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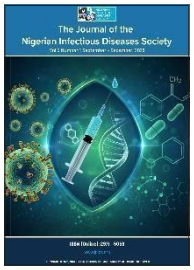

Original Article

Knowledge, Attitude, and Practice of Premarital Counselling and Testing for HIV/AIDS Among Students of College of Education

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ABSTRACT

Background: Human Immunodeficiency Virus (HIV) remains a significant public health challenge, especially for young people in sub-Saharan Africa, which struggles with low HIV testing rates and diagnosis, that lead to delayed treatment and increase risk of transmission. Premarital voluntary HIV counseling and testing emerge as a proactive strategy to curb both vertical and heterosexual transmission in regions with high HIV prevalence. However, despite these efforts of premarital testing and self-testing, stigma, confidentiality concerns, and misconceptions continue to hinder uptake, particularly among students.

Aim: To explore the knowledge, attitudes, and practices of premarital HIV counseling and testing among college students.

Methodology: A descriptive cross-sectional study was conducted among 245 students (response rate 94.2%) using a structured self-administered questionnaire. Data were analyzed using SPSS version 27, with descriptive statistics and chi-square tests for associations between variables.

Results: The majority of participants (89.4%) were aware of HIV/AIDS, with 53.9% demonstrating good knowledge. Most respondents (78%) showed positive attitudes toward PMCT, with 81.6% of unmarried participants expressing willingness to undergo testing. Among married participants, 52.3% had undergone PMCT. Major barriers included religious beliefs (45.3%), partner's refusal (43.3%), and cultural beliefs (40.4%). Significant associations were found between PMCT knowledge and ethnicity ($p<0.001$), religion ($p=0.046$), and marital status ($p=0.012$).

Conclusion: While awareness and attitudes toward PMCT were generally positive, there remains a gap between knowledge and practice. Religious, cultural, and social factors significantly influence PMCT uptake. These findings suggest the need for comprehensive interventions addressing sociocultural barriers and improving accessibility to PMCT services among college students.

Keywords: Knowledge, Attitude, Premarital Counselling, HIV/AIDS, College students

BACKGROUND

Human Immunodeficiency Virus (HIV) remains a significant global public health challenge, particularly among young people.[1] In 2023, an estimated 39.9 million individuals were living with HIV globally, with approximately 36.1 to 44.6 million affected since the beginning of the epidemic. Of this population, 30.7 million are receiving antiretroviral therapy (ART), and 38.6 million are adults aged 15 years or older. In the same year, 1.3 million new infections and 630,000 AIDS-related deaths were recorded globally.[2]Alarmingly, individuals aged 15 to 24 years represent the group most at risk of contracting the virus.[3] In sub-Saharan Africa, women and girls account for 62% of all new HIV infections, with 3,100 new infections occurring weekly.[2] This region faces unique challenges, including low rates of HIV testing among young adults, particularly young men; evidence suggests less than a quarter of young adults have ever tested for HIV. For those who are HIV-positive, testing often occurs at later stages of the disease, leading to delayed initiation of ART, increased risk of transmission, and higher AIDS-related mortality.[4] Early diagnosis remains a critical step in improving health outcomes and achieving the UNAIDS 95-95-95 global target—ensuring that 95% of individuals living with HIV know their status, 95% of those diagnosed access ART, and 95% of those on ART achieve viral suppression by 2030.[5] Despite these efforts, approximately 40% of all HIV infections remain undiagnosed worldwide.[6] Contributing factors include inadequate sexual health education, limited access to voluntary HIV testing and counselling, unhealthy cultural practices, and a weak healthcare system.[7,8] In Nigeria, HIV prevalence is estimated at 2.8%, with approximately 1.9 million people living with HIV.[9] Efforts to improve access to HCT are embedded within Nigeria's National Strategic Framework for HIV control, with initiatives aimed at expanding availability and encouraging participation nationwide.[10] Nonetheless, concerns regarding stigma and confidentiality continue to hinder testing uptake, particularly among young adults. HIV self-testing (HIVST) has emerged as a youth-friendly alternative to traditional testing methods, offering increased accessibility and privacy.[11] Premarital screening (PMS) is another preventive strategy aimed at identifying genetic disorders and sexually transmitted infections (STIs) before marriage. It typically involves counseling and medical examinations, providing couples with critical health information and minimizing disease transmission risks.[12]

