

## ORIGINAL ARTICLE

## PREVALENCE OF FEMALE GENITAL MUTILATION AMONG REPRODUCTIVE-AGE WOMEN IN ETHIOPIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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## ABSTRACT

**Introduction:** - Female genital mutilation (FGM) is the most common harmful traditional practice in Africa 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 mutilation (FGM) is a harmful traditional practice that affects the physical and mental health of girls and women.

**Methods:** - Systematic Review and meta-analysis were 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 Both published and unpublished articles were searched.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 including 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 was used to assess the quality of the included paper. Egger’s test and  $I^2$  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).  $I^2$  test statistics showed high heterogeneity ( $I^2=94.4$ ,  $p=0.000$ ), and Egger’s test was done to check for publication bias, but the test has revealed that there is no statistically 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 differences among different regions found in the country.

**Key Words:** Female, Genital, Mutilation, Meta-analysis, Ethiopia

## INTRODUCTION

Female genital mutilation (FGM) is the most common harmful traditional practice in Africa and 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 mutilate their daughters (6). The practice of FGM remains prevalent in East and West African countries (7) (8).

As many as 93% of girls in developing countries such as Yemen, Nigeria, and Sudan are mutilated (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 the Somali region(11). Ethiopia is the second-ranked African country by the number of girls and women with FGM (23.8 million) next to Egypt (12).

As revealed by Ethiopia demographic health survey in 2016 the prevalence of 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 childbirth (15,16). The consequences can even include death as a result of shock, hemorrhage, or septicemia (17).

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Further, FGM increases the risk of infectious disease transmission (18,19). In addition to the direct complication of FGM, it increases the woman's biological vulnerability to HIV transmission if exposed to the virus (17).

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

Despite the hard work 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 several ways, as they are subjected to different forms of FGM right from the date of their birth (24). Many governments in Africa have 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). Even though, 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).

There are different studies conducted in Ethiopia on female genital mutilation, but the finding of studies vary from 78.5% in the Bale Zone (28) to 98% in the Hababo Guduru district (12). Therefore this study aimed to determine the pooled prevalence of female genital mutilation among reproductive-age group women. This may imply the risk of complications during labor and delivery.

## METHODS

### *Search strategy*

The protocol of this systematic review and meta-analysis has been registered on Prospero with an identification number of CRD42019137284. A systematic review and meta-analysis were 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 including 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 studies conducted in different regions of Ethiopia were included in this systematic review and meta-analysis. Community and institutional-based cross-sectional studies were included for meta-analysis. Duplicates from different databases and google searches were removed using the endnote citation manager. Articles were screened by their title and abstracts for full-text evaluation. Only articles written in the 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 was used to assess the quality of the included articles. The checklist has a maximum of 8 points with a score of 0, 1, and not applicable (table 1). Critical appraisal was done independently by two authors. Data were extracted using a 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. A 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. A random-effect model was used for meta-analysis. STATA version 14 was used to conduct analysis. A Forest plot was used to present the estimated prevalence at a 95% confidence interval. Prevalence of female genital mutilation was taken from the studies and standard error was calcu-

