



## Trends in prevalence, pattern and factors associated with female genital mutilation/cutting among youth 15 to 24 years old in Nigeria

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### Abstract

**Introduction:** Female Genital Mutilation/Cutting (FGM/C) has no health benefits, and it is recognised internationally as a violation of the human rights of girls and women. This study assessed the prevalence, trends, patterns and determinants of FGM/C among youths in Nigeria.

**Methods:** A cross-sectional study design was used to retrospectively review the Nigerian Demographic and Health Survey data sets of 2008, 2013, and 2018 individual recode data of Youth aged 15 to 24 years. Data analysis was done using STATA-14.2 software and SPSS version 27. Descriptive statistics are presented with frequency tables and line graphs, and Inferential statistics were done using the chi-square test.

**Results:** A greater proportion of participants 22761 (54.9%) were those aged 15 to 19 years, resided in rural areas 24585(59.3%), Islam 21380 (51.6), secondary level of education, 21912 (52.8%), from the northwest region, 12031 (29.0%), and richer wealth index 9098 (21.9%). The overall prevalence of FGM/C within the period is 7054, 17.01%. The findings show a declining trend in the review period; the highest prevalence was seen in 2008 (3026 [24.0%]) and the lowest was seen in 2018 (1366 [9.6%]), ( $\chi^2 = 64.5$ ;  $p < 0.001$ ). The most prevalent pattern was flesh removed from the genitals (3678, 8.9%). Age, location, region, level of education, religion, and socioeconomic status (Wealth index), and year of interview were significantly associated with FGM/C.

**Conclusion:** The progress/downward trajectory in the trend of FGM/C prevalence is encouraging, but sustained efforts are necessary to address the context-specific factors (Regionally tailored interventions) to eradicate FGM/C.

Keywords: Trends, Prevalence, Patterns, Determinants, Female genital cutting, Youths

### Introduction

Female Genital Mutilation/Cutting (FGM/C) is a deeply entrenched cultural practice that continues to

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affect millions of girls and women worldwide. The World Health Organization (WHO) defines FGM/C as "all procedures that involve partial or total removal of the external female genitalia, or other injuries to the female genital organs for non-medical reasons"<sup>1</sup>. Female Genital Mutilation/Cutting has no health benefits and is recognised internationally as a violation of the

human rights of girls and women<sup>2</sup>. The practice can cause immediate and long-term health consequences, including pain, bleeding, infection, urinary problems, and complications in childbirth. It can also lead to psychological trauma and has implications for the sexual and reproductive health of women and girls<sup>1</sup>.

The prevalence of FGM/C in Nigeria is approximately 27% among women aged 15-49<sup>3</sup>. In Nigeria, the prevalence of FGM/C among youth aged 15-24 remains a significant public health concern<sup>4</sup>. However, according to the 2018 Nigeria Demographic and Health Survey (NDHS), there has been a decline in the burden of FGM among women aged 15 to 49 years, from 1999 to 2018<sup>4</sup>. The practice persists among younger generations, highlighting the need to assess the enabling factors<sup>5</sup>. The prevalence among girls aged 15 to 24 years was 13.3% in 2007 and increased to 25.3% in 2017. The prevalence among girls reflects the most recent FGM evidence. This suggests that despite global and national efforts to eradicate this harmful practice, persistent and, in some cases, increasing prevalence among this age group<sup>6</sup>.

The United Nations defines youth as those between the ages of 15 and 24 years old<sup>7</sup>. However, in the Nigerian context, youth is defined as those 15 to 29 years old, according to the revised Nigerian National Youth Policy 2019-2023<sup>8</sup>. This study focused on youths aged 15 to 24 years old, using the United Nations definition. Female genital cutting is mostly performed in childhood and adolescent periods, youths aged 15–24 years serve as a proxy for more recent cohorts, helping to reflect whether the practice is declining compared to older women.

