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RESEARCH ARTICLE

FEMALE GENITAL MUTILATION AND BEHAVIORAL AVERSION OF HIV/AIDS TESTING IN WEST AFRICA

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ABSTRACT

Background: Although some studies have recorded phobias, depression, and sexual disorders; FGM has been ignored as representing a violation of someone's physical intactness, and classified as a psychological trauma according to DSM-IV.

Study aims: We examined relationships between the FGM trauma and behavioral likelihood of not getting tested for HIV/AIDS in four African countries adjusting for age, level of education, religion and marital status.

Methods: This study utilized secondary database analysis of the de-identified and publicly available Multiple Indicator Cluster Survey (MICS) 4 data for the period between 2009- 2011. A Cross-Sectional study was conducted for women with birth history using the data from Nigeria (n=19938), Ghana (n=8961), Togo (n=6013) and Sierra Leone (n=7945).

Results: FGM victims in West Africa were significantly more likely to avoid acquisition of HIV testing or screening with a crude OR of 2.263 ([95% CI, 2.099–2.440]; $P \leq 0.05$). The estimated adjusted OR remained significant with an estimated value of 1.279 ([95% CI, 1.180–1.387]; $P \leq 0.05$).

Conclusions: In this population representing women with birth there is a significant relationship between FGM and probable behavioral default or aversion to HIV screening methods as more women with FGM reported not to go for HIV screening.

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INTRODUCTION

Female genital mutilation (FGM) is a traditional practice related to certain cultural groups. This practice is deeply rooted in geography, history, and the customs of many countries around the world. Recently, UNICEF estimated that more than 200 million women in about 30 countries (located mainly in Africa, South Asia, and the Middle East) have undergone FGM, and that at least 30 million young women under the age of 15 are at risk for FGM over the next decade (UNICEF, 2016). FGM has always been a complex and controversial human rights issue since it is often performed on young women, without their informed consent, at a very young age. From a medical perspective, it is associated with severe pain, hemorrhaging, excessive bleeding, and infection (Masho et al., 2009), as well as psychological consequences (reference around here). Some studies have shown that certain factors such as religion, education, ethnicity, and access to the media (newspapers, television, radio, etc.) may all play a role in the perpetuation of the FGM practice. Thus, Muslim women appear to be twice as likely to favor FGM compared to

Christian women (Masho et al., 2009). Similarly, it is noteworthy that the FGM procedure is usually performed by traditional healers, traditional birth attendants, trained midwives, and to a much lesser extent by physicians (Mandara, 2004). Studies have documented negative health consequences related to the practice, resulting from the use of non-sterile equipment and the high risk of hemorrhaging that may facilitate the transmission of Human Immunodeficiency Virus (HIV/AIDS) and other sexually transmitted diseases (Brady, 1999). FGM is divided into four different types (types I- IV) according to the extent of the lesion, with types III and IV being the more extreme (Brady, 1999; Mandara, 2004). Despite the fact that nations such as Ghana introduced legislation related to FGM and other culturally-related practices that are detrimental to the well-being of women and children, the practice has been sustained through underground networks (Ako et al., 2009). Other nations such as Sierra Leone, do not have any such laws, making the enforcement of international laws intended to protect women quite difficult. In general, the FGM practice is reinforced in certain societies through the existence of well-entrenched cultural factors such as the beliefs that FGM prevents the spread of HIV and the possibility of prostitution by decreasing a woman's sexual desire (Mgbako et al., 2010).

