

Received on 11 February 2015; received in revised form, 26 March 2015; accepted, 29 April 2015; published 30 May 2015

PRACTICE AND INTENTION TO USE LONG ACTING AND PERMANENT CONTRACEPTIVE METHODS AMONG MARRIED WOMEN IN ETHIOPIA: SYSTEMIC REVIEW AND META-ANALYSIS

Yonatan Moges ^{*1} and Kelemu Tilahun ²

Department of Public Health ¹, College of Medical and Health Science, Haramaya University, Harar, Ethiopia.

Department of Public Health ², College of Medical and Health Science, Wollega University, Nekemte, Ethiopia.

ABSTRACT: Background: The use of long-acting and permanent contraceptive methods (LAPMs) has not kept step with that of short-acting methods such as oral pills and injectables in Africa. Ethiopia is the second most populous country in sub-Saharan Africa with a high total fertility rate and high maternal and child mortality rates. Therefore, this study summarized the evidence of practice and intention to use long-acting and permanent family planning methods among women in Ethiopia using systemic review and meta-analysis. **Methods and findings:** Systematic review of the published literature of observational studies was conducted. Original studies were identified using databases of Medline/Pubmed and Google Scholar. Heterogeneity across studies was checked using the Cochran Q test statistic and I². Pool risk estimates of intention to use and practice of long-acting and permanent family planning methods were computed using a random effect model. Based on the nine observational studies included in the meta-analysis, the pooled prevalence of intention to use long-acting and permanent family planning methods among married women according to random effect DL model was 42.66% (95% CI 31.55 to 53.78%). On the other hand, the pooled practice of long-acting and permanent methods (LAPMs) among the study participants was 13.5% (95% CI 8.2% to 18.7%). **Conclusion:** This meta-analysis revealed that women intention to use LAPMCs is generally good, but their utilization is low. So it is recommended that LAPMCs have to be available and accessible to for the women who need it at lower health service delivery level.

Keywords: LAPMs, Intention, Practice, meta-analysis, Ethiopia

Correspondence to Author:

Yonatan M. Mesfin

Department of Public Health, College of Medical and Health Science, Haramaya University, Harar, Ethiopia.

E-mail: mogesyoni@gmail.com

INTRODUCTION: Family planning (FP) is a process that usually involves a discussion between a woman, a man, and a trained FP service provider focusing on family health and the desires of the couple to either limit or space their family ¹.

Contraceptive methods used for FP can be grouped into two categories programmatically. These are long-acting and permanent methods (intrauterine devices, implants, and sterilization) and short-term methods (pills, condoms, spermicides, injectables, other modern methods, and all traditional methods). Long-acting and permanent methods are generally used to limit childbearing, whereas short-term methods are better suitable for women who want to delay but not forfeit having a child ². Researchers have shown that many women do not use oral contraceptives effectively.

	<p>QUICK RESPONSE CODE</p>
	<p>DOI: 10.13040/IJPSR.0975-8232.IJLSR.1(5).160-68</p>
<p>The article can be accessed online on www.ijlsr.com</p>	
<p>DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.IJLSR.1(5).160-68</p>	

One million pregnancies result from the faulty use of oral contraceptives each year, and unintended pregnancies remain common. The method of contraception must tailor to meet the needs of such individuals^{3, 4}. If the more effective Long-acting and Permanent Methods of Contraception (LAPMCs) have been used, the number of unintended births and induced abortions could have been substantively reduced to help families and countries to achieve their health goals⁵. Moreover, avoiding barriers to the use of contraceptives and enhancing the demand for family planning could avert 54 million unintended pregnancies, more than 79,000 maternal deaths and one million infant deaths each year⁶. LAPMs remain a relatively small and sometimes missing component of national FP programs in Sub Saharan Africa (SSA). These methods can enhance FP programs in meaningful ways if the challenges to their availability, access, and acceptability can be overcome³.

The total fertility rate in Ethiopia is 4.8 children per women. A great majority of the health facilities in Ethiopia offer oral pills (98.8%) and injectables (98.0%) followed by male condom (95.2%), implants (75.0%), Intrauterine device (IUDs) (53.6%), female sterilization (22.6%), male sterilization (16.7%), and female condom (4.0%)⁶. The modern contraceptive prevalence rate among currently married women is 29%. Thirty-seven percent of women want no more children, but only 3.4% of married women reported using implants, 0.3% IUD, and less than 1% as sterilized⁷.