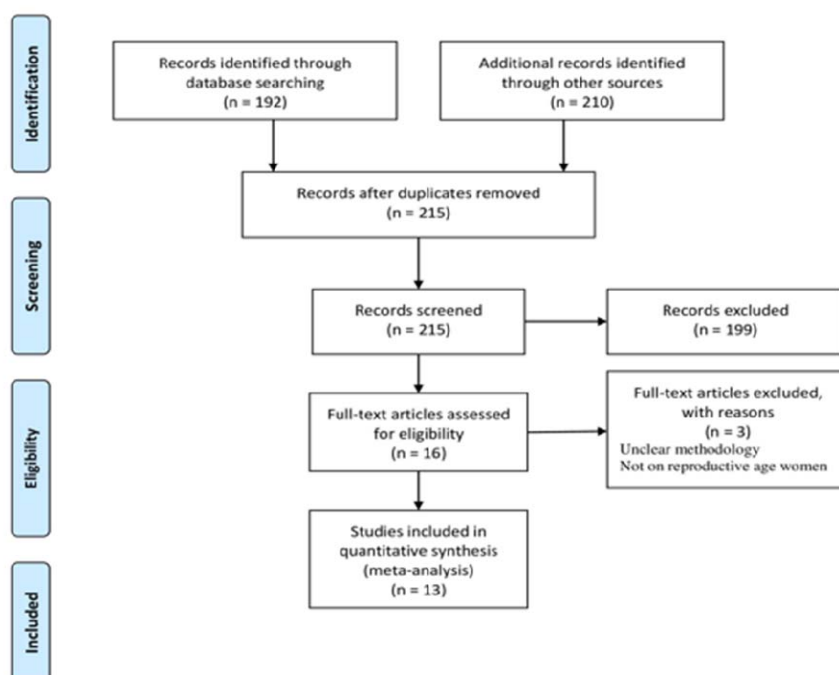
lated using the formula  $SE = \sqrt{pq/n}$ . The prevalence and the calculated standard error were entered into STATA version 14 to calculate the pooled prevalence at 95% CI. Subgroup analysis was conducted to evaluate differences among different regions within the country.

## RESULT

A total of 402 studies were identified through the 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 the 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 these studies was conducted on girls less than 15 years. Finally, 13 articles were included in the study (figure. 1).



**Figure 1:** PRISMA flow chart of the overall phases of review on prevalence of FGM in Ethiopia.

**Table 1:** The 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	Con-founding factors identified	Strategies to deal with con-founding 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 (29)	0	1	1	1	N/A	N/A	1	1	5/8
Bogale et al (28)	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

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

A total of 7,850 participants were included for review with an individual study sample size ranging from 235 studies conducted in the Amhara region (35) to 858 studies conducted in the Oromia region (29).

Four studies from the Oromia region, three studies from the 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 studies 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.

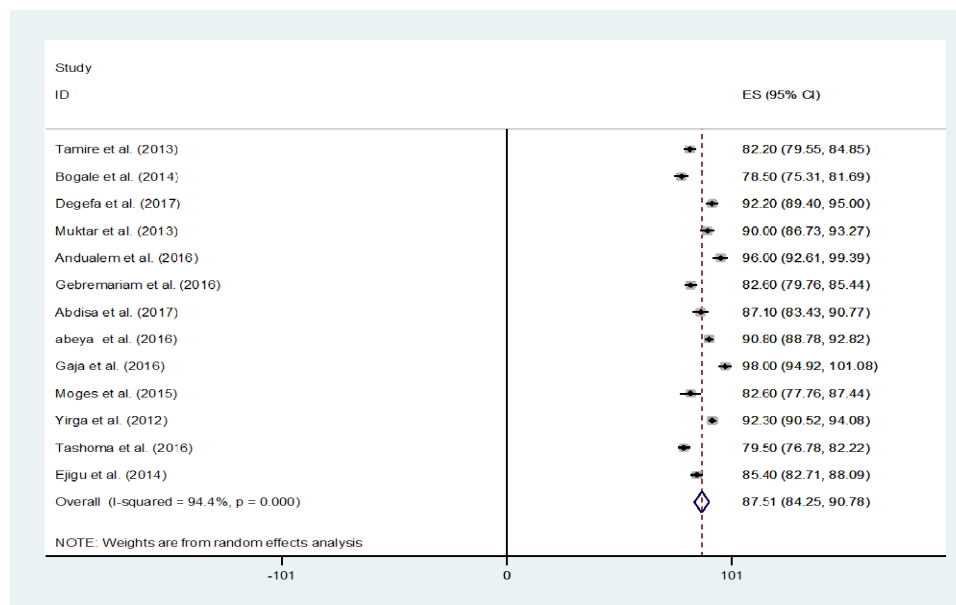
SN	Authors	year	Region	Setting	Design	sample	Prevalence
1	Tamire et al.	2013	SNNPR	High school	Cross-sectional	780	82.2
2	Bogale et al.	2014	Oromia	Community	Cross-sectional	634	78.5
3	Degefa et al.	2017	SNNPR	Hospital	Cross-sectional	395	92.2
4	Muktar et al.	2013	Somali	Community	Cross-sectional	323	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