Mandatory premarital HIV testing has been adopted in several countries, including Nigeria, where religious organizations have played a significant role in promoting this practice.[13] Religious organizations, particularly within Christian and Muslim communities, have implemented it.[14] However, numerous critiques have surfaced in recent years.[15] While the Catholic Church pioneered this initiative, the Muslim community initially challenged it, but in recent years, it has been since that many mosques now require couples to undergo premarital screening before conducting wedding ceremonies in some northern states, Bauchi and Jigawa. It includes screening for common genetic disorders, such as sickle cell anaemia, and infectious diseases like hepatitis B and C.[11,16] Despite its potential benefits, mandatory premarital HIV testing has drawn criticism from human rights organizations due to concerns about privacy and confidentiality.[17] However, stigma, confidentiality concerns, and fear of positive results hinder the uptake of premarital HIV testing.[18] Understanding HIV testing behaviors among college students is critical, given their high levels of risky sexual behavior and rising rates of heterosexual HIV transmission. Research has shown that misconceptions about HIV transmission, stigma, and low awareness of testing locations significantly impact testing rate.[7,19] For instance, a study in Zaria revealed that while two-thirds of students understood HIV/AIDS, only one-third were aware of VCT services, and misconceptions about HIV persisted.20 Additionally, studies have found that fear of positive results and social discrimination are major barriers to HIV testing.[21] Socioeconomic factors, such as age, marital status, educational attainment, and wealth, also influence testing behaviors. For example, individuals aged 20–24, married individuals, and those with higher education or socioeconomic status are more likely to undergo HIV testing.[22] Despite the benefits of premarital screening, knowledge and attitudes toward this practice vary among students. A study conducted at Suez Canal University in Egypt revealed that 60.5% of students were aware of premarital counseling, and 74.5% exhibited positive attitudes toward it.[18] , another study among adolescents and young adults, higher educational attainment, media exposure, and reduced stigma are positively associated with testing rates.[23] However, misconceptions about PMS, particularly regarding its implications for marriage compatibility, persist despite its importance in reducing genetic and infectious diseases.[21]

In southern Nigeria, findings showed moderate knowledge levels (51.6%) about HIVST among students but high acceptability rates (62.6%).[24] However, most students preferred traditional HIV counseling and testing over self-testing. Some studies have found that fear of positive results and social discrimination are major barriers to HIV testing.[8] Additionally, a study conducted in Sokoto, Nigeria, which involved religious leaders, revealed that Christian clerics had significantly higher knowledge about HIV/AIDS compared to Muslim clerics. While all Christian clerics advocated for mandatory premarital HIV testing, Muslim clerics placed less emphasis on this issue.[25] Another study in Danbare village, Kano, reported high awareness of HIV transmission routes, such as sexual activity and unscreened blood transfusions, but varying levels of overall knowledge were found.[26] Understanding these gaps in knowledge and attitudes is crucial for designing more effective HIV prevention programs that resonate with the target populations. This study aims to explore knowledge, attitudes, and practices regarding premarital HIV counseling and testing (HCT) among students at the College of Education.

METHODOLOGY

Study Area and Setting

This study was conducted at the Federal College of Education (FCE), Kano, Nigeria, established in 1967 as an advanced teacher's college. FCE Kano is one of the largest colleges of education in Northern Nigeria, offering diverse programs including degrees, National Certificates of Education (NCE), pre-NCE, remedial programs, and diplomas. The institution, situated in Kano Municipal Local Government Area within the metropolis, caters to a diverse population of 7,782 registered students, comprising 2,817 females and 4,965 males. Its surrounding environment is cosmopolitan, with predominant Hausa-Fulani ethnicity and Islamic religious practice.

Study Design

A descriptive cross-sectional study was employed to assess the knowledge, attitude, and practice (KAP) of premarital HIV counselling and testing among the student population of FCE Kano.

Study Population

The study population included all students enrolled at FCE Kano during the 2019/2020 academic session.

Eligibility Criteria

Inclusion Criteria: Students currently enrolled at FCE Kano who consented to participate in the study after being fully informed about its purpose and confidentiality measures.
Exclusion Criteria: Students who declined to participate or did not provide informed consent.