In a country like Ethiopia with a high fertility rate and unmet need of contraceptives, shifting towards LAPMCs is an important strategy to ensure continuity of services. But the issue is controversial; the contraceptive method mix is dominated by short term methods like pills and injectables⁸⁻¹¹. The Ethiopian ministry of health has planned and is working on the provision of all FP methods, especially LAPMs in the lowest service delivery level¹². Even though modern contraceptive services are made accessible nearly at all major urban areas in Ethiopia and in most instances at lower or no cost¹³.

There are different pocket studies in different area of Ethiopia, which conducted to estimate the

magnitude of practice and intention to use long-acting and permanent contraceptive methods among married women. These studies showed that the intention to use long-acting and permanent contraceptive methods among married women ranges from 27.3% in Goba town, South East Ethiopia⁸ to 65% in Jinka town, southern Ethiopia¹⁴. The practice of LAPMs among married women also ranges from 7.3% in Jinka town, southern Ethiopia¹⁴ to 19.5% in Drberemarkos town, north Ethiopia¹⁵. LAPMs are one of the key for reducing child and maternal mortality, and to halt/combat HIV/AIDS directly and to achieve other MDG goals indirectly.

It is important to summarize and calculate the pooled practice rate and intention to use of LAPMs among women in reproductive age group in the future so that the concerned bodies can identify the gaps and propose supplementary strategies to increase the availability, accessibility, and utilization of LAPMs in Ethiopia. Therefore, this study summarized the evidence of practice and intention to use long-acting and permanent family planning methods among women in Ethiopia.

METHODS:

Study Design and Data Source: Systematic review and meta-analysis of the published literature of observational studies were conducted. Original studies providing prevalence rate of practice and intention to use long-acting and permanent family planning methods among married women in Ethiopia were identified through a computerized search using databases of Medline/Pubmed, Google Scholar and HINARI (Health InterNetwork Access to Research Initiative) with detailed search-strategy and cross-checking of reference lists. The search terms used to search the database were practice, intention to use, demand, and prevalence rate of LAPMCs. These mesh terms were used as a combination of free text and thesaurus terms in different variations. The search was also made for cross-reference lists of identified original articles and reviews for other relevant articles. The data abstraction was performed from October 1 to January 2014.

Study Selection: A systematic review and meta-analysis was made on observational studies (cross-sectional and survey) which were reported the

practice of married women on LAPMCs and the intention to use LAPMCs among married women in Ethiopia. Eligibility criteria for articles to be included in the meta-analysis were if they presented results on practice or prevalence rate of long-acting and permanent family planning methods, and also we included studies that reported the intention to use long-acting and permanent family planning methods among married women in Ethiopia without the restriction of publication date.

Reports of original studies, unpublished master's thesis and Ph.D. dissertations, which were written in the English language also considered while comments, editorials, and reviews were excluded. Studies were excluded from the analysis for any of the following reasons: articles focused on short term contraceptive; meta-analyses or systematic reviews; duplicate publication of the same study; and articles available only in abstract form and articles with a sample size of less than 50.

The selection of articles for review was done in three stages: titles alone, abstracts, and then full-text articles.

Methodological Quality Assessment: Sample size, reporting of response rate, and appraisal of external validity of the study were considered as study quality indicators. All assessments were entered into pre-formatted standardized data extraction forms. Studies were assessed for quality, and studies with high quality were included for analysis. High-quality studies were: studies that reported outcomes on at least 50 patients; the study response rate was greater than 80%; studies reported on basic demographic data and studies reported either practice of LAPM and intention to use LAPMCs.

Data Abstraction: The data abstraction was conducted independently by two of the investigators (YM, KT). The selected studies were reviewed by using pre-tested and standardized abstraction form to extract data about the title; authors, year of publication, country, study design, study site, study base (community-based or institution-based), sample size, data collection procedure, response rates, measure of rate with its confidence interval (CI) and p-values. When there was a discrepancy in data abstraction, it was

resolved through consensus among the team of investigators.

