

ORIGINAL RESEARCH ARTICLE

Women's empowerment and attitudes towards female genital mutilation abandonment in Nigeria: A cross-sectional analysis of the Nigeria demographic health survey

DOI: 10.29063/ajrh2022/v26i12s.14

Erin Leasure*, Connor Roth, Erick Yegon, Elizabeth Anderson, Nitin Datta and Chimaraoke Izugbara

International Center for Research on Women

*For Correspondence: Email: eleasure@icrw.org

Abstract

Female genital mutilation (FGM) is a human rights violation that impacts the social, physical, psychological, sexual, and gynecological wellbeing of women and girls. Even so, FGM persists in many Nigerian communities. Using data from the 2018 Nigeria Demographic and Health Survey, we investigated the association between women's empowerment and attitudes towards FGM abandonment. A weighted logistic regression adjusting for demographic factors, contraceptive use, contraceptive decision-making power, and severity of FGM was used to assess the influence of the validated African Women's Empowerment Index-West on women's favorability to abandoning FGM as a practice. This study found that higher education level, zero acceptance of violence against women, and higher access to healthcare as indicators of empowerment were associated with support for FGM abandonment. Additional research is needed to understand further the influences on decision making and to further research the various empowerment scales and their impact on FGM abandonment. (*Afr J Reprod Health* 2022; 26[12s]: 127-137).

Keywords: Female genital mutilation; female genital cutting; empowerment; African Women's Empowerment Index; Nigeria

Résumé

Les mutilations génitales féminines (MGF) sont une violation des droits humains qui a un impact sur le bien-être social, physique, psychologique, sexuel et gynécologique des femmes et des filles. Même ainsi, les MGF persistent dans de nombreuses communautés nigérianes. À l'aide des données de l'enquête démographique et sanitaire de 2018 au Nigeria, nous avons étudié l'association entre l'autonomisation des femmes et les attitudes à l'égard de l'abandon des MGF. Une régression logistique pondérée ajustant les facteurs démographiques, l'utilisation de contraceptifs, le pouvoir de décision en matière de contraception et la gravité des MGF a été utilisée pour évaluer l'influence de l'indice validé d'autonomisation des femmes africaines-Ouest sur la préférence des femmes à abandonner les MGF en tant que pratique. Cette étude a révélé qu'un niveau d'éducation plus élevé, une acceptation nulle de la violence à l'égard des femmes et un meilleur accès aux soins de santé en tant qu'indicateurs d'autonomisation étaient associés au soutien à l'abandon des MGF. Des recherches supplémentaires sont nécessaires pour mieux comprendre les influences sur la prise de décision et pour approfondir les recherches sur les différentes échelles d'autonomisation et leur impact sur l'abandon des MGF. (*Afr J Reprod Health* 2022; 26[12s]: 127-137).

Mots-clés: Mutilations génitales féminines; excision génitale féminine; responsabilisation; Indice d'autonomisation des femmes africaines; Nigeria

Introduction

Female genital mutilation (FGM), also referred to as female genital cutting, is a human rights violation. Globally, over 200 million women and girls have undergone FGM¹. United Nations Population Fund (UNFPA) estimates suggest that 68 million girls will undergo FGM by 2030². FGM has no health benefits. Instead, it has negative

lifelong social, physical, psychological, sexual, and gynecological consequences that cause many women and girls to be left behind³⁻⁵. FGM is a prerequisite to marriage in some communities, thus limiting opportunities for education among school-aged girls who are cut and reducing their chances of becoming economically productive and fulfilled^{6,7}.

Although considered a violation of human rights, FGM is a commonly accepted practice in

Nigeria in the ritual and socio-cultural context of the population^{8,9}. The Nigerian legislature has had strong policy actions to curb this practice in recent years. Efforts to accelerate the abandonment of FGM in Nigeria have been a mix of legal/policy and advocacy interventions¹⁰. In response to the international calls and in line with the Target 5.3 of the Sustainable Development Goals (SDGs) aimed at the eradication of all forms of harmful practices against women and children, including FGM, the Nigerian government has passed the Violence against Persons (Prohibition) Act 2015. The VAPP Act strongly prohibits FGM and other forms of gender-based violence in Nigeria with provisions including the prosecution of the perpetrators and reintegration of victims into society¹¹⁻¹³. In addition to other national policies such as the 2013/2017 National Policy and Plan for Action for Elimination of FGM in Nigeria, this initiative aims to bring the practice of FGM in Nigeria to an end^{11,14}. Civil society organizations (CSOs) have also mobilized people against FGM by forming partnerships with the media and civil society, including traditional and religious leaders. Using these partnerships, CSOs organize public awareness campaigns to disseminate anti-FGM messages at federal and state levels to turn enablers and promoters of FGMs into anti-FGM campaigners^{15,16}.