A complex interplay of cultural, social, and economic factors influences the patterns of FGM/C in Nigeria. Cultural beliefs that FGM/C preserves a girl's purity, enhances marriageability and upholds family honour are deeply rooted in many communities. Additionally, the medicalization of FGM/C, where healthcare professionals perform the procedure, has contributed to its persistence by giving it a veneer of legitimacy<sup>3</sup>. Economic factors also play a crucial role, as some families view FGM/C as a rite of passage that can lead to better marriage prospects and, consequently, economic stability<sup>9</sup>. Furthermore, community pressure and the desire to conform to traditional practices continue to

drive the practice, despite awareness campaigns highlighting its harmful effects<sup>6</sup>. Reported enabling factors of FGM/C include cultural traditions and beliefs. It is often seen as a rite of passage, a means to preserve purity, and a prerequisite for marriage<sup>6</sup>. These cultural norms exert strong social pressure on families to conform. In many communities, FGM/C is a social convention. Girls who are not cut may face stigma, social exclusion, and reduced marriage prospects<sup>5,10,11</sup>. In some cases, FGM/C is linked to economic incentives. Practitioners of FGM/C may receive payment, and families may believe that cutting their daughters will enhance their marriage prospects and economic stability<sup>12</sup>.

Limited access to education and awareness programs about the harmful effects of FGM/C may contribute to its persistence. Many communities lack comprehensive information on the health risks and human rights violations associated with the practice<sup>13</sup>.

There is an increasing trend of FGM/C being performed by healthcare providers, which gives the practice a veneer of legitimacy and safety<sup>6,14</sup>. This medicalisation can perpetuate the practice by reducing perceived risks. The medicalization of FGM/C has been noted<sup>2</sup>. Nigeria has laws prohibiting FGM/C, but enforcement is often weak, and the practice continues in many areas<sup>8</sup>. Effective interventions may require community-based approaches that involve local leaders, educators, and healthcare providers<sup>9</sup>. Engaging communities in dialogue and education is vital for changing attitudes and behaviours<sup>9</sup>. Understanding these enabling factors is essential for developing targeted interventions to reduce the prevalence of FGM/C among youths in Nigeria and address the socio-cultural and economic drivers of FGM/C.

Over the past few decades, there has been a gradual decline in the prevalence of FGM/C in Nigeria among 0-14 years females<sup>15</sup>, this can be attributed to increased awareness, education, and advocacy efforts. However, the rate of decline varies across different regions and communities. This approach can reveal the<sup>14</sup> success or otherwise of past policies and programs and identify emerging factors. Another study reported that FGM prevalence among women increased from 46.6% (2011) to 69.5% (2021), the study used secondary data collected primarily by UNICEF<sup>16</sup>.

Research among this subgroup of the population (youths) has been underserved, also most studies done have used primary data sources focusing on one or more communities. Those who have used secondary data sources have been mostly women of reproductive age, which encapsulates the youth population, although they are different populations. Understanding these trends is important for developing targeted and effective strategies to accelerate the abandonment of FGM/C. Also, analysing long-term trends and determinants offers a comprehensive view that can highlight shifts over time. This study aims to assess the prevalence, trend, pattern, and determinants of FGM/C among youths aged 15 to 24 years in Nigeria over 10 years. The study aimed to determine the temporal trends in the prevalence of FGM/C among youth aged 15 to 24 years from 2008 to 2018, identify the pattern of FGM/C, to identify the factors associated (sociodemographic, cultural, and economic) with the practice of FGM/C among youth aged 15 to 24 years in Nigeria.

## Methods

The study area is Nigeria, the most populous country in Africa. Nigeria is bordered by Benin to the west, Niger to the north, Chad to the northeast, Cameroon to the east, and the Gulf of Guinea to the south. Nigeria has six geopolitical regions: North-West, North-Central, North-East, South-West, South-South and South-East. Nigeria is culturally rich, with diverse traditions and cultures, some of which drive harmful practices and one of the largest populations of youth in the world<sup>17</sup>.

**Study design:** A cross-sectional study using secondary data from the Nigerian Demographic and Health Survey Data sets of 2008, 2013, and 2018 to assess the prevalence, trend, pattern, and determinants of FGM/C in Nigeria over 10 years.