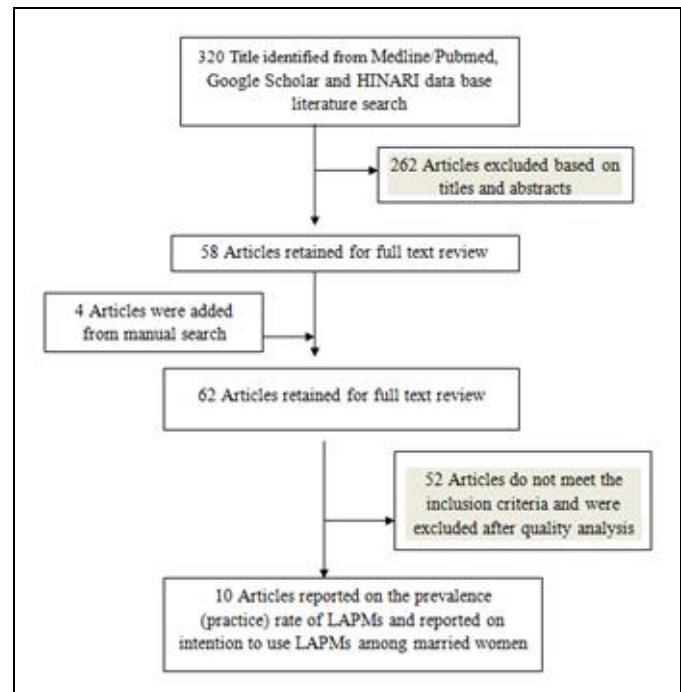


FIG. 1: FLOW CHART DIAGRAM DESCRIBING SELECTION OF STUDIES FOR A SYSTEMATIC REVIEW (IDENTIFICATION, SCREENING, ELIGIBLE AND INCLUDED STUDIES)

Articles may have been excluded for more than one reason.

Statistical Analysis: STATA software was used for data entry and analysis. The descriptions of original studies were assessed by using frequency and forest plot. The overall effect (pooled estimated prevalence rate) of LAPMCs practice and intention to use was carried out by using the Der Simonian Laird random-effects meta-analysis (random effects model) and measured by prevalence rate with 95% confidence intervals [95% CI]. Statistical heterogeneity was assessed with Cochran's Q test, which tests if the amount of between-study heterogeneity is greater than due to chance¹⁸ and I^2 statistic the magnitude of statistical heterogeneity that can be expected by partitioning out the chance heterogeneity¹⁷. To investigate the influence of each study on the overall effect size estimate, we conducted an influence analysis by computing the estimate and omitting 1 study in each turn.

Ethical Issues: The underlying work is based on systematic reviews of published and unpublished data and thus did not require ethical review.

RESULT: A total of 322 original articles were identified from the initial Pub Med, HINARI, and Google Scholar search on current practice and intention to use long-acting and permanent family planning in Ethiopia. Four additional articles were manually identified. Of these, 264 were excluded after screened by titles and abstracts. Those were duplicated studies and those that were case reports and reviews. Of the remaining 62 articles, 24 studies were excluded because they were studies conducted on outside Ethiopia, 10 were dealt with short term contraceptive and 17 studies were qualitative findings. Finally, 10 articles were used for the meta-analysis, with a total population of

16449. See **Fig. 1** for the flow of the diagram for study selection.

Characteristics of Studies Included in the Review: All of the studies selected for systemic review and meta-analysis were cross-sectional studies^{8, 11, 14, 15, 18, 19, 20, 22, 23, 24}. The resulting 10 studies addressing the practice and intention to use LAPMCs, which had study populations varying from 398 to 10204, were carried out between 2008 and 2014. All studies were reported in English. General characteristics and description of the studies selected for meta-analysis are outlined in **Table 1**.

TABLE 1: SUMMARY OF THE 10 OBSERVATIONAL STUDIES ASSESSING WOMEN INTENTION TO USE AND PRACTICE OF LAPMS INCLUDED IN THE META-ANALYSIS (N = 10)