Despite the passage into law of the VAPP Act, its enforcement varies across the 36 states of the country, with some states, especially those with historically high FGM prevalence, yet to implement the law^{10,17}. The limited presence of law enforcement agents, especially in rural areas, has been identified as a critical challenge coupled with deep-rooted cultural beliefs. FGM reporting rates have been low for the states that have enforced them because the perpetrators are almost always family members. It is even possible that the law enforcement agents may sometimes discharge such reports as a family or community matter aimed at preserving one's socio-cultural norms and decide not to meddle¹⁰. Several theories have been proposed for the practice of FGM in Nigeria, which commonly highlights the contexts of religious, cultural and superstitious beliefs among certain ethnicities¹⁸. Some common social grounds for the approval of FGM among men and women in Nigeria include prevention of early initiation of sexual intercourse, promiscuity, and premarital sex,

which are generally believed to improve marriage prospects among unmarried girls^{19,20}. Unfortunately, the deep-rooted misperceptions and incorrect medical and socio-cultural justification are still widespread, resulting in increasing medicalization of FGM in many countries, including Nigeria^{19,21}. While FGM can occur in adolescence and adulthood, it is often done during infancy¹⁵. Taking this into account, our study focuses on mothers who have given birth in the last five years and thus would have recently been considering this decision while pregnant or post-partum.

While practice of FGM is rooted in these various cultural beliefs, evidence from previous studies supports that women's empowerment is inversely associated with women's intention to circumcise their daughters²². While highly empowered women may recognize FGM as an inherent harm and have the agency to advocate against its use on their own children, less empowered women may have acceptant or fatalistic attitudes towards FGM that ensure the practice will continue in future generations. We define empowerment as the process of change where an individual with prior inability to choose has the access and freedom to make choices²³. Women's empowerment, being multidimensional, has been measured by various domains, namely (1) agency, which describes the ability to make decisions regardless of existing power relations; (2) resources—including health, education, and physical assets—are the channels through which agency is exercised; and (3) achievements—such as economic opportunities and improved socio-political status—the outcomes of agency²⁴.

In the present study, we adopt the African Women's Empowerment Index (AWEI) that uses four domains that comprise: Attitude toward violence, work/labor force participation, education, and access to health care domains for West Africa (AWEI-W)²³. The Index defines it as "a multifaceted process of change that involves individual and collective awareness, behavior, institutions, and outcomes embedded in distinct social and cultural contexts". The validated instrument was informed by previous literature on factors contributing to women's empowerment and has been used to associate women's empowerment with other health and social indicators. The scale

has been previously used with DHS datasets to look at women's health outcomes²⁵ but to our knowledge has not yet been used to measure the association of empowerment and attitudes towards FGM abandonment.

Methods

Study design and sample

We performed a secondary, cross-sectional analysis of the 2018 Nigeria Demographic and Health Survey (DHS) using the African Women's Empowerment Index for West Africa (AWEI-W)²³. The DHS is a nationally representative, household-level, cross-sectional survey. The survey collects comprehensive data regarding health, behavior, and development indicators, including demographic information on health and social experiences, education and literacy measures, health-related perceptions, beliefs, and attitudes. Randomly selected participants also complete additional submodules for more in-depth data on the indicators. Data for DHS are collected by in-country staff using standardized protocols described elsewhere. The data sets for Nigeria DHS and those from other participating countries are publicly available to researchers on request [<https://dhsprogram.com>].

We limited our sample to women who were married or cohabiting with a man as if they were married, who had given birth at least once in the past 5 years, who had received all apposite sociocultural modules relevant to the AWEI-W, and who had heard of FGM. Single, divorced, and widowed women did not qualify to receive all of the modules necessary to contribute to the AWEI-W, which was the reason they were excluded from the sample of interest.

Primary outcome

The primary outcome was attitude towards FGM abandonment, which was dichotomized by belief that FGM should be abandoned and belief that FGM should not be abandoned.

Exposure variable

Women's empowerment was operationalized using the domains found to be valid for West Africa as

per the AWEI-W²³: labor force participation (four items on economic earnings, max score of 12); attitude toward violence (four items on justifications for violence against women, max score of 4), access to health care (four items on barriers to seeking care, max score of 4), and education (two items on level of education and literacy, max score of 5). Items included in each domain subscale, scoring breakdowns, and categorization cutoffs are available in Appendix A. We summed the respondents' scores on each of the four domains to get a total empowerment score, categorized as low (0-10), moderate (11-18), or high (19-25). Higher scores indicated higher empowerment. We additionally considered each of the four empowerment domains independently relative to the primary outcome, belief in FGM abandonment. Each domain was placed into three categories based on the distribution of response scores.