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In Nigeria, FGM is partly driven by the fear that one's daughter will be unfit for marriage and ostracized if not cut (Caldwell *et al.*, 2000). Despite the culturally-sanctioned FGM practice, negative psychological consequences such as anxiety and other psychiatric disorders have been described as a result of FGM. It is also classified as a cause of psychological trauma according to DSM-IV. Though some studies have recorded phobias, depression, and sexual disorders; a meta-analysis study (Berg *et al.*, 2010) concluded there was a paucity of high quality evidence regarding the psychological consequences of FGM based on insufficient information to support causality. On another note, a study showed that only one participant out of a large cohort remembered the day of her circumcision as extremely appalling and traumatizing (Behrendt *et al.*; Knipscheer *et al.*). Hence, our literature search supports the fact that psychological and behavioral consequences of FGM are still an under-researched and neglected issue till date as there are very few studies which were all inconclusive in their findings. We propose that the psychological trauma is the prevalent element of developing behavioral aversion/avoidance to HIV screening precisely because of remembering the FGM trauma ordeal; this would be very interesting for the development/ augmentation of specific healthcare services and management of FGM problems. Given the absence of psychological/behavioral items in the survey, the main purpose of this study was to understand whether or not there is a relationship between the FGM trauma and behavioral likelihood of not getting tested for HIV/AIDS in four African countries: Ghana, Sierra Leone, Nigeria, and Togo. The working hypothesis was that independent of level of education or media exposure, being exposed to FGM is associated with a lower behavioral likelihood of getting tested for HIV/AIDS in these 4 countries.

MATERIALS AND METHODS

Study sampling: This paper reports on secondary analyses of a large data set, the Multiple Indicator Cluster Survey (MICS4) a survey implemented in all four African countries included in this analysis. MICS4 was designed to provide estimates for a large number of indicators (list of possible indicators here) on the health status of children and women in each of the four countries, broken down by area of residence (urban vs. rural) The urban and rural areas within each region were identified as the main sampling strata and the sample was selected in two stages. Within each stratum, a specified number of census enumeration areas (EA) were selected systematically with probability proportional to size. After a household listing was obtained within the selected EA, a systematic sample of households was drawn in each selected EA. All the selected EAs were visited during the fieldwork period. The sample was thus stratified by district/state/region and then by urban/rural areas. The study design is a cross-sectional survey.

Data and samples: This study utilized the de-identified, publicly available MICS 4 data from the World Health Organization/United Nations International Children's Emergency Fund (WHO/UNICEF) database. It is a dataset that provides information (high quality data) to monitor the situation of children and women around the World 2009-2011. UNICEF assists countries to carry out the surveys every three years which are essential for monitoring countries' progress towards national goals and global commitments, including the Millennium Development Goals (MDGs) for the target year 2015. The dataset contains information on "household",

"women with birth history", "women without birth history", "men" and "children". The designated study areas of interest are four West African countries and data for Nigeria, Togo, Ghana and Sierra Leone were harnessed with emphasis on the information on FGM. The data files adopted includes the individual women (with birth history) and Household files. A total of 19938 from Nigeria, 6013 from Togo, 8961 from Ghana and 7945 from Sierra Leone women were included in the study. These women are from different ethnic backgrounds and religious affiliations.

Household Interview: Exposure Random household visit questionnaire based information was collected from the participant women in relation to their household link on face to face basis.

Outcomes of Interest: The question about Female Genital Mutilation was asked as follows: "Have you yourself ever been circumcised?" The answers were coded as either "Yes" or "No". Information on HIV testing was elicited with the following query: "I don't want to know the results, but were you tested for the AIDS virus as part of your antenatal care?" ; "I don't want to know the results, but were you tested for the AIDS virus between the time you went for delivery but before the baby was born?" and "I don't want to know the results, but have you ever been tested to see if you have the AIDS virus?" for which the responses were either "yes" or "no". If the response to these three questions was "No", then the respondent was assumed to have "aversion to HIV testing"

Measurement of variables: To assess potential confounders, information on women's age, level of education? and access to mass media was collected. Other information that was collected included: (a) marital status "Are you currently married or living together with a man as if married?" (b) Educational level "What is the highest level of school you attended?" (c) Religion "What is the religion of household head". Was there any information on psychological issues or problems?

