

KNOWLEDGE, ATTITUDE AND PRACTICE OF EMERGENCY CONTRACEPTIVES AMONG FEMALE UNIVERSITY STUDENTS IN ETHIOPIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

Bilal Tessema Yimer¹, Berhanemeskel Weldegerima Atsbeha^{1*}, Nurahmed Seid Getaw²

¹ Lecturer, Department of Pharmaceutics, School of Pharmacy, College of Medical and Health Sciences, University of Gondar, Gondar, Ethiopia

² Lecturer, Department of Pharmaceutical Chemistry, School of Pharmacy, College of Medical and Health Sciences, University of Gondar, Gondar, Ethiopia.

ABSTRACT

BACKGROUND: Unwanted pregnancy followed by unsafe abortion is one of the major worldwide health problems, which has many negative consequences on the health and well-being of women. Emergency contraception is a type of modern contraception that is indicated after unprotected sexual intercourse when regular contraception is not in use. This study summarized the knowledge, attitude and practice of ECs among female university students in Ethiopia.

METHODS: A systematic review and meta-analysis of observational studies were conducted. Original studies were identified using databases of PubMed, Medline, Embase, Cinahl and Web of science. Heterogeneity across studies was checked using Cochrane Q test statistic and I^2 test. The pooled prevalence of the knowledge, attitude and practice of ECs methods were computed using a random effect model.

RESULTS: A total of 321 articles were retrieved through the initial search strategy, producing 15 observational studies from universities of Ethiopia for analysis. Based on the studies included in the meta-analysis, the pooled prevalence of level of knowledge, attitude and magnitude of utilization of ECs were 57.7% (95% CI: 49.8 to 65.3), 42.6% (95% CI: 41.4 to 43.8) and 9.2% 95% CI: 6.6 to 12.6), respectively. On the other hand, significant heterogeneity was observed between studies ($Q = 664.9$, $p = 0.000$, $I^2 = 97.9\%$).

CONCLUSION: This meta-analysis revealed that the pooled prevalence of level of knowledge, attitude and the magnitude of utilization of ECs were relatively low among female university students in Ethiopia. Hence, behavioral change strategies should be considered by responsible bodies to improve knowledge and bring attitudinal change on use of emergency contraception.

KEYWORDS: Emergency contraceptives, Knowledge, Attitude, Practice, Meta-analysis, Systematic review, Ethiopia.

INTRODUCTION

Unwanted pregnancy is an important public health issue in both developed and developing countries because of its negative association with social and health outcomes for both mothers and children as well as the society as a whole^{1,2}. Unintended pregnancies in higher education students pose a major public health problem in the developed and developing countries³⁻⁵ including Ethiopia⁶ and are associated with far reaching effects such as jeopardizing students' educational progress and future careers^{4,7}. In about half of all unwanted pregnancies, conception occurs due to inadequate guidance to use contraception effectively, including the users' inability to address their feelings, poor attitudes towards contraceptives, and lack of motivation⁶. In spite of the availability of contraceptives with affordable costs and Ethiopian government's effort to prevent unwanted pregnancies and abortion among youths, there is a large number youths' with unwanted pregnancies and unsafe abortion^{6,8}.

Emergency contraceptive (EC) is any method of contraception which is used after intercourse and before the potential time of implantation⁹. It plays a vital role in preventing unintended pregnancy, which in turn helps to reduce unintended child birth and unsafe abortion, which are major problems of maternal health¹⁰. It is found to be effective and can prevent at least 75% of expected pregnancies if used as soon as possible after unprotected sexual intercourse, especially within 72 hours of unprotected sexual intercourse^{10,11}. Various studies have reported the level of knowledge, attitude and practice of EC among university students in Ethiopia^{8,9,10,22}. It is important to have summarized evidence

on these studies to extract valuable information, which helps concerned bodies to identify existing gaps and propose supplementary strategies to increase the availability, accessibility and utilization of EC in Ethiopia. Therefore, the purpose of this study is to summarize the level of knowledge, attitude and practice of ECs among female university students in Ethiopia.

METHODS

The present research is a systematic review and meta-analysis on the knowledge, attitude and practice of EC among university students of Ethiopia. The researcher systematically searched studies published and unpublished observational studies on the level of knowledge, attitude and practice of EC among female university students in Ethiopia. English language publications in the PubMed, MEDLINE, EMBASE, CINAHL and Web of science databases were identified and cross-checked with reference lists containing combinations of the key words "knowledge", "attitude", "practice", "emergency contraceptive", "university students", and "Ethiopia". In addition, a search was also made for cross-reference lists of identified original articles and reviews of articles. The data search was performed from July 25 to August 30, 2016. Reference list of published studies was evaluated to increase sensitivity and to select more studies. An independent researcher did search evaluation randomly and it was confirmed that no studies were excluded. This meta-analysis is reported in accordance with the MOOSE guidelines²³. Endnote X7 was used to maintain and manage our library.