**Study population:** Youth aged 15 to 24 years, in Nigeria using the individual recode data.

**Sample size:** Cochran's formula for sample size calculation for descriptive study ( $\text{Sample size } n = \frac{(Z^2 pq)}{e^2}$ )<sup>18</sup> was used in estimating the sample size for this study. Using an estimate of the prevalence of 25.3% of FGM/C among youths in Nigeria 6 and providing for a further 10% allowance to compensate for missing values. This yielded a sample size of approximately 322, then applying a

design effect of 2 which brought the sample size to 646. This served as a guide to ensure the total population studied has a study population greater than the derived minimum sample size. It shows the minimum required subjects needed to achieve adequate statistical power was reached. All cases / the total population sample from the NDHS 2008, 2013, and 2018 were included in the study and reviewed with no sampling required.

**Sampling technique:** The implementers and primary owners of the NDHS, adopted a multi-stage sampling.

The Individual Recode file from the 2008, 2013 and 2018 NDHS was used for this study.

**Study variables:** Dependent variable – prevalence of FGM/C, year of interview (Trends 2008, 2013, 2018), and Patterns. Independent variable – Sociodemographic variables, age, level of education, religion, region, and wealth index.

**Data analysis:** Data analysis was done using STATA-14.2 software and SPSS version 27. Descriptive statistics were used and presented as frequency tables and percentages. A descriptive analytical approach was used to analyse the pattern and trends of FGM/C cases in the six geopolitical regions of Nigeria. In addition, a thorough analysis was carried out to examine the trend of FGM/C in the years under review (2008, 2013, and 2018). The pattern of across the states in the region was presented using frequency tables.

Inferential statistics was done using the chi-square test

Ethical approval was sought and obtained from the Research and Ethics Committee of the University of Port Harcourt Teaching Hospital (UPTH/ADM/90/S.11/VOL.XI/17012). Written permission was obtained from ICF, the implementer and primary owner of Demographic and Health Surveys (DHS) conducted in countries worldwide. DHSs are funded by the United States Agency for International Development (USAID) in collaboration with countries.

## Results

A greater proportion of participants 22760.8 (54.9%) were those aged 15 to 19 years, resided in rural areas 24584.9 (59.3%), Islam 21380.4 (51.6), secondary level of education, 21911.6 (52.8%), from the northwest region, 12030.9 (29.0%), and

Table 1: Socio-demographic characteristics of youth aged 15 to 24 from 2008, 2013, and 2018

Characteristics	Frequency No. n=41,472	Percentage (%)
<b>Age group</b>		
15-19	22761	54.9
20-24	18712	45.1
<b>Residence</b>		
Urban	16887	40.7
Rural	24585	59.3
<b>Religion</b>		
Catholic	4688	11.3
Other Christians	14973	36.1
Islam	21380	51.6
Traditionalist	253	0.6
Others	118	0.4
<b>Education Completed</b>		
No Formal	12005	29.0
Primary	5165	12.5
Secondary	21912	52.8
Tertiary/Higher	2391	5.7
<b>Region</b>		
North Central	6148	14.8
Northeast	6427	15.5
Northwest	12031	29.0
Southeast	4782	11.5
South-south	5554	13.4
Southwest	6531	15.8
<b>Wealth Index</b>		
Poorest	7018	17.1
Poorer	8198	19.8
Middle	8461	20.4
Richer	9098	21.9
Richest	8644	20.8

richer wealth index 9097.5 (21.9%)

Table 2: Overall prevalence of FGM/C among youth aged 15 to 24 years in the review period

Variable	Frequency No. n=41,472	Percentage (%)
<b>Respondents circumcised</b>		
No	34418	82.99
Yes	7054	17.01

The overall prevalence of FGM/C within the period is 7053.63, 17.01%.

Table 3: The Yearly prevalence of FGM/C among youth aged 15 to 24 years from 2008 to 2018

Variable	Not Circumcised n=12626	Circumcised 2013 n=14576	Total Frequency n=41472 (%)	Chi-square (P-value)
<b>Year of Interview</b>				<b>64.5 (0.001)*</b>
2008	9601 (76.0)	3026 (24.0)	12626(100.0)	
2013	11915 (81.7)	2662 (18.3)	14576 (100.0)	
2018	12903 (90.4)	1366 (9.6)	14269 (100.0)	

Table 3 shows the prevalence per year also showed a decreasing trend of 24.0%, in 2008, 18.3% in 2013, and 9.6% 2018 2018 ( $\chi^2 = 64.5; p < 0.001$ ).