Controlling variables

Covariates selected for use in a prespecified adjusted model were based on scientific literature related both to women's empowerment and attitudes towards FGM abandonment. Demographic variables considered were age at interview, region of residence (categorized as Northern or Southern Nigeria), ethnicity (categorized as Hausa, Igbo, Yoruba, or other), location of residence (categorized as urban or rural), and economic status (categorized from the wealth quintile as low including poorest and poorer, medium including middle, or high including highest and higher). Other relevant covariates included total births (categorized as 1, 2-3, 4-6, or >6), age at first birth (categorized as <15, 15-18, 19-24, or >25 years), current use of contraceptives (categorized as no method, traditional method, or modern method), and contraceptive decision-making power (categorized as mainly self, joint, or mainly partner). Of the respondents that underwent FGM themselves, we considered the severity of the FGM designated in line with the DHS reporting categories as (1) the least severe form of having the genital area nicked without removing any flesh, (2) the moderately severe form of having flesh removed from the genital area, (3) the most severe form of having the genital area sown, or (4) not

specifying the type of FGM undergone²⁶. Respondents were categorized as those who had no daughters, those who had one or more daughters who had undergone FGM, or those who had one or more daughters of whom none had undergone FGM.

Statistical methods

We first applied the individual sampling weight for women (v005) as designated by DHS to account for probability in the sample²⁷. Then we performed descriptive analyses of demographic variables,

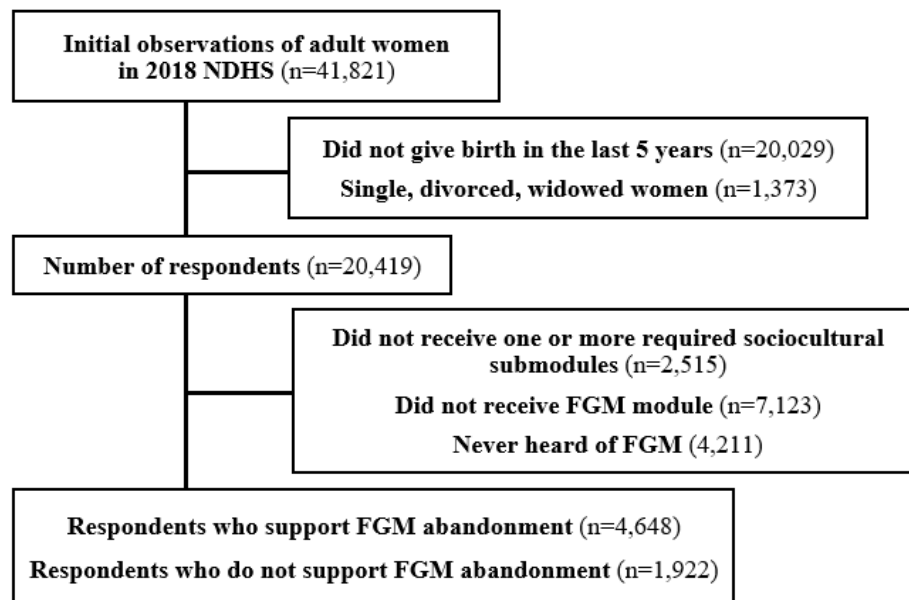


Figure 1: Flow chart of inclusion criteria prior to analysis of the influence of women's empowerment on attitudes towards FGM abandonment as estimated using the 2018 Nigeria Demographic Health Survey based on domains of the African Women's Empowerment Index-West

domains of women's empowerment, and relevant covariates, with respondents stratified by attitude towards FGM abandonment (i.e., believes FGM should not be abandoned or believes FGM should be abandoned). Appropriate bivariate tests of statistical significance between groups (i.e., *t*-tests or Pearson's χ^2) were used with significance set *a priori* as an alpha of 0.05 or less. Exclusions based on missing or outlying data were recorded in the study inclusion flowchart (Figure 1). All analyses were performed in Stata 17 (College Station, TX, USA).

We used logistic regression to estimate the adjusted and unadjusted odds ratios (OR) and 95% confidence intervals (CI) of belief in FGM abandonment to women's empowerment level. Unadjusted and adjusted ORs and 95% CIs were also calculated for attitude towards FGM abandonment to each of the four domains of empowerment separately (attitudes toward

violence, labor force participation, access to healthcare, and education level). Adjusted models included the previously mentioned covariates but excluded those which showed strong evidence of multicollinearity. We assessed multicollinearity through a Variance Inflation Factor (VIF) among the explanatory covariates selected for the model. A covariate was excluded if receiving a VIF of 10 or greater. The goodness of fit for each model was estimated using the estimation of a c-statistic for each model, as well as a Hosmer-Lemeshow test where an alpha of less than 0.05 signified lack of fit.

