Sierra Leone Journal of Biomedical Research

(A publication of the Sierra Leone Field Epidemiology Training Program)

©SLJBR Vol.15(1), November Edition, 2024 ISSN (Print), ISSN (Online First)

PREVALENCE AND FACTORS ASSOCIATED WITH FEMALE GENITAL MUTILATION IN SIERRA LEONE, 2024

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ABSTRACT

Background: Female Genital Mutilation (FGM) is a major public health problem in Sierra Leone. However, its prevalence and related factors are not documented. We conducted this study to determine the prevalence and factors associated with FGM in Sierra Leone.

Method: We used the FGM data of Sierra Leone, 2017, extracted from the United Nations International Children Emergency Fund multiple indicator cluster survey. We conducted descriptive analysis to determine the frequencies and proportion of demographic and female circumcision variables. Multivariable binary logistic regression was used to determine the association between circumcision and explanatory variables.

Result: Of the 18,194 women aged 18-49 years surveyed, 84.7% (15,406) were married, 69.4% (12,630) lived in rural areas, and 71.8% (13,062) had pre-primary education. The prevalence of FGM was 96.7% (17,598) among women aged 18-49 years, and 99.7% (18139) of the respondents have heard of FGM. Of the circumcised women, 82% (14,409) were living in rural areas and 97.9% (17,225) had no functional difficulty as a result of female circumcision. In Multivariable binary logistic regression, high level of education (aOR= 5.4, 95% CI:4.81, 7.06) and p-value <0.001), single women (aOR= 3.0, 95% CI:2.54, 3.82) and p-value <0.001), and richest women (aOR= 2.2, 95% CI:1.51, 3.59) and p-value <0.001) were factors associated with FGM.

Conclusion: We found a high prevalence of FGM in Sierra Leone. FGM is prevalent among single women, rich in the wealth index women, and women with high education levels. We recommend developing policies, community sensitization, and including FGM in school curricula to end FGM in Sierra Leone.

Keywords: Female genital mutilation; Prevalence; Public Health; Multivariable binary regression models; Surveys and questionnaires, Sierra Leone

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INTRODUCTION

Female Genital Mutilation (FGM), also called female genital cutting or female circumcision, is a major public health problem with debilitating effects on the health and well-being of girls and women, worldwide (Dalal et al., 2018; Tammary & Manasi, 2023). FGM is defined as a practice that involves the partial or total removal of the female external genitalia or injury to the external female genitalia without medical-related cause (UNICEF, 2023). Socio-cultural beliefs, religious beliefs, and low educational levels are the key drivers that contribute to the persistent occurrence of FGM (Leen Farouki et al., 2022).

According to studies (Norbakk M & Tønnessen L, 2020; Sagna, 2014), the prevalence of FGM has been declining slowly worldwide. In the last four decades, the prevalence of the practice reduced from one in two to one in three among girls between the ages of 15 to 19 years in 30 countries (Norbakk M & Tønnessen L, 2020). Despite this decline, it is estimated that more than 200 million women and girls have undergone FGM in 30 countries in Africa, the Middle East, and Asia (UNICEF, 2023). Treatment of FGM complications is estimated to cost the health system approximately US$ 1.4 billion per year (World Health Organization, 2023).

In West Africa, the prevalence of the practice reduced from 73.6% in 1995 to 25.4% in 2017 (Norbakk M & Tønnessen L, 2020). One in four FGM among girls is performed by healthcare workers and this proportion doubles among adolescents (UNICEF, 2020). The involvement of healthcare workers in FGM is stated as a strategy for stopping the practice in many countries including Sierra Leone (Bjälkande et al., 2012). However, this involvement compromises the medical profession and ethics, increases the vulnerability of women to FGM, and deters efforts to abandon FGM (Bjälkande et al., 2012).