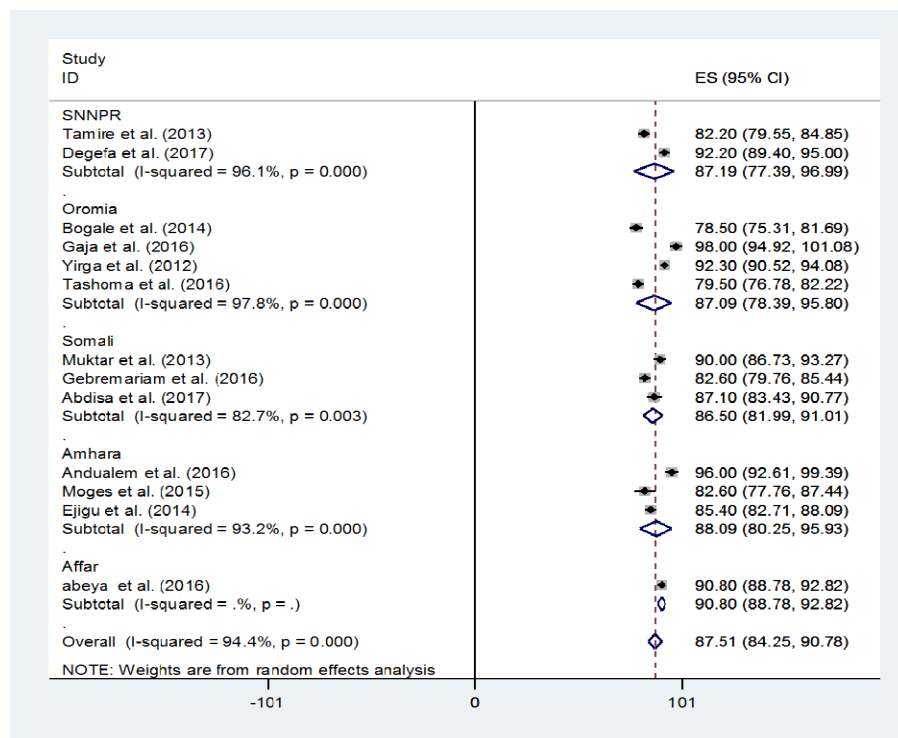
Studies included in this review were those studies conducted on the prevalence of female genital mutilation among women of reproductive age group. The pooled result of the study indicated about 87.5 % of women of reproductive age group undergone female genital mutilation in Ethiopia (figure. 2).  $I^2$  test statistics showed high heterogeneity ( $I^2=94.4$ ,  $p < 0.001$ ) (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 group women in different regions with overall prevalence (figure. 3).



**Figure 2:** Forest plot displaying the pooled result of the 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

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

This systematic review and meta-analysis were done to determine the pooled prevalence of female genital mutilation among reproductive-age group 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 group women in Ethiopia was 87.5%: 95% CI (84.25, 90.78). The current pooled prevalence of female genital mutilation among reproductive-age group women was higher than many African countries except Somalia and Djibouti(36). This finding is also higher than the 2016 annual report of WHO (37). This difference may be attributed to socio-demographic differences of the African community.

The subgroup analysis of this pooled prevalence has not shown difference among different regions of Ethiopia. This implies that being in a community of different culture and regions have no difference to towards the practice of female genital mutilation in Ethiopia.

The limitation of this systematic review and meta-analysis were lack of studies from some regions of the country, which might affect the pooled prevalence of female genital mutilation in Ethiopia. The Strength of this review was comprehensive searching and strict following of PRISMA guideline.

### Conclusion

This study has revealed that about nine in ten reproductive-age group women have mutilated in Ethiopia. Subgroup analysis among different regions of Ethiopia has not shown a significant difference. Therefore strengthening health education, creating awareness about the complication of female genital mutilation may play a great role to reduce the practice of female genital mutilation in Ethiopia.

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### Competing of interest

Authors declare no competing interests in this work.

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