Statistical analysis: Statistical analysis was performed using the SAS 9.3 software suite developed by SAS institute used for advanced statistical analysis which handles complex design models. The frequency distribution of variables of women was calculated according to the different countries of interest. The appropriate χ^2 tests were used to compare FGM practice amongst cohort and the possible association with HIV testing. Survey logistic regression models were used to assess the impact of variables that were significantly associated ($P < 0.05$) with both exposure and outcomes. Logistic regression was conducted for different countries, and combined as a whole. Confounding was assumed to have occurred if the odds ratio changed by $\geq 10\%$ and they were included in the final logistic regression model. The MICS 4 survey design did not take into account weighted variables and the possibility of missing values in some variables from respondents. Hence, maintaining the statistical rigor was paramount and unwanted observations in person-level files are not deleted in the analysis.

Ethical consideration: None.

RESULTS

Table 1, depicts the summary descriptive statistics of the study population with FGM history.

Table 1. Descriptive and summary statistics for Women with FGM (N= 42858)

Variable	Nigeria N= 19938 (100%)	Sierra Leone N= 7945 (100%)	Ghana N= 8961 (100%)	Togo N= 6013 (100%)	Total N= 42857 (100%)
Ever Circumcised					
Yes	894 (4.48)	4304 (54.17)	130 (1.45)	185 (3.08)	5513 (12.86)
No	19044 (95.52)	3641 (45.83)	8831 (98.55)	5828 (96.92)	37345 (87.14)
HIV Test					
Yes	1819 (9.12)	948 (11.93)	1288 (14.37)	602 (10.01)	4658 (10.87)
No	18119 (90.88)	6997 (88.07)	7673 (85.63)	5411 (89.99)	38200 (89.13)
Age					
< 30	13997 (70.20)	5428 (68.32)	5877 (65.58)	4007 (66.64)	29309 (68.39)
>30	5941 (29.80)	2517 (31.68)	3084 (34.42)	2006 (33.36)	13549 (31.61)
Religion					
Christianity	11102 (55.68)	1596 (20.09)	5413 (60.41)	1381 (22.97)	14080 (32.85)
Islam	8131 (40.78)	5808 (73.10)	1951 (21.77)	844 (14.04)	16734 (39.05)
Others	705 (3.54)	541 (6.81)	1597 (17.82)	3788 (63.00)	12044 (28.10)
Geopolitical Zone					
Urban	4844 (24.30)	2828 (35.59)	3515 (39.23)	2145 (35.67)	13332 (31.11)
Rural	15094 (75.70)	5117 (64.41)	5446 (60.77)	3868 (64.33)	29526 (68.89)
Education Level attended					
None	2253 (11.30)	593 (7.46)	912 (10.18)	1155 (19.21)	4913 (11.46)
Primary	2900 (14.55)	772 (9.72)	1399 (15.61)	497 (8.27)	5568 (12.99)
Middle/JSS	963 (4.83)	-	277 (3.09)	83 (1.38)	1429 (3.33)
Secondary	581 (2.91)	105 (1.32)	97 (1.08)	39 (0.65)	717 (1.67)
Missing/DK	13241(66.41)	6475 (81.50)	6276 (70.04)	4239 (70.50)	30231 (70.54)
Access to Media					
Yes	16844 (84.48)	4950 (62.30)	7322 (81.71)	4243 (70.56)	33359 (77.84)
No	3095 (15.52)	2995 (37.70)	1639(18.29)	1770 (29.44)	9499 (22.16)

