

Prevalence of Female Genital Mutilation among reproductive age women in Ethiopia: Systematic Review and Meta-analysis

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Abstract

Background: - Female genital mutilation (FGM) is the most common harmful traditional practice. Which is characterized by partial or total removal of the female external genitalia for non-therapeutic reasons. Globally, FGM affects about 130 million women and girls. Female Genital cutting (FGC) is a harmful traditional practice which affects the physical and mental health of girls and women. **Methods:** - Review and meta-analysis was conducted using the guideline of Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA). Both published and unpublished articles were searched. Articles were searched from different databases like PubMed, Popline, AJOL, EMBASE and gray literature like Google scholar and Google. Articles were searched using terms like " prevalence ", " magnitude", "female genital cutting" "female genital mutilation", and "female circumcision" . Joanna Briggs Institute (JBI) Critical Appraisal-Checklist for Analytical Cross Sectional Studies were used to assess the quality of the included paper. Egger's test and I² statistics were used to assess Publication bias and heterogeneity respectively. **Result and discussion:** - About thirteen studies with total participants of 7850 were included for systematic review and meta-analysis. The pooled prevalence of female genital mutilation among reproductive age women in Ethiopia was 87.5%: 95% CI (84.25, 90.78).). I square test statistics showed high heterogeneity (I² =94.4, p=0.000) and Egger's test was done to check for publication bias, but the test has revealed that there is no statistical significant publication bias (p-value=0.374). **Conclusion:** - The pooled prevalence of female genital mutilation is high in Ethiopia. Subgroup analysis does not revealed significant difference among different region found in the country.

Background

Female genital mutilation (FGM) is the most common harmful traditional practice. Which is characterized by partial or total removal of the female external genitalia for non-therapeutic reasons (1). The type of FGM procedures varies not only across countries, but also within countries, across ethnic groups and within cultural communities (2). Female genital mutilation is practiced in variable forms among different communities. The most severe form is Pharaonic operation (infibulation) in which the clitoris is removed along with the labia minora and at least two-thirds of the labia majora (3). The procedure is performed using a blade or sharp materials by a religious leader, town elder, or a medical professional with limited training (4).

Globally, FGM affects about 130 million women and girls (5). About 84% of parents still have the intention to circumcise their daughters (6). The origins of FGM is in ancient times, but the practice remains prevalent in East and West Africa (7) (8). As many as 93% of girls in developing countries such as Yemen, Nigeria and particularly Sudan are circumcised (9). Female genital mutilation is most prevalent in north-eastern Africa countries where the prevalence varies from 97% in Egypt to 80% in Ethiopia (10). Female genital mutilation is documented to be widespread across Ethiopia and is believed to be widely practiced in Somali region(11). Ethiopia is the second-ranked African country by the number of circumcised girls and women (23.8 million) next to Egypt (12). As revealed by Ethiopia demographic health survey the prevalence FGM was 65%(13). Female genital mutilation is practiced Significantly in Oromo, Afar, Amhara, Somali and Tigray ethnic groups (14).

Female genital mutilation is abnormal practice which results in substantial physical, obstetrical and psychological effect on women and newborn during child birth (15,16). The consequences can even include death as a result of shock, hemorrhage or septicemia (17). Traditional harmful practice risk of infectious disease transmission (18,19). In addition to direct complication of FGM increases the woman's biological vulnerability to HIV transmission if exposed to the virus (17).

The National constitution, Criminal and Family law's, of Ethiopia included articles that prohibit female genital mutilation. However, the existence of this law alone does not provide a protection to the women's undergoing female genital mutilation (20).

Despite a lot has done to combat FGM in Ethiopia (21), the magnitude is still very high (22). Female genital mutilation (FGM) is a harmful traditional practice that violates women's rights and threatens their health (23) in a number of ways, as they are subject to different forms of FGM right from the date of their birth (24). Many governments in Africa taken steps to eliminate the practice of FGM in their countries (25). Although female genital mutilation has serious complications, the prevalence of this problem is underestimated due to hidden practice in Africa (26).

Despite a high level of knowledge regarding the complications of FGM and a high level of awareness, FGM continues to be prevalent in Addis Ababa (27).The most frequently mentioned reasons for the practice include fear of being rejected by the community, preparing the girl for marriage, ensuring premarital virginity, and preventing marital fidelity (23).

