

Knowledge, Attitudes, and Preventive Practices for Sexually Transmitted Infections Among Undergraduate Students at Ahmadu Bello University, Zaria, Nigeria: A Cross-Sectional Study

Isawumi Adedamola Peter¹, Ismael Olalekan Tesleem² and Isah Ahmad Gafai³

¹ Ipswich Hospital, Ipswich, United Kingdom

E-mail: isawumiaa@yahoo.com

² Oyo State Primary HealthCare Board, Ibadan Oyo State Nigeria

E-mail: otismael88@gmail.com

³ General Hospital Katsina

E-mail: Ahmadgafai123@gmail.com

ABSTRACT

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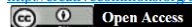
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*Corresponding author:

isawumiaa@yahoo.com

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Sexually transmitted infections (STIs) remain a significant public health concern among young adults, yet awareness does not consistently translate into preventive behaviour. This study assessed the knowledge, attitudes, and preventive practices (KAP) regarding STIs, and the predictors of preventive practice, among undergraduate students at Ahmadu Bello University (ABU), Zaria, Nigeria, using the Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB). A descriptive cross-sectional survey was conducted among 381 undergraduates selected through multistage probability sampling. Data were collected with a structured, self-administered questionnaire and analysed in IBM SPSS Statistics using descriptive statistics, chi-square tests, and multiple linear regression. The response rate was 95.3%. Respondents were predominantly male (54.3%), single (92.9%), and sexually active (61.4%). Although 91.1% had heard of STIs, only 42.8% had received formal instruction, and only 21.8% demonstrated good overall knowledge (mean score 6.41 ± 1.37). Attitudes were mostly neutral (67.2%; mean 2.98 ± 0.49). Preventive practices were suboptimal: 22.6% always used condoms, 52.0% had ever tested for STIs, and 35.2% had been vaccinated, with 50.4% showing adequate overall practice. No sociodemographic factor, knowledge level, or attitude was significantly associated with preventive practice (all $p > 0.05$). In multiple regression, knowledge score was the only significant independent predictor ($B = 0.08$, $\beta = 0.13$, $p = 0.016$), explaining 2.8% of the variance. A persistent gap exists between STI awareness, attitudes, and day-to-day preventive practice, shaped by sociocultural norms, stigma, and limited youth-friendly services. Interventions should move beyond information delivery to combine culturally tailored education, peer programmes, stigma reduction, and accessible confidential services.

Keywords: sexually transmitted infections; knowledge; attitude; preventive practices; undergraduates; Nigeria

Introduction

Sexually transmitted infections (STIs) are a major source of the global public health burden, particularly in developing countries, where they remain among the leading causes of productive years of life lost [1]. These infections comprise more than two dozen bacterial, viral, and parasitic conditions—including chlamydia, gonorrhoea, genital herpes, human papillomavirus (HPV), syphilis, and human immunodeficiency virus (HIV) that are transmitted mainly through sexual contact. The World Health Organization (WHO) estimates that more than one million STIs are acquired every day worldwide, amounting to about 376 million new infections each year from the four main curable STIs: chlamydia, gonorrhoea, syphilis, and trichomoniasis [1], [2]. Approximately 38 million people were living with HIV in 2020 [3], while chronic hepatitis B affected an estimated 296 million people and caused substantial mortality from cirrhosis and hepatocellular carcinoma [2].

Beyond their epidemiological scale, STIs carry serious health consequences, including infertility, pelvic inflammatory disease, adverse pregnancy outcomes, neonatal infection, and increased

susceptibility to HIV; HPV, the most common STI, is the principal cause of cervical cancer [4], [5]. STIs are simultaneously medical and social problems, because stigma, discrimination, and misinformation act as major barriers to prevention and control [6].

Despite this burden, knowledge and awareness gaps persist, especially among adolescents and young adults. Global evidence consistently demonstrates limited understanding of STI symptoms, modes of transmission, prevention, and complications [2], [7]. While awareness of HIV/AIDS is often relatively high, other infections such as chlamydia and trichomoniasis are frequently poorly understood, particularly among university students [8], [9].

