 2.41)	1.99(0.62, 6.424)	0.25	
	3-4child	154	157	1.68(0.94, 3.01)	2.64(1.05,6.65)	<b>0.04</b>	
	5-7child	21	36	1	1		
Ever use other CM	Yes	122(57.8)	106(43.4)	.560(.386-.813)	1.011(.53, 1.92)	0.974	
	No	89(42.2)	138(56.6)	1	1		

**6. Discussion**

The main purpose of this study was to assess utilization of long acting and permanent contraceptive methods

among women of modern contraceptive users.

The result of this study showed that two hundred thirteen (46.8%), 95% CI (42.0-51.0) were using long acting and permanent contraceptive methods. Even if the finding was less than worldwide practice of LAPMs and national plan, it is much higher than nationwide practice (15.3%) according to mini EDHS 2014. The finding is also higher than studies done in western Ethiopia 2014 (20%), east Hararge zone (26%), Mekele town 2011 (12.3%), Debre Brihan (27.3%), (9, 10, 11). The reason for this may be due to the difference in time & residence, increased promotion by governmental & non-governmental organizations and increased awareness of contraceptive user mothers in the town about long acting and permanent contraceptive methods which are by far the most effective methods of contraception available and are very safe and convenient with some side effects.

The majority of LAPM users were using implants (77.5%) followed by IUCD (19.7%) and sterilization (2.8%). This is consistent with a study done in Debre Brihan in which implants (86.03%), IUCD (11.76%) and female sterilization (2.21%) were practiced by long acting and permanent user mothers (10). The reason for the higher practice of implants over the other long acting permanent methods may be respondents' higher awareness of implants over other LAPMs, as it was mentioned by 92.3% of participants which was much higher than others. The other reason to choose implants over sterilization may be high proportion of respondent's intention to have another child (86%) and much lower proportion of respondent's interest not to have another child (8%).

In this study, information about alternative contraceptive methods from FP service providers, future fertility plan, decision maker of CM type to be used, and desired number of children were significantly associated with utilization of LAPMs.

Accordingly modern contraceptive users who didn't want to have more child were 17 times more likely to utilize LAPMs than contraceptive user mothers who didn't decide on their future reproductive plan (AOR=16.86; 95% CI: 2.38, 29.43). It is supported by a study done in Pakistan and Adigrat (12, 13). This can be explained by users' fear of fertility return after use of long acting methods.

This study showed that modern contraceptive user mothers whose desired number of children were between 3-4 child were 2.6 times more likely to utilize LAPMs than those whose desired number of children were between 5-7 child (AOR=2.64; 95% CI: 1.05, 6.65). It could be because the less number of children the mother wants to have the more likely she wants to space pregnancy for longer duration or limit pregnancy and the more likely she could utilize LAPMs.

This study also revealed that contraceptive user mothers who decide contraceptive method type to be used by discussion with their husbands were 89% times more likely to utilize LAPMs than those who were using contraceptive method type which was their husbands' preference only (AOR=0.11; 95% CI: 0.01, 0.94). It is supported by a study done in southwest Nigeria, Zambia, and Goba town (14, 15, 16). This might be due to contraceptive users who had common choice of modern contraceptive type with their husband were more likely to discuss on the desired family size, share their perception towards LAPMs and its utilization. It is also supported by a study done in Debre Brihan.

Furthermore in this study modern contraceptive user mothers who had information about other contraceptive methods that could be used from FP service providers were 14 times more likely to utilize LAPMs as compared to participants who hadn't information about other contraceptive methods from FP service providers (AOR=13.77; 95% CI: 6.30, 30.10). It is supported by a study done in Addis Ababa (17). It could be because of the presence of clients with method types in mind which doesn't meet their needs and preferences and getting information about other contraceptive method types from providers leads them to have increased awareness and consequent utilization of LAPMs.

## 7. Conclusion and recommendation

### 7.1. Conclusion

Long-acting and permanent methods utilization in the town was high. From all of LAPM type user mothers' majority were utilizing implants.

Modern contraceptive user mothers' future reproductive plan, their desired number of children, contraceptive method type chooser, and having information about other contraceptive method types from FP service providers were significantly associated with their utilization of LAPMs.

### 7.2. Recommendations

#### To Debre Markos town health office

- As the modern contraceptive method types practiced have significantly shifted towards the long and permanent methods, sustainable availability and accessibility of LAPMs should be ensured.
- Family planning service programs strategies of the town at each level of health care delivery system need to promote discussion of partners on the type of contraceptive method to utilize.