Methods

Search strategy

Title of has been registered on proper with an identification number of CRD42019137284. Review and meta-analysis was conducted using the guideline of Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA). The search for this review had included published and unpublished articles. Articles were searched from different databases like *PubMed, Popline, AJOL, EMBASE* and gray literature like *Google scholar and Google*. Articles were searched using terms like "*prevalence*", "*magnitude*", "*female genital cutting*" "*female genital mutilation*", and "*female circumcision*".

Quantitative study conducted in different regions of Ethiopia were included in this systemic review and meta-analysis. A community and institutional based cross-sectional studies were included for review. Duplicate from different databases and google search were removed using endnote citation manger. Articles were screened by their title and abstracts for full text evaluation. Only articles written in English language from 2011 to 2019 were retrieved for review. Three authors conducted searching and screening procedures.

Joanna Briggs Institute (JBI) Critical Appraisal-Checklist for Analytical Cross Sectional Studies were used to assess the quality of the included paper. The checklist has a maximum of 8 points with the score of 0, 1 and not applicable (table 1). Critical appraisal was done independently by two authors. Data were extracted using Microsoft excel worksheet. Author's name, year of publication, region, setting, design, sample and prevalence of female genital mutilation were extracted. The extracted data were then imported to Stata software version 14 for analysis.

Egger's test and I^2 statistics were used to assess Publication bias and heterogeneity respectively. P-value of less than 0.05 was used to declare the publication bias. I^2 test statistics result of 25%, 50%, 75% and 100% was declared as little concern, concerning, very concerning and substantial heterogeneity respectively. Random effect model was used for meta-analysis. STATA version 14 was used to conduct analysis. Forest plot was used to present the estimate prevalence at 95% confidence interval. Prevalence of female genital mutilation was taken from the studies and standard error was calculated using the formula $SE = \frac{SE}{\sqrt{n}}$. The prevalence and the calculated standard error were entered to STATA version 14 to calculate the pooled prevalence at 95% CI. Subgroup analysis was conducted to evaluate difference among different regions with in the country.

Result

A total of 402 studies identified through initial search for review. From 402 studies 187 articles were excluded as a result of duplication. About 215 articles screened based on their title and abstract to be included for full text review. During title and abstract screening 199 articles were excluded from the review because they are not quantitative and not from Ethiopian community. Therefore only 16 articles were undergone full text review and from full text review about 3 articles have been excluded because their methodology is not clear and one of this study was conducted on girls less than 15 years. Finally 13 articles were included in the study (figure. 1).

Methodological quality of the studies were done using JBI critical appraisal tool. The tool has eight items. Each item will be given score of 0, 1 or not applicable. Based on JBI critical appraisal too1 studies were excluded from review (table. 1).

Table 1. Methodological quality of included studies for review on prevalence of FGM among reproductive age women in Ethiopia.

Author name	Criteria for inclusion in the sample clearly defined	Study subjects and the setting described in detail	Exposure measured in a valid and reliable way	Objective, standard criteria used for measurement of the condition	Confounding factors identified	Strategies to deal with confounding factors stated	Outcomes measured in a valid and reliable way	Appropriate statistical analysis used	Overall appraisal
Tamire et al (22)	0	1	1	1	N/A	N/A	1	1	5/8
Yerga et al (28)	0	1	1	1	N/A	N/A	1	1	5/8
Bogale et al (29)	0	1	1	1	N/A	N/A	1	1	5/8
Degefa et al (15)	0	1	1	1	N/A	N/A	1	1	5/8
Ejigu et al (8)	1	1	1	1	N/A	N/A	1	1	6/8
Teshoma et al (30)	0	1	1	1	N/A	N/A	1	1	5/8
Mitike et al (6)	0	1	1	1	N/A	N/A	0	Unclear	3/8
Muktar et al (26)	0	1	1	1	N/A	N/A	1	1	5/8
Shay et al (9)	0	0	0	1	N/A	N/A	0	1	2/8
Andualem et al (31)	0	1	1	1	N/A	N/A	1	1	5/8
Gabermariam et al (10)	0	1	1	1	N/A	N/A	1	1	5/8
Abate et al (32)	0	0	1	0	N/A	N/A	1	0	2/8
Gajaa et al (12)	1	1	1	1	N/A	N/A	1	1	6/8
Abdisa et al (33)	1	1	1	1	N/A	N/A	1	1	6/8
Abeya et al (34)	1	1	1	1	N/A	N/A	1	1	6/8
Moges et al (35)	1	1	1	1	N/A	N/A	1	1	6/8