Sierra Leone has one of the worst maternal, infant, and child mortality rate (Carshon-Marsh et al., 2022), and is classified among countries with FGM prevalence of >80% globally (Ameyaw et al., 2020). Between 2008 and 2019, the prevalence of FGM reduced from 91% to 83% in Sierra Leone (Statistics Sierra Leone (Stats SL) and ICF, 2019). This reduction varies with age, location, religion, and level of education, among others. For instance, 89% of women living in rural areas had undergone FGM compared to 76% of women living in urban areas; and 94% of women aged 45 to 49 years had it compared to 61% of women aged 15 to 19 years (Statistics Sierra Leone (Stats SL) and ICF, 2019).

In past decades, the government of Sierra Leone has signed several international treaties aimed at ending the practice. Some of these international treaties include the sixty-first World Health Assembly (World Health Organization, 2008) and the Joint Program on Female Genital Mutilation (UNFPA-UNICEF, 2014). The lack of a national policy to support the prohibition of the practice (28 Too Many, 2021) has slowed progress in ending FGM in Sierra Leone. As of 2019, Sierra Leone was ranked seventh in the world with the highest prevalence of FGM (IndexMundi, 2019). This ranking underscores the need for a nationwide study to understand the prevalence and factors

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associated with FGM in Sierra Leone. This is important to foster progress in reducing maternal mortality, enhancing gender equality, and tackling HIV and AIDS by 2030 (United Nations, 2024).

Until now, there is a paucity of information on FGM in Sierra Leone. Understanding the prevalence and factors associated with FGM in Sierra Leone is crucial for informing policymakers on designing appropriate policies and strategies, and targeted interventions in tackling FGM. This study aims to determine the prevalence and examine the factors associated with FGM in Sierra Leone.

METHODS

Study design and period

This is a cross-sectional secondary data analysis, conducted in May 2024.

Study setting

This study was carried out in Sierra Leone. Sierra Leone is a West African country bordering Guinea in the north and northeast, Liberia in the south, and the Atlantic Ocean in the southwest. Sierra Leone is divided into five regions constituting 16 districts, with a total population of 7.1 million by the end of 2015 (Leone S, 2015). According to the Sierra Leone population and housing census in 2015, 59% of the population resided in rural areas and 41% had never attended formal school (Leone S, 2015). There are eighteen distinct ethnic groups in Sierra Leone; the majority are Mende and Temne, and the most common language spoken there is Creole (UNIPSIL, 2017). In Sierra Leone, Islam makes up 78% of the population, while Christianity makes up 21% (Leone S, 2015). By the end of 2020, the average person's life expectancy was sixty years (The World Bank, n.d.). Farming, petty trading, and mining are the main source of livelihood among Sierra Leoneans. In total, Sierra Leone has 1,328 health facilities, including 58 hospitals, 231 community health centers, 341 community health posts, 639 maternal and child health posts, 54 clinics, and 5 others. Traditional medicines form part of the healthcare system in Sierra Leone (Government of Sierra Leone, 2015).

Study population

The study population were women aged 18-49 years who provided consent during the data collection process conducted by UNICEF.

Data source

We used the Sierra Leone National Health Survey data on Female Genital Mutation 2017, extracted from the United Nations International Children Emergency Fund (UNICEF) Multiple Indicator Cluster Survey (MICS) (UNICEF, 2017). Established in the mid-1990s, this database is open-source software that offers globally comparable, and statistically sound data on women and children. The data on female genital mutilation are collected as part of a wide range of indicators in the Sierra Leone household survey, for eligible women between the ages of 15 and 49. The data is anonymized with no personally identifiable data of respondents. The survey aimed to provide up-to-date information on women and children, among others. A stratified and systematic sampling design was used for the identification of stratum and enumeration areas within each stratum during the survey. A total of seven questionnaires including a

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questionnaire for individual women in the household were used to generate the data. Age, educational level, wealth index quintile, residential areas, functional difficulties, and percentage of women who had a genital mutilation were the variables used in the questionnaire (UNICEF, 2017). We included 18,194 women aged 18-49 years with a complete dataset on variables of interest.