University undergraduates, typically aged 18–24 years, are a particularly vulnerable group, since this developmental stage is marked by increased social contact, growing autonomy, and elevated risk-taking, including early sexual initiation and inconsistent condom use [10], [11]. In Nigeria, successive studies among undergraduates have documented high general awareness coexisting with superficial knowledge, persistent misconceptions, and suboptimal preventive behaviour [10], [12], [13].

To interpret this awareness behaviour gap, the present study draws on two complementary behavioural frameworks: the Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB) [14]. The HBM proposes that preventive behaviour is shaped by perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, together with cues to action; the TPB adds that behavioural intention is driven by attitudes, subjective norms, and perceived behavioural control [14]. Accordingly, this study assessed the knowledge, attitudes, and preventive practices regarding STIs among undergraduate students at ABU, Zaria, and identified the independent predictors of preventive practice, in order to inform contextually appropriate interventions.

Materials and Methods

Study Area and Design

The study employed a descriptive cross-sectional design and was conducted at Ahmadu Bello University (ABU), Zaria, Kaduna State, Nigeria. Established in 1962, ABU is one of the largest universities in sub-Saharan Africa, with a multi-ethnic student body drawn from all 36 states of Nigeria as well as international students, providing a suitable setting for research across diverse cultural, religious, and socio-economic groups.

Study Population and Sample Size

The study population comprised all undergraduate students of ABU, with a total enrolment of 49,954 [16]. The sample size was determined using Cochran's formula for an infinite population ($Z = 1.96$, $p = 0.5$, $e = 0.05$), yielding approximately 384 respondents, which was adjusted for the finite population to give a final sample of 381 respondents [15], [16].

Sampling Technique

A multistage probability sampling technique was used. In the first stage, the Faculty of Social Sciences was selected by simple random sampling (balloting); in the second stage, the Department of Mass Communication was similarly selected. In the third stage, the departmental register (levels 100–500; 991 students) served as the sampling frame, and proportional allocation was applied across levels. Systematic random sampling was then used at each level, selecting every fifth student from a random starting point until the allocated sample was reached.

Data Collection Instrument

Data were collected using a structured, self-administered paper questionnaire adapted from previous research and aligned with the study objectives. The instrument comprised three thematic domains: (i) knowledge of STIs, assessed through closed-ended and multiple-choice items covering causes, symptoms, transmission, complications, and prevention; (ii) attitudes towards STIs, measured on a five-point Likert scale; and (iii) preventive practices, assessed through the reported frequency of behaviours such as condom use, testing, partner communication, and health-seeking. Trained research assistants supervised distribution and retrieval in lecture theatres and other approved settings to ensure completeness and participant eligibility.

Data Management and Analysis

Knowledge responses were scored and categorised using Bloom's cut-off points into poor, moderate, and good levels; attitude and practice scores were similarly classified. Data were analysed in IBM SPSS Statistics (version 25). Descriptive statistics (frequencies, percentages, means, and standard

deviations) summarised respondent characteristics and KAP responses, while chi-square tests and multiple linear regression examined associations between the independent variables (sociodemographic characteristics, knowledge, and attitude) and preventive practice. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Ethical approval and institutional permission were obtained, and participation was voluntary, anonymous, and based on informed consent. The study relied on self-reported data collected offline to enhance control over the sampling environment and to protect respondent confidentiality.

Results

Response Rate and Sociodemographic Characteristics

Of 400 questionnaires distributed, 381 valid responses were analysed, giving a response rate of 95.3%. Respondents were predominantly male (54.3%), single (92.9%), and Muslim (62.2%), and 52.8% lived off-campus. Regarding sexual experience, 61.4% reported ever having had sex, most commonly with first intercourse at ages 18–20 years (37.8%). Full sociodemographic characteristics are presented in Table 1.