The first author, year	Study period	Study setting	Study population	Sample size	Parameter studied	Prevalence (%), Confidence interval
Gebremariam and Addissie, 2014 ¹⁹	2012	Community based	married women of reproductive age	594	Intention to use LAPM	48.4 (44.1 - 52.7)
Takele <i>et al.</i> , 2014 ⁸	2009	Community-based	married women of reproductive age	734	practice and intention to use LAPM	8.7 (6.9 - 11) 27.3(24.2 - 30.612)
Meskel and mekonene, 2014 ¹⁸	2013	Health facility-based	Women who were using STCs	416	Intention to use LAPM	38 (33.3 - 42.7)
Bulto <i>et al.</i> , 2014 ¹⁵	2012	Community-based	married women of reproductive age	519	Practice and intention to use LAPM	19.5 (16.3 - 23.1) 52.4 (48.1 - 56.7)
Getachew Mekonnen, 2013 ¹⁴	2008	Community-based	women of reproductive age group	800	practice and intention to use LAPM	7.3 (5.7 - 9.3) 65.2 (61.9 - 68.5)
Haile A, Fantahun M, 2012 ²²		Community-based		398	Intention to use LAPM	24.4 (20.4 - 28.9)
EDHS 2011 ⁷	2010	Community based	Married and sexually active unmarried women	10204	Intention to use LAPM	54.0 (53.0 - 55.0)
DasheNegawo, unpublished ²⁰	2010	Health facility-based	Women who were using STCs	519	Intention to use LAPM	56.1 (51.8 - 60.3)
Alemayehu <i>et al.</i> , 2012 ¹¹	2012	Community-based	married women of reproductive age	460	Practice of LAPM	12.3 (9.6 - 15.6)
Tesfaledet T, unpublished 2014 ²³	2014	Community based	married women of reproductive age	802	Intention to use LAPM	18.2 (15.65 - 21)
Alemu S, unpublished 2014 ²⁴	2014	Community based	married women of reproductive age	1003	Practice of LAPM	20 (17.65 - 22.6)

Intention to Use Long-Acting and Permanent Methods: A study in Jinka town, from south Ethiopia; indicated that nearly two-third of participants had intention to use long-acting and permanent methods¹⁴. Another study from North West Ethiopia in Debire Markos town showed that 45.9% of women had intention to use one of the LAPMs of contraception in the future. Of these, ninety-eight (18.9%) of the respondents intended to use Implanon, 67 (12.9%) Jadele, 60 (11.6%) IUD

and 13 (2.5%) of the study participants had the intention to use female sterilization¹⁵. A study in Wolayita town, Southern Ethiopia indicated that one hundred or fifty-six (38%) of women had the intention to use LAPMs while nearly half of them (n = 216) had a negative attitude to use such methods. Moreover, two-thirds of study participants (n = 276) held myths and misconceptions about such methods. The women who had a positive attitude were found to be 2.5

times more intention to use LAPMs compared to women who had a negative attitude (AOR = 2.47; 95% CI: 1.48- 4.11)¹⁸.

According to a study done in Goba town, southeast Ethiopia, the total demand for LAPMs of contraceptives in the town was found to be 18.12%. The unmet need for LAPMs of contraceptives was sixty-nine 9.4% (3.78% for spacing and 5.59% for limiting). The overall prevalence rate of intention to use LAPMs in the study area was 27.3%⁸. Another study which was conducted in Adigrat town, Tigray region, North Ethiopia showed that the prevalence of intention to use LAPMs was 48.4% (95% CI = 44.1, 52.7) while 78(14.6%) participants were unsure of their intention. Of those who had an intention, 152(58.9%) had intention to use one of the LAPMs within the next one year.

The most preferred method participants' intend to use was implants 184(71.3%), followed by IUCD 62(24.0%). This study also demonstrated that intention to use LAPMs was higher among women

who knew at least one of LAPMs (AOR = 4.7, 95% CI = 1.58, 14.01) and women who do not want to have birth within the next 2 years (AOR = 1.9, 95% CI = 1.22, 3.13). Intention to use LAMPs was less among women who perceive poor support from their husbands (AOR = 0.2, 95% CI = 0.09, 0.45) and those who perceive LAPMs are harmful for the womb (AOR = 0.24, 95% CI = 0.14, 0.41)¹⁹.

A study conducted in Ambo town, Ethiopia, 2010, documented that 56.1% of 519 women who were using family planning methods had the intention to use LAPMs²⁰. Likewise, result from Ethiopian Demography and Health Survey 2011 showed that the magnitude rate of intention to use among the study population was 54%²¹. On the other hand, the facility based study conducted in East Showa Zone; Batu, Ethiopia in May 2009 among 398 women aged 18 – 49 years showed that the magnitude rate of intention to use LAPMs was 24.4%²².