Table 2. Other population characteristics and response

Variable	Nigeria	Sierra Leone	Ghana	Togo	Total
Currently using a method to avoid pregnancy					
Yes	1757 (19.52)	577 (14.35)	1451 (35.34)	510 (16.46)	4295 (21.24)
No	7245 (80.48)	3443 (85.65)	2655 (64.66)	2588 (83.54)	15931 (78.76)
Currently married or living with a man					
Yes	9811 (91.01)	4139 (88.16)	3356 (71.39)	2507 (72.12)	19813 (83.77)
No	969 (8.99)	556 (11.84)	1345 (28.61)	969 (27.88)	3839 (16.23)
Tested for AIDS virus as part of antenatal care					
Yes	1778 (61.61)	626 (57.06)	1112 (69.33)	588 (47.15)	4104 (60.05)
No	1108 (38.39)	471 (42.94)	492 (30.67)	659 (52.85)	2730 (39.95)
Tested for AIDS virus during delivery					
Yes	48 (8.92)	9 (3.03)	12 (6.38)	12 (4.24)	81 (6.20)
No	490 (91.08)	288 (96.97)	176 (93.62)	271 (95.76)	1225 (93.80)
Know a place to get AIDS virus test					
Yes	2798 (48.45)	643 (30.65)	871 (42.16)	728 (32.93)	5040 (41.48)
No	2977 (51.55)	1455 (69.35)	1195 (57.84)	1483 (67.07)	7110 (58.52)
Husband/partner has other wives					
Yes	3666 (34.01)	1440 (30.67)	1166 (24.80)	1260 (36.25)	7532 (31.85)
No	7113 (65.99)	3255 (69.33)	3535 (75.20)	2216 (63.75)	16120 (68.15)
Radio					
Yes	14177 (72.09)	4419 (59.59)	5949 (68.10)	3821 (70.75)	28367 (68.82)
No	5489 (27.91)	2997 (40.41)	2787 (31.90)	1580 (29.25)	12853 (31.18)
Television					
Yes	8233 (41.86)	874 (11.79)	199 (2.28)	1408 (26.07)	10715 (25.99)
No	11433 (58.14)	6542 (88.21)	8537 (97.72)	3993 (73.93)	30505 (74.01)
Mobile Telephone					
Yes	13780 (70.07)	3575 (48.21)	6211 (71.10)	2861 (52.97)	26428 (64.11)
No	5886 (29.93)	3841 (51.79)	2525 (28.90)	2540 (47.03)	14792 (35.89)

Table 3. Crude and Adjusted estimates for Women with FGM tested for HIV

Countries	Crude OR (95% CI)	Adjusted OR (95% CI)
	Aversion for HIV testing	
Nigeria	2.883* (2.437- 3.411)	0.922 (0.770-1.094)
Sierra Leone	6.161*(5.099-7.445)	0.722* (0.565-0.924)
Ghana	1.501(0.973-2.316)	0.825 (0.527-1.292)
Togo	2.413* (1.672-3.484)	1.301 (0.849-1.993)
West Africa	2.263* (2.099 -2.440)	1.279* (1.180-1.387)

Key: *= p-value <0.05

Nigeria: Adjusted for age, education, religion, media, and currently married or living with a man

Sierra Leone: Adjusted for age, education, media, and religion

Ghana Adjusted for age, education, religion and media.

Togo: Adjusted for education, religion and media.

West Africa: Adjusted for age, education, and media.

Values from Nigeria, Ghana, Togo, and Sierra Leone were summed and categorized as West Africa which has a mean age distribution and mean age at circumcision of 31.65±2 (8.16) years and 12.15±2 (4.33) years respectively. Among 42,857 West African women surveyed, 12.86% reported being circumcised and 10.87% reported having been tested for HIV. Most respondents were <30 years old (68.39%) and from a rural geopolitical zone (68.89%). The prevalence of FGM varied greatly by country with 54.17% of Sierra Leonean women reporting circumcision, compared to 4.48%, 1.58%, and 3.08% of Nigerian, Ghanaian, and Togolese women, respectively.