A systematic review and meta-analysis were made on

cross-sectional studies that were focused on the knowledge, attitude and practice of EC among female university students of Ethiopia. Every accessible article that reported knowledge, attitude and practice of EC among university students of Ethiopia was included in the meta-analysis without restriction based on publication date. Researchers carefully assessed entire text or summary of all searched articles, documents, and reports and the related articles were selected. Studies were excluded from the analysis for any of the following reasons: articles focused on other than ECs, meta-analysis or systematic reviews; articles consisted of comments, editorials, or duplicate publication of the same study; articles in which response rate was less than 80% and articles available only in abstract form. The selection of articles for review was done in three stages: titles alone, abstracts, and then full-text articles.

Concerning quality evaluation, the related studies in terms of titles and contents, a checklist, which is adapted from a previous study, was applied. To evaluate the quality of documents; objective of every research, study method, sample size, sampling method, data collection tool, variables evaluation status, studied target group, and analysis status were examined using 10 questions (one score for each question). According to this checklist, maximum score is 10 and minimum acceptable score is 8⁽²⁴⁾. Finally, articles obtaining minimum score and above were selected and their respective information was extracted and analyzed. Data was extracted in terms of article title, first author, study year, total sample size, research method and place, level

of knowledge, attitude and practice of EC. Data was entered in Excel spreadsheet.

Data synthesis for meta-analyses was performed using the random effect model with available data presented in a Forest plot. Prevalence rate of level of knowledge, attitude and practice of ECs in every study was calculated. Finally, heterogeneity index was determined using Q test and I² index, which describes the percentage of variation not because of sampling error across studies. An I² value above 75% indicates high heterogeneity. Meta-analysis was conducted by using a random-effects model (to account for heterogeneity) conducted using Comprehensive Meta-Analysis V2.exe.Ink (Biostat, Englewood, NJ 07631 USA).

Finally, point estimation of level of knowledge, attitude and practice of ECs with confidence interval of 95% was calculated by using forest plots. In this plot, square size represents weight of every study, which had positive association with the sample size and lines to both sides of it represent confidence interval of 95% of the reported prevalence, and the diamond below the graph shows the pooled average. Sensitivity analysis was also conducted to estimate the effect of each individual study in the pooled prevalence estimation.

RESULTS

A total of 321 citations were retrieved through electronic database screening and ten additional articles were also manually obtained. Of these 331 articles, 255 were excluded after screening by titles and abstracts.

These were duplicated studies, case reports and reviews. Finally, 15 articles that met all of the eligibility criteria were used for the meta-analysis. All of the 15

studies selected for the analysis were cross sectional Table 1 and a PRISMA flow chart outlining the details studies with a total population of 8,157 subjects. The related to the selection process are presented in Figure characteristics of each included study are reported in 1.

Table 1 and a PRISMA flow chart outlining the details related to the selection process are presented in Figure 1.