We tested the sensitivity of adjusted models of attitude towards FGM abandonment to total empowerment and the four domains for empowerment by removing the covariate of women with daughters having undergone FGM. We compared the resulting ORs, c-statistics, and Hosmer-Lemeshow estimates with the

Table 1: Descriptive statistics of sample stratified by women's attitude towards FGM abandonment

Characteristic	Women's attitude towards FGM abandonment		p-value
	Abandon FGM (n=4733)	Do not abandon FGM (n=2138)	
Age at interview (years)	Mean (SD) 30 (7.0)	Mean (SD) 29 (7.4)	<0.001
Age at first birth (years)	20 (4.7)	18 (3.5)	<0.001
Parity (number of births)			
1	768 (16.2)	294 (13.8)	
2-3	1687 (35.6)	627 (29.3)	
4-6	1509 (31.9)	706 (33.0)	
>7	769 (16.3)	511 (23.9)	<0.001
Women's empowerment scores			
Attitudes toward violence (range 0–4)	3.4 (1.3)	2.8 (1.6)	<0.001
Access to health care (range 0–3)	3.2 (1.1)	2.8 (1.1)	<0.001
Labor force participation (range 0–12)	7.0 (4.3)	6.5 (4.5)	0.004
Education level (range 0-5)	2.1 (1.9)	0.9 (1.5)	<0.001
Total education (years) (range 0-20)	Median (IQR) 6 (0, 12) n (%)	Median (IQR) 0 (0, 6) n (%)	
Socioeconomic status			
Low	803 (17.0)	769 (36.0)	
Mid	1765 (37.3)	996 (46.6)	
High	2165 (45.7)	373 (17.4)	<0.001
Contraceptive usage			
No contraceptive	3704 (78.3)	1962 (91.8)	
Traditional	312 (6.6)	56 (2.6)	
Modern	717 (15.2)	120 (5.6)	<0.001
Contraceptive decision making			
Mainly self	1335 (28.1)	830 (38.8)	
Self and partner	2123 (44.9)	498 (23.3)	
Mainly partner	1275 (26.9)	810 (37.9)	<0.001
Participant undergone FGM			
Did not undergo FGM	3548.5 (75.0)	979 (45.8)	
Least severe	107 (2.3)	183 (8.58)	
Moderately severe	478 (10.1)	349 (16.3)	
Most severe	83 (1.8)	24 (1.1)	
Not specified	516 (10.9)	603 (28.2)	<0.001
If daughter had undergone FGM*			
Any daughter underwent FGM	568 (12.0)	1413 (66.1)	
No daughter underwent FGM	3296 (85.3)	461 (24.6)	<0.001

*Percentages related to daughters undergoing FGM is limited to only those who have daughters, n=5738

corresponding results from the previously described primary analysis.

Results

Description of participants

After weighting the sample of 6,570 participants, the sample size was 6,871 (Table 1). The majority (67.2%) resided in the Northern region of Nigeria and identified in three main ethnicities: Hausa (41.6%), Igbo (13.3%), and Yoruba (13.5%). Those who support FGM abandonment were more likely

to have high economic status (45.7% compared to 17.4%) and more likely have high educational attainment (39.2% completing 11 or more years compared to 14.5%). In addition, those who support FGM abandonment were less likely to have undergone FGM themselves (25.0% compared to 54.2%) and less likely to have a daughter who underwent FGM (12.0% compared to 66.1%). Contraceptive usage was low for both populations, though those who support FGM abandonment were more likely to use traditional (6.6% compared to 2.6%) and modern (15.25% compared to 5.6%) methods of contraception.

Table 2: Factors associated with attitudes towards FGM abandonment relative to women's empowerment domains

	Unadjusted (95% CI)	OR	p-value	Adjusted OR ^a (95% CI)	p-value
Total (n)					
Low empowerment (1,654)	Reference			--	
Moderate empowerment (2,890)	1.30 (1.10,1.55)*		0.003	1.37 (1.12,1.68)*	0.001
High empowerment (2,026)	3.23 (2.56,4.07)***		<0.001	1.34 (.99,1.81)	0.048
C-statistic	0.6129			0.8669	
Violence against women (n)					
High acceptance (1,203)	Reference			--	
Moderate acceptance (740)	1.17 (.90,1.54)		0.224	.93 (.69,1.27)	0.696
Never acceptable (4,637)	2.55 (2.06,3.18)***		<0.001	2.26 (1.73,2.94)***	<0.001
C-statistic	0.5936			0.8736	
Access to healthcare (n)					
Low access (758)	Reference			--	
Moderate access (2,762)	.99 (.74,1.34)		0.993	1.04 (.78,1.39)	0.633
High access (3,050)	2.07 (1.48,2.89)***		<0.001	1.31 (.99,1.73)*	0.038
C-statistic	0.5888			0.8667	
Labor force participation (n)					
Low participation (1,907)	Reference			--	
Moderate participation (1,867)	1.34 (1.07,1.67)*		0.009	1.17 (.91,1.50)	0.191
High participation (2,796)	1.30 (1.10,1.54)*		0.003	1.25 (1.01,1.56)*	0.024
C-statistic	0.5299			0.8663	
Education level (n)					
Low level (2,989)	Reference			--	
Moderate level (1,981)	3.00 (2.50,3.60)***		<0.001	1.47 (1.17,1.85)*	0.001
High level (1,600)	4.77 (3.79,6.01)***		<0.001	1.43 (1.05,1.94)*	0.025
C-statistic	0.6679			0.8668	