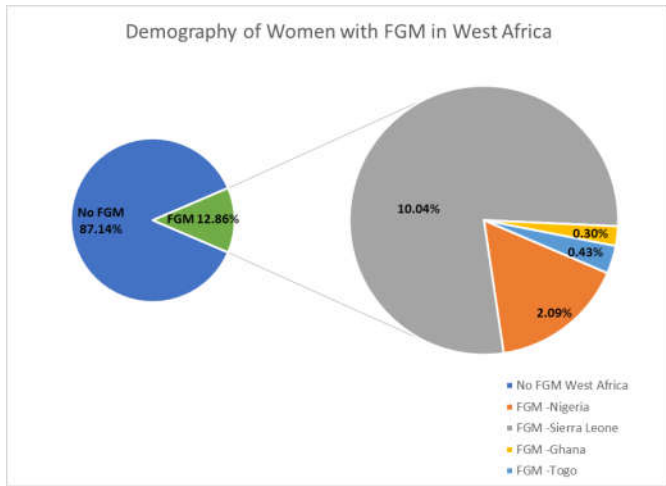


Figure 1. FGM Demography

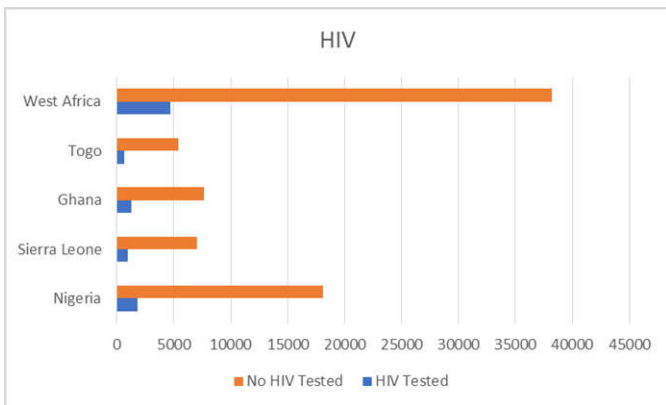


Figure 2. Bar chart depicting HIV testing

Furthermore, Sierra Leone had a relatively large proportion of uneducated women (40.34%) and the least access to media (55.00%)—predominantly from mobile telephone and radio similar to the other West African nations; concurrently, it had no noticeable difference in HIV testing (11.93%) in comparison with other west African countries. The most populated West African nation, Nigeria, made up nearly half or approximately 47% of the study population. It had the most rural population (75.70%), the greatest access to media (84.48%), and the least HIV testing response (9.12%) among the West African nations. However, Nigeria also had the greatest percentage of women with secondary education at 8.68%; and in a separate survey population, more Nigerian women reported knowing where to get HIV testing (48.45%) than any other West African women (Table 2). For Ghana, a country with the greatest proportion of urban population (39.23%) and least FGM practice (1.45%), they had the most women tested for HIV (14.37%). Concurrently, Ghanaian women had nearly the greatest likelihood of having received primary education (52.10%), however that did not translate to a greater likelihood of receiving either middle (10.31%) or secondary education (3.61%) as shown in Table 1.