Table 1: Description of the studies included in the meta-analysis								
ID	First author	Publication year	Study Setting (University)	Sample size	Score quality	Parameter studied and their prevalence on EC		
						Knowledge on EC	Attitude towards EC	Utilization of EC
1	Dejene ⁽¹³⁾	2010	Adama	660	8	Ever heard about EC, 46.8%	Positive attitude, 62.9%	Ever Used EC, 4.7%
2	Fatuma ⁽¹¹⁾	2012	Addis Ababa	368	9	Ever heard of EC, 84.2%	Positive attitude towards EC, 32.3%	Used EC, 7.33%
3	Ejara ⁽¹⁸⁾	2013	Hawasa	776	8	Had knowledge about EC, 72.2%	-	Ever used EC, 5.3%
4	Nasir ⁽⁹⁾	2014	Jimma	389	8	Ever heard or knew EC, 41.9%	Willing to use EC at times of need, 29.8%	Used the EC method, 6.8%
5	Jimma ⁽¹²⁾	2013	Ambo	350	9	Had ever heard about EC, 62.5 %	Plan to use if needed, 21.2%	Utilized EC, 36.5%
6	Belaynew ⁽¹⁹⁾	2012	Gondar	623	9	Had heard about EC, 67%	Believe that EC can prevent pregnancy, 30.7%	-
7	Marta ⁽¹⁶⁾	2015	D/Markos	599	8	Had good knowledge, 62.5%	Positive attitude towards EC, 53.8%	Ever used EC, 11.4%
8	Wegene ⁽⁸⁾	2007	AAU/Unity U	774	8	Have heard about EC, 43.5%	Positive attitude towards, 53%	Ever used EC 4.9%
9	Bisrat ⁽²⁴⁾	2016	Mizan-Tepi	540	8	Ever heard about EC, 67.8%	Positive attitude towards EC, 46.8%	Utilized EC, 12.6%
10	Berhanu ⁽²¹⁾	2011	Haramaya	572	8	Ever heard about EC, 46.6%	Positive attitude towards EC, 36.4%	-
11	Tewodros ⁽²³⁾	2015	Wachamo	424	8	High levels of knowledge about EC, 49.8%	Positive attitudes towards EC, 47.6%	Used EC, 13.9%
12	Zeleke ⁽²⁰⁾	2009	Bahir dar	400	9	Heard about EC, 83.5%	Positive attitude towards EC, 62.3%	Utilized EC, 22.75%
13	Gelaye ⁽¹⁵⁾	2014	Wolaita	493	8	Ever heard of EC, 44%	-	Used EC, 9.5%
14	Giziyenesh ^{(22)**}	2014	Aksum	628	8	Good knowledge about EC, 27.2%	Had positive attitude EC, 12.4%	Ever used EC, 14.7%
15	Etenesh ^{(14)**}	2009	Mekelle	561	8	Aware of EC, 44.7 %	Had positive attitude towards EC, 33.9%	Had ever used EC before, 5.7%