Data Collection and Analysis

We extracted all available variables (such as circumcised women, educational level, wealth status, and locations) used to generate data on the 2017 FGM survey conducted in Sierra Leone. After extracting the data from the UNICEF database, we removed all missing variables and analyzed them using the Statistical Package for Social Sciences (IBM - SPSS version 20). We computed descriptive analysis to determine the frequencies and proportion of demographic and female circumcision variables. Prevalence was calculated as the proportion of total women who reported FGM by the total respondents surveyed.

A multivariable binary logistic regression was developed based on possible confounding factors and existing literature. Bivariable logistic regression analysis model was used to assess the association of each independent variable with the outcome variable. Factors with a significant level of 0.2 were maintained for the multivariable analysis. Multivariable binary logistic regression model was built based on the variables retained at bivariate level. Variables in the multivariable binary logistic regression with $p < 0.05$ were considered statistically associated with the outcome variable. We used QGIS software version 3.30.0 to create a map (QGIS.org, 2022). To create the map, we used the Sierra Leone shapefile provided by the Sierra Leone Field Epidemiology Training Program. After launching QGIS, we clicked on the layer (at the top) and chose "add layer". After selecting add layer, we went to vector layer, selected shape file from the data source section, and clicked add. We added the Sierra Leone map to the QGIS workspace, then right-clicked on the layer and selected specific features from the property's menu. On completion, we clicked on project (in the upper left corner), selected a new print layout, and saved the file. Later, we selected relevant features from the add items (top-center) and clicked save.

Ethical clearance

We obtained permission from the UNICEF administrator of the DHS program to use the data in a non-harmful manner. Before permitting us to use the data, we shared our study's goal with the team for verification. After verification, we were instructed to use the data only for the intended purpose. The data are available for free in the Sierra Leone Demographic Health Survey 2017.

RESULTS

In this study, a total of 18,194 women aged 18-49 were included; 84.7% (15,406) of them were married, 9.6% (1,742) were divorced or widowed, and only 5.7% (1,046) were single. The majority of women had pre-primary education, 71.8% (13,062) and only 7.1% (1,286) had upper secondary and higher education. The number of the poorest women was 28.2% (5,127), and more than half of the

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women included in this study, 69.4% (12,630) lived in rural areas. The number of women who believed that circumcision practice should continue was 78% (14,191), which exceeded the number of women who thought that this practice should be discontinued. The majority of those who practice circumcision were traditional circumcisers, 94.4%(17,184). Almost, 97.5% (17,748) of women aged 18-49 years were not covered by health insurance (Table 1).

The prevalence of FGM was 96.7% (17,598), and 96.5% (17,563) of the circumcised women have heard of female circumcision. Of women who were circumcised, 71.8% (15,027) were married and 70.8% (12,892) of them had only pre-primary school education. A significant number, 98.3%(14,409), of circumcised women, lived in rural areas. Nearly all circumcised women, 97.8%(17,225), had no functional difficulty as a result of female circumcision. The highest number of circumcisions was reported in Northern region with 36.7% (6,682), and the lowest number was reported in the western region, 12.6% (2,297) (Fig 1).

Multivariable analysis revealed that there was no significant change in circumcision distribution between women living in urban areas as compared to those living in rural areas, and was not statistically significant (aOR= 1.1, 95% CI:0.81, 1,56), p-value =0.445). The Odds of female circumcision was 5 times higher among women with a high level of education compared to those who had a low level of education, and it was statistically significant (aOR= 5.3, 95% CI: 4.11, 6.92) and p-value <0.001). The odds of female circumcision was three times higher among single women as compared to married and it was statistically significant (aOR= 3.4, 95% CI: 2.71, 3.18), p-value <0.001). Based on our analysis, the odds of female circumcision was 2 times higher among the richest women compared to the poorest women (aOR= 2.3, 95% CI: 1.49, 3.50), p-value <0.001). The odds of female circumcision were 2.7 times higher among women residing in Western region of the country compared to those women who live in the Eastern region (aOR= 2.7, 95% CI: 1.49, 3.50), p-value <0.001). The odds of female circumcision was 2.6 times higher among women residing in Southern region of the country compared to those women who live in the Eastern region (aOR= 2.6, 95% CI: 1.18, 3.42), p-value <0.001). (Table 2)

