

## Differentials in Male Circumcision Prevalence, HIV/AIDS Knowledge and Behavioral Prevention Practices Among Men in Nigeria

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### Abstract

Compelling evidence regarding the HIV/AIDS reduction potentials of male circumcision abounds in sub-Saharan Africa, but men aged 15 to 59 years in Nigeria are mostly circumcised already. Yet, Nigeria continues to experience tens of thousands of deaths due to HIV/AIDS yearly, accounting for one of the highest HIV burdens worldwide. Differentials that may account for new HIV infections and high HIV prevalence rates need to be investigated. The purpose of this study was to examine the prevalence of male circumcision and determine the association between HIV/AIDS/STIs knowledge, contraception methods, and HIV prevention behavioral practices amongst men in Nigeria. This study utilized the 2018 Nigeria Demographic and Health Survey (n= 13,311). Chi-square tests were used to determine the prevalence of male circumcision. Two binary logistic regression models were performed to predict the relationship between independent and dependent variables. The prevalence of male circumcision was higher among men with knowledge of HIV/AIDS (98%) and other STIs (74%), used condoms (70.7%), and only 2.5% of men who sought advice/treatment were circumcised. Further evidence suggested that knowledge of HIV/AIDS was associated with higher odds of consistent condom use (AOR = 2.37; 95% CI = 1.12 – 5.02), and knowledge of other STIs was significantly associated with higher odds of seeking advice/treatment for the last STIs (AOR= 3.06; 95% CI = 1.88 – 4.99). This suggests that comprehensive education regarding HIV/AIDS and STIs if prioritized may serve as both a protective and preventive mechanism to achieve HIV epidemic control among men in Nigeria.

**Keywords:** *Circumcised men, HIV/AIDS, HIV/AIDS knowledge, Sexually Transmitted Infections, Sexual behaviors, Nigeria.*

### Introduction

Africa has the highest HIV prevalence rate globally, averaging nearly 4% of their population [1]. The World Health Organization (WHO) recommended male circumcision and HIV testing to become part of a comprehensive approach to HIV prevention [2]. Circumcision is a longstanding tradition involving the surgical removal of the foreskin from the penis [3-5]. The suggestion stemmed from findings in three randomized controlled trials (RCTs) carried out in Kenya, South Africa, and Uganda during the early to mid-2000s. These trials demonstrated a

50–60% decrease in the risk of female-to-male transmission of HIV among circumcised men when compared to their non-circumcised counterparts [6-8]. Additional evidence indicates that circumcision is associated with a decrease in HIV infection in some eastern and southern African countries where the public health policies have integrated voluntary male medical circumcision and HIV testing [9-11]. Studies suggests that 75 to 85% of HIV infection are likely acquired through sexual intercourse and majority of men living with HIV might have been infected through the penis [12]. Therefore,

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circumcision could eliminate the inner layer of foreskin enriched with HIV-1 target cells and receptors for the HIV virus [12-15]. This removal may confer protective effects against HIV infections. Both epidemiological and biological studies offer compelling evidence supporting the protective benefits of male circumcision in reducing heterosexual HIV transmission among males. These studies also help to explain the notable geographical variations in the prevalence of HIV infection within sub-Saharan Africa. The increasing focus on circumcision practices is also driven by empirical evidence suggesting a lower incidence of certain sexually transmitted infections (STIs) and HIV among circumcised individuals [14, 16, 17]. Some research even suggests that circumcision could reduce the HIV infection rate by up to 70%, marking a significant contribution to public health [18, 19]. Overall, fifteen WHO designated priority countries in Sub-Saharan Africa have implemented the integration of Voluntary male medical circumcision with HIV prevention practices such as HIV testing as a comprehensive HIV prevention strategy with measurable implications on HIV prevalence rates [20]. Experts warn that male circumcision should not replace HIV prevention practices [21].

Nigeria is the most populous country in Africa and the seventh most populous nation in the world. Most recent estimates indicate that more than three million Nigerians live with HIV/AIDS out of an estimated total current population of 223, 804, 632 million people [1, 22]. The HIV burden in Nigeria ranks fourth worldwide but highest in West and Central Africa with alternative conservative estimates suggesting that about 1.8 million people are living with HIV in Nigeria [23, 24]. In 2021, the HIV prevalence in Nigeria reached 1.9 million people averaging 74,000 new HIV infections at a 1.3% adult HIV prevalence rate, with 51,000 deaths attributed to AIDS, encompassing both adults and children [23, 25]. Nigeria unenviably ranks the lowest in life expectancy among countries in the West

African sub-region, with HIV mortality significantly contributing to this problem. Currently, Nigeria has to its credit, a unifying national HIV and AIDS strategic framework 2021 – 2025 which plans to increase access to HIV testing services so as to enable 90% of people living with HIV know their status by 2025 [23].