Sample Size Determination

The minimum sample size was calculated using the formula:

$n=z2pq/d2$

Where:
n = minimum sample size
z = 1.96 (standard normal variate at 95% confidence level),
p = 0.81 (proportion of respondents who approved voluntary counselling and testing from a previous study),
q = 1 - p = 0.19,
d = 0.05 (precision).
Substituting these values into the formula,

$n=1.962*0.81*0.19/0.052$

$n=236$

The calculated sample size was 236, which was increased to 260 to account for potential non-responses.

Sampling Technique

A multistage sampling technique was used:
1. Stage 1: Three schools were randomly selected from the five schools within FCE Kano using a lottery method.
2. Stage 2: One department was randomly selected from each of the chosen schools.
3. Stage 3: Systematic random sampling was applied to select participants from the department lists, using a predetermined sampling interval.

Data Collection

Data were collected using a structured, self-administered questionnaire that was pretested for validity and reliability. The questionnaire comprised sections on socio-demographics, knowledge, attitudes, and practices related to premarital HIV counselling and testing. Informed consent was obtained from all participants before data collection.

Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Permission was granted by the college's administration, and participants were assured of confidentiality and anonymity. Participation was voluntary.

Data Analysis

Data were analysed using SPSS version [27]. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the data. Inferential statistics, including the Chi-square test, were applied to assess relationships between variables. Statistical significance was set at $p < 0.05$.

RESULTS

The study involved 245 students with a response rate of 94.2%. the majority were between 20-24 years (61.6%), with a mean age of 21.68. Of the 245 students, (n= 145, 41%) were male and (n=100, 59%) were female. The majority of the students were Hausa (n=170, 69.4%) and Muslim (n=224, 91%), (n=28, 11.4%) Fulani, and (n=26, 10.6%) Yoruba. The majority of respondents were single (n=210, 85%), at the time of the survey as shown in table 1.

Table 1. Sociodemographic Characteristics

Participant's Socio-demographic Characteristics			
Variables		**n**	**%**
Age group			
15-19		55	22.4
20-24		151	61.6
25-29		29	11.8
30-34		7	2.9
35-39		3	1.2
Gender			
	male	145	41
	female	100	59
Religion			
	Islam	224	91
	Christianity	21	9
Ethnicity			
	Hausa	170	69.4
	Fulani	28	11.4
	Yoruba	26	10.6
	Igbo	5	2
	Others	16	6.5
Marital status			
	Single	210	85.7
	Married	29	11.8
	Divorced	5	2
	Widowed	1	0.5

About 89.4% (219) of the respondents had heard about HIV/AIDS, and the remaining (n=26, 10.6%) had not heard of it with varying sources of information. As reported and illustrated in Table 3 and Fig.1 respectively, (n=66, 26.9%) got their information from Health facilities, (n=68, 27.8%) got their information from social media, (n=49, 20%) from school, (n=23, 9.4%) from health worker and (n=11, 4.5%), which is the least prominent source of information obtained their information from Posters. Each participant selected only one option.

Table 2. Knowledge related questions

Knowledge on HIV transmission, prevention and control		
Questions	percent with correct response	percent with wrong response
Have you heard of HIV/AIDS?	Yes (89.4%), n=219	No (10.6%), n=26
how do you think HIV is transmitted?		
mother to child	59.6	40.4
mosquito bite	86.1	13.9
unprotected sexual intercourse	84.5	15.5
transfusion with infected blood	82.9	17.1
sharing contaminated needles	76.3	23.7
kissing	85.7	14.3
Handshaking with infected person	93.5	6.5
Eating with HIV infected person in the same bowl	91.8	8.2
How can one prevent him/herself from getting infected?		
Abstinence from sex	57.6	42.4
Faithfulness to marriage partner	37.1	62.9
Avoidance of eating with infected person	80.4	19.6
Use of condom	72.7	27.3
avoidance of transfusion with unscreened blood	80	20
How can HIV be prevented among marital partners?		
By praying	87.3	12.7
By premarital counselling and testing	43.7	56.3
By marrying your blood relations only	86.4	13.6
By treating partner with drugs	30	70

Sources of information		
Participant's source of information		
Sources of information	**n**	**%**
Health facilities	66	26.9
Social media	68	27.8
Posters	11	4.5
Health worker	23	9.4
Friends and relatives	28	11.4
School	49	20