*EC- Emergency contraceptive, ** - unpublished thesis studies

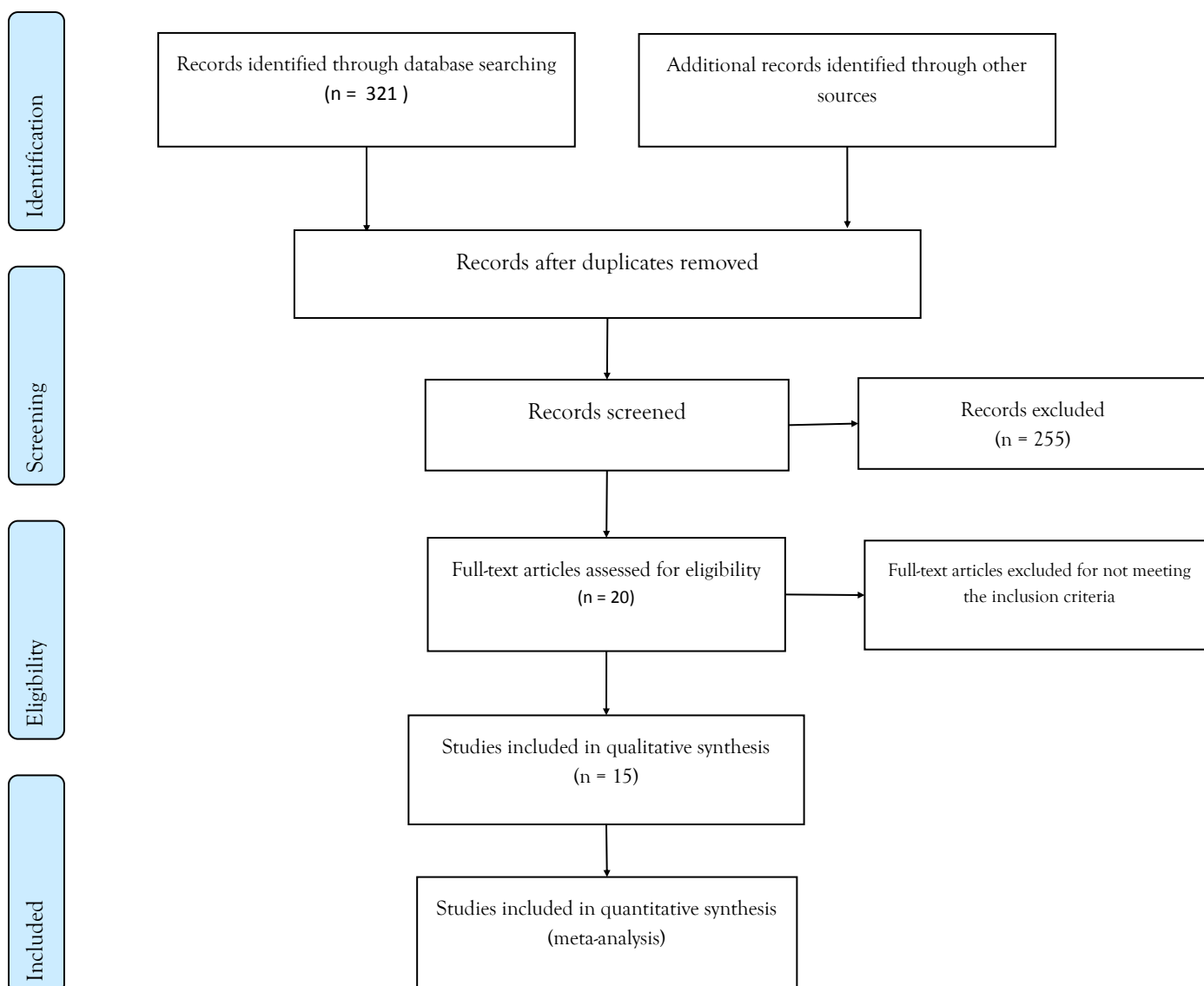


Figure 1: A flowchart describing selection of studies for the systematic review and meta-analysis (identification, screening, eligibility and inclusion).

*Articles may have been excluded for more than one reason

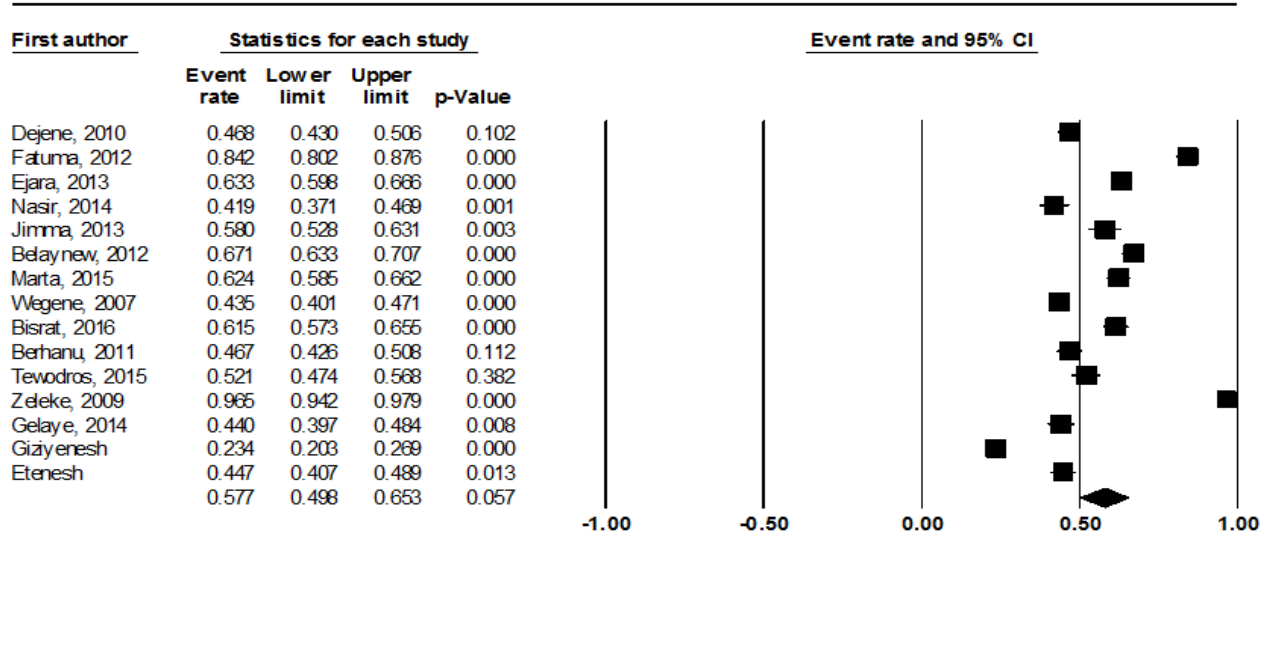


Figure 2: Forest plot of studies related to knowledge regarding emergency contraceptives among university students in Ethiopia. Rectangles indicate point prevalence and size of the rectangles represent the weight given to each study in the analysis; the diamond indicates the combined point prevalence and horizontal lines indicate 95% confidence interval