#### To FP service providers

- Should explain to contraceptive user mothers all contraceptive method types that could be used.

- Should explain to users that they can use LAPMs not only for limiting but also for spacing pregnancy and fertility can return after use of long acting methods.
- Better to involve husbands during counseling service to help contraceptive user mothers to discuss on the type of contraceptives with their husbands.

#### 8. Limitations of the study

- Husbands' knowledge on LAPMs and its influence on their wives utilization of LAPMs was not addressed through in this study.
- The study also did not discover any information from LAPMs service providers.

#### 9. Competing interests

The authors declares that they have no competing interests

#### 10. Authors' contributions

Habtamu Chanie wrote the proposal, participated in data collection, analyzed the data and drafted the paper. Mulunesh Abuhay, Haymanot Zeleke and Marta Berta approved the proposal with some revisions. All the authors revised subsequent drafts of the paper and approved the final manuscript.

#### 11. Acknowledgments

We would like to express our deepest and sincere appreciation to the University of Gondar College of Medicine and Health Sciences department Midwifery for the financial support. We would also like to acknowledge Debre Markos town health office, all kebeles administrations, study participants and all data collectors.

#### 12. References

1. Jacobstein, R., et al., Fragile, Threatened, and Still Urgently Needed: Family Planning Programs in Sub - Saharan Africa. *Studies in family planning*, 2009. 40(2): p. 147-154.
2. Ethiopia, F.D.R.o. and M.o. Health, national guideline for family planning services in Ethiopia, February - 2011: Addis Ababa Ethiopia
3. Biddlecom, A. and V. Kantorova. Global trends in contraceptive method mix and implications for meeting the demand for family planning. in *International Population Conference (Busan, Republic of Korea)*. 2013.
4. Development, I.C.o.P.a., Framework of Actions for the follow-up to the Programme of Action of the International Conference on Population and Development Beyond . 2014.
5. Family Health International. *Addressing Unmet Need for Family Planning in Africa. The Case for Long-Acting and Permanent Methods*. 2007
6. Ethiopian Demographic and Health Survey 2014. Addis Ababa, Ethiopia: Central Statistical Agency and ICF International; 2014. Accessed on January 01, 2015
7. Bhende, A.A., et al., Determinants of contraceptive method choice in an industrial city of India. *Asia-Pacific Population Journal*, 1991. 6(3): p. 41-66.
8. The Free Encyclopaedia: Debre Markos town socio economic profile. 2011. Accessible at [http://en.wikipedia.org/wiki/Debre\\_Marqos](http://en.wikipedia.org/wiki/Debre_Marqos). Accessed on: January 01, 2015
9. Alemayehu, M., T. Belachew, and T. Tilahun, Factors associated with utilization of long acting and permanent contraceptive methods among married women of reproductive age in Mekelle town, Tigray region, north Ethiopia. *BMC pregnancy and childbirth*, 2012. 12(1): p. 1.
10. Wondwosen, A., Utilization of long acting and permanent family planning methods among women of reproductive age group in Debre Birhan Town, North Shewa Ethiopia 2014, 2014, AAU.
11. Melka, A.S., T. Tekelab, and D. Wirtu, Determinants of long acting and permanent contraceptive methods utilization among married women of reproductive age groups in western Ethiopia: a cross-sectional study. *The Pan African Medical Journal*, 2015.
12. Gebremariam, A. and A. Addissie, Intention to use long acting and permanent contraceptive methods and factors affecting it among married women in Adigrat town, Tigray, Northern Ethiopia. *Reproductive health*, 2014. 11(24): p. 1-9.
13. Agha, S., Intentions to use contraceptives in Pakistan: implications for behavior change campaigns. *BMC public health*, 2010. 10(1): p. 1.
14. Mutombo, N. and P. Bakibinga, The effect of joint contraceptive decisions on the use of Injectables, Long-Acting and Permanent Methods (ILAPMs) among married female (15–49) contraceptive users in Zambia: a cross-sectional study. *Reproductive health*, 2014. 11(1): p. 51.
15. Olaitan, O.L., Sexual behaviour of university students in south west nigeria. *Egyptian Academic Journal of Biological Sciences (Zoology)*, 2009. 1(1): p. 85-93.
16. Takele, A., G. Degu, and M. Yitayal, 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): p. 26. 11.
17. Prata, N., et al., Factors associated with choice of post-abortion contraception in Addis Ababa, Ethiopia. *African journal of reproductive health*, 2011. 15(3): p. 55 62.