* $p < 0.05$. *** $p < 0.001$. ^a Adjusted for parity, age at first birth, rural vs urban residency, region of residency (Northern or Southern), ethnicity, economic status, marital status, current contraceptive use, contraceptive decision making power, and severity of FGM

Primary analysis results

Respondents' educational level showed an effect on their odds to support FGM abandonment in both the unadjusted and adjusted analyses with significance for both moderate educational level (unadjusted OR=3.00, 95% CI=2.50,3.60) and adjusted (OR=1.47, 95% CI=1.17,1.85) and for high educational level (unadjusted OR=4.77, 95% CI=3.79, 6.01) and adjusted OR=1.43, 95% CI=1.05,1.94). Similarly, viewing violence as never acceptable showed a statistically significant impact on respondents' odds of supporting FGM abandonment for both analyses (unadjusted OR=2.55, 95% CI=2.06,3.18) and AOR=2.26, 95% CI=1.73,2.94). Only a high level of access to healthcare in the unadjusted model (OR=2.07, 95% CI=1.48,2.89) was significant. While not showing a statistical significance throughout the respective subscales, increased access to healthcare showed increased odds of supporting FGM abandonment in both models. Only the unadjusted model found

labor force participation to be significant at both levels (unadjusted OR=1.34, 95% CI=1.07,1.67 and AOR=1.30, 95% CI=1.10,1.54). However, similar to access to healthcare, only the higher labor force participation was significantly associated with higher odds of supporting FGM abandonment in the adjusted model. Overall empowerment showed significance and increased support for FGM abandonment in the unadjusted model at both levels (moderate empowerment OR=1.30, 95% CI=1.10,1.55; high empowerment OR=3.23, 95% CI=2.56,4.07). Only moderate empowerment was significant in the adjusted model (OR=1.37, 95% CI=1.12,1.68). All four scales and overall empowerment for the adjusted model had c-statistic scores of at least .860, indicating moderate to strong goodness of fit.

Sensitivity analysis results

The sensitivity analysis (Appendix B) found overall consistent results versus the primary analysis.

Notably, AORs for both overall empowerment and the labor subscale were lower than those found in the primary analysis by approximately 15%. The c-statistics for the sensitivity analysis were also lower by approximately 0.06 across all the adjusted models compared to the primary analysis, indicating that the exclusion of the covariate of women with daughters having undergone FGM generated a model of marginally worse fit for the relationship between mothers' empowerment and their attitudes towards FGM abandonment.

Discussion

Local FGM eradication requires intervention of multiple social and cultural norms at all levels of communities, considering inequality in resources and opportunity, as well as various forms of empowerment²⁸⁻²⁹. Consistent with previous studies on women's empowerment and FGM in Africa, we found that acceptance of violence against women and education level were the most strongly associated with support for FGM abandonment²⁹⁻³¹. While moderate acceptance of violence had a slight association with belief in FGM abandonment, no acceptance of violence was the strongest predictor for supporting FGM abandonment, which contradicts literature showing that educational attainment is most strongly associated with discontinuation of FGM¹⁶.

For education, a moderate level of educational attainment versus low level is slightly more associated with increased support for FGM abandonment compared to high level of educational attainment versus low level. We also found that both educational level and acceptance of violence against women were less strongly associated with support for FGM abandonment after adjusting for the covariates. This could show that these variables alone do not influence women to make more empowered decisions, which aligns with studies that suggest FGM abandonment is a culturally rooted practice tied to many socio-economic variables. Access to healthcare was not significantly associated with attitudes towards FGM abandonment. Though FGM is known to increase risk of serious health complications for women and girls, including immediate infection or hemorrhage, miscarriage, stillbirth, and other gynecological and birth complications, the literature is lacking on the connection between

healthcare access and beliefs about FGM³². However, research in Senegambia found that cost of healthcare related to complications from FGM was the biggest risk identified by mothers considering the costs and benefits of circumcising their daughter³³. This could identify a need for educational interventions on the healthcare risks and costs to those with decision-making power on FGM. However, this variable also did not deeply explore agency in healthcare decisions, only access, which could have implications for empowerment.

Labor force participation was also not significantly associated with support for FGM abandonment after adjusting for covariates. However, this finding is not completely unexpected, as a previous study found that compared to women who did not participate in the labor force, women who did participate were more likely to intend to have their daughters undergo FGM³⁰.