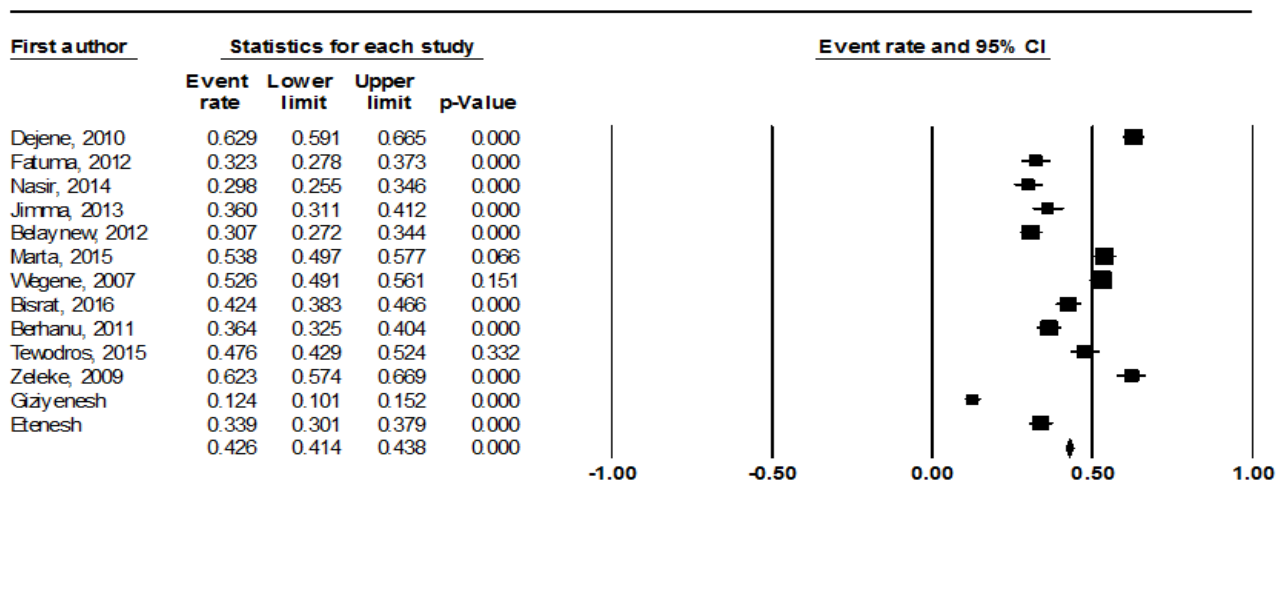


Figure 3: Forest plot of studies related to attitude towards emergency contraceptives among female university students in Ethiopia. Rectangles indicate point prevalence and size of the rectangles represent the weight given to each study in the analysis; the diamond indicates the combined point prevalence and the horizontal lines indicate 95% confidence interval.

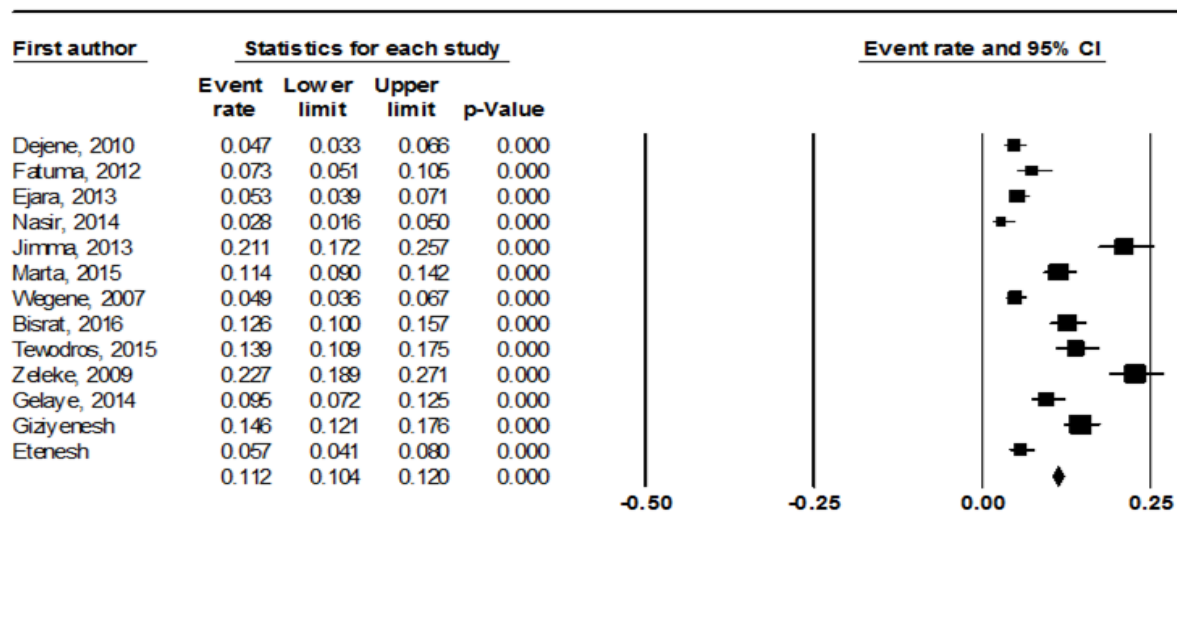


Figure 4: Forest plot of studies related to utilization of emergency contraceptives by female university students in Ethiopia. Rectangles indicate point prevalence and size of the rectangles represent the weight given to each study in the analysis; the diamond indicates the combined point prevalence and the horizontal lines indicate 95% confidence interval.