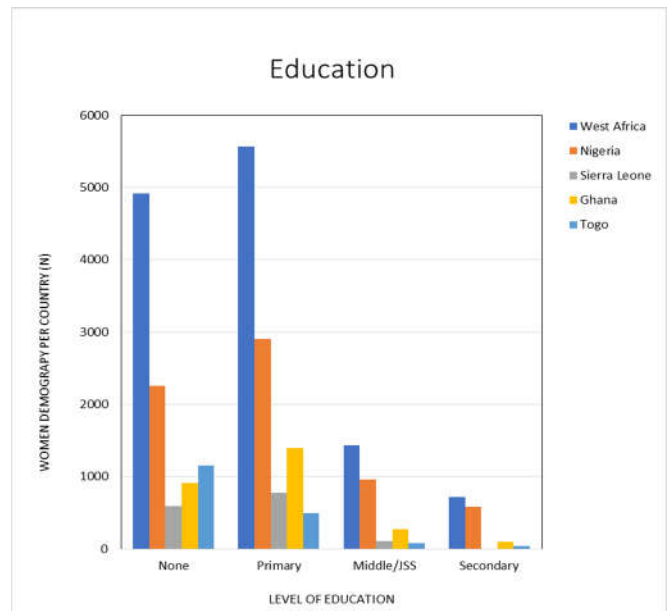


Figure 4. Bar Chart on education

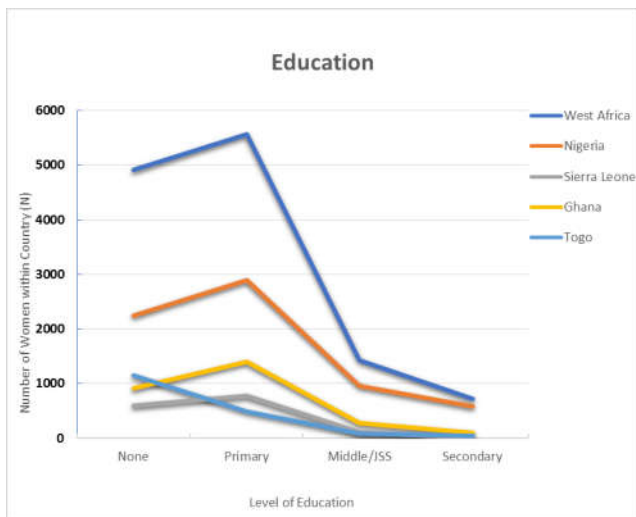


Figure 3. Level of education for study cohorts

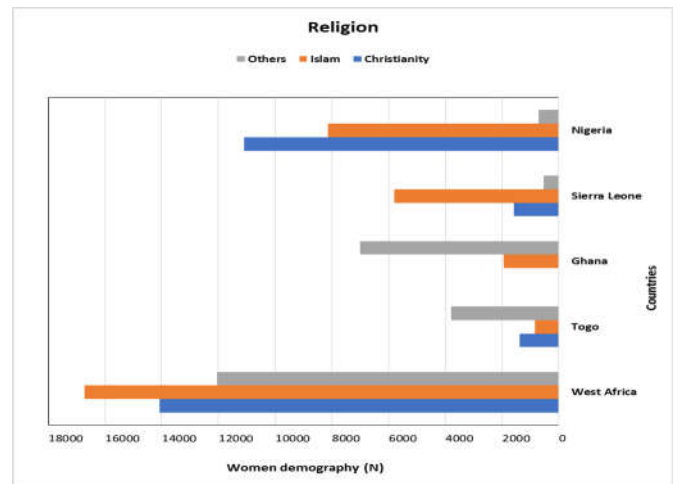


Figure 5. Bar chart on religious inclination of cohort

With regards to Togo, level of education and religion was distinct as compared to other West African nations. Primary education was the most prevalent level of education received by Nigerians (43.30%), Sierra Leoneans (52.52%), and Ghanaians (52.10%), while no education predominated among Togolese (65.12%) as depicted in Table 1. While major religions such as Islam predominated in Sierra Leone (73.10%) or Christianity in Ghana (60.41%) and Nigeria (55.68%), Togo was primarily comprised of regional or traditional religions (63.00%). Other descriptive details of the cohort are depicted on table 2 and Figure 1- 4. Univariate logistic model in Table 3 shows that women with FGM practice in West Africa were significantly more likely to avoid acquisition of HIV testing or screening with a crude OR of 2.263 [95% CI, 2.099–2.440]; $P \leq 0.05$). This relationship was adjusted for using multiple covariates including age, education, marital status, religion and access to media. After the adjustment, the relationship remained significant with an estimated OR of 1.279 [95% CI, 1.180–1.387]; $P \leq 0.05$). Similarly, FGM practice was also significantly associated with decreased odds of HIV testing in Nigeria (OR 2.883 [95% CI, 2.437–3.411]; $P \leq 0.05$), Sierra Leone (OR 6.161 [95% CI, 5.099–7.445]; $P \leq 0.05$), and Togo (OR 2.413 [95% CI, 1.672–3.484]; $P \leq 0.05$) before adjustments. Adjusted odds ratio for only Sierra Leone remained significant where FGM was significantly associated with an increased likelihood of getting a HIV test with an estimated OR of 0.722 [95% CI, 0.565–0.924]; $P \leq 0.05$).

DISCUSSION

Despite the recommendation by WHO and the International Federation of Gynecologist and Obstetricians that FGM may be a risk factor for HIV infection, this assumption is yet to be tested scientifically. Hence it requires further studies and research, as FGM may facilitate HIV transmission through numerous mechanisms. Furthermore, if an association were established, it might potentially help to mediate the huge gap in cultural perception of the practice and general acceptability of the act. On the other hand, little or nothing is known about the behavioral acts amongst FGM patients or victims with regards to HIV susceptibility and knowledge. Our study has revealed that there is a significant relationship between FGM and probable behavioral default or aversion to HIV screening methods as more women with FGM reported not to go for HIV screening, which was statistically significant despite controlling for possible confounding variables. This inference might be attributed to the fact that some women might not have access to HIV screening facilities, lack of knowledge on HIV epidemiology, or personal fear of the result outcome. Patriarchal norms and cultural values can also serve as barriers to receiving medical care since women must often seek permission from their husbands to receive an HIV test.

