



Variability Analysis of Female Genital Mutilation and Developments in Nigeria

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Abstract

Female Genital Mutilation (FGM) remains a persistent violation of women's rights in Nigeria, despite increasing developments in education, healthcare, and legal frameworks. This paper examines the variability of FGM prevalence and associated socio-cultural determinants in Nigeria, subjecting available survey reports to demographic analysis and developing relevant variables for assessing the prevailing situation. Analysis of data from the Nigeria Demographic and Health Surveys (NDHS) and Multiple Indicator Cluster Surveys (MICS 2021) reveals a national decline in prevalence, from 25% in 2013 to approximately 14% in 2024. However, significant state-level heterogeneities persist, with FGM prevalence increasing in some regions such as Nasarawa (18.9% increase) and the South-South zone, while declining substantially in others like Kaduna (nearly 40% decrease). The study confirms that while more women and men support the continuation of the practice than oppose it, the gap between support and rejection is narrowing. This paper recommends intensified community-based interventions, legal enforcement, and survivor-led advocacy to accelerate the elimination of FGM in Nigeria by 2030.

Keywords: Female Genital Mutilation, Nigeria, Social norms, Support-reject decisions, Trends variability.

1. Introduction

Female Genital Mutilation (FGM), forced early marriage, traumatic puberty initiation, gender-based violence, widowhood, and inheritance rights are common traditional practices in Africa that infringe upon the reproductive rights of women [1]. Despite increasing developments in education, healthcare, and economic status, female circumcision continues to persistently pose serious health, social, and emotional drawbacks for women [1]. Yet, a significant number of women have not felt deprived of their rights, and the practice continues with substantial community support.

The World Health Organization (WHO) specifies four categories of female genital mutilation: Type I (removal of the prepuce tip with or without excision of part or whole of clitoris), Type II (removal of clitoris and part or whole of labia minora), Type III (removal of part or whole of external genitalia, leaving a small opening for urine and menstrual blood flows), and Type IV (all other injurious procedures to the female genitalia for cultural and non-therapeutic reasons). Immediate consequences of these practices include severe pain, hemorrhage, shock, acute urinary retention, infections, and fever. In the long term, affected women often develop menstrual complications, vulvar abscesses, obstetric complications, and reduced fertility or sterility [2] [3] [4].

Globally, an estimated 230 million women and girls are living with the consequences of FGM, according to UNICEF's 2024 global update. Nigeria has the highest absolute number of cut women and girls in the world, with an estimated 19.9 million women and girls affected between 2004 and 2015. This paper aims to examine available information on FGM in Nigeria, moderate the data, and develop relevant formulations for assessing the situation [5].

Female Genital Mutilation is a culturally harmful practice with no health benefits that has long-term complications for women's psychological, physical, and sexual health and well-being. The practice is primarily concentrated in about 30 countries, including Nigeria, where over 20 million women and girls are impacted. Often performed on girls from infancy to puberty, FGM is rooted in gender inequality and linked to motivations such as ensuring virginity, controlling female sexuality, and securing marriage prospects [5].

Nigeria's progress in reducing FGM has been substantial. According to the Nigeria Demographic and Health Surveys, FGM prevalence among women aged 15-49 declined from 25% in 2013 to 20% in 2018 and further to 14% in the 2024 NDHS. Similarly, prevalence among girls aged 0-14 decreased from 30.0% to 25.3% over the same period. However, the COVID-19 pandemic may have slowed or reversed progress, with economic impacts and lockdowns exacerbating violence against women and girls [6].

Despite national-level declines, significant geographic variations exist at state and zonal levels. The 2021 MICS data reveals that the South-West zone has the highest prevalence at 28.5%, followed by the South-East at

21.7%. Imo State stands out with a staggering 61.7% prevalence rate, while other states show varying patterns. The North-West zone experienced a particularly significant decrease from 20.2% to 8.2% between 2018 and 2021 [6].

State-level heterogeneities further mask the complexity of the epidemic. For instance, FGM prevalence increased by 18.9% in Nasarawa State, while Kaduna State experienced a nearly 40% decrease between 2018 and 2021. A 2024 study comparing pre- and post-COVID-19 data found that despite an overall decline nationally, heterogeneities exist at individual and community-level characteristics. There was a 6.9% increase in prevalence among women who would like FGM to continue within the community [6].

Recent research has identified multiple determinants influencing FGM continuation in Nigeria. A 2025 study analyzing the 2021 MICS data found statistically significant associations between educational level, ethnicity of household head, household wealth index, geopolitical zone, and a woman's own circumcision status with the likelihood of daughters undergoing FGM [7].