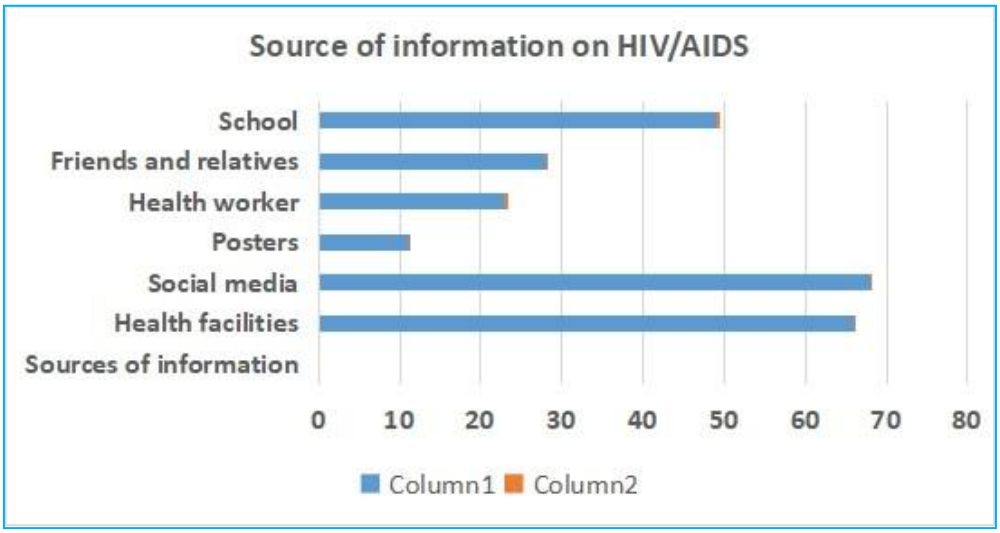

Fig. 1.

To test the participant's knowledge on route of transmission, a set of questions with 8 options were given (Table 2). Participants were asked to identify the methods through which HIV/AIDS can be transmitted from an infected person to healthy individuals. Four routes of transmission received majority of the correct responses, with (n=207, 84.5%) indicated that HIV/AIDS can be transmitted through unprotected sexual intercourse, (n=203, 82.9%) indicated that it can be transmitted through transfusion with infected blood, (n=187, 76.3%) indicated that it can be transmitted through sharing contaminated needles and (n=146, 59.6) indicated that HIV/AIDS can be transmitted from mother to child. Responses to these options shows that the respondents have reasonably good knowledge of HIV/AIDS transmission.

To further test the participant's understanding of the routes of transmission, more questions were asked.

Those with wrong responses showed that they had misconceptions about transmission. (n=35, 14.3%) thought that HIV/AIDS could be transmitted through kissing, (n=34, 13.9%) thought that mosquitoes could transmit the virus, (n=20, 8.2%) thought that eating in the same bowl as an infected person could transmit the virus from infected to healthy individuals, and (n=16, 6.5%) thought that it could be transmitted through handshaking with an infected person.

Questions about knowledge of prevention and control revealed that (n=196, 80%) indicated that HIV/AIDS can be prevented by avoiding transfusion with unscreened blood, (n=178, 72.7%) indicated that prevention can be achieved by using condoms, (n=154, 62.9%) indicated that it can be prevented by being faithful, (n=141, 57.6) indicated that it could be prevented through abstinence from having sex with an infected person,(n=93, 43.7%) indicated that it could be controlled through PMCT, and (n=64, 30%) indicated that it could be controlled by treating a partner with drugs. However, (n=48, 19.6%) believed that avoiding eating with an infected person in the bowl could prevent transmission, (n=29,13.6%) believed that marrying blood relatives only could prevent transmission, and (n=27, 12.7%) believed that transmission could be prevented through prayer.

TABLE 3: GRADING OF KNOWLEDGE OF RESPONDENTS

	Frequency	Percentage (%)
POOR KNOWLEDGE	26	10.6
FAIR KNOWLEDE	87	35.5
GOOD KNOWLEDGE	132	53.9
Total	245	100.0

Based on the responses to the variables, the knowledge of the respondents was graded and tabulated in table 3. A total of (n=132, 53.9%) participants demonstrated good understanding and knowledge of HIV/AIDS, (n=87, 35.5%) had fair knowledge, and (n=26 ,10.6%) had poor knowledge.