Knowledge regarding emergency contraceptive shown and hence were included in the assessment. In the as all of the 15 studies included some form of assessment regarding knowledge about ECs. Overall, the prevalence of level of knowledge about EC was 57.7 % (95% CI: 49.8 to 65.3) see Figure 2. The highest level of knowledge (awareness) regarding ECs was reported from Addis Ababa University in 2012 with 84.2% (95% CI: 80.2 to 87.6) and the lowest level reported from Aksum University in 2014 with 23.4% (95% CI: 20.3 to 26.9). Significant heterogeneity was observed between studies ($Q = 664.9$, $p = 0.000$, $I^2 = 97.9\%$) and consequently the random effect model was employed for the meta-analysis.

Attitude towards emergency contraceptive indicates, among the 15 studies included in the meta-analysis, 13 reported information related to attitude towards ECs

and hence were included in the assessment. In the assessment the average prevalence rate of positive attitude towards EC was 42.6% (95% CI: 41.4 to 43.8) see Figure 3. The highest prevalence of good/positive attitude towards ECs was reported from Adama University in 2010 with 62.9% (95% CI: 59.1 to 66.5) and the lowest rate reported from Aksum University in 2014 with 12.4% (95% CI: 10.1 to 15.2). Significant heterogeneity was observed between studies ($Q = 526.4$, $p = 0.000$, $I^2 = 97.7\%$) and consequently the random effect model was employed for the meta-analysis.

DISCUSSION

In many low income countries lack of knowledge about and inadequate access to EC has resulted in women resorting to unsafe or illegal abortions²⁵. In this systematic review and meta-analysis 15 studies aimed at as-

sessing the level of knowledge, attitude and practice of ECs were selected and included. The evidence from the selected articles of meta-analysis, the pooled level of knowledge, attitude and magnitude of utilization of ECs were 57.7, 42.6 and 9.2%, respectively.

Level of awareness regarding ECs has tremendous impact on the utilization of EC. In this meta-analysis the overall pooled prevalence of knowledge about ECs was 57.7 % (95% CI: 49.8 to 65.3). This finding reveals that more than two fifth of the respondents do not have awareness regarding EC methods. There was variation in the level of awareness among universities in Ethiopia, the highest level of knowledge was observed in Addis Ababa University (84.2%) but the lowest level in Aksum University (23.4%). This variation may be due to a difference in proximity of the respondents to sources of information that can intern influence awareness on ECs. The pooled prevalence of awareness regarding ECs was relatively higher as compared to the results of studies conducted in universities of Ghana (43.2%)²⁶, Uganda (45.1%)²⁷ and South Africa (56.5%)²⁸ but relatively lower than those of many other studies conducted among university students found in Nigeria (67.8%)²⁹, Cameroon (63%)³⁰, Nepal (66%)³¹ and Mexico (95%)³².

Although it is believed that parents, teachers and trained personnel could provide information on contraceptives, their attitude could prevent youths from seeking advice from them³³. The result from this meta-analysis revealed that the overall pooled prevalence of the attitude towards EC was 42.6% (95% CI: 41.4 to 43.8). From this finding, more than half of the re-

spondents have negative attitude towards EC. This might be due to lack of awareness, misconception regarding utilization of EC, concerns associated with religiosity, cultural and societal beliefs.

Although EC is not recommended as a routine family planning method, it is a very useful method after unprotected sexual intercourse to reduce the chance of unplanned or unwanted pregnancies²⁹. Emergency contraceptive is an effective means of preventing unwanted pregnancies, but unfortunately, the large numbers of university students are unaware of it. In this meta-analysis, the pooled prevalence of practice of EC among participants of the studies is very low 9.2% (95% CI: 6.6 to 12.6). The possible reason for low EC utilization rate could be due to the fact that, less proportion sexually active participants, lack of awareness of its use and side effects, lack of correct information, low health promotion and availability of the methods in most health institutions. The pooled utilization of EC among university students was relatively higher in studies conducted in South African (28%)³⁴ but lower than in studies conducted in Cameroon (7.4%)³⁰, Nigeria (5.7%)³⁵.