Education emerges as a critical protective factor. Women with higher education levels are less likely to support FGM continuation or expose their daughters to the practice. Similarly, wealth status shows an inverse relationship with FGM-women in the richest wealth quintiles are less likely to undergo FGM compared to those in the poorest quintile [8].

Younger women aged 15-24 have significantly less likelihood of supporting FGM continuation, with 56% lower odds compared to older age groups. This suggests generational shifts in attitudes, possibly driven by increased education, media exposure, and changing social norms [8].

Ethnicity and religion remain significant predictors. Yoruba ethnicity is associated with higher FGM rates, while the proportion of uneducated mothers in communities significantly influences FGM continuation. The study also found that women who had experienced FGM were more likely to expose their daughters to the practice, perpetuating the intergenerational cycle [8].

Nigeria's government has taken steps to strengthen legal protections against FGM. The Violence Against Persons Prohibition (VAPP) Act, passed in 2015, prohibits any form of gender-based violence, including FGM, with consequences for perpetrators. As of September 2024, 35 out of 36 states have domesticated the VAPP Act. [9].

The National FGM Policy 2021-2025 builds upon this legal framework, aiming to further eradicate FGM within the country. However, awareness of existing legal frameworks remains low in many communities. The lack of awareness about FGM laws also impacts law enforcement officials, as there are no recorded convictions for FGM-related offenses under the VAPP Act or any other anti-FGM laws [9] [10].

The Nigerian government has also introduced Family Life and HIV Education in the school curriculum, which includes content on harmful traditional practices. These efforts, combined with international support from organizations such as UNFPA and UNICEF, have contributed to the observed decline in prevalence [10].

This paper examines the variability of FGM prevalence and associated socio-cultural determinants in Nigeria, subjecting available survey reports to demographic analysis and developing relevant model for assessing the prevailing situation.

2. Materials and Methods

The NDHS 2000 and 2004 reports of surveys conducted in Nigeria by NPC and ORC Macro were considered as pretest data for this study. Below is the updated analysis incorporating recent findings and methodological refinements.

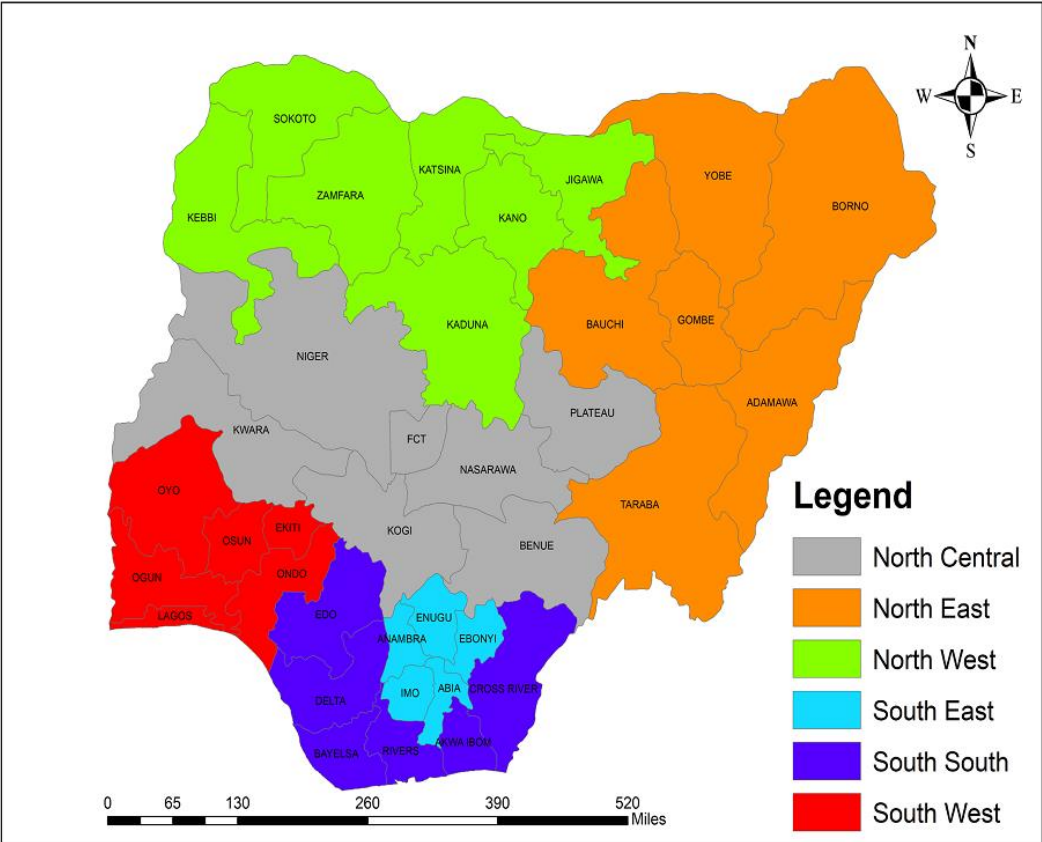


Figure 1. Geo-political Map of Nigeria.