A total of 7,850 participants were included for review with individual study sample size ranging from 235 study conducted in Amhara region (35) to 858 study conducted in Oromia region (28). Four studies from Oromia region, three studies from Amhara region, three studies from Somali region, two studies from SNNP region and one study from Afar region were included in this review (table. 2). All studies included in this review were cross-sectional study design and most of the studies were community based (table. 2).

Table 2. Summary characteristics of studies included for review on prevalence of FGM among reproductive age women in Ethiopia.

SN	Authors	year	Region	Setting	Design	sample	Prevalence
1	Tamire et al.	2013	SNNPR	High school	Cross-sectional	780	82.2
2	Bogale et al.	2014	Oromia	Community	Cross-sectional	634	78.5
3	Degefa et al.	2017	SNNPR	Hospital	Cross-sectional	395	92.2
4	Muktar et al.	2013	Somali	Community	Cross-sectional	323	90
5	Andualem et al.	2016	Amhara	Community	Cross-sectional	718	96
6	Gebremariam et al.	2016	Somali	School	Cross-sectional	679	82.6
7	Abdisa et al.	2017	Somali	Community	Cross-sectional	320	87.1
8	abeya et al.	2016	Afar	Community	Cross-sectional	792	90.8
9	Gaja et al.	2016	Oromia	Community	Cross-sectional	610	98
10	Moges et al.	2015	Amhara	Community	Cross-sectional	235	82.6
11	Yirga et al.	2012	Oromia	Community	Cross-sectional	858	92.3
12	Tashoma et al.	2016	Oromia	Community	Cross-sectional	842	79.5
13	Ejigu et al.	2014	Amhara	Community	Cross-sectional	664	85.4

Prevalence of female genital mutilation in Ethiopia

Studies included this review were those studies conducted on prevalence of female genital mutilation among women of reproductive age. Highest rate of female genital mutilation among reproductive age women was reported from study conducted in Gojam Zone, Amhara region 96%, while the lowest rate was reported by study conducted in Bale Zone, Oromia region which was 78%. The pooled result of the study indicated about 87.5 % of women's of reproductive age group undergone female genital mutilation/ cutting in Ethiopia (figure. 2). I square test statistics showed high heterogeneity ($I^2=94.4$, $p=0.000$) (figure. 2).

Subgroup analysis

Subgroup analysis was done to check prevalence among different regions of Ethiopia. It has showed almost similar prevalence of female genital mutilation among reproductive age women in different region with overall prevalence (figure. 3).

Egger's test was done to check for publication bias, but the test has revealed that there is no statistical significant publication bias (p -value=0.374) (table 3).

Table 3. Egger's test for review on prevalence of FGM among reproductive age women in Ethiopia

Number of studies = 13		Root MSE = 4.246					
Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
slope	94.31267	6.835173	13.80	0.000	79.26855	109.3568	
bias	-4.528477	4.884428	-0.93	0.374	-15.27903	6.222077	

Test of H0: no small-study effects P = 0.374

Discussion

Female genital mutilation will result in serious acute and chronic complications and end up in difficulty during the process of child birth. Therefore this meta-analysis and systematic review was done to determine the pooled prevalence of female genital mutilation among reproductive age women in Ethiopia with thirteen studies included from different regions of Ethiopia.

In this systematic review and meta-analysis the pooled prevalence of female genital mutilation among reproductive age women in Ethiopia was 87.5%: 95% CI (84.25, 90.78). This finding is higher than WHO report (36).

Ethiopia is a country where there is strong policy that prohibit female genital mutilation (37), even though the prevalence of female genital mutilation has not shown significant reduction within the country over two decades. This indicate that the policy where not strictly applied in order to come up with significant reduction and achievement of 2030 sustainable development goals. The current moto of female genital mutilation state that zero tolerance for female genital mutilation can be achieved not only by having strong policies, but also by strictly applying the policies (38).