As shown in Figure 1, there is a downward trajectory in FGM/C prevalence among female youths aged 15 to 24 years in Nigeria from 2008 to 2018. The highest prevalence was seen in 2008 (3,025.7 (42.9%)), and the lowest was seen in 2018 (1,366.4 (19.4%)).

Table 4 shows that the most prevalent pattern seen

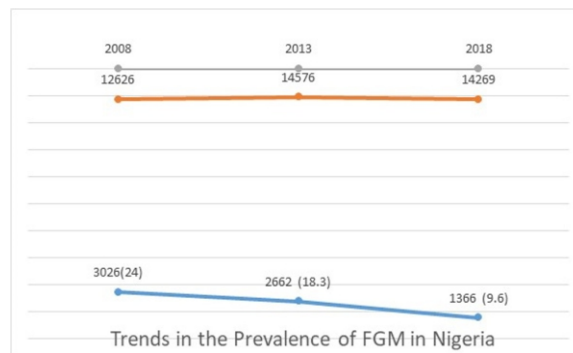


Figure 1: Trend in FGM/C proportion among female youths 15 to 24 years in Nigeria, 2008 to 2018

Table 4: Trend in the pattern of FGM/C among youths in Nigeria

Pattern of FGM/C	2008 n=12626	2013 n=14576	2018 n=14269	Total Frequency n=41472 (%)
<b>Flesh removed from genitals</b>				
No	11,179(88.5)	12,829 (88.0)	13,786 (99.6)	37,794 (91.1)
Yes	1,445(11.5)	1,747 (12.0)	484 (0.4)	3,678 (8.9)
<b>The genital area was just nicked</b>				
No	12,548 (99.4)	14,397(98.8)	14,124 (98.8)	41,068 (99.0)
Yes	78. (0.6)	179 (1.2)	146 (1.2)	404 (1.0)
<b>The genital area is sewn closed</b>				
No	12,471 (98.8)	14,448.8 (99.1)	14,218	41,138 (99.2)
Yes	155(1.2)	127.7 (0.9)	51	334 (0.8)

over the 10 years was flesh removed from the genitals (3678, 8.9%).

As shown in Table 5, the Chi-square test indicates a statistically significant association in circumcision rates among the age groups 15-19 and 20-24 years ( $p$ -value  $< 0.001$ ). Specifically, circumcision is more common (3681) (19.7%) among the older age group (20-24 years) than the younger age group (15-19 years), 3373 (14.8%) ( $\chi^2 = 104.5; p < 0.001$ ). The Chi-square test indicates a statistically significant difference in circumcision rates between urban and rural residents ( $p$ -value  $< 0.001$ ). Circumcision is more common among urban 3317 (19.6%) youths than rural female youths 3736 (15.2%), ( $\chi^2 = 17.6; p < 0.001$ ).

Furthermore, the highest proportion of circumcised female youths over the periods was observed in the Southeast 1529 (32.0%) ( $\chi^2 = 92.0; p < 0.001$ ), followed by the Southwest 2083 (31.9%), and the least proportion was seen in the Northeast 207 (3.2%). Additionally, the highest proportion of



Table 5: Socio-demographic factors associated with female circumcision among youths 15 to 24 years in Nigeria, 2008, 2013 and 2018