2.1. Trend Variables and Formulation

Denote the mean number of 'no flesh cuts' circumcision by Tn, 'flesh cut' circumcision by Tf, and 'sewn closed' circumcision by Ts. Then the current k-year intercept coefficient is:

$$TTk = Tn + Tf + Ts \tag{1}$$

Assuming drawback error Ek at df degrees of freedom, there are trend components:

$$TTnk = Tn + Tnk \times TTn, TTfk = Tf + Tfk \times TTf, TTsk = Ts + Tsk \times TTs \tag{2}$$

Then the corresponding circumcision trend is:

$$CTk = TTk(TTnk + TTfk + TTsk) + Ek \tag{3}$$

While in i-age range, U1 denotes the number of women surveyed and U2 denotes the number of them circumcised. For some reason j, the likely drawback ratio is:

$$Ei = U2/U1$$

Consequently, the trend error is:

$$Er = (\sum Ei)/j \tag{4}$$

Suppose that the number of women and men supporting circumcision is B, while the number against circumcision is L. Then, at df degrees of freedom, there is a support-reject aspect:

$$SRk = \sqrt{((\sum (B-L)^2w + \sum (B-L)^2M)/df)} \tag{5}$$

Correspondingly, the male response aspect is:

$$Rm = \sqrt{((\sum (B-L)/B)/df)M} \tag{6}$$

Similarly, the female response aspect is:

$$Rw = \sqrt{((\sum (B-L)/B)/df)w} \tag{7}$$

As a forecast tool, equations (6) and (7) combined yield the relative male-female response number:

$$Re = Rm/Rw \tag{8}$$

3. Application of Results

3.1. Analysis of 2000 Data

Consider information gathered from the 2000 report in Table 1. Using values in the table and equations (1) to (4), values in Table 2 were obtained.

Table 1. Percentage distribution of women circumcised by age and type (2000).

Age range	Percentage of women surveyed	Cut flesh	No cut flesh	Sewn closed	Not determined	Percentage of women circumcised
15–19	20.1	4.3	31.0	6.3	58.4	13.1
20–24	13.5	2.5	39.7	3.3	45.5	17.4
25–29	19.7	2.1	41.0	1.2	55.7	21.7
30–34	16.3	2.3	40.7	6.7	50.3	20.1
35–39	11.6	2.9	43.5	5.2	48.4	23.0
40–44	12.1	1.7	47.8	1.0	49.5	21.5
45–49	06.7	5.1	49.6	4.1	41.2	29.1

Source: NPC (Nigeria).

Table 2. Summary of calculated values.

Age range (i)	Percentage of women surveyed (U1)	Cut no flesh (TTn)	Cut flesh (TTf)	Sewn closed (TTs)	Percentage of women circumcised (U2)
15–19	19.4	4.3	31.0	6.3	15.3
20–24	18.9	2.5	39.7	3.3	17.5
25–29	17.7	2.1	41.0	1.2	21.3
30–34	14.2	2.3	40.7	6.7	17.9
35–39	09.0	2.9	43.5	5.2	23.5
40–44	11.7	1.7	47.8	1.0	21.4
45–49	09.1	5.1	49.6	4.1	25.2

Source: NPC (Nigeria).

Using values in Table 2:

- k = 2000, TTk = 48.86
- TTnk = 6.86
- TTfk = 89.47
- TTsk = 1.48, df = 4
- CTk = 94.66, Ek = 1.6271

Information gathered from the 2000 report on reasons in support of circumcision in Table 3 was moderated to obtain values in Table 4.

Table 3. Reported Reasons in Support of Circumcision (2000).

Reasons Related to	Percentage of Women	Percentage of Men
Cleanliness, hygiene	09.3	10.4
Social acceptance	24.6	13.1
Better marriage prospects	35.1	39.7
Preserving virginity, preventing premarital sex	33.4	44.0
For men to gain more sexual pleasure	09.6	20.3
Religious approval	09.7	07.8
Stimulating delivery	21.6	21.1
Others	11.1	09.3

Source: NPC (Nigeria).