DISCUSSIONS

This study aims to determine the prevalence and examine the factors associated with FGM in Sierra Leone. This study found a high prevalence of FGM (96.7%) in Sierra Leone. Almost two-thirds of the circumcised women were married and had at least a primary school education. Majority (98.3%) of the circumcised women resided in rural areas and 97.9% had no function difficulty as a result of female circumcision. At Multivariable binary logistic regression, high levels of education, single women, and richest women were factors associated with FGM. No association was found for women residing in rural or urban settings for FGM.

Several factors could be attributed to the high prevalence of FGM in Sierra Leone. First, in Sierra Leone, FGM is a deep-rooted cultural practice perceived as a gateway for girls to enter adulthood (Norbakk M & Tønnessen L,

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2020). Societal women perceived it as a practice where members learn basic cultural and traditional values to be implemented during adulthood and in marriage. Also, this practice is used as a political tool to gain votes during elections in Sierra Leone (Ibrahim, 2019). As a result, endorsement of bills to end the practice remains a daunting task. Finally, the practice (FGM) is perceived as an occupation for older women (Dyer, 2024). That is the practice is seen as a source of revenue generation for older women commonly referred to as Sowei (Dyer, 2024). The combination of these factors with the lack of a national policy abolishing FGM (28 Too Many, 2021) could have likely contributed to the high prevalence of FGM observed in this study. This finding is consistent with a study conducted by Bright Opoku Ahinkorah and colleagues where they reported a prevalence of FGM in Mali at 92.2% in 2019 and Sierra Leone at 89.9% in 2013 (Ahinkorah et al., 2022). A similar study conducted in Sudan revealed that the prevalence of FGM was 89% (Elduma, 2018).

Surprisingly, this study found that women with a high educational level had a higher FGM prevalence compared to women with a low education. This finding is different from studies conducted on FGM in Sierra Leone (Ameyaw et al., 2020) and Ethiopia (Oljira et al., 2016). The authors reported a high prevalence of FGM among women with low education compared with their compatriots with higher education. However, a cross-sectional study conducted on self-reported and observed FGM in the same study setting found no association between education level and FGM at the Multivariable binary logistic regression level (Bjälkander et al., 2013). In Sierra Leone, there is no straightforward explanation for the high prevalence of FGM among educated women compared with uneducated observed in this study. This study therefore suggests a qualitative/mixed study to be conducted by public health researchers to understand the reasons for the high prevalence of FGM among educated women.

This study also found the majority of the women who underwent the FGM practice had no functional difficulty. This finding was unexpected considering functional difficulty is reported as a major consequence of FGM (World Health Organization, 2024). This finding is different from a study conducted in rural Sudan where the authors reported a negative impact of FGM on sexual function (Dura et al., 2023). The authors also reported difficulties with urination, infertility, fibrosis, and keloids, amongst others as a consequence of FGM (Dura et al., 2023). Because the majority of the women in Sierra Leone perceived FGM as a women's movement against Western neo-colonialism and a deep-rooted cultural practice (Thomas, 2015). Their responses during the survey might have been biased, possibly resulting in the non-reporting of functional difficulty after FGM in Sierra Leone.

Regarding the continuation of FGM, despite the negative consequences caused by the practice which has led to several injuries and deaths to women (Dyer, 2024; Mahase, 2022). This study found majority of women support the continuation of the practice. This finding is consistent with a study conducted by Marguerite L. Sagna who reported that a high proportion of women supported the continuation of FGM practice in Sierra Leone (Sagna, 2014). A study conducted to assess the

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attitudes of adolescent girls' on FGM involved seven African countries reported that women supported the continuation of this practice in Mali, Guinea, Egypt, Kenya, Niger, Senegal, and Sierra Leone were 72%, 63%, 58%, 16%, 23%, and 52% respectively (Dalal et al., 2018). The high proportion of women who support FGM continuation in Sierra Leone indicates the complexity of the practice and the deep-rooted link with the tradition, and norms of the society. Therefore, the current intervention in FGM has to follow a multisectoral approach including government, non-governmental officials, and traditional leaders to prioritize campaigns against FGM. Additionally, in a study conducted in Tanzania, FGM was considered a hereditary practice and children born to women who marry without undergoing the practice are a curse and they will die, making the practice widely practiced across the country (Mkuwa et al., 2023). Sierra Leone and Tanzania share similar geographical, cultural, and traditional norms.