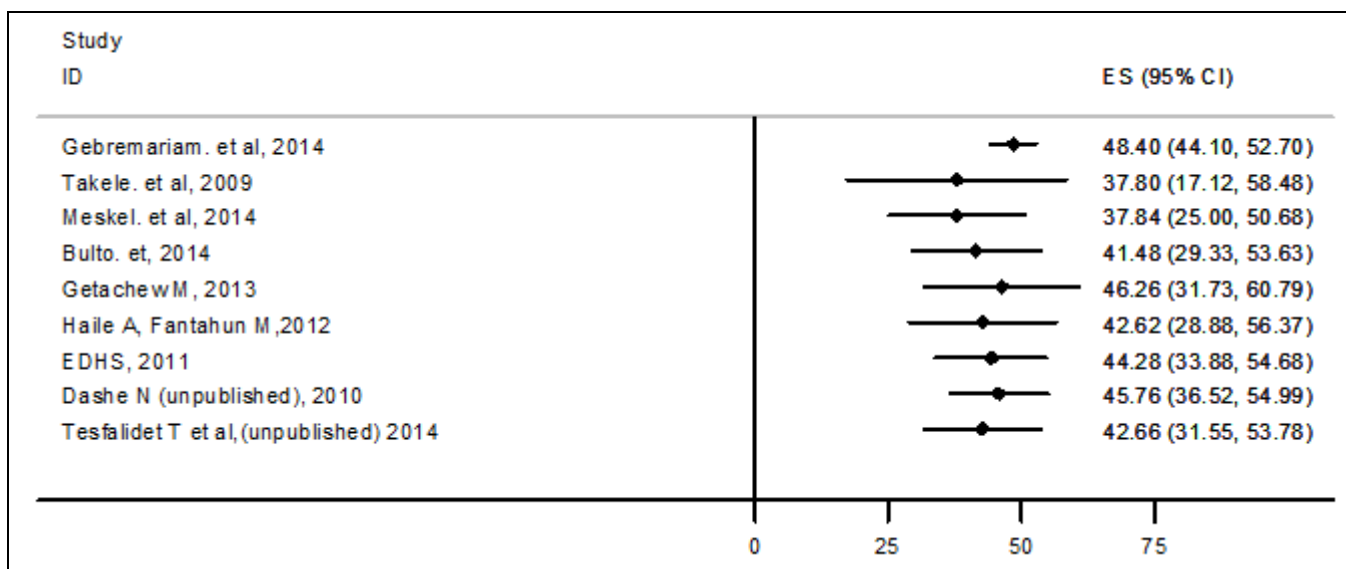


FIG. 2: CUMULATIVE FOREST PLOT OF 9 STUDIES FOR INTENTION TO USE LONG ACTING FP. THE FIRST ROW SHOWS THE EFFECT BASED ON ONE STUDY; THE SECOND ROW SHOWS THE CUMULATIVE EFFECT BASED ON TWO STUDIES, AND SO ON

Assessing Heterogeneity and Meta-Analysis

Result: The studies (9 studies dealing to use long-acting and permanent family planning method) showed high heterogeneity using Cochrane Q test statistic (Q test p = 0.000) and I² test statistic (I² = 99.2%) which was indicative for using random effects model. The 5 studies which are included in the meta-analysis to pool the practice of the married women towards long-acting and permanent

family planning method also showed high heterogeneity using Cochrane Q test statistic (Q test p = 0.000) and I² test statistic (I² = 95.8%). Based on the 9 observational studies included in the meta-analysis, the pooled prevalence of intention to use LAPMs among married women according to random effect DL model was 42.66% (95% CI 31.55 to 53.78%) **Fig. 3**.