Overall empowerment was also not significantly associated with support for FGM abandonment after adjusting for covariates. These results show how empowerment is not linear and again reinforces that FGM is significantly engrained in culture. In Senegambia, researchers found that in the consideration of the costs and benefits of circumcising their daughter, perceived social advantages that related to the social norm of being cut was the greatest benefit identified by women³³. Partaking in FGM was perceived to increase a women's social support and inclusion due to the public demonstration of respect for tradition and elder women in the community and a social commitment to feminine morality³³. A study in Ghana found that married women were also more likely to have undergone FGM compared to unmarried women, playing a crucial role in marriageability, which again reinforces the notion that social norms greatly influence decision-making³⁴. Being empowered to have choice through various socio-economic variables may instead mean that a woman feels empowered to choose what is socially accepted or socially beneficial, even after understanding the costs.

This study had some key limitations to address. First, the cross-sectional nature of the DHS makes it difficult to establish a causal relationship between empowerment and beliefs around FGM abandonment due to the inability to measure

temporality. Second, single, divorced, and widowed women did not qualify for the AWEI-W, eliminating them from the sample. These individuals may have different empowerment levels from their married and partnered peers but may still have some decision-making agency regarding the circumcision of young family members, making it difficult to generalize these results. Third, this study did not explore the influence of the beliefs of the father figures on a woman's beliefs in abandonment of FGM, as the male figures likely hold the greatest decision-making power. Finally, there is a strong likelihood of social desirability bias in reporting on attitudes towards the abandonment of FGM, which is a crime in Nigeria.

Conclusion

This study found that education level, acceptance of violence against women, and higher access to healthcare as indicators of empowerment were associated with support for FGM abandonment. These results show the need to intervene at both at the individual level and societal level to ensure programmers are addressing both the individual factors and social norms that perpetuate FGM. These results support interventions that further invest in education for girls and other female community members, increase access to healthcare, and invest in gender-based violence prevention and norms change programming. FGM is a cultural practice carried out in some Nigerian communities at different points in the lives of girls and women. Additional research is needed to understand further influences on decision making around FGM, including the role of fathers and patriarchal authorities and the wider social and structural issues driving the persistence of the practice. The AWEI-W is also just one scale used to define empowerment. The complex nature of FGM raises the need for future research on the various mechanisms of empowerment and their impact on support for abandonment.

Conflicts of interest

The authors declare they have no conflicts of interest.

Acknowledgement

The authors would like to thank the Hewlett Foundation for supporting author time in drafting this manuscript.

Contribution of authors

Erin Leasure contributed to the study design, data analysis and interpretation and drafted the manuscript. Connor Roth contributed to study design, data analysis and drafting the manuscript. Erick Yegon contributed to study design and drafting the manuscript. Elizabeth Anderson contributed to study design and critical review of the manuscript. Nitin Datta provided critical contribution to study design and analysis. Dr. Chimaraoke Izugbara provided critical review of the manuscript.

References

1. Wood R, Richens Y and Lavender T. The experiences and psychological outcomes for pregnant women who have had FGM: A systematic review. *Sexual & Reproductive Healthcare*. 2021; 29, 100639.
2. Matanda D and Walgwe EL. A research agenda to strengthen evidence generation and utilisation to accelerate the elimination of female genital mutilation. UNFPA, UNICEF, WHO and Population Council, Kenya. 2022.
3. Ezelote J, Eleanor A, Ezeonyi E, Rita C, Martin-Remy C and Mary U. Domestic Violence among Women in Nigeria and its Health Implication-Review. *International Journal of Gender Studies*. 2021; 6(1), 80-101.
4. Grose RG, Chen JS, Roof KA, Rachel S and Yount KM. Sexual and reproductive health outcomes of violence against women and girls in lower-income countries: a review of reviews. *The Journal of Sex Research*. 2021; 58(1), 1-20.
5. Nkwam-Uwaoma A, Ojiakor IC and Onovo JC. Awareness, Knowledge and Perception of Female Genital Mutilation and Cutting (FGM/C) Radio Campaign and Practice among Women in Imo State. *Archives of Current Research International*. 2019; 1-11.
6. Ikpebe E. Essays on Women's Development: Minimum Marriageable Age Policy, Early Marriage, and Female Education in Nigeria. American University, School of Public Policy. 2021; 1-166.
7. Offiong EE, Eyo EI and Offiong AE. Patriarchy, Culture and the Social Development Of Women in Nigeria. *Pinisi Journal of Art, Humanity and Social Studies*. 2021; 1(4), 78-86.
8. Omigbodun O, Bella-Awusah T, Emma-Echiegu N, Abdulmalik J, Omigbodun A, Doucet MH and