Strength and Limitations of Study

The main strength of this study is the use of the Sierra Leone national FGM date which provided opinions of women across all districts in Sierra Leone. Despite this strength, this study had a few limitations. First, because the data was collected retrospectively during the survey, the experiences of the women reported might not reflect the true picture of the practice in Sierra Leone. This could have introduced biases in some of the study findings. Second, due to the cross-sectional nature of the data, it is difficult to establish a cause-and-effect relationship between the independent variables and the outcome of interest. Third, because this study utilizes the 2017 multiple indicator cluster survey (UNICEF, 2017), the findings might not reflect the current phenomena of FGM in Sierra Leone. However, since FGM is a historical practice in Sierra Leone, we are confident that the findings are important in providing a snapshot of the FGM required for informing policy development and strategies for ending FGM. Finally, this study did not check for model assumptions. As a result, the findings might not have adequate power to detect differences that would exist due to the imbalanced data nature.

Implication of study findings for public health practice and policy

This study suggests a multi-pronged approach to ending FGM practice in Sierra Leone. Policymakers should develop a national policy prohibiting FGM practices among women of all ages. The development of this policy should incorporate the views of all relevant stakeholders including community leaders. Stakeholders should intensify awareness of the proposed FGM policy through community engagement, media (print and electronic), meetings, and seminars. The high proportion of no-functional difficulties due to FGM does not necessarily reflect the true picture in Sierra Leone. As a result, stakeholders should create a safe space for women to report violence against women, such as those who encounter functional difficulties. Stakeholders should also encourage older women to start small businesses by providing them with resources like microfinance. These will strengthen efforts to put an end to FGM. The high prevalence of FGM among educated and richest women implies a difficult task to abolish the practice.

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CONCLUSIONS

FGM is still a widely common practice in Sierra Leone with high prevalence and distribution across rural and urban settings. FGM is prevalent among single women, rich in the wealth index women, and women with high education levels. This study recommends policymakers to develop a national FGM policy aimed at ending the practice. This is important to reducing the high prevalence and ending FGM in Sierra Leone. A dialogue meeting should be held at regional levels, and relevant stakeholders including local leaders, civil society organizations, and women's leaders should be invited. Their views (invited stakeholders) should be incorporated accordingly. Stakeholders should intensify continued community sensitization on the negative impacts of FGM. Additionally, stakeholders should provide funding support for older women to embark on small-scale businesses or other income-generating activities which will facilitate the discontinuation of the practice, and thereby fostering progress in ending FGM. Furthermore, stakeholders should develop safe space structures at the district and national level where women can report dysfunctional issues related to FGM.

Acknowledgment

We extend our sincere thanks to UNICEF MICS program for granting us access to the dataset which is freely available.

List of abbreviations

FGM: Female genital mutilation

MICS: Multiple Indicator Clustered Survey

UNICEF: United Nation International Children Emergency Fund

Availability of data and materials

Data for this study is publicly and freely available with permission from the MICS program (UNICEF, 2017).

Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Consent for publication

Not applicable

Funding

No funding was provided for this study

Author (s) contribution

All authors contributed to the study's conception and design. The materials and method section including data extraction and analysis were performed by Umaru Sesay and Adel Hussein Elduma. The first draft of the manuscript was written by Umaru Sesay and Adel Hussein Elduma. The supervision was done by Gebrekrstos Negash Gebru. All authors commented on the previous version, and read and approved the final manuscript.