Variables	Circumcised (Freq% %)		Total	Chi-square (P-value)
	Yes n=7054	No n=34419		
<b>Age</b>				104.5 (0.001)*
Youths (15-19)	3373 (14.8)	19388 (85.2)	22761 (100.0)	
Youths (20-24)	3681 (19.7)	15031 (80.3)	18712 (100.0)	
<b>Place of residence</b>				17.6 (0.001)*
Urban	3317 (19.6)	13570 (80.4)	15887 (100.0)	
Rural	3736 (15.2)	20849 (84.8)	24585 (100.0)	
<b>Region</b>				92.0 (0.001)*
North Central	419 (6.8)	5729 (93.2)	6148 (100.0)	
Northeast	207 (3.2)	6220 (96.8)	6427 (100.0)	
Northwest	1935 (16.1)	10096 (83.9)	12031 (100.0)	
Southeast	1529 (32.0)	3253 (68.0)	4782 (100.0)	
South-south	880 (15.8)	4673 (84.2)	5554 (100.0)	
Southwest	2083 (31.9)	4448 (68.1)	6531 (100.0)	
<b>Educational Level</b>				18.18 (0.001)*
No Education	1525 (12.7)	10480 (87.3)	12005 (100.0)	
Primary	907 (3.2)	4258 (83.1)	5165 (100.0)	
Secondary	4138 (18.9)	17774 (81.1)	21912 (100.0)	
Tertiary/Higher	484 (20.2)	1907 (79.8)	2391 (100.0)	
<b>Religion</b>				5.62 (0.0005)*
Catholic	1034 (22.1)	3654 (77.9)	4688 (100.0)	
Other Christians	2534 (16.9)	12439 (83.1)	14973 (100.0)	
Islam	3420 (16.0)	17960 (84.0)	21380 (100.0)	
Traditionalist	44.7 (17.7)	208 (82.3)	252 (100.0)	
Others	20 (11.2)	158 (88.8)	178 (100.0)	
<b>Wealth Index</b>				16.2 (0.001)*
Poorest	862 (12.2)	6210 (87.8)	7072 (100.0)	
Poorer	1201 (14.7)	6997 (85.3)	8198 (100.0)	
Middle	1438 (17.0)	7023 (83.0)	8461 (100.0)	
Richer	1897 (20.9)	7201 (79.1)	9097 (100.0)	
Richest	1656 (19.2)	6988 (80.8)	8644 (100.0)	
<b>Year of interview</b>				64.5 (0.001)*
2008	3026 (24.0)	9601 (76.0)	12626 (100.0)	
2013	2662 (18.3)	11915 (81.7)	14576 (100.0)	
2018	1366 (9.6)	12903 (90.4)	14269 (100.0)	

\*Statistically significant ( $p \leq 0.05$ )

circumcised female youths was seen among Catholics, 1034 (22.1%) ( $\chi^2 = 5.62$ ;  $p < 0.005$ ); those with a higher level of education, 484 (20.2%); and those in the richer, 1897 (20.9%), and richest, 1656 (19.2%), wealth index. FGM/C was common in the year 2008 (3026 [24.0%]) compared to 2018 (1366 [9.6%]) ( $\chi^2 = 64.5$ ;  $p < 0.001$ ).

## Discussion

This study assessed the prevalence, trend, pattern, and determinants of FGM/C among youths 15 to 24 years in Nigeria using the NDHS data set of 2008, 2013 and 2018. The overall prevalence of 17.01% over the decade represents a considerable reduction compared to earlier periods, reflecting progress in addressing FGM/C. However, it underscores that a substantial proportion of female youths continue to be affected. When contextualised with the country's large population, the figure indicates that thousands of women and girls are still subjected to this practice, demonstrating the need for continued interventions. The findings show a downward trajectory in Female Genital Mutilation/Cutting (FGM/C) prevalence among Nigerian females aged 15 to 24 years from 2008 to 2018, underscoring

progress in efforts to combat this harmful practice. The highest prevalence in this period was recorded in 2008, while the lowest prevalence occurred in 2018. The prevalence reduced by more than half over the past decade. This downward trajectory reflects both increasing awareness and the effectiveness of interventions at various levels.

This finding is in tandem with the study by Morlighem et.al., which reported an overall decline in FGM prevalence nationally<sup>19</sup>. Their study used data of women 15 to 49 years from the MICS 2021. A decrease in prevalence was also seen in an Ethiopian study<sup>20</sup>.

The Chi-square test results demonstrate patterns in circumcision rates among female youths in Nigeria, with variations based on age, location, region, religion, and socioeconomic status. These observations provide valuable insights into the socio-cultural dynamics influencing Female Genital Mutilation/Cutting (FGM/C) and can guide targeted interventions.