However, Nigeria has not integrated male circumcision and HIV prevention practices as part of its comprehensive health services despite compelling evidence shown in doing so by other countries in the control of the HIV/AIDS pandemic. Apparently, Nigerian health authorities reckon that circumcision rates are already high, and that subsisting national HIV/AIDS framework may be sufficient. The challenge lies in accurately assessing the implementation of this HIV/AIDS framework with a view to quantifying the impact of the thematic areas of focus on reduction of new HIV infection. Granted, the 2018 Nigeria Demographic and Health Survey indicate that male circumcision rate is indeed very high (96.8%) but other reports indicate that new HIV infection rates remain significantly high coupled with the high HIV burden [23]. Given that experts warn that male circumcision should not replace HIV prevention practices [21], and male circumcision rates are already very high, there is crucial need to explore the differentials in the knowledge of AIDS, other sexually transmitted infectious (STIs), contraception methods and their association with selected HIV prevention behaviors among circumcised males in Nigeria. Understanding the health seeking behaviors of circumcised men will provide valuable insight on alternative thematic areas for focusing health education and intervention resources. Previous studies have focused on countries in East, Central and Southern Africa with non-focusing on Nigeria (West Africa), and have been limited to cross-sectional designs, lacking nationally representative outcomes.

Current evidence is lacking in research specifically targeting Nigerian men.

Additionally, there is limited understanding of how knowledge of HIV/AIDS, other STIs, and contraception methods might impact HIV prevention behaviors among men aged 15 to 59 years old in Nigeria who are already circumcised. Therefore, to advance knowledge and address gaps in existing knowledge, this study utilized nationally representative samples of Nigerian men aged 15 to 59 years old to address the following research questions: (1) What are the prevalence rates of male circumcision across knowledge of HIV/AIDS, other STIs, contraception methods, and HIV prevention behavioral practices among Nigerian men? (2) Are there relationships between HIV/AIDS knowledge, other STIs, contraception methods, and HIV prevention behaviors among men in Nigeria?

## Methods

### Data Source

The 2018 Nigeria National Demographic and Health Survey (NDHS) is a comprehensive, nationally representative sample survey designed that offers current insights into demographic and health trends [26]. The NDHS was conducted by the National Population Commission (NPC), and the Department of Health and Human Services (DHS) Inner City Fund International (ICF) with support from United States Agency for International Development (USAID), Global Fund, Bill and Melinda Gates Foundation, World Health Organization (WHO), and the United Nations Population Fund (UNFPA). Approximately 42,000 households were included in the representative sample. All men aged 15 to 59 residing permanently in the chosen households, as well as temporary visitors who spent the night before the survey in those households, were eligible for interview participation. Data collection for the NDHS took place from August 14 to December 29, 2018. The survey encompassed various topics, including socio-demographic characteristics, awareness and attitudes towards HIV/AIDS and HIV testing,

and other health-related issues. The study utilized a male questionnaire to gather information from eligible male participants aged 15 to 59, focusing on modules covering HIV, condom use, aspects of male circumcision, and demographic characteristics.

### Sampling Design and Sample Size

This study is based on a secondary dataset known as the 2018 NDHS which marked a significant milestone as it introduced computer-assisted personal interviewing (CAPI) for the first time [26]. This innovative approach facilitated a faster and more efficient provision of data compared to previous survey methodologies. Employing a stratified, two-stage cluster design, the survey utilized enumeration areas (EAs) as the first-stage sampling units. In the second stage, a complete listing of households was conducted in each of the 1,400 selected EAs. A sample size of 13,311 male participants were interviewed for this study. In addition to presenting national estimates, the report provides key indicators for both rural and urban areas, Nigeria's six geopolitical zones, all 36 states, and the Federal Capital Territory (FCT). This extensive survey serves as a valuable resource for understanding and addressing demographic and health issues across the country. Measures were solely derived from the Man's questionnaire of the NDHS which was administered to all men aged 15-59 in the subsample of households selected for the men's survey.