In Ethiopian medicalization female genital mutilation is not allowed (37). World health organization also prohibit medicalization of female genital mutilation as it is violation of women's right (39). Therefore, female genital mutilation is performed traditionally in home with unclean sharp material that increase risk of infection and severe bleeding. If this complication happened the chance of them to be taken to the hospital is very unlikely because some of the communities in Ethiopia are performing despite knowing that it is prohibited legally.

Even though, there are no documented evidence that shows medicalization of female genital mutilation can end up in reduction of female genital mutilation practice (40), in countries were medicalization of female genital mutilation is allowed it may limit at least the complication imposed by traditional circumcision.

Limitation of review was studies were available only in four regions of the country this might affect the pooled prevalence of female genital mutilation in Ethiopia. While Strength of this review was comprehensive searching and strict following of PRISMA guideline.

Conclusion

The pooled prevalence of female genital mutilation is high in Ethiopia. In Ethiopia the finding of subgroup analysis does not revealed significant difference among different regions. This high pooled prevalence is an indication of lack of knowledge or inadequate health education on the risks and complication of female genital mutilation.

Therefore strengthening health education, creating awareness about complication of female genital mutilation may play a great role in reduction prevalence. In addition to this engagement of male, religious head and elders in the community facilitate applicability of policy on female genital mutilation in Ethiopia.

Abbreviations

CI-Confidence Interval

PRISMA-Preferred Reporting System for Meta-Analysis and Systematic Review

JBI- Joanna Briggs Institute

N/A- Not Applicable

Declarations

Ethics approval and consent to participate

This review has registered on Prospero with an ID of CRD42019137284 and all studies included in the study have stated their own ethical approval.

Consent for publication - all studies included in this study have documented their consent for publication.

Availability of data and materials

The dataset analyzed during the current study available from the corresponding author on reasonable request.

Competing interests -We have no competing interests.

Authors' contributions – DA, KS and HG wrote the proposal, facilitated data extraction, critical appraisal, analysis, and data interpretation, drafted the final report write up and prepared manuscript.