Table 1

Sociodemographic characteristics of respondents (n = 381)

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	207	54.3
	Female	174	45.7
Marital status	Single	354	92.9
	Married	22	5.8
	Divorced	3	0.8
	Widowed	2	0.5
Level of study	100	87	22.8
	200	89	23.4
	300	84	22.0
	400	74	19.4
	500	47	12.3
Religion	Islam	237	62.2
	Christianity	126	33.1
	Other	10	2.6
	Traditional	8	2.1
Residence	Off-campus	201	52.8
	On-campus	180	47.2
Ever had sex	Yes	234	61.4
	No	147	38.6
Age at first sex	Not applicable	147	38.6
	Below 15 years	8	2.1
	15–17 years	42	11.0
	18–20 years	144	37.8
	21 years and above	31	8.1
	Prefer not to say	9	2.4

Knowledge of STIs

The mean knowledge score was 6.41 ± 1.37 ; 7.6% of respondents had poor, 70.6% moderate, and 21.8% good knowledge (Table 2). General awareness was high (91.1% had heard of STIs), but only 42.8% had ever attended a seminar or received formal instruction. Misconceptions were common: 21.3% believed STIs could be transmitted by hugging, and some respondents wrongly classified malaria (16.3%) and candidiasis (19.2%) as STIs. Only 37.3% correctly recognised that not all infections are symptomatic, and only 32.0% knew that some STIs are curable.

Table 2

Overall knowledge of STIs among respondents (n = 381)

Knowledge level	Frequency (n)	Percentage (%)
Poor knowledge	29	7.6
Moderate knowledge	269	70.6
Good knowledge	83	21.8
Total	381	100.0

Note: Mean knowledge score = 6.41 ± 1.37 (categorised using Bloom's cut-off points).

Attitudes Towards STIs

The mean attitude score was 2.98 ± 0.49 on a five-point scale, indicating predominantly neutral attitudes. When categorised, 15.0% of respondents had negative, 67.2% neutral, and 17.8% positive attitudes (Table 3).

Table3

Attitudes towards STIs among respondents (n = 381)

Attitude category	Frequency (n)	Percentage (%)
Negative attitude	57	15.0
Neutral attitude	256	67.2
Positive attitude	68	17.8
Total	381	100.0

Note: Mean attitude score = 2.98 ± 0.49 (range 1.63–4.38) on a five-point Likert scale.

Preventive Practices

Preventive practices were generally suboptimal (Table 4). Only 22.6% of respondents reported always using condoms, whereas 24.7% never did; 52.0% had ever tested for STIs (35.7% within the previous six months); 33.3% had discussed STIs with a partner; and 35.2% had received an STI vaccination. Overall, 50.4% of respondents demonstrated adequate preventive practice.

Table 4

Selected preventive practices towards STIs among respondents (n = 381)

Preventive practice indicator	Frequency (n)	Percentage (%)
Ever tested for STIs	198	52.0
Tested within the last 6 months	136	35.7
Always uses condoms	86	22.6
Ever discussed STIs with a partner	127	33.3
Received STI vaccination	134	35.2
Received STI counselling	191	50.1
Would seek help if symptomatic	121	31.8
Adequate overall preventive practice	192	50.4

Factors Associated with Preventive Practice

Chi-square analyses revealed no statistically significant association between preventive practice and sex, level of study, residence, or age at first sex (all $p > 0.05$). Similarly, neither knowledge level ($\chi^2 = 2.31$, $p = 0.316$) nor attitude ($\chi^2 = 0.07$, $p = 0.966$) was significantly associated with preventive practice. In multiple linear regression (Table 5), the overall model was not significant ($F(9, 371) = 1.18$, $p = 0.304$) and explained only 2.8% of the variance; knowledge score was the only significant independent predictor of preventive practice ($B = 0.08$, $\beta = 0.13$, $p = 0.016$).

Table 5

Multiple linear regression predicting total preventive practice

Predictor	B	SE	β	t	p
(Constant)	16.90	1.34	—	12.64	<0.001
Age	-0.17	0.11	-0.08	-1.57	0.117
Sex	-0.01	0.26	-0.00	-0.05	0.963
Knowledge score	0.08	0.03	0.13	2.42	0.016*
Attitude (mean)	0.26	0.26	0.05	1.01	0.315
Frequency of condom use	-0.04	0.09	-0.02	-0.40	0.688
Barrier to STI testing	0.06	0.09	0.03	0.66	0.511
Cultural/religious effect	-0.14	0.25	-0.03	-0.57	0.569
Friends discuss STIs	-0.24	0.26	-0.05	-0.92	0.358
Peer influence	-0.18	0.25	-0.04	-0.71	0.477