Table 4.

Attitudes towards PMCT		
Participant's attitude towards premarital counselling and testing		
Would you want to undergo premarital counselling and testing for HIV/AIDS?	Yes	No
	78%	22%
Perceived advantages by the participants for wanting to undergo premarital counselling and testing for HIV/AIDS	**N=192**	**78%**
To prevent Partner from getting infected	81	42%
To help infected partner seek treatment early	42	22%
To allow for happy and trustful marriage	69	36%
Perceived reasons by the participants for not wanting to undergo premarital counselling and testing for HIV/AIDS	**N=53**	**22%**
Fear of break in relationship	21	39.60%
Fear of positive result	15	28.30%
Fear of stigmatisation and discrimination	17	32.10%
Attitude of participants in an event of positive result	**N**	**%**
Postpone the marriage until partner gets well	67	27.30%
Abandon the marriage forever	75	30.60%
Proceed with the marriage and use condom	31	12.70%
Decision should be made by the couple	72	29.40%
Respondents view on how the test should be made	**N**	**%**
Compulsory	185	75.50%
Voluntary	60	24.50%
Respondents' Opinion on financial implication of the test	**N**	**%**
Government should make it free	214	87.30%
individuals should bear the cost	31	12.70%
Respondents view on who should reveal the test result	**N**	**%**
Medical doctor	106	43.20%
Trained counsellor	56	22.90%
Laboratory scientist	83	33.90%
Practice of PMCT		
Practice of premarital counselling and testing for HIV/AIDS		
Have you ever married?	**Yes (18%), n=44**	**No (82%), n=201**

Did you have a PMCT (Married)?	**Yes (52.3%), n= 23**	**No (47.7%), n= 21**
Reason for not undergoing PMCT (married)	**N**	**%**
it wasn't available	2	9.50%
it was expensive	6	28.60%
Religious/cultural beliefs	3	14.30%
Fear of break in relationship	6	28.60%
Fear of positive result	4	19%
If yet to marry, would you want to undergo PMCT of HIV/AIDS?	**Yes (81.6%), n= 200**	**No (18.4%), n= 45**
Perceived reason for wanting to undergo PMCT in the future	**N**	**%**
To have happy and trustful marriage	109	44.50%
To prevent partner from getting infected	114	46.50%
To help myself seek treatment early	22	9%
Reason for not wanting to undergo PMCT	**N**	**%**
Fear of positive result	164	67%
Fear of break in relationship	76	31%
Fear of stigma and discrimination	5	2%

Table 4 shows the distribution of variables regarding attitudes towards premarital counselling and testing; (78%, 192) expressed a positive attitude, and (n=53, 22%) expressed a negative attitude. Out of the 192 respondents who were willing to undergo premarital counselling and testing in the future, (n=81, 42%) expressed willingness to go for PMCT to prevent their partner from getting infected, (n=69, 36%) to allow for happy and trustful marriage, and (n=42, 22%) indicated that they were willing to go for PMCT to help infected partners seek treatment.

For the remaining (n=53, 22%) respondents who were not willing to undergo PMCT in the future, (n=21, 39.6%) indicated that they were not willing to undergo PMCT for fear of break in relationship, (n=17, 32.1%) for fear of positive results, and (n=15, 28.3%) for fear of stigmatization and discrimination.