This study does have several limitations with all pooled analyses containing significant heterogeneity and subsequently should be interpreted with caution. The results should considered generalizable as they include a broad geographical cross-section from Ethiopia. Potential factors contributing to the variability include location (setting), time of the study and characteristics of the population. Such heterogeneity is to be expected though considering the diverse cultures and ethnic

groups found in Ethiopia. Although many would argue that in the presence of such significant heterogeneity a meta-analysis should not be presented, the researchers believe that providing the reader with the pooled prevalence estimates and a caution relating to the presence of heterogeneity will allow them to obtain a broad perspective examining the level of knowledge, attitude and utilization of EC among university students. However, the researchers believe that this review still provides the reader with an overview of the current available evidence and highlights. There is also a potential gap due to reporting biases that need to be considered in future investigations and research.

CONCLUSION

The results of this meta-analysis indicate that the overall level of knowledge, attitude and especially the practice on EC among university students was very low. Based on the findings, it is crucial to develop a strategy to increase awareness, positive attitude, need based practice of ECs and decrease barriers among respondents.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests in this study.

Corresponding Author:

Berhanemeskel Weldegerima Atsbeha

Department of Pharmaceutics, School of Pharmacy, College of Medical and Health Sciences,

University of Gondar, Gondar, Ethiopia. :

Email: bilaltss4@gmail.com

REFERENCES

1. Darega ND. Unplanned pregnancy: Prevalence and Associated factors among Antenatal Care Attending Women in Bale Zone, Oromiya Region, Southeast Ethiopia: A facility-based cross sectional study. *Global Journal of Medical Research*. 2015;15(4).
2. Hamdela B, Tilahun T. Unwanted pregnancy and associated factors among pregnant married women in Hosanna Town, Southern Ethiopia. *PLoS One*. 2012;7(6):e39074.
3. Larsson M. *The Adoption of a New Contraceptive Method—Surveys and Interventions Regarding Emergency Contraception*. 2004.
4. Manena-Netshikweta M. Knowledge, perception and attitude regarding contraceptives among secondary school learners in the Limpopo province, November 2007, South Africa. South Africa. 2007.
5. Byamugisha JK. User and provider perspectives emergency contraception among young people in Uganda, 2007, Kampala and Stockholm: PHD thesis) available: www.nfog.org/theses/Josaphat%20Kayogoza.pdf.
6. Tadesse E, Yoseph S, Gossa A, Muletta E, Pogharian D. Illegal abortion in five hospitals in Addis Ababa. *Ethiop Med J*. 1994;32(4):283-84.
7. Larsson M, Aneblom G, Lurenus K, Westerling R, Tyden T. Limited impact of an intervention regarding emergency contraceptive pills in Sweden- repeated surveys among abortion applicants. *European Journal of Contraception and Reproductive Health Care*. 2006;11(4):270-6.
8. Tamire W, Enqueselassie F. Knowledge, Attitude, and Practice on Emergency Contraceptives Among Female University Students In Addis Ababa, Ethiopia. *Ethiopian Journal of Health Development*. 2007;21(2):111-6.
9. Tajure N, Pharm B. Knowledge, Attitude and Practice of Emergency Contraception Among Graduating Female Students of Jimma University, Southwest Ethiopia. *Ethiopian Journal of Health Sciences*. 2010;20(2):91-7.
10. Ahmed FA, Moussa KM, Petterson KO, Asamoah BO. Assessing Knowledge, Attitude, and Practice of Emergency Contraception: A Cross- Sectional Study Among Ethiopian Undergraduate Female Students. *BMC public health*. 2012;12:110.
11. Lenjisa JL, Getachew ZG, Tola NL, Kifle ST, Getachew D, Bekele GDD, et al. Knowledge, Attitude and Practice of Emergency Contraceptives Among Ambo University Female Students, West Showa, Ethiopia. *Research Journal of Pharmaceutical Sciences ISSN*. 2013;2319:555X.
12. Tilahun D., Assefa T., Belachew T. Knowledge, Attitude and Practice of Emergency Contraceptives Among Adama University Female Students. *Ethiop J Health Sci*. 2010; 20(3): 195–202.
13. Etenesh G. Assessment of Knowledge, Attitude and Utilization of Emergency Contraception among Mekelle University Female Undergraduate Students: AAU; 2009.