Circumcision is significantly more prevalent in the older age group 20–24 years compared to the younger age group 15–19 years). The higher prevalence in older youths might be due to the declining FGM/C practices over time, which could be due to increased awareness and advocacy. This trend may suggest a generational shift, with younger cohorts being less exposed to FGM/C, likely due to intensified anti-FGM/C efforts in recent years. Policies and programs targeting younger age groups may help sustain and accelerate this decline.

Urban prevalence may be linked to cultural retention among urban migrants, who may practice FGM/C to maintain ties with traditional customs. In rural areas, the decline might be due to focused outreach programs by NGOs and health workers, who often target rural communities with educational campaigns. Efforts to address FGM/C in urban areas should include tailored approaches that consider migration and cultural dynamics.

The findings show that the Southeast and Southwest have the highest proportions of circumcised female youths, while the Northeast has the lowest. Regional differences reflect cultural and ethnic variations in the practice of FGM/C. The Southeast and Southwest regions may have stronger adherence to cultural norms perpetuating FGM/C, whereas the Northeast, influenced by different ethnic and

religious dynamics, shows minimal prevalence. This underscores the need for region-specific interventions to address the unique cultural and social drivers in each area.

The association between Catholicism and higher circumcision rates could be due to cultural practices among ethnic groups predominantly adhering to this religion. The south easterners may be mostly Catholics. Other religious groups may have less prevalence due to differing doctrinal stances on FGM/C or effective advocacy within their communities. Religious leaders can play a pivotal role in combating FGM/C by promoting alternative rites of passage and rejecting harmful practices.

The observed higher prevalence of FGM/C among tertiary-educated individuals highlights the complex interplay between education, cultural norms, and societal expectations. Individuals with tertiary education might belong to ethnic or cultural groups where FGM/C is deeply ingrained, and their educational attainment may not override societal pressures to conform to these traditions. Educated individuals might opt for FGM/C in clinical settings under the assumption that this reduces health risks, perpetuating the practice under the guise of safety rather than abandoning it entirely.

Higher wealth categories may reflect access to medicalised FGM/C, where the practice is performed in clinical settings, reducing perceived health risks. The perception of FGM/C as a status symbol or tradition within wealthier families may also have contributed to this finding. Advocacy efforts should challenge the normalization of medicalized FGM/C and address cultural beliefs associating wealth with maintaining traditional practices.

### Limitations and Strength

Due to the cross-sectional design of this study, causality cannot be established, as there is temporal limitations also, deeper cultural, contextual, or qualitative explanations for FGM practices are not captured. However, the NDHS data are collected using a rigorous probability sampling method (multi-stage) with large sample size, ensuring results are generalizable to the Nigerian population.

### Conclusion

The sharp decline in FGM/C prevalence among

Nigerian female youths from 2008 to 2018 may be a testament to the impact of advocacy, legal reforms, and changing social norms. While the progress is encouraging, sustained efforts are necessary to address the remaining challenges and ensure all Nigerian girls and women are free from the harm of FGM/C. With continued focus, the country can serve as a model for ending this practice globally. These findings emphasize the need for targeted, context-specific strategies to eradicate FGM/C. Collaboration with community leaders, religious figures, and healthcare providers, combined with regionally tailored interventions, is important for addressing the diverse factors perpetuating this harmful practice.

### References

1. WHO. Female genital mutilation [Internet]. 2024 [cited 2024 Jun 25]. Available from: <https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation>
2. Epundu UU, Ilika AL, Ibeh CC, Nwabueze AS, Emelumadu OF, Nnebue CC. The epidemiology of female genital mutilation in Nigeria—a twelve year review. *Afrimed Journal* [Internet]. 2018 Nov 13;6(1):1–10. Available from: <https://www.ajol.info/index.php/afrij/article/view/170215>
3. UNFPA. Female genital mutilation in Nigeria. *Situation Analysis*. 2021. p. 161–7.
4. National Population Commission [Nigeria] and ICF International Rockville, Maryland U. Nigeria Demographic and Health Survey Key Indicators Report. Nigeria Demographic and Health Survey 2018 Key Indicators Report. 2019.
5. Kandala NB, Ezejimofor MC, Uthman OA, Komba P. Secular trends in the prevalence of female genital mutilation/cutting among girls: A systematic analysis. *BMJ Glob Health*. 2018;3(5):1–7.
6. UNICEF. Female genital mutilation: A new generation calls for ending an old practice [Internet]. 2020. [cited 2024 Jun 25]. p. 8. Available from: <https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation>
7. United Nations. Definition of youth. 2014. p.