Fig.2

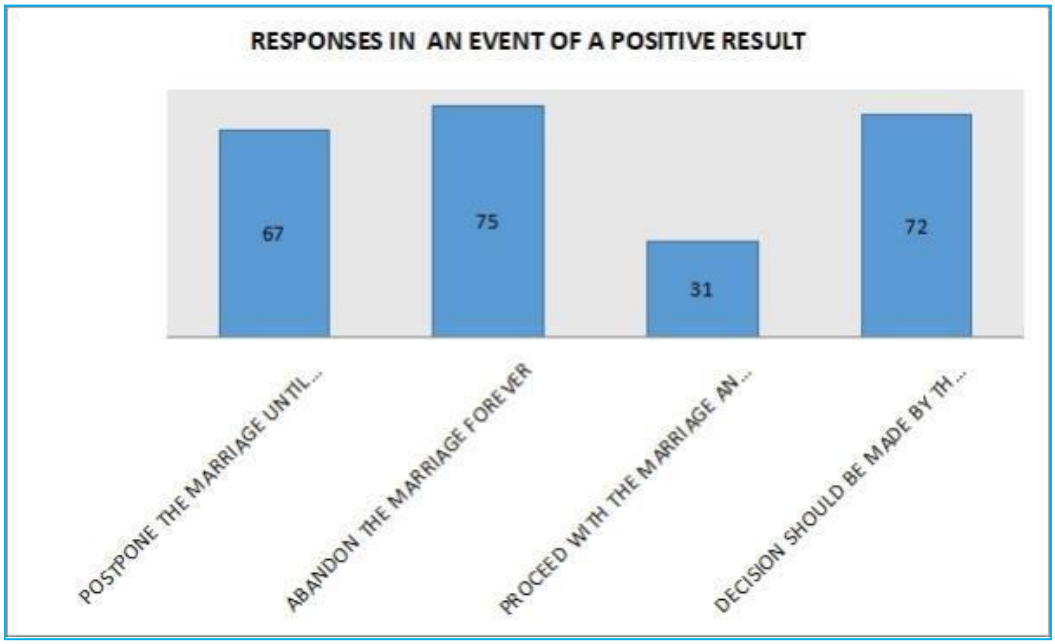

Figure 2 shows the distribution of responses by the respondents in an event of positive result, (n=75, 30.6%) indicated that they would abandon the marriage forever, (n=72, 29.4%) indicated that the decision about next line of action should be made by the couples, (n=67, 27.3%) would postpone the marriage until their partner gets well and (n=31, 12.7%) indicated that they would proceed with the marriage.

Respondents' opinions were asked about how the test should be made (n=185, 75.5%) suggested that the test should be made compulsory, and (n=60, 24.5%) suggested that the test should be made voluntary. Of the participants' (n=214, 87.3%) wanted the government to make the test free and (n=31, 12.7%) suggested that the financial burden of the PMCT should be borne by the government. To gain deeper insight into the attitude of the respondents towards PMCT, their opinion was asked about who should reveal the result of the test; (n=106, 43.2%) indicated that the result should be revealed by a medical doctor, (n=83, 33.9) by laboratory scientists and (n=56, 22.9%) by trained counselors.

According to Table 4, unmarried persons were the most prevalent (201, 82%), with only a few (44, 18%) being married at the time of the survey. Of the married participants, 23 (52.3%) underwent PMTCT and 21 (47%) did not.

Among the barriers to PMTCT, married MVPs who were not screened reported fear of relationship breakdown (28.6%) and financial inability (28.6%) as the most common reasons. Other reasons included fear of a positive result (19%), religious or cultural beliefs (14.3%), and a lack of access to PMTCT facilities (9.5%).

Among the 245 respondents, (n=167, 67%) named fear of a positive result as the main barrier, (n=76, 31%) feared relationship breakdown, and (n=5, 2%) worried about stigma and discrimination.

With respect to the facilitators and motivations for future uptake of PMTCT services, (n=114, 46.5%) would take PMTCT for a happy and trustful marriage, (n=109, 44.5%) to spare their partner from getting infected, and (n=22, 9%) for an early opportunity for treatment if taking the test.

4.4 FACTORS AFFECTING PREMARITAL COUNSELLING AND TESTING FOR HIV/AIDs

TABLE 5. Common Barriers to PMCT

FACTORS	FREQUENCY	PERCENTAGE (%)
1. Partner's Refusal	106	43.3%
2. Expensive Service	90	36.7%
3. Distant Location	78	31.8%
4. Religious Beliefs	111	45.3%
5. Cultural Beliefs	99	40.4%
6. Family's Refusal	96	39.2%

Table 5 highlights the barriers to premarital counselling and testing (PMTCT) for HIV/AIDS that the study identified operated through several channels, including sociocultural, religious, and financial. The most common barriers cited were religious beliefs (45.3%) and partners' refusal (43.3%), followed by cultural beliefs (40.4%) and refusal by family members (39.2%). Other notable barriers were high service costs (36.7%) and the large distance between testing centres (31.8%). This finding underscores the complex relationship between sociocultural and financial factors that affect access and utilization of PMTCT services.