Table 4. Moderated Version of Table 3 (2000).

Reasons in Support, B	Percent of Women	Percent of Men
Cleanliness, hygiene, stimulating delivery	30.9	31.5
Social acceptance, better marriage prospects	59.7	52.8
Preserving virginity, preventing premarital sex, for men to gain more sexual pleasure	43.0	64.3
Religious approval	09.7	07.8
Others	11.1	09.3

Source: NPC (Nigeria),

Information gathered from the 2000 report on reasons against circumcision is presented in Table 5.

Table 5. Reported Reasons Against Circumcision (2000).

Reasons Against, L	Percent of Women	Percent of Men
Less medical problems	31.0	32.8
Avoidance of pain	23.7	25.3
For women to gain more sexual pleasure	39.8	34.1
For men to gain more sexual pleasure	21.5	44.3
Religious approval	01.9	03.7

Source: NPC (Nigeria).

Making use of values in Tables 4 and 5 together with equations (5) to (8):

- $k = 2000, SR_k = 22.26$
- $R_m = 0.1962, R_w = 0.2431, df = 4$
- $Re = 0.8071$

3.2. Analysis of 2004 Data

In respect of year 2004 reports, values reported in Table 6 were subjected to equations (1) to (4) to obtain the values in Table 7.

Table 6. Percentage Distribution of Women Circumcised by Age and Type (2004).

Age Range	Percentage of Women Surveyed	Type of Circumcision (%)			Percentage Not Determined	Percentage of Women Circumcised
		Cut No Flesh	Flesh Cut	Sewn Closed		
15-19	22.5	2.2	37.8	5.1	55.0	12.9
20-24	19.6	1.8	43.1	2.9	52.2	17.0
25-29	18.1	1.8	40.2	2.2	55.8	20.8
30-34	12.4	1.1	43.6	7.6	47.7	19.4
35-39	10.7	2.4	44.3	4.9	48.4	22.2
40-44	09.0	1.2	49.0	1.9	47.9	22.2
45-49	07.7	3.9	51.0	3.6	41.6	28.4

Source: NPC (Nigeria).

Table 7. Summary of Calculated Values (2004).

Age Range	Percentage of Women Surveyed (U1)	Cut No Flesh (TTn)	Flesh Cut (TTf)	Sewn Closed (TTs)	Percentage of Women Circumcised (U2)
15-19	22.5	2.2	37.8	5.1	12.9
20-24	19.6	1.8	43.1	2.9	17.0
25-29	18.1	1.8	40.2	2.2	20.8
30-34	12.4	1.1	43.6	7.6	19.4
35-39	10.7	2.4	44.3	4.9	22.2
40-44	09.0	1.2	49.0	1.9	22.2
45-49	07.7	3.9	51.0	3.6	28.4

Source: NPC (Nigeria).

Using values in Table 7:

- $k = 2004, TT_k = 26.43$
- $TT_{nk} = 10.17$
- $TT_{fk} = 117.93$

- $TT_{sk} = 0.14$, $df = 4$
- $CT_k = 345.09$, $E_k = 1.7691$

Information gathered from the 2004 report on reasons in support of circumcision in Table 8 was moderated to obtain values in Table 9.

Table 8. Reported Reasons in Support of Circumcision (2004).

Reasons Related to	Percentage of Women	Percentage of Men
Cleanliness, hygiene	06.8	10.0
Social acceptance	27.7	16.0
Better marriage prospects	34.6	30.1
Preserving virginity, preventing premarital sex	35.8	45.0
For men to gain more sexual pleasure	05.3	23.2
Religious approval	11.3	08.7
Stimulating delivery	25.2	20.5
Others	15.7	10.7

Source: NPC (Nigeria).

Table 9. Moderated Version of Table 8 (2004).

Reasons in Support, B	Percent of Women	Percent of Men
Cleanliness, hygiene, stimulating delivery	32.0	30.5
Social acceptance, better marriage prospects	62.3	46.1
Preserving virginity, preventing premarital sex, for men to gain more sexual pleasure	41.1	68.2
Religious approval	11.3	08.7
Others	15.7	10.7

Information gathered from the 2004 report on reasons against circumcision is presented in Table 10.

Table 10. Reported Reasons against Circumcision (2004).