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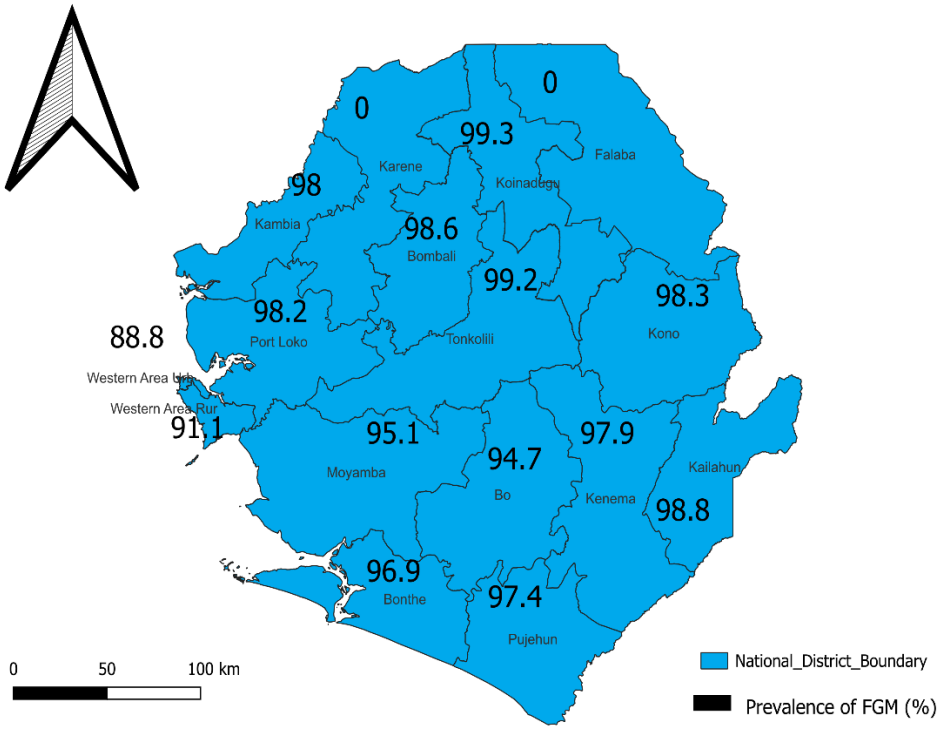

Figure 1: Distribution of Female Genital Mutilation by district, Sierra Leone, 2017

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Table 1: Demographic and circumcision characteristics of women aged 18-49 years in Sierra Leone,2024

No	Variables	N= 18,194 (%)
1	**Ever circumcised**	
	Yes	17,598 (96.7)
	No	596 (3.3)
2	**Heard of female circumcision**	
	Yes	18,145 (99.7)
	No	49 (0.3)
3	**Marital status**	
	Currently married	15,406 (84.7)
	Formerly married	1,742 (9.6)
	Never married	1,046 (5.7)
4	**Leve of education**	
	Pre-primary	13,062 (71.8)
	Primary	2,136 (11.7)
	Lower secondary	1,710 (9.4)
	Upper secondary and above	1,286 (7.1)
5	**Wealth index quintile**	
	Poorest	5,127 (28.2)
	Poor	4,434 (24.4)
	Middle	3,904 (21.5)
	Rich	2,615 (14.4)
	Richest	2,114 (11.6)
6	**Area**	
	Urban	5,564 (30.6)
	Rural	12,630 (69.4)
7	**Region**	
	East	4,421 (24.3)
	North	6,770 (37.2)
	South	4,468 (24.6)
	West	2,535 (13.9)
8	**Genital area sewn closed (or sealed)**	
	Yes	930 (5.1)
	No	15,988 (87.9)
	Don’t know	658 (3.6)