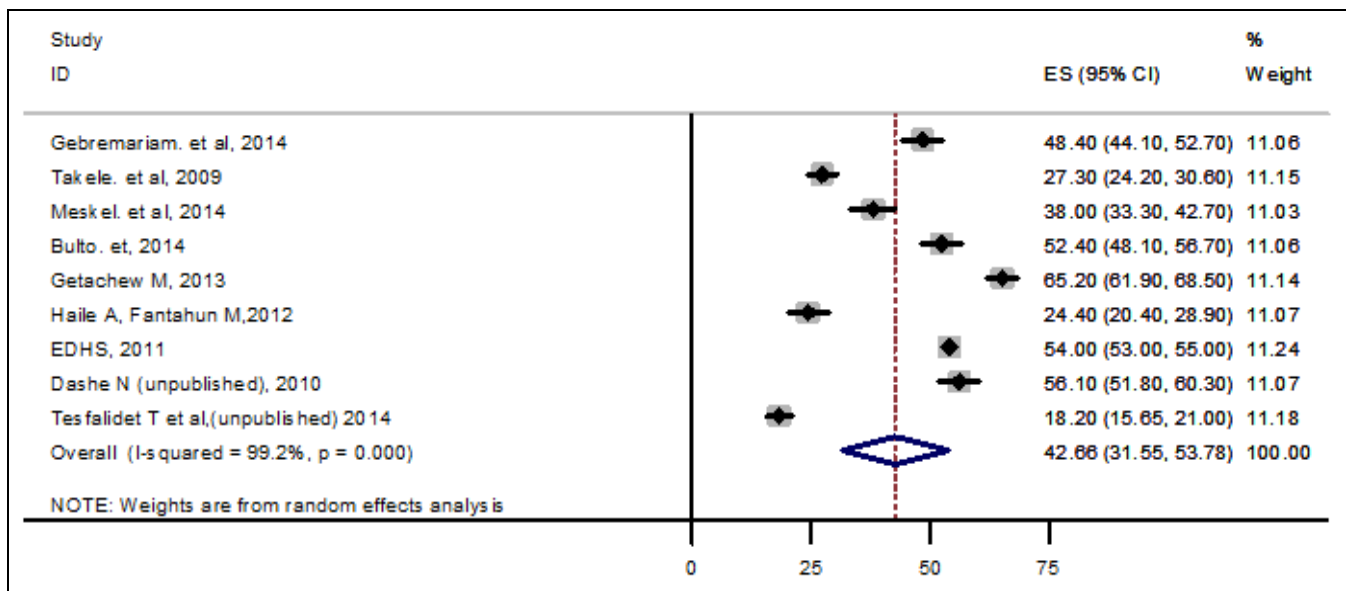


FIG. 3: FOREST PLOT OF THE 9 CROSS-SECTIONAL STUDIES THAT QUANTITATIVELY ASSESSED THE MAGNITUDE OF INTENTION TO USE LONG ACTING AND PERMANENT FAMILY PLANNING METHODS AMONG MARRIED WOMEN IN THE REPRODUCTIVE AGE GROUP

Long-Acting and Permanent Family Planning Methods Practices Among Women of Reproductive Age: Of the 10 studies identified, only 5 studies were dealing with practice of women in the reproductive age group on long-acting and permanent family planning methods. According to a study report from Jinka town, south Ethiopia; the prevalence of long acting and permanent

contraceptive method was 7.3%, which was very low. About one out of every five participants has ever heard information about one or more of long acting and permanent contraceptive methods. Also a study from Goba town, Bale Zone, South East Ethiopia; Utilization of LAPMs of contraception in the town was 64 (8.7%), and the unmet need for LAPMs was 69 (9.4%).