### Measures

*Male circumcision* is measured by asking participants. "Some men are circumcised, that is, the foreskin is completely removed from the penis. Are you circumcised?" This variable was measured dichotomously as "yes" (circumcised) and "no" (uncircumcised). *Knowledge of HIV/AIDS* was assessed by asking the participants: "Now I would like to talk about something else. Have you ever heard of HIV or AIDS? This variable was measured

dichotomously as “yes” (heard of HIV or AIDS) and “no”. *Knowledge of any contraceptive method* was measured by asking the participants if they had knowledge of any contraceptive method. This was dichotomously coded as “yes” or “no”. *STIs knowledge* was measured by asking participants: “apart from HIV, have you heard about other infections that can be transmitted through sexual contact?” Also, this variable was measured dichotomously as “yes” (Ever heard of other STIs) and “no” (Have never heard of other STIs). *HIV prevention behaviors* was assessed by asking the following items (1) used condom every time they had sex with the most recent partner in the last 12 months, “was a condom used every time you had sexual intercourse with this person in the last 12 months? (2) sought advise/treatment for last sexual infection, “The last time you had a sexually transmitted infection, did you seek any kind of advice or treatment?” This was dichotomously coded as “yes” or “no”.

The socio-demographic characteristics included the following variables: region, ethnicity, resident type, age group, marital status, education, employment, wealth status, and religion. These were used as control variables.

### **Data Analysis**

The statistical package for the social sciences (SPSS version 29) were utilized for data analysis. For the descriptive statistics, the frequencies and proportions of socio-demographic variables were computed and tabulated. Chi-square was used to determine the association and prevalence estimates between male circumcision and knowledge of HIV/AIDS, other STIs, contraception methods, and HIV prevention behaviors. To determine whether knowledge of HIV/AIDS, other STIs, and contraception methods predict the sexual health seeking behaviors of Nigerian men aged 15 to 59 years, we conducted multivariate logistic regression while controlling for sociodemographic characteristics. Afterwards the new knowledge of contraception methods

variable, knowledge of HIV/AIDS, and STIs were used to fit a logistic regression to predict the odds of practicing either consistent use of condom or seeking for advice/treatment (HIV prevention behaviors). The statistical significance was set at the  $p$ -value of 0.05.

### **Ethical Considerations**

The NDHS was executed collaboratively by the National Population Commission (NPC) and the Department of Health and Human Services (DHS), and the Inner City Fund International (ICF), receiving support from the United States Agency for International Development (USAID), Global Fund, Bill and Melinda Gates Foundation, World Health Organization (WHO), and the United Nations Population Fund (UNFPA). Questionnaires, based on The DHS Program’s standard Demographic and Health Survey (DHS-7) questionnaires, were modified to address population and health issues specific to Nigeria. The survey protocol underwent scrutiny and approval from the National Health Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board. Upon finalizing the questionnaires in English language, translations into Hausa, Yoruba, and Igbo languages were carried out. The 2018 NDHS utilized computer-assisted personal interviewing (CAPI) for data collection. Authorization to employ the NDHS was obtained from the Department of Health and Human Services (DHS) Inner City Fund International (ICF), securing approval on November 27<sup>th</sup>, 2023. The study is deemed to have been conducted ethically and in accordance with established guidelines.

### **Results**

#### **Descriptive Characteristics of the Participants**

This table (Table 1) provides descriptive characteristics of the participants. The total sample size included 13,311 Nigerian men aged 15 to 59 years. By *region*, the participants were distributed across different regions of the

country, with the highest representation in the Northwest (22.2%), followed by the Northeast (18.4%) and North Central (18.1%). In terms of *ethnicity*, most participants belong to the “Others” category (37.3%) which represents minority tribes, followed by the Hausa/Fulani ethnic group (33.1%), Igbo (16.0%), and Yoruba (13.6%). More than half of the participants (58.6%) lived in rural areas, were between 15 to

34 years old (55.6%) and were married (58.1%). About 63.5% of the participants had at least secondary or higher education, and only 36.2% were currently working, and belonged to the “rich” by wealth status (41.9%). Slightly more than half of the participants identified as belonging to as Islam (50.1%), and the overwhelming majority of the participants were circumcised (96.8%).