*Note: $R^2 = 0.028$; $F(9, 371) = 1.18$; $p = 0.304$. Dependent variable: total preventive practice. * $p < 0.05$.*

IV. Discussion

The findings reveal a consistent paradox: high general awareness of STIs alongside fragmented knowledge, ambivalent attitudes, and suboptimal preventive practice. Although 91.1% of respondents had heard of STIs, only 21.8% demonstrated good knowledge, echoing earlier reports from Nigeria and the wider sub-Saharan region in which broad awareness masks shallow understanding of transmission, asymptomatic infection, curability, and complications [9], [10], [17]. The persistence of misconceptions such as the belief that hugging transmits STIs, or that malaria and candidiasis are STIs mirrors previous Nigerian findings [10] and points to enduring myths that undermine accurate risk perception. Within the HBM, such gaps depress perceived susceptibility and perceived severity, particularly for asymptomatic infections, while limited awareness of appropriate testing sites represents a perceived barrier to timely care [14], [18].

Attitudes were predominantly neutral, consistent with an “optimism bias” in which students acknowledge that STIs exist but do not perceive themselves to be personally at risk [19]. Stigma, shame, and social judgement reinforced by religious and cultural norms in Northern Nigeria—may further discourage assertive preventive stances and open discussion of sexual health [20]. Through the lens of the TPB, these neutral attitudes suggest that subjective norms and limited perceived behavioural control constrain the translation of knowledge into intention, even where cognitive awareness is present [14]. Exposure to permissive sexual media may compound this ambivalence by normalising risk-taking [11], [25].

Preventive practice was weak across several indicators, notably consistent condom use (22.6%), recent testing, partner communication, and vaccination (35.2%). These patterns align with regional evidence of low condom use and limited uptake of STI services among students, attributed to stigma, restricted access to youth-friendly services, and gendered norms around sexual negotiation [22], [23], [26], [27]. The low HPV vaccination coverage is consistent with documented gaps in primary prevention in Nigeria [22]. Such findings underscore that both perceptual factors (HBM) and structural barriers must be addressed simultaneously.

Notably, no sociodemographic factor, knowledge level, or attitude was significantly associated with preventive practice, and the regression model explained only 2.8% of the variance, with knowledge

as the sole significant predictor. This weak knowledge–behaviour link is consistent with studies reporting that Nigerian youths may be well informed yet not act protectively [21], and that positive attitudes do not necessarily produce corresponding behaviour [21], [29]. The result reinforces the TPB proposition that intentions require supportive subjective norms and perceived behavioural control to become action [14], [24]. In conservative settings, peer pressure, cultural and religious expectations, and limited access to confidential services may outweigh individual knowledge and attitudes [20], [23], [30], [31]. The broader Nigerian STI burden further highlights the urgency of effective, context-sensitive prevention [32].

This study has limitations. Its cross-sectional design precludes causal inference, and self-reported data may be subject to social-desirability and recall bias. Conducting the study within a single department of a single university limits generalisability, and the modest explanatory power of the regression model indicates that unmeasured contextual, social, and structural factors likely shape preventive behaviour. Nonetheless, the high response rate and theory-informed design strengthen the internal validity of the findings.

Conclusion

Among ABU undergraduates, high STI awareness coexisted with fragmented knowledge, largely neutral attitudes, and suboptimal preventive practice, and knowledge was the only though weak independent predictor of preventive behaviour. These results indicate that information delivery alone is insufficient to change behaviour. Interpreted through the HBM and TPB, the dominant obstacles are low perceived susceptibility and severity, persistent stigma and misconceptions, restrictive subjective norms, and limited perceived behavioural control and service access. Interventions should therefore integrate culturally tailored, curriculum-based education; peer-led programmes; stigma reduction involving faith and student leaders; and expanded access to confidential, youth-friendly testing, counselling, condoms, and vaccination. Embedding routine monitoring and a supportive institutional sexual-health policy would help sustain these efforts and enable knowledge to translate into consistent preventive practice.

Conflict of Interest

The authors declare no conflict of interest.

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