14. Gelaye AA, Taye KN, Mekonen T. Magnitude and risk factors of abortion among regular female students in Wolaita Sodo University, Ethiopia. *BMC women's health*. 2014;14:50.
15. Tesema HB. Knowledge, Attitude and Practice on Emergency Contraception and Associated Factors among Female Students of Debre-Markos university, Debre-Markos town, East Gojam Zone, North west Ethiopia, 2013. *Global Journal of Medical Research*. 2015;15(1).
16. Tolossa E., Meshesha B., Alemu Abajobir A. Assessment of level of knowledge and utilization of emergency contraception among female students of Hawassa University, South Ethiopia. *Advances in Reproductive Sciences*. 2013;01(03):51-6.
17. Wasie B, Belyhun Y, Moges B, Amare B. Effect of emergency oral contraceptive use on condom utilization and sexual risk taking behaviours among university students, Northwest Ethiopia: a cross-sectional study. *BMC research notes*. 2012;5:501.
18. Zeleke G, Zebenay Z, Weldegerima B. Knowledge Attitude and Practice of Emergency Contraceptives in Bahir Dar University Female Students. *Ethiopian Journal of Reproductive Health*. 2009;3:59-64.
19. Desta B, Regassa N. On emergency contraception among female students of Haramaya University, Ethiopia: surveying the level of knowledge and attitude. *Educational research*. 2011;2(4):1106-17.
20. Giziyenesh K. Assesment of Factors Affecting Emergency Contraceptive Use and Prevalence of Unwanted Pregnancy Among Female Students In Aksum Univerisity: AAU; 2014.
21. Hailemariam TG, Tesfaye T, Melese T, Alemayehu W, Kenore Y, Lelamo Y, et al. Sexual experiences and emergency contraceptive use among female university students: a cross-sectional study at Wachamo University, Ethiopia. *BMC research notes*. 2015;8:112.
22. Shiferaw B, Gashaw B, Tesso F. Knowledge, Attitude and Practice of Emergency Contraceptives among Mizan-Tepi University Female Students, South West Ethiopia. *Pain Manage Med*. 2016;2(111):2.
23. Stroup DF, Berlin JA, Morton SC, Olkin I, Williamson GD, Rennie D, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting. *Jama*. 2000;283(15):2008-12.
24. Hoy D, Brooks P, Woolf A, Blyth F, March L, Bain C, et al. Assessing risk of bias in prevalence studies: modification of an existing tool and evidence of interrater agreement. *Journal of clinical epidemiology*. 2012;65(9):934-9.
25. Hoque ME, Ghuman S. Knowledge, practices, and attitudes of emergency contraception among female university students in KwaZulu-Natal, South Africa. *PLoS One*. 2012;7(9):e46346.
26. Baiden F, Awini E, Clerk C. Perception of university students in Ghana about emergency contraception. *Contraception*. 2002;66(1):23-6.
27. Byamugisha JK, Mirembe FM, Faxelid E, Gemzell-Danielsson K. Emergency contraception and fertility awareness among university students in Kampala, Uganda. *African health sciences*. 2006;6(4).

28. Roberts C, Moodley J, Esterhuizen T. Emergency contraception: knowledge and practices of tertiary students in Durban, South Africa. *Journal of Obstetrics and Gynaecology*. 2004;24(4):441-5.
29. Ebuehi O, Ekanem E, Ebuehi O, Mills S, Rogo K, Ahuka O, et al. Knowledge and practice of emergency contraception among female undergraduates in the University of Lagos Nigeria. *East African medical journal*. 1969;83(3):90-5.
30. Kongnyuy EJ, Ngassa P, Fomulu N, Wiysonge CS, Kouam L, Doh AS. A survey of knowledge, attitudes and practice of emergency contraception among university students in Cameroon. *BMC Emergency Medicine*. 2007;7(1):1.
31. Adhikari R. Factors affecting awareness of emergency contraception among college students in Kathmandu, Nepal. *BMC women's health*. 2009;9(1):1.
32. Tapia-Curiel A, Villaseñor-Farías M, Nuño-Gutiérrez B. Knowledge and attitudes about using emergency contraceptives among young college students. *Revista medica del Instituto Mexicano del Seguro Social*. 2007;46(1):33-41.
33. Arowojolu A, Ilesanmi A, Roberts O, Okunola M. Sexuality, contraceptive choice and AIDS awareness among Nigerian undergraduates. *African journal of reproductive health*. 2002:60-70.
34. Kistnasamy EJ, Reddy P, Jordaan J. An evaluation of the knowledge, attitude and practices of South African university students regarding the use of emergency contraception and of art as an advocacy tool. *South African Family Practice*. 2009;51(5):423-6.
35. Abasiattai A, Umoiyoho A, Bassey E, Etuk S, Udoma E. Misconception of emergency contraception among tertiary school students in Akwa Ibom State, South Nigeria. *Nigerian journal of clinical practice*. 2007;10(1):30-4.