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Figures



PRISMA 2009 Flow Diagram

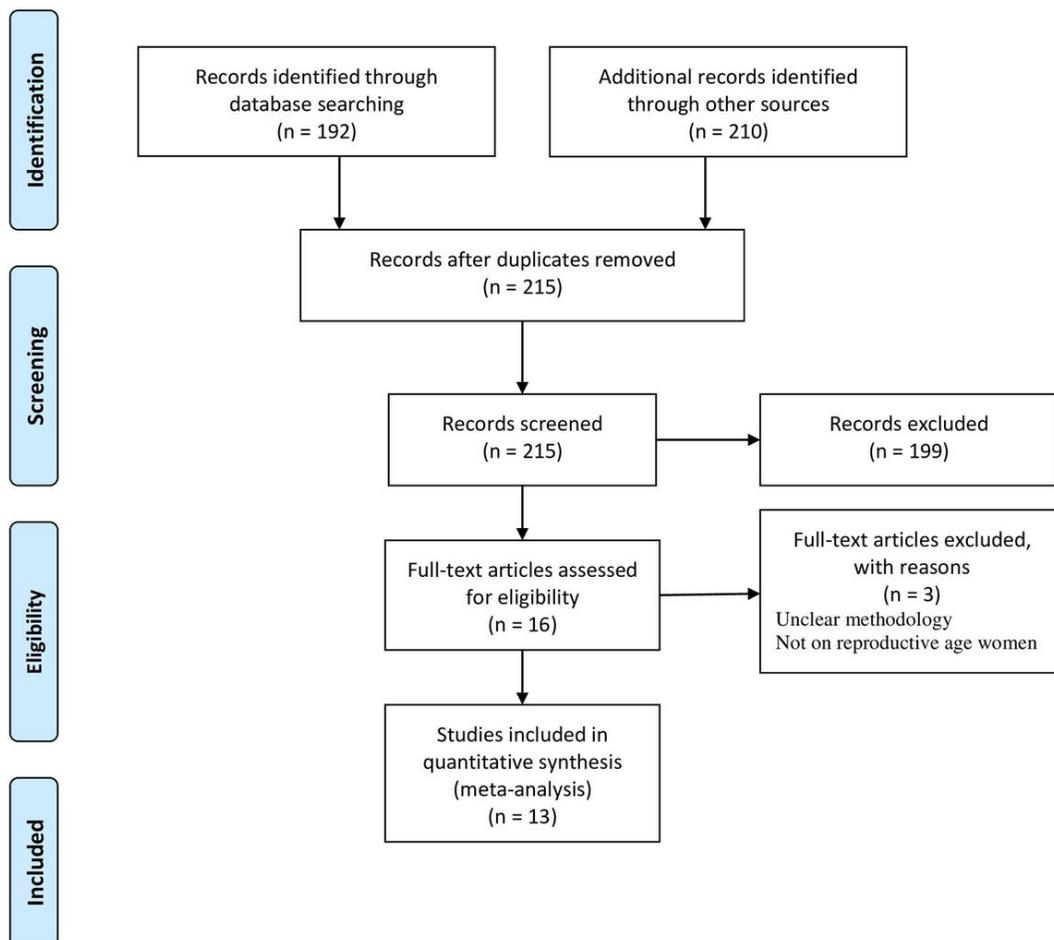


Figure 1

PRISMA flow chart of the overall phases of review on prevalence of FGM in Ethiopia