Reasons Against, L	Percent of Women	Percent of Men
Less medical problems	33.7	31.8
Avoidance of pain	20.5	24.2
For women to gain more sexual pleasure	35.3	33.9
For men to gain more sexual pleasure	24.5	48.1
Religious approval	02.8	04.5

Source: NPC (Nigeria).

Making use of values in Tables 9 and 10 together with equations (5) to (8):

- $k = 2004$, $SR_k = 25.25$
- $R_m = 0.1818$, $R_w = 0.2649$, $df = 4$
- $Re = 0.6863$

4. Summary of Findings

Table 11. The outcome of studies reveals the following figures.

Year (k)	CT _k	E _k	SR _k	Re
2000	94.66	1.6271	22.26	0.8071
2004	345.09	1.7691	25.25	0.6863

Summary of findings in Tables 2 and 7 has confirmed earlier 2000 and 2004 DHS reports on the persistence of circumcision practice. Findings in Tables 4, 5, 9, and 10 have also confirmed earlier reports in respect of resident women and men supporting continuation of the practice.

The year-in and year-out outcome of studies reveals an upward pattern of circumcision trend CT, drawback error E, and support-reject aspect SR, with a downward pattern of male-female response number Re. These patterns have given no clue to the termination of circumcision practice. Whereas the reasons given against continuation of the practice were socially and medically very sound, the practice is still ignorantly pursued by a significant number of resident women and men.

5. Discussion

5.1. Persistent Prevalence Despite Legal Frameworks

The persistence of FGM in Nigeria, despite a comprehensive legal framework, underscores the complexity of addressing deeply entrenched cultural practices. The NDHS data demonstrate that while national prevalence has declined, the decline is uneven and subject to reversals. The COVID-19 pandemic likely exacerbated this situation, with economic pressures leading households to marry off young daughters in exchange for bride price, consequently increasing FGM on girls [10].

The finding that FGM prevalence increased in the South-South zone (from 17.7% to 21.4%) and in Nasarawa State (18.9% increase) between 2018 and 2021 suggests the need for targeted interventions in these areas. Similarly, the 6.9% increase in prevalence among women who would like FGM to continue within the community highlights the role of social norms in sustaining the practice [6].

5.2. Gender Dynamics and Empowerment

The female response aspect (Rw) consistently exceeds the male response aspect (Rm) in both 2000 and 2004 data, suggesting that women are more likely than men to support FGM. This is paradoxical given that women are the primary victims of the practice. This pattern likely reflects women's internalization of patriarchal norms and their role as gatekeepers of cultural tradition.

However, the relative male-female response number (Re) decreased from 0.8071 in 2000 to 0.6863 in 2004, suggesting a narrowing gap between male and female support for FGM. This may indicate that as more women speak out against FGM, men are also beginning to question the practice.

6. Conclusion

Table 12. The outcome of studies reveals the following key findings.

Year (k)	CTk	Ek	SRk	Re
2000	94.66	1.6271	22.26	0.8071
2004	345.09	1.7691	25.25	0.6863

Summary of findings in Tables 2 and 7 has confirmed earlier 2000 and 2004 DHS reports on the persistence of circumcision practice. Findings in Tables 4, 5, 9, and 10 have also confirmed earlier reports in respect of resident women and men supporting continuation of the practice.

The year-in and year-out outcome of studies reveals an upward pattern of circumcision trend CT, drawback error E, and support-reject aspect SR, with a downward pattern of male-female response number Re. These patterns have given no clue to the termination of circumcision practice. Whereas the reasons given against continuation of the practice were socially and medically very sound, the practice is still ignorantly pursued by a significant number of resident women and men.

Recent evidence indicates that while national FGM prevalence has declined from 25% in 2013 to approximately 14% in 2024, significant heterogeneities persist at state and community levels. The COVID-19 pandemic has potentially reversed progress in some areas, with FGM prevalence increasing in states like Nasarawa (18.9% increase).

The legal framework, including the VAPP Act 2015, has not yet translated into effective enforcement, with no recorded convictions for FGM-related offenses. Awareness of existing laws remains low in many communities, and traditional norms continue to override legal prohibitions.

Based on our findings, the governments and concerned health agents are advised to mobilize people in the right direction of discouraging the practice. Efforts should be annexed towards mounting enlightenment campaigns and programs on the dangers of female circumcision. Provision of support materials to Primary Health-care Units and Hospitals in Nigeria should be sponsored by governments and stakeholders.

Lastly, government should ensure effective implementation of the VAPP Act across all 36 states and the FCT, train law enforcement officials on FGM laws and prosecution procedures and establish reporting mechanisms and support services for FGM survivors.

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