Table 6

Factors associated with knowledge					
Age group (years)	**Inadequate**	**Adequate**	**Total**	χ^2	**P value**
	n (%)	**n (%)**	**n (%)**		
15-24	48(23.3)	158(76.7)	206(100)	1.196	0.274
>25	6(15.4)	33(84.6)	39(100)		
Gender					
Male	32(22.1)	112(77.2)	145(100)	0	0.99
Female	22(22.0)	78(78.0)	100(100)		
Ethnic group					
Hausa/Fulani	53(26.8)	145(73.2)	198(100)	13.421	0
Non-Hausa/Fulani	1(2.13)	46(97.9)	47(100)		
Religion					
Islam	53(23.7)	171(76.3)	224(100)	3.991	0.046
Christianity	1(4,76)	20(95.2)	21(100)		
Marital status					
Married	52(24.8)	158(75.2)	210(100)	6.334	0.012
Single/Divorced	2(57.1)	33(94.3)	35(100)		
Factors associated with attitude					
Age group	**Good attitude**	**Poor attitude n (%)**	**Total**	χ^2	**P value**
	N (%)		**N (%)**		

15-24	157(76.2)	49(23.8)	206(100)	3.541	0.06
>25	35(89.7)	4(10.3)	39(100)		
Gender					
Male	111	34	145	0.691	0.406
Female	81	19	100		
Ethnic group					
Hausa/Fulani	149	49	198	5.907	0.015
Non-Hausa/Fulani	43	4	47		
Religion					
Islam	172	52	224	3.856	0.05
Christianity	20	1	21		
Marital status					
Married	160	50	210	4.109	0.043
Single/ Divorced	32	3	35		

Table 6 revealed a statistically significant association of knowledge of PMTCT with map ethnic background ($\chi^2 = 13.421$, $p < 0.001$), with the very high proportion (97.9%) of non-Hausa/Fulani respondents being knowledgeable compared to Hausa/Fulani respondents (73.2%). There was a significant relationship between the other variables, such as marital status ($\chi^2 = 6.334$, $p = 0.012$), and a greater proportion of married respondents (75.2%) knew about PMTCT than single or divorced individuals (94.3%). A weak but positive association was revealed between religion and knowledge ($\chi^2 = 3.991$, $p = 0.046$), with Christian respondents (95.2%) representing knowledgeable individuals compared with Muslim respondents (76.3%). No statistically significant association was found between knowledge and age ($p = 0.274$) or gender ($p = 0.990$). These results may indicate that ethnicity, marital status, and religion hold greater significance in forming knowledge of PMTCT, whereas age and gender exert insignificant influence.

The results of the PMTCT demonstrated a statistically significant association between attitude and ethnic background ($\chi^2 = 5.907$, $p = 0.015$), with non-Hausa/Fulani respondents (91.5%) exhibiting one attitude.

DISCUSSION

The study underscores a significant level of awareness regarding HIV/AIDS among students at the Federal College of Education, Kano, with 89.4% of respondents having heard of the disease. This finding aligns with previous studies indicating high awareness of HIV among university students in Nigeria and other sub-Saharan African countries.[27,28] The sources of information identified in the study health facilities, social media, schools, and healthcare workers are consistent with findings from similar research.[7]

However, gaps in knowledge persist, particularly concerning modes of transmission, with misconceptions such as mosquito bites (13.9%) and casual contact (handshaking 6.5%, Eating with infected person, 8.2% and kissing, 14.3%) still prevalent among some respondents. This aligns with studies conducted in Nigeria and Cameroon, which also found that some students harboured misinformation regarding HIV transmission.[29,30]

Despite high levels of awareness, the study revealed gaps in knowledge regarding premarital counseling and testing (PMCT).