**Table 1.** Descriptive Characteristics of the Participants (n=13,311)

<b>Variables</b>	<b>N</b>	<b>%</b>
<b>Region</b>		
North Central	2415	18.1
North East	2447	18.4
North West	2960	22.2
South East	1755	13.2
South South	1697	12.7
South West	2037	15.3
<b>Ethnicity</b>		
Hausa/Fulani	4397	33.1
Igbo	2134	16.0
Yoruba	1811	13.6
Others	4969	37.3
<b>Resident Type</b>		
Urban	5506	41.4
Rural	7806	58.6
<b>Age Group (years)</b>		
15 – 34	7388	55.6
35 – 44	3288	24.7
45 – 59	2635	19.8
<b>Marital Status</b>		
Married	7738	58.1
Never married	5105	38.4
Living with partner	280	2.1
Others	188	1.4
<b>Education</b>		
No education	2946	22.1
Primary	1914	14.4
Secondary or higher	8451	63.5
<b>Employment</b>		
Not working	8488	63.8
Currently working	4823	36.2
<b>Wealth Status</b>		
Poor	4874	36.7

Neither poor nor rich	2858	21.5
Rich	5579	41.9
<b>Religion</b>		
Catholic	1587	11.9
Protestant	4948	37.2
Islam	6664	50.1
Traditionalist	95	0.7
Others	17	0.1
<b>Male Circumcised</b>		
Not circumcised	428	3.2
Circumcised	12827	96.8

### The Prevalence of Male Circumcision by HIV/AIDS/STI knowledge, Condom use and Seeking Advice/Treatment for Last STI Infection

The Chi-square results showing an association and prevalence of male circumcision by HIV knowledge, condom use, and seeking advice/treatment for last STI infections are shown in Table 2. The results indicated that knowledge of HIV/AIDS, including ever heard of HIV/AIDS ( $p < .002$ ), ever heard of other STIs ( $p < .001$ ), as well as seeking advice/treatment for the last STI infection ( $p < .001$ ) were significantly associated with male circumcision. However, consistent condom use in the last 12 months was not significantly associated with male circumcision ( $p = .466$ ). Particularly, 94.8% of the men who reported having ever

heard of HIV/AIDS were more likely to be circumcised compared to 5.2% who never heard of HIV/AIDS. Second, 74% of men who had ever heard of STIs were more likely to be circumcised than 26% who had never heard of other STIs. In terms of seeking advice/treatment for the last STI infection, the prevalence of having sought advice/treatment for the last STI infection was only 2.5%, with only minimal difference for male circumcision compared to 2.4% who never sought advice/treatment for the last STI infection. Finally, although consistent condom use was not significantly associated with male circumcision, surprisingly, 70.7% of the men who used condoms during sexual intercourse in the last 12 months were more likely to be circumcised compared to 29.3% who never used condoms during the last 12 months.

**Table 2.** The Prevalence of Male Circumcision across HIV/AIDS/STIs Knowledge and Prevention

Variable	Male Circumcision			Effect size
	Circumcised (N=12827)	Uncircumcised (N=428)	P-Values	
<b>Ever heard of HIV/AIDS</b>				
Yes	12157 (94.8%)	390 (2.9%)	.002	.030
No	668 (5.2%)	38 (0.3%)		
<b>Ever heard of other STIs</b>				
Yes	9497 (74%)	240 (6.7%)	<.001	.120
No	3330 (26%)	188 (1.9%)		
<b>Ever heard of contraceptive methods</b>				
Yes	12157(94.8%)	397 (13.7%)	.001	.026
No	670 (5.2%)	31 (4.4%)		
<b>Consistent Condom use in the last 12 months</b>				
Yes	967 (70.7%)	42 (4.1%)	.466	.033

No	400 (29.3%)	12 (2.9%)		
<b>Sought advise/treatment for last STI infection</b>				
Yes	324 (2.5%)	45 (12.7%)	<.001	.148
No	308 (2.4%)	15 (4.4%)		

### Association between HIV/STI Knowledge, Contraceptive Knowledge and Consistent Condom Use and Seeking Advice/Treatment for STI Infection

The logistic regression results of HIV/STI knowledge and method of contraceptive predicting consistent condom use in the last 12 months and seeking advice/treatment for STI infection are shown in Table 3. Men who ever heard of HIV/AIDS had higher odds of consistent condom use with their most recent partner in the last 12 months compared to those who never heard of HIV/AIDS (AOR = 2.37; 95% CI = 1.12 – 5.02;  $p < .05$ ). However, having heard of other STIs was not significantly

associated with consistent condom use every time among men had sex with the most recent partner in the last 12 months compared to those never heard of other STIs (AOR = .86; 95% CI = .63 – 1.17;  $p > 0.05$ ). On the other, having heard of other STIs was significantly associated with higher odds of seeking advice/treatment for the last STI infection among men (AOR= 3.06; 95% CI = 1.88 – 4.99;  $p < .001$ ). However, having ever heard of HIV/AIDS (AOR= .33; 95% CI = .072 – 1.48;  $p > .05$ ) and knowledge of contraceptive methods (AOR= 2.47; 95% CI = .60 – 10.2;  $p > .05$ ) were not significantly associated with seeking advice/treatment for last STI infection among men in Nigeria.