- Groleau D. Escaping Social Rejection, Gaining Total Capital: The Complex Psychological Experience of Female Genital Mutilation/Cutting (FGM/C) Among The Izzi in Southeast Nigeria. *Reproductive Health*. 2021; 19(1), 41.
9. Omigbodun O, Bella-Awusah T, Groleau D, Abdulmalik J, Emma-Echiegu N, Adedokun B and Omigbodun A. Perceptions of the psychological experiences surrounding female genital mutilation/cutting (FGM/C) among the Izzi in Southeast Nigeria. *Transcultural psychiatry*. 2020; 57(1), 212-227.
10. Nnanatu CC, Atilola G, Komba P, Mavatikua L, Moore Z, Matanda D, Obianwu O and Kandala NB. Evaluating changes in the prevalence of female genital mutilation/cutting among 0-14 years old girls in Nigeria using data from multiple surveys: A novel Bayesian hierarchical spatio-temporal model. *PloS one*. 2021; 16(2), e0246661.
11. Dirisu O, Adetunji A, Adediran M and Obianwu O. A diagnostic assessment of the health system's response to FGM/C management and prevention in Nigeria. Population Council and UKAID. 2020.
12. Ogbu E. Legal Brief: Rape as a Penal Offence in the Nigerian Violence Against Persons (Prohibition) Act, 2015: A Forensic Investigative Approach. *African Journal of Criminology and Justice Studies: AJCJS*. 2021; 13(1), 123-128.
13. Uniga OJ and Fwa YD. Effective Implementation of the Violence Against Persons Prohibition (Vapp) Act, Curbing The Impunity of Perpetrators of Gender Based Violence (Gbv) and Promoting Socio-Economic Development In Nigeria. *International Journal of Management, Social Sciences, Peace and Conflict Studies*. 2021; 4(2), 195-208.
14. Kimani S and Obianwu O. Female genital mutilation/cutting: A review of laws and policies in Kenya and Nigeria. Population Council. 2020.
15. Obianwu O, Adetunji A and Dirisu O. Understanding medicalisation of Female Genital Mutilation/Cutting (FGM/C): a qualitative study of parents and health workers in Nigeria. Population Council. 2018.
16. Williams-Breault BD. Eradicating female genital mutilation/cutting: human rights-based approaches of legislation, education, and community empowerment. *Health and human rights*, 2018;20(2), 223-233.
17. Udowoima M and Ukpo Q. Law as An Agent of Social Change: A Case Study of Female Genital Mutilation in Nigeria. *SSRN*. 2021; 1-7.
18. Gorah KY, Sindama H and Obinna GB. Evaluation Of Health Problems Associated with Female Genital Mutilation in Ikwerre Local Government Area Of Rivers State. *BW Academic Journal*. 2021.
19. Howard JA and Gibson MA. Is there a link between paternity concern and female genital cutting in West Africa? *Evolution and Human Behavior*. 2019;40(1), 1-11.
20. Yaya S and Ghose B. Female genital mutilation in Nigeria: A persisting challenge for women's rights. *Social Sciences*. 2018; 7(12), 244.
21. Earp BD and Johnsdotter S. Current critiques of the WHO policy on female genital mutilation. *International journal of impotence research*. 2021; 33(2), 196-209.
22. Coll C, Santos T, Wendt A, Hellwig F, Ewerling F and Barros A. Women's Empowerment as It Relates to Attitudes Towards and Practice of Female Genital Mutilation/Cutting of Daughters: An Ecological Analysis of Demographic and Health Surveys From 12 African Countries. *Front. Sociol.* 2022; 6: 685329. doi: 10.3389/fsoc.
23. Asaolu IO, Alaofè H, Gunn JK, Adu AK, Monroy AJ, Ehiri JE., Hayden MH and Ernst KC. Measuring women's Empowerment in sub-Saharan Africa: exploratory and confirmatory factor analyses of the demographic and health surveys. *Frontiers in psychology*. 2018; 9, 994.
24. Laszlo S, Grantham K, Oskay E and Zhang T. Grappling with the challenges of measuring women's economic empowerment in intrahousehold settings. *World Development*. 2020; 132, 104959.
25. Anderson EJ, Chebet JJ, Asaolu IO, Bell ML and Ehiri J. Influence of Women's Empowerment on Place of Delivery in North Eastern and Western Kenya: A Cross-sectional Analysis of the Kenya Demographic Health Survey: *JEGH*; 2020; 10(1):65. doi:10.2991/jegh.k.200113.001
26. Yoder PS and Shaoxiao W. Female Genital Cutting: The Interpretation of Recent DHS Data. DHS Comparative Reports No. 33. Calverton, Maryland, USA: ICF International. 2013.
27. DHS. Guide to DHS Statistics DHS-7. DHS Program. https://dhsprogram.com/data/Guide-to-DHS-Statistics/index.htm#t=Analyzing_DHS_Data.htm
28. Rodrigues F, Stevens S, Getinet F, Shikur Z and Sood S. Assessing factors that support the abandonment of female genital mutilation in Ethiopia. *African Journal of Reproductive Health*. 2022; 26(1):53-65. doi:10.29063/ajrh2022/v26i1.6
29. Farina P, Ortensi L, Pettinato T and Ripamonti E. The relationship between women's individual empowerment and the support to female genital cutting continuation: a study on 7 African countries. *Genus*. 2022; 78, 7.
30. Ameyaw EK, Anjorin S, Ahinkorah BO, Seidu AA, Uthman OA, Keetile M and Yaya S. Women's empowerment and female genital mutilation intention for daughters in Sierra Leone: a multilevel analysis. *BMC Women's Health*. 2021; 21(1):200. doi:10.1186/s12905-021-01340-2
31. Dalal K, Lawoko S and Jansson B. Women's attitudes towards discontinuation of female genital mutilation in Egypt. *Journal of injury & violence research*. 2010;2(1), 41-45. <https://doi.org/10.5249/jivr.v2i1.33>
32. World Health Organization. Female genital mutilation: Key messages. <https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation>. 2022.
33. Wander K and Shell-Duncan B. Social norm coordination and readiness to change female genital cutting:

Evidence from Senegambia. *SSM - Population Health*. 2020; 11, 100593.

34. Sakeah E, Debpuur C, Oduro AR, Welaga P, Aborigo R, Sakeah JK and Moyer CA. Prevalence and factors

associated with female genital mutilation among women of reproductive age in the Bawku municipality and Pusiga District of northern Ghana. *BMC Women's Health*. 2018; 18(1), 150.

Appendix A

Indicators for labor force participation

Low participation: 0

Moderate participation: 1-9

High participation: 10-12

Respondent's occupation

Type of earning from respondent's work

Seasonality of respondent's occupation

Income ratio to partner

Unemployed

Indicators for attitudes towards violence against women

High acceptance of violence: 0-1

Moderate acceptance of violence: 2-3

No acceptance of violence: 4

A beating is justified is a wife:

Neglects the children

Argues with husband

Burns the food

Refuses to have sex with husband

Indicators for education level

Low level of education: 0

Moderate level of education: 1-3

High level of education: 4-5

Literacy

Highest level of education

Indicators for access to healthcare

Low level of health: 0-1

Moderate level of health: 2-3

High level of health: 4

When getting medical help for self, getting permission to go is:

When getting medical help for self, not wanting to go alone is:

When getting medical help for self, the distance to the health facility is:

When getting medical help for self, getting the money needed for treatment is:

1 Works for a family member

2 Works for someone else

3 Self-employed

1 Paid in-kind only

2 Paid cash and in-kind

3 Paid cash only

1 Works occasionally or seasonally

2 Works all year

1 Partner does not bring in any income

2 Earns less than partner

3 Earns about the same as partner

4 Earns more than partner

0

1 No

0 Yes or don't know

0 Cannot read at all or don't know

1 Able to read only parts of sentence

2 Able to read the whole sentence

0 No education

1 Primary

2 Secondary

3 Higher

0 A big problem

1 Not a big problem

0 A big problem

1 Not a big problem

0 A big problem

1 Not a big problem

0 A big problem

1 Not a big problem

Appendix B

	Unadjusted OR (95% CI)	Adjusted OR ^a (95% CI)
Total (n)		
Low empowerment (1,654)	Reference	--
Moderate empowerment (2,890)	1.30 (1.10,1.55)*	1.16 (.96,1.41)
High empowerment (2,026)	3.23 (2.56,4.07)***	1.15 (.88,1.52)
C-statistic	0.6129	0.8029
Violence against women (n)		
High acceptance (1,203)	Reference	--
Moderate acceptance (740)	1.17 (.90,1.54)	.95 (.73,1.24)
Never acceptable (4,637)	2.55 (2.06,3.18)***	2.15 (1.72,2.69)***
C-statistic	0.5936	0.8131
Access to healthcare (n)		
Low access (758)	Reference	--
Moderate access (2,762)	.99 (.74,1.34)	1.04 (.79,1.38)
High access (3,050)	2.07 (1.48,2.89)***	1.36 (1.03,1.80)*
C-statistic	0.5888	0.8039
Labor force participation (n)		
Low participation (1,907)	Reference	--
Moderate participation (1,867)	1.34 (1.07,1.67)*	1.00 (.80,1.26)
High participation (2,796)	1.30 (1.10,1.54)*	1.05 (.86,1.28)
C-statistic	0.5299	0.8026
Education level (n)		
Low level (2,989)	Reference	--
Moderate level (1,981)	3.00 (2.50,3.60)***	1.41 (1.14,1.73)*
High level (1,600)	4.77 (3.79,6.01)***	1.35 (1.02,1.80)*
C-statistic	0.6679	0.8040

* $p < 0.05$. *** $p < 0.001$. ^a Adjusted for parity, age at first birth, rural vs urban residency, region of residency (Northern or Southern), ethnicity, economic status, marital status, current contraceptive use, contraceptive decision making power, and severity of FGM