More than half of the respondents have good knowledge of HIV/AIDS, but only 10.6% have poor knowledge, which lead to spread of HIV/AIDS if the risky behaviours are not addressed. Only 43.7% of respondents identified PMCT as a means of HIV prevention, which highlights a need for further educational interventions. This aligns with studies that found that while students may be aware of HIV/AIDS, specific knowledge of preventive measures such as PMCT remains low.[28]

A study in Egypt similarly reported that only 60.5% of university students were aware of PMCT services.[18] The study's findings on knowledge disparities among different ethnic and religious groups align with research indicating that cultural background significantly influences awareness and acceptance of PMCT.[8,25]

The study revealed generally positive attitudes toward PMCT, with 78% of respondents willing to undergo testing. This supports research from Zambia, where 81% of students expressed willingness to test for HIV before marriage.[31] However, barriers such as fear of stigma (32.1%), fear of positive results (28.3%), and fear of relationship breakdown (39.6%) significantly hinder testing uptake. These findings align with previous research that identified similar concerns as major obstacles to HIV testing.[32] Stigma and confidentiality concerns have long been documented as critical barriers to HIV testing[6,33] and this study reinforces that these factors remain relevant in current public health efforts.

The study found a discrepancy between knowledge and practice, with only 52.3% of married respondents having undergone PMCT. Similar gaps between knowledge and practice have been reported in Nigeria, India, and the Dominican Republic, where cultural and religious beliefs, financial constraints, and fear of stigma were primary barriers.[34] The findings in this study, which identify religious beliefs (45.3%) and cultural beliefs (40.4%) as significant barriers, align with research conducted in Sokoto, Nigeria, where religious leaders played a critical role in influencing premarital HIV testing uptake[25]

A significant finding in this study is the impact of partner refusal, reported by 43.3% of respondents, on PMCT uptake. This corroborates studies that found that partner influence is a crucial determinant in HIV testing decisions.[28] Financial constraints (36.7%) and accessibility issues (31.8%) also emerged as barriers, which is consistent with findings from studies in South Africa and Nigeria that emphasized the role of economic factors in HIV testing behaviors.[35,36]

Ethnicity, religion, and marital status were significantly associated with knowledge and attitudes toward PMCT. Hausa/Fulani respondents demonstrated lower levels of knowledge compared to non-Hausa/Fulani groups, aligning with research indicating that ethnic background influences health literacy.[12]

The study also found that Christians had higher knowledge levels compared to Muslim respondents, which supports findings from a study in Sokoto, Nigeria, where Christian clerics showed greater advocacy for PMCT than their Muslim counterparts.[25]

The association between marital status and PMCT knowledge was statistically significant, with married respondents demonstrating greater awareness. This finding aligns with studies suggesting that individuals preparing for marriage or already married are more likely to seek HIV-related information.[34] The study also found that age and gender were not significant predictors of knowledge, which contrasts with some studies that suggest younger individuals, particularly women, have lower awareness levels.[7]

The study highlights the need for targeted interventions to increase PMCT uptake among college students. Given the role of religious and cultural beliefs in shaping attitudes toward HIV testing, collaboration with religious and community leaders could be instrumental in addressing misconceptions and stigma.[15]

Efforts should also focus on integrating HIV education into school curricula and leveraging social media platforms to reach young adults, as previous studies have identified these as effective means of disseminating health information.[11]

Financial barriers to PMCT also warrant attention. The study found that 87.3% of respondents favored free PMCT services, aligning with findings from similar research emphasizing the importance of cost-free HIV testing programs.[36] Policymakers should consider subsidizing or providing free PMCT services in government health facilities to improve accessibility.

Conclusion

This study contributes to the growing body of research on HIV testing behaviors among young adults in sub-Saharan Africa. While awareness and attitudes toward PMCT are generally positive, significant barriers remain, including stigma, financial constraints, and sociocultural factors. Addressing these challenges requires a multifaceted approach, incorporating education, policy changes, and community engagement. Future research should explore longitudinal trends in PMCT uptake and evaluate the effectiveness of targeted interventions in increasing testing rates among young adults.

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All authors read and approved the final submissions.

CONSENT FOR PUBLICATION
Not applicable

The availability of data and materials
The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

COMPETING INTEREST
The authors declare no competing interest.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE
The Health Research Ethics Committee of Kano (HREC) State Ministry of Health granted ethics approval under the approval number…NHREC/17/03/2018……
We obtained informed consent from each participant before they participated in the study. We maintained participants' confidentiality by using code numbers instead of personal identifiers on the questionnaires. The aims of the study were explained to each participant before filling out the questionnaire. All measures were performed, following all relevant guidelines and regulations.

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