- 1–7.
8. Federal Ministry of Youth and Sports Development. Federal Republic of Nigeria National Youth Policy: Enhancing Youth Development and Participation in the context of Sustainable Development. 2019. p. 1–111.
  9. Sabi Boun S, Otu A, Yaya S. Fighting female genital mutilation/cutting (FGM/C): towards the endgame and beyond. *Reprod Health* [Internet]. 2023;20(1):1–5. Available from: <https://doi.org/10.1186/s12978-023-01601-3>
  10. Hamdy A, Aboushady AT, El Moty HIA, ELShobary MOM, Bassiouny Y, Hegazy AA. Knowledge, attitudes, and practices of Female Genital Mutilation / Cutting among healthcare providers in two public hospitals in Egypt: A cross-sectional study. *PLOS Global Public Health* [Internet]. 2023;3(12):1–18. Available from: <http://dx.doi.org/10.1371/journal.pgph.0002724>
  11. Oni TO, Okunlola DA. Contextual determinants of generational continuation of female genital mutilation among women of reproductive age in Nigeria : analysis of the 2018 demographic and health survey. *Reprod Health* [Internet]. 2024;21(39):1–12. Available from: <https://doi.org/10.1186/s12978-024-01778-1>
  12. European Union Agency for Asylum E. Female genital mutilation or cutting (FGM/C). *Common Analysis*. 2021.
  13. Jung MS, Dlamini NS, Cui X, Cha K. Prevalence of HIV testing and associated factors among young adolescents in Eswatini: a secondary data analysis. *BMC Pediatr* [Internet]. 2022;22(1):1–8. Available from: <https://doi.org/10.1186/s12887-022-03698-0>
  14. Young J, Nour NM, Macauley RC, Narang SK, Johnson-Agbakwu C. Diagnosis, management, and treatment of female genital mutilation or cutting in girls. *Pediatrics*. 2020;146(2).
  15. Nnanatu CC, Atilola G, Komba P, Mavatikua L, Moore Z, Matanda D, et al. 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* [Internet]. 2021 May 17;16(2):e0246661. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7880428/>
  16. Sanni FO, Sanni EA, Onyeagwaibe C, Ahamuefula T. A retrospective analysis of the trends in the prevalence of female genital mutilation and associated factors among women of reproductive age in Nigeria 2011–2021. *J Family Med Prim Care* [Internet]. 2024 Nov 13;13(8):3084–93. Available from: [https://journals.lww.com/jfmpc/fulltext/2024/13080/a\\_retrospective\\_analysis\\_of\\_the\\_trends\\_in\\_the.42.aspx?context=latestarticles](https://journals.lww.com/jfmpc/fulltext/2024/13080/a_retrospective_analysis_of_the_trends_in_the.42.aspx?context=latestarticles)
  17. World bank Group. Nigeria [Internet]. World Bank. 2024. Available from: <https://www.worldbank.org/en/country/nigeria>
  18. Israel GD. Determining Sample Size 1. Institute of Food and Agricultural Sciences (IFAS), University of Florida, Gainesville, FL 32611. 2013. p. 1–5.
  19. Morlighem C, Visée C, Nnanatu CC. Comparison of FGM prevalence among Nigerian women aged 15–49 years using two household surveys conducted before and after the COVID-19 pandemic. *BMC Public Health* [Internet]. 2024 Nov 13;24(1):1866. Available from: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-024-19069-6>
  20. Alemu AA. Trends and Determinants of Female Genital Mutilation in Ethiopia: Multilevel Analysis of 2000, 2005 and 2016 Ethiopian Demographic and Health Surveys. *Int J Womens Health* [Internet]. 2021 Nov 11; Volume 13 : 19 – 29 . Available from: <https://www.dovepress.com/trends-and-determinants-of-female-genital-mutilation-in-ethiopia-multi-peer-reviewed-article-IJWH>