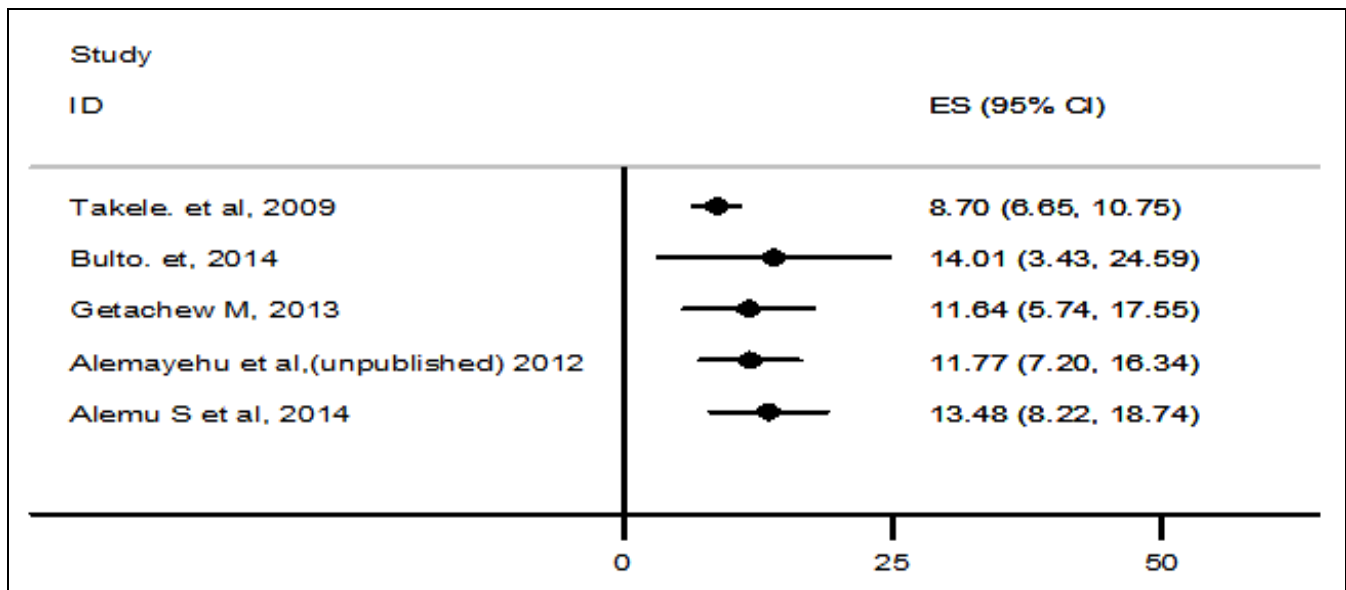


FIG. 4: CUMULATIVE FOREST PLOT OF 5 STUDIES FOR PRACTICE OF LONG-ACTING AND PERMANENT FAMILY PLANNING METHODS. THE FIRST ROW SHOWS THE EFFECT BASED ON ONE STUDY; THE SECOND ROW SHOWS THE CUMULATIVE EFFECT BASED ON TWO STUDIES, AND SO ON

Moreover, the overall prevalence use of long-acting and permanent contraceptive methods use was 12.3% according to a study report from Mekelle town, Tigray Region, North Ethiopia.

Of those women who were using LAPMs, the majority of women used implants (87%) followed by IUCD (13%), and there were no married women who underwent female sterilization.

Unlike the previous three studies, a study from Debre Markos Town, North West Ethiopia reported that among 519 respondents, 323 (62.2%) were using modern family planning (FP) methods in which 101 (19.5%) were using long-acting and

permanent contraceptive methods (LAPMs). Based on the 5 studies included in this meta-analysis, the overall prevalence use of long-acting and permanent contraceptive methods use was 13.5% (95% CI 8.2% to 18.7%) **Fig. 5**.