The practice of FGM is often tied to marriageability or treated as a rite of passage. Shell-Duncana and colleagues proposed that circumcision is important for a young girl's social network with the other circumcised women and elders (Shell-Duncana *et al.*, 2011). Herein lays the social capital of FGM which perpetuates the preservation of this tradition. These strong cultural roots of FGM may also propagate societal stigmas against HIV and subsequently HIV testing via social consequences. Oppong *et al* reported that over 45% of students were reported not to have had HIV testing, although over 90% of them knew where to access counseling and testing services. Their study revealed that the unwillingness of students to take

an HIV test was attributed to fear, anxiety and stigma/discrimination associated with the counseling and testing for HIV, and AIDS in general (Oppong *et al.*, 2013). Another group surveyed 66 immigrant women from Africa that had undergone genital cutting and found that questionnaire answers for a third of the participants were representative of affective and anxiety disorders. (Knipscheer *et al.*, 2015). These findings are consistent with our study as the majority of our respondents had not taken the HIV test despite having the knowledge and access to a testing facility. The psychosocial impact of the FGM ordeal may be impacting HIV testing.

Similarly, Behrendt *et al* revealed that over 90% of the circumcised women expressed feelings of intense fear, helplessness, horror and severe pain, while over 80% were still suffering from intrusive flashbacks of their circumcision. They concluded that that FGM is a likely cause of various emotional disturbances which can degenerate into different psychiatric disorders, especially PTSD and memory dysfunction. Knipscheer *et al.* also suggested that 17.5% of the immigrant women with FGM in their study had scores suggestive of PTSD. These attributable causal factors might reduce the probability of a woman reporting for a regular routine check which could have gone a long way in reducing the transmissibility of the infection. With regards to pathophysiology and pathogenesis of HIV transmission amongst FGM victims, infection and scarring may result following practice which causes partial or complete occlusion of the vagina leading to introital narrowing. Other reported features include superficial dyspareunia, inadequate vaginal penetration and futile attempts at intercourse; hence may be at a greater risk of inflammation and bleeding during coitus. Similarly, women with FGM are reported to engage in anal intercourse following painful vaginal penetration and this would appear consistent with case reports of vaginal narrowing and occlusion in mutilated women as anal intercourse is known to enhance the efficiency of HIV transmission. Consequently, this may increase the likelihood for more efficient transmission of HIV following disruption of the genital epithelium and exposure to blood during coitus. Concurrently, mutilated victims have been reported to be at greater risk of hemorrhage in childbirth because of obstructed labor and tearing of vaginal and perineal scar tissue, as African women are significantly more likely to receive blood transfusions for obstetrical and gynecological related reasons than women in the West. Supportively, these transfusions are prone to HIV infections as universal blood screening procedures supply screening has not been achieved in most parts of Sub-Saharan Africa. This rare occurrence might be attributed or likened to possible complications of FGM.

Other likely possible causes that might increase the likelihood of HIV transmission include the use of unsterilized instruments in the performance of FGM as knives/ blades may be contaminated with blood, since five to ten females may be simultaneously mutilated with a single unsterilized instrument, and the likelihood an individual undergoing FGM has the potential to be HIV positive is high since they are prone to avoiding evaluation and testing (Olaniran, 2013). Ironically, areas with high prevalence of the most severe form of FGM like Sudan, and Ethiopia had reported relatively low rates of HIV infection, while high prevalence rates are currently found in regions where less damaging forms, or no FGM, are performed. This may be attributed to little data available to corroborate this ecological argument as marked differences