**Table 3.** Logistic Regression Model of HIV Prevention Behaviors and Knowledge of HIV/AIDS, Other STIs, and Contraception Methods

Variables	Model 1	Model 2
	Consistent Condom Use	Sought Advice and Treatment
	AOR (95% C.I)	AOR (95% CI)
<b>Ever heard of HIV/AIDS</b>		
Yes	2.37 (1.12 – 5.02)*	.33 (.072 – 1.48)
No	Ref	Ref
<b>Ever heard of STIs</b>		
Yes	.86(.63 – 1.18)	3.06 (1.88-4.99)***
No	Ref	Ref
<b>Contraceptive method knowledge</b>		
Yes	X	2.47 (.60 – 10.2)
No	Ref	Ref

\*= $P < .05$ , \*\*= $P < .01$ , \*\*\*= $P < .001$ , AOR = Adjusted Odd Ratio, CI = Confidence Intervals.

Model 1 used condom is analyzed as an outcome variable, and Model 2 sought advice/treatment is analyzed as an outcome variable, X= Not analyzed due to collinearity between knowledge of contraceptive methods and consistent condom use during the past 12 month.

### Discussion

Our aim in this study was to determine the prevalence and examine the differences between HIV/AIDS knowledge, other STIs, contraception methods, and the potential odds of such knowledge impacting the practice of selected HIV prevention behaviors amongst circumcised men in Nigeria. Hence, this study

has made a significant contribution to the literature by providing critical insights about high rates of male circumcision that appear not to result in a commensurate reduction in the HIV prevalence rate and HIV/AIDS burden among Nigerian men.

In particular, in our prevalence findings, we found that among 96.8% of men who were circumcised, 94.8% reported having knowledge of HIV/AIDS, 74% knowing other STIs, 94.8% having knowledge of contraceptives, and 70% reported having used condoms in the past 12 months in Nigeria. At the same time, the significant association we found between reported knowledge of HIV, and consistent condom use with male circumcision is consistent with findings from previous studies indicating a high knowledge of medical circumcision for HIV prevention among male samples in other countries [27-29]. This suggests that knowledge of HIV/AIDS may serve as both a protective and prevention mechanism with numerous benefits of reducing the potential HIV or infection from other STIs among men in Nigeria. Thus, the continuation of intervention or programs in some parts of the country lagging HIV awareness is paramount to successfully control HIV/AIDS infection rates in Nigerian society. In the present study, we found a highly significant association between other STIs and male circumcision status. This aligns with the previous study, which indicated that men who were circumcised, regardless of their HIV status, exhibited a lower prevalence of syphilis compared to their uncircumcised counterparts in Nigeria [30]. Additionally, circumcised men demonstrated a reduced prevalence of curable STIs among their female partners [30]. In contrast, one study conducted in Uganda posits that there was no association between male circumcision and other bacterial STIs with the exception of syphilis and chancre [31]. This study also found that male circumcision was associated with variations in awareness of HIV/AIDS, other STIs, and contraceptive methods, as well as seeking advice/treatment for the last STI

infection but not for consistent use of condom for every sexual intercourse in the past 12 months. Similar studies conducted in eastern, southern, and central Africa support this finding [29, 32, 34].

Furthermore, knowledge of AIDS was significantly associated with higher odds of consistent condom use among men in Nigerian. Specifically, those having knowledge of AIDS were 2.4 times more likely to use condoms relative to those who were not aware of AIDS in Nigeria. Conversely, rather than knowledge of AIDS, some prior studies found that perception of condom use by friends, self-efficacy (attitudes toward condom use, obstacles to condom usage, contentment with sexual communication, expected quantity of sexual partners, brief sexual encounters, and ethnic identity), and general impulsive attitudes were predictors of condom use [35-37]. Another study suggests that having more social network members was a significant predictor of consistent condom use [38]. A more recent study found that condom use were reportedly high during anal sex than in vaginal sex [39], while another study identified the predictor for condom use as initiating condom use during one's first sexual experience and engaging in a conversation with one's initial sexual partner regarding the use of condoms [40]. These studies did not specifically examine the knowledge of AIDS in relation to condom use in their sample.