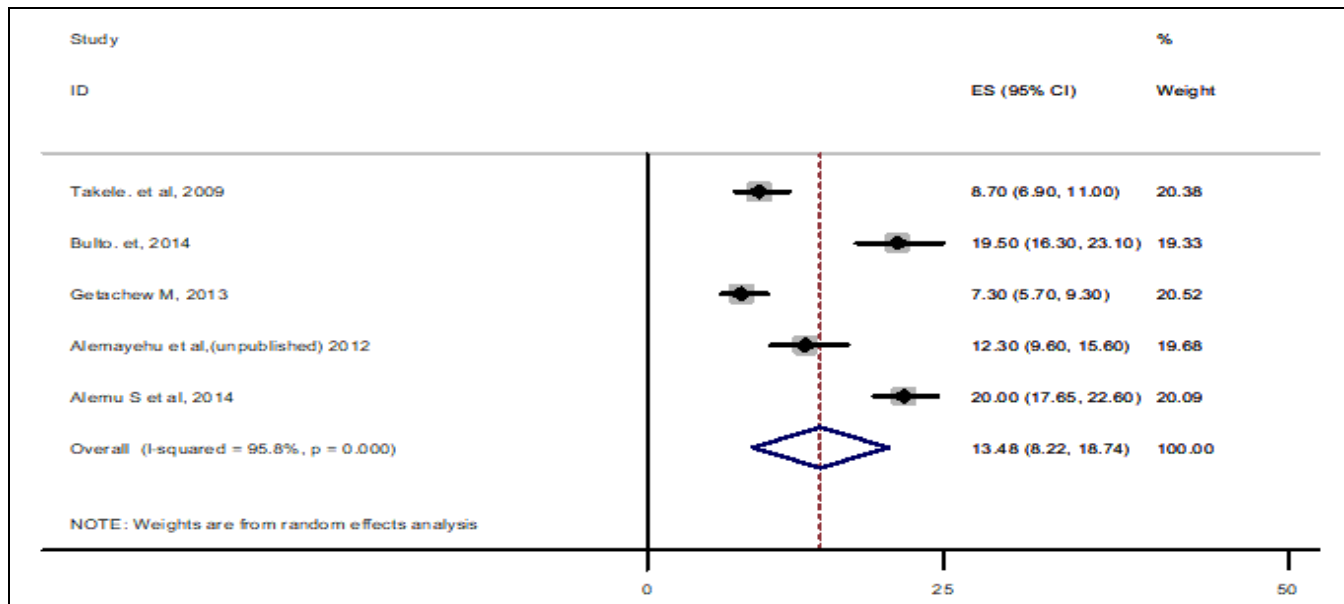


FIG. 5: FOREST PLOT OF THE 5 CROSS-SECTIONAL STUDIES THAT QUANTITATIVELY ASSESSED THE PREVALENCE RATE OF LONG-ACTING AND PERMANENT FAMILY PLANNING METHODS PRACTICE AMONG MARRIED WOMEN

DISCUSSION: This Review and Meta-Analysis addressed articles on the magnitude of utilization and intention to use long-acting and permanent family planning method (LAPMCs) using 10 selected studies. Nine studies were identified from four regional states of Ethiopia and one national survey (EDHS 2011) and summarized the evidence on the magnitude of utilization and intention to use long-acting and permanent family planning method among women in the reproductive age group. According to the results of this meta-analysis, the pooled magnitude of the practice of and intention to use LAPMs among women in the reproductive age group were 13.5% (8.2% - 18.74%) and 42.66% (3.55% - 53.78%) respectively.

Long-acting and permanent methods (LAPMs) can address a full range of women's and couples'.

Family planning needs. According to the results of this meta-analysis, the pooled magnitude of intention to use LAPMCs among women in the reproductive age group was 42.66% (3.55% - 53.78%). In the individual studies, the intention to use LAPMs among married women varied from 18.2% in a study conducted in East wollega (23) to 65.2% in Jinka town, Ethiopia¹⁴. This wide inter

study variation might be due to variations in settings and study population.

In Sub-Saharan Africa, only 2.7 million women are currently using these methods fewer than one in eight (12.5%) contraceptive users. Likewise, this pooled studies in Ethiopia also showed that the practice of use of LAPCMs among women in the reproductive age group was 13.5% (8.2% - 18.74%), which is low. The reason could be; since LAPMCs are provider dependent methods, they are only available within the health care system ("health care system access"), and the system's policies, structures, and organization of services and the providers' practices greatly influence client access to LAPMCs.

This meta-analysis revealed that there was a discrepancy between intentions to use LAPMCs and practice. Even though the intention to use LAPMCs among married women was acceptably high (42.66%), their actual practices / utilization was low (13.5%). This implies that there might be a lack of accessibility and availability of the LAPMCs in lowest service delivery level near to the residential area of the women. In Sub Saharan Africa LAPMCs remain a relatively small and

sometimes missing component of national FP programs³. A great majority of the health facilities in Ethiopia offer oral pills (98.8%) and injectables (98.8%) (6).

CONCLUSION AND RECOMMENDATION:

This meta-analysis revealed that women intention to use LAPMCs is generally good, but their utilization is low. So, it is recommended that LAPMCs have to be available and accessible to for the women who need it at lower health service delivery level.

Also, a quality client-provider interaction between a knowledgeable, empowered client and a skilled, motivated service provider, at an appropriately staffed, managed and functioning service site is needed.

ACKNOWLEDGEMENT: Nil

CONFLICT OF INTEREST: Nil

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How to cite this article:

Moges Y and Tilahun K: Practice and intention to use long acting and permanent contraceptive methods among married women in Ethiopia: Systemic Review and Meta-Analysis. Int J Life Sci & Rev 2015; 1(5): 160-68. doi: 10.13040/IJPSR.0975-8232.IJLSR.1(5).160-68.

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