among groups with respect to the mean number of sexual partners, prevalence of STDs, commercial sex work activity and degree of sexual mixing with other ethnic groups must first be investigated. Secondly, validity of HIV reporting in some countries may also be questionable due to poorer documentation of health status in general and lower recognition of AIDS related morbidity and mortality, in particular (Kun, 1997). The works of Mackie reveal that the link between FGM and complications may be misattributed in populations. A possible cause for this is the lack of information regarding the practice in communities and supposed excisors using misinformation to marginalize complications in order to maintain the demand and financial gains associated with cutting skills (Mackie, 2003). In this regard, the role of mass-media campaigns utilizing television, radio jingles, newspaper, posters and billboards have been shown to be effective in promoting health care awareness campaign that attempt to combat these misinformation. They have also been proven to be effective at increasing self-efficacy knowledge to use condoms, influencing social norms, increasing the amount of interpersonal communications and raising awareness of available health services. But little could be likened to the relationship in our study. Historically, FGM continues to be a nefarious form of violence against women and a global public health issue despite efforts to eradicate it. In some countries laws have been established to forbid the practice, however some various societies and cultural ethnic groups continue to practice female circumcision secretly. Whether FGM is directly linked to HIV transmission or instead a predominant descriptor of the social contexts in which HIV testing and awareness is lacking, it is logical to state that both of these epidemics greatly affect the female gender and they continue to demand the attention of policymakers and sundry.

Limitations of the Study

Firstly, there were some missing data which had the potential to decrease the statistical power to detect significant effects of the selected variables at the differential country levels. It is possible that this may have led to incorrect interpretation of study results and probable output recorded. Secondly, the data used in this study was self-reported and not measured or observed data and therefore relies on the accuracy of the respondents. Hence, it is prone to self-reporting bias. Some individuals may not be so apt to respond accurately to questions they deem too personal as the questionnaire utilized for the study contains inquiries about sexual practices, and not everyone may want to share this kind of information for fear of being judged. This may be especially true in societies where certain topics are discussed openly, such as sex, and discussion of these topics may be viewed as disrespectful or it may even be taboo.

Therefore, reliance on self-report for the measurement of both dependent and independent variables raises concern about the validity; hence, inaccurate information or falsification of responses could severely impact the results of the study. Another limitation of this study is its cross-sectional nature as linking the causal inference could prove to be a challenge. In this study, it is difficult to ascertain if FGM patients deliberately decided not to get tested for HIV based on the stigma or any other reasons linked to the practice as earlier discussed; likewise, being able to determine if the FGM is the sole culprit to aversion of HIV testing and screening. It is therefore possible that some respondents were HIV positive

prior to circumcision which were not identified because of poor screening compliance and availability, and because it is difficult to establish this fact, there are poor statistics and deceitful information with regards to the prevalence of both FGM and HIV screening relationship. Hence, the generalizability of this study is questionable. Finally, there is paucity in the literature with regards to declining and poor HIV screening practice amongst FGM patients, likewise describing a possible biological mechanism for FGM and aversion to HIV screening practice. Irrespective of the numerous studies, the large sample size of the overall population is a major strength; even though the bulk of the population is from Nigeria while Togo had the smallest population. This large sample size will account for minimal random error in the study and also takes into account the different country-region predisposition. So, it can be ascribed to be generalizable as it represents the study population (external validity). Secondly, the study result can serve as a platform for possible comprehensive prospective studies to be conducted; likewise, vital for establishment of hypothesis, health planning and understanding the behavioral disposition with regards to cultural practices. Hence, it is of great importance for physicians, psychiatrist and psychologists to continue their research on FGM victims as there are so many grey areas yet to be explained. Conclusively, FGM victims were less likely to get tested for HIV infection among women from Nigeria, Togo, Ghana and Sierra Leone. This relationship might be attributed to behavioral imprint amongst FGM victims who are weary on the outcome of the test based on their status, level of awareness, educational level or access to mass media. The scary high rates of psychological disturbance among victims entails that researchers should focus more resources towards FGM. Hence, a broad prospective study will be a valuable model to confirm the relationship in this study.

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