On the other hand, evidence from the current study suggests that knowing other STIs was associated with higher odds of seeking advice/treatment. Precisely, Nigerian men who have heard of other STIs were three times more likely to seek treatment or advice if they had a sexually transmitted infection. Although other studies have suggested that age and number of sexual partners are correlates of HIV and STI status in similar sub-Saharan African demographics [35], this study presents unique differentials in knowledge about other STIs examined through HIV prevention evidence. It is also possible that having knowledge about STIs



could serve as a reminder about the potential consequences that are associated with undiagnosed STIs. As such, men who engage in unprotected sexual risk behaviors may be compelled to seek treatment or advice regarding STIs. In this case, knowledge of STIs is a potential protective factor and can prompt immediate response to seek support, treatment, and information vital to living healthy and productive lives among men at risk of STIs.

### **Implications of the Study**

The findings from this current study present a unique perspective, but like other related studies [35], proposes the crucial need to escalate HIV/AIDS preventive measures in favor of those who are behaviorally vulnerable to HIV/AIDS such as adolescents, young adults and the uneducated who may not have been exposed to family life and HIV education. Sex education have been the thrust of prior studies with similar demographics, although it is not often emphasized in the Nigerian society due to socio-cultural, educational, and religious inhibitions [41-43]. In this sample, 22.1% have no education at all. In comparison, 14.4% have only primary education, which indicates that 36.5% of Nigerian men may likely be uneducated about sexual health beyond knowledge of the existence of HIV/AIDS. Also, young men aged 15 to 34 years who may be most behaviorally vulnerable to HIV/AIDS account for the highest group with the least possibility of sexual health education, assuming they fall within the 36.5% of Nigerian men with little or no education. Given the possibility of the lack of family life and HIV education in the younger demographic prior to potential exposure to sexual risks, more concerted efforts at sexuality education should be prioritized early from 10 years old.

### **Limitations of the Study**

The limitations of the current study include the lack of HIV testing data which may also contribute to understanding the relationships between male circumcision and HIV prevention

behaviors. Also, the study design suggests that the current study cannot establish or infer a causal relationship between male circumcision and HIV prevention behaviors or knowledge of HIV/AIDS, contraception, and STIs. Considering that HIV is still a disease rooted in stigma, social and economic inequities, the self-report survey design may be prone to response bias. Participants in the study may have potentially underreported or experienced recall bias, influencing the outcomes. Despite these limitations, our models incorporated variables chosen for their relevance in extensive existing literature, particularly in studies related to male circumcision and HIV. Notably, the study employed a nationally representative sample, enhancing reliability and generalizability to other settings in Nigeria and across sub-Saharan African countries.

### **Conclusions**

This study provides valuable insights on the differentials in HIV/AIDS knowledge and behaviors and male circumcision with the intent to contribute to the HIV prevention literature. Evidence from this study suggests that knowledge of HIV/AIDS is a significant predictor of consistent condom use during sexual intercourse. Similarly, knowledge of STIs is also a significant predictor of seeking advice or treatment following sexual infection. Besides, male circumcision status has been associated with differences in awareness of HIV/AIDS, other STIs, and contraceptive methods, as well as seeking advice/treatment for the last STI infection. These findings provide thematic areas of focus for the national response towards ending HIV/AIDS in Nigeria. Considering that male circumcision status does not account for reduction in HIV burden and prevalence among Nigerian men, concerted efforts should focus on alternative approaches such as expanding access to HIV prevention, treatment, and linkage to care services at the community level through relevant formal and informal community structures. Current efforts addressing HIV prevention in

Nigeria should integrate sexuality education into all existing community health services, focusing on building the knowledge and capacity of community stakeholders and service providers. Moreso, evaluating the progress of the national HIV/AIDS strategy should be carried out quarterly in order to sustain progress in ending the HIV epidemic. Finally, this study provides direction for further studies that could utilize ethnographic qualitative approaches to integrate community engaged HIV prevention strategies such as HIV testing and linkage to care services into research.

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## Conflict of Interests

The author(s) declare that they have no competing interests.

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