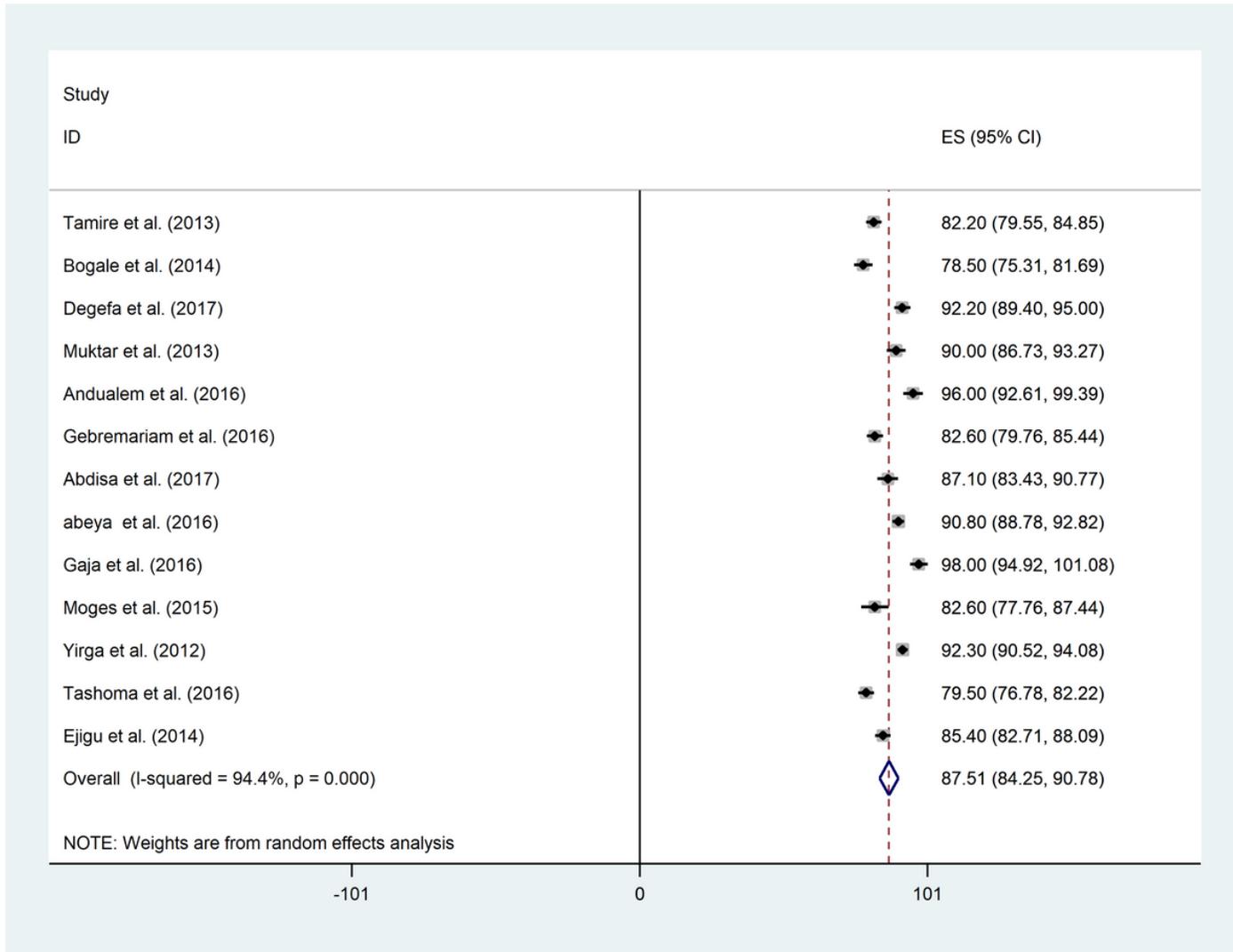


Figure 2

Forest plot displaying the pooled result of prevalence of FGM among reproductive age Women in Ethiopia

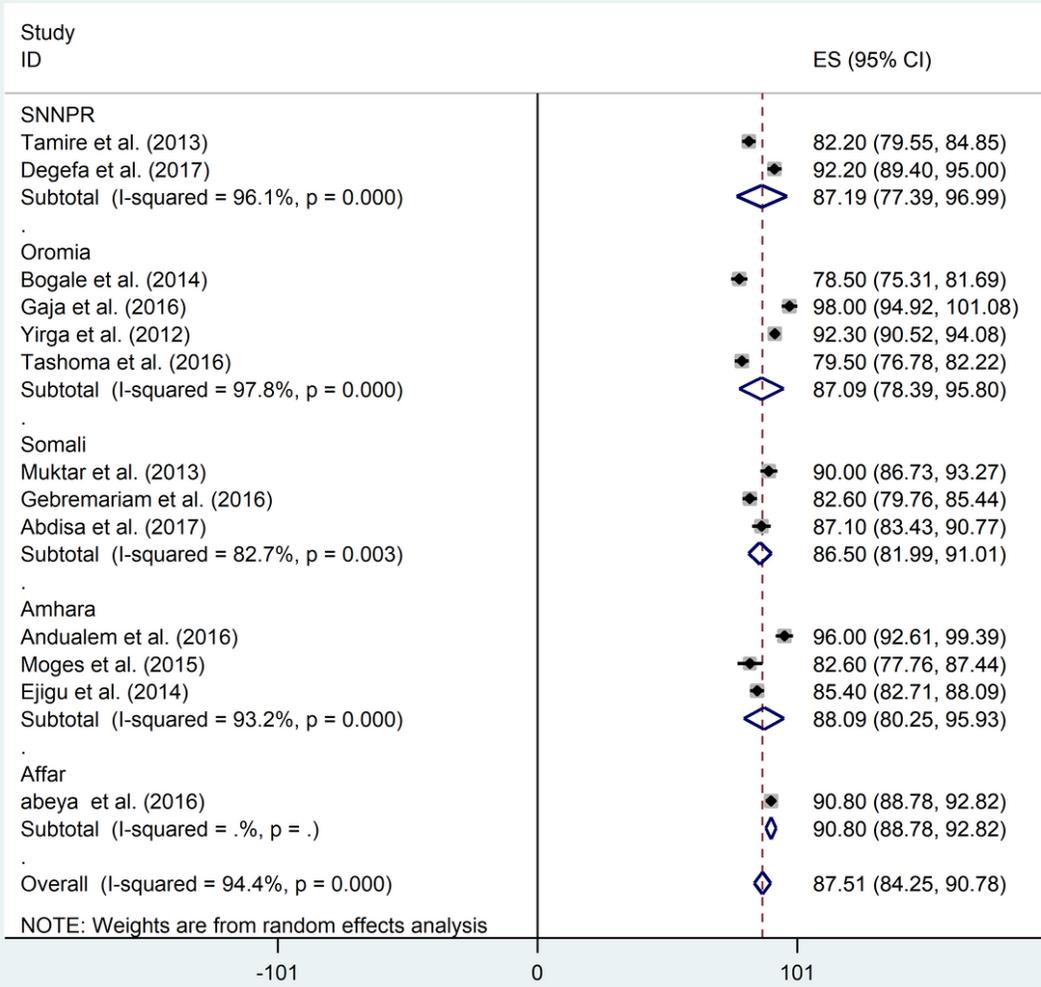


Figure 3

Forest plot displaying the pooled result of prevalence of FGM among reproductive age women in Ethiopia