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No	Variables	N= 18,194 (%)
9	**Should practice be continued or discontinued**	
	Continued	14,191 (78)
	Discontinued	3,074 (16.9)
	Depend	684 (3.8)
	Do not know	232 (1.3)
10	**Functional difficulties (age 18-49 years)**	
	Has function difficulty	312 (1.7)
	Has no function difficulty	17,791 (97.8)
11	**Health insurance**	
	With insurance	356 (2.0)
	Without insurance	17,748 (97.5)
12	**Person who did the circumcision**	
	Medical doctor	18 (0.1)
	Nurse/midwife	62 (0.3)
	Oher health professional	24 (0.1)
	Traditional circumcisers	17184 (94.4)
	Traditional birth attendant	169 (0.9)

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Table 2: **Bivariate and multivariate analysis of variables associated with female circumcision among women aged 18-49 years, Sierra Leone, 2017**

NO	Variables	Ever circumcised N=18194)		cOR (95% CI)	P-Value	aOR (95% CI)	P- Value
		Yes -17598 (96.7%)	No -596 (3.3%)				
1	**Heard of female circumcision**						
	No	35 (0.2)	14 (0.1)	Ref		Ref	
	Yes	17563 (96.5)	582 (3.2)	12.0 (6.45, 22.55	<0.001	14.9 (7.12, 31.51)	<0.001
2	**Marital status**						
	Currently married	15027 (71.8)	379 (2.1)	Ref		Ref	
	Divorced	1692 (9.3)	50 (0.3)	1.2 (0.86, 1.58)	0.299	0.9 (0.67, 1.25)	0.299
	Single	879 (4.8)	167 (0.9)	7.3 (6.02, 9.14)	<0.001	3.4 (2.71, 3.18)	<0.001
3	**Education**						
	Pre-primary	12892 (70.8)	170 (0.9)	Ref		Ref	
	Primary	2053(11.7)	83 (0.5)	3.1 (2.34, 4.00)	<0.001	2.3 (1.75, 3.09)	<0.001
	Lower secondary	1563 (9.4)	147 (0.8)	7.1 (5.68, 8.94)	<0.001	3.9 (3.11, 5.10)	<0.001
	Upper secondary and above	1090 (7.1)	196 (1.1)	13.6 (11.01, 16.19)	<0.001	5.3 (4.11, 6.92)	<0.001
4	**Wealth index quintile**						
	Poorest	5048 (27.7)	79 (0.4)	Ref		Ref	
	Second	4379 (24.1)	55 (0.3)	0.8 (0.56, 1.1)3	0.231	0.8 (0.58, 1.18)	0.301
	Middle	3811 (21.0)	93 (0.5)	1.6 (1.15, 1.69)	0.004	1.3 (0.91, 1.74)	0.164
	Fourth	2486 (13.7)	129 (0.7)	3.3 (2.06, 4.40)	<0.001	1.6 (1.03, 2.36)	0.032
	Richest	1874 (10.3)	240 (1.3)	8.1 (6.31,10.08)	<0.001	2.3 (1.49, 3.50)	<0.001

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NO	Variables	Ever circumcised N=18194) Yes -17598 (96.7%)	No -596 (3.3%)	cOR (95% CI)	P-Value	aOR (95% CI)	P- Value
5	**Area**						
	Rural	14409 (98.3)	221 (1.7)	Ref		Ref	
	Urban	5189 (30.6)	375 (6.7)	4.1 (3.24, 4.80)	<0.001	1.1 (0.82, 1,56)	0.442
6	**Region**						
	East	4347 (23.9)	74 (0.4)	Ref		Ref	
	North	6682 (36.7)	88 (0.5)	0.7 (0.56, 1.05)	0.106	0.8 (0.58, 1.18)	0.244
	South	4290 (23.6)	178 (1.0)	2.4 (1.85, 3.20)	<0.001	2.6 (1.18, 3.42)	<0.001
	West	2297 (12.6)	256 (1.4)	6.6 (5.07, 8.58)	<0.001	2.7 (2.00, 3.69)	<0.001
7	**Functional difficulties (age 18-49 years)**						
	Has function difficulty	303 (1.7)	9 (0.1)	Ref			
	Has no function difficulty	17225 (97.8)	566 (3.1)	1.1 (0.56, 2.15)	0.767		