

Knowledge, Preventive Practices and the Knowledge–Behaviour Gap for Sexually Transmitted Infections among Youths in a Rural Community in South-West Nigeria

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Abstract

Background

Sexually transmitted infections (STIs) remain an important public health concern among young people, particularly in underserved rural settings. This study assessed STI knowledge, perceptions, preventive practices and associated factors among young people in rural Oyo State, Nigeria.

Methods

A community-based cross-sectional study was conducted among of 456 youth aged 15 to 29 years, selected through a multi-stage sampling technique. Data on STI awareness, knowledge, perceptions and preventive practices were analysed using descriptive statistics and multivariable logistic regression.

Result

More than half (54.6%) of the respondents were aged 10–19 years. Though awareness of STIs was high (88.8%), fewer than half (45.8%), demonstrated adequate knowledge. Misconceptions about transmission were common, while preventive practices, STI screening and partner notification were limited. The predictor of STI knowledge was higher education (AOR = 0.13; 95% CI: 0.06–0.28) respondents living with disabilities (AOR = 2.67; 95% CI: 1.01–7.08) and the self-efficacy construct on the Health Belief Model. Knowledge alone did not translate into safer preventive practices.

Conclusion

High STI awareness coexists with substantial knowledge gaps and poor preventive practices. Comprehensive, context-specific interventions should address misconceptions and behavioural barriers. Such interventions should combine comprehensive sexuality education, youth-friendly health services, confidential STI screening and counselling, condom access, parent–adolescent communication, peer education, and community-level stigma reduction.

Background

Sexually transmitted infections (STIs) remain a major global public health concern, disproportionately affecting adolescents and young adults because of biological, behavioural and social vulnerabilities.^{1–3} STIs are caused by bacterial, viral, fungal or parasitic agents and are transmitted predominantly through sexual contact.^{1,4–5} Some infections, including HIV, syphilis and hepatitis B, can also be transmitted from mother to child during pregnancy, childbirth or breastfeeding, while blood-borne transmission may occur through inadequately screened blood or blood products.^{1,5–6} Curable STIs such as gonorrhea, syphilis, chlamydia and trichomoniasis remain widespread, while viral infections including HIV, herpes simplex virus, human papillomavirus (HPV) and hepatitis B may cause chronic or recurrent disease and long-term morbidity.^{1,4,7}

The global burden remains substantial, with more than one million curable STIs estimated to be acquired daily among people aged 15–49 years.⁵ Many infections are asymptomatic or mildly symptomatic, delaying diagnosis and facilitating continued transmission.^{7–9} Untreated infections can cause pelvic inflammatory

disease, infertility, ectopic pregnancy, adverse pregnancy outcomes, neonatal infection and increased susceptibility to HIV, while HPV is a major cause of cervical and other anogenital cancers.^{4,7-9} Young people account for a substantial proportion of this burden.^{1,10} Their vulnerability is associated with early sexual debut, multiple partnerships, inconsistent condom use, substance use and sexual coercion, compounded in low- and middle-income countries by inadequate sexual health information and limited youth-friendly services which are fragmented, or poorly integrated into routine primary healthcare.^{3,11-16}

Sub-Saharan Africa bears a particularly high burden of HIV and other STIs.⁴ Young people's vulnerability reflects interactions between individual behaviours and structural determinants, including gender and sociocultural norms, stigma, poverty, education and limited access to confidential services.^{14,17-20} Sociocultural norms restrict open discussion of sexuality, while gender norms, stigma, poverty, low educational attainment, limited access to confidential services, and reliance on informal treatment pathways all influence young people's knowledge, risk perception, preventive behaviour, and health care-seeking behaviour.¹⁷⁻²⁰ Although decades of HIV programming have produced relatively high HIV awareness, knowledge of other STIs remains inadequate while misconceptions persist.²¹⁻²⁵ Many young people cannot correctly identify the symptoms, transmission, complications, prevention, testing and treatment of infections such as chlamydia, gonorrhoea, syphilis and HPV.^{5,23,26-29}

Nigeria has one of the world's largest youth populations and continues to experience substantial STI and HIV-related sexual health risks.^{10,30} Studies show high general STI awareness, particularly of HIV, but limited comprehensive knowledge of transmission, prevention and treatment.^{21,31} Misconceptions about transmission, physical signs, antibiotic use and traditional remedies persist and may encourage self-medication, stigma and delayed use of formal services.^{20-22,32} Moreover, knowledge does not necessarily translate into preventive behaviour because peer influence, limited negotiating power, stigma and confidentiality concerns can constrain safer choices.^{15,17,20,33} The Health Belief Model therefore provides a useful framework for examining how perceived susceptibility, severity, benefits, barriers, self-efficacy and cues to action influence STI-related decisions.³⁴⁻³⁵

These challenges may be greater among rural youth, who often have poorer access to sexuality education, confidential youth-friendly services and reliable health information.^{15,20,36-38} Nigerian evidence has largely concentrated on urban, school-based and tertiary populations, leaving rural community-based youth underrepresented.^{21,31,39} Parent-adolescent communication is also constrained by cultural norms and discomfort, increasing reliance on peers, social media and informal information sources.^{21,40-41} Understanding STI knowledge, perceptions, preventive practices, information sources and healthcare-seeking among rural young people is therefore important for developing context-specific interventions that address both information gaps and the social and health-system barriers that influence behaviour.

This study assessed STI knowledge, preventive practices, and associated factors among youths in a rural community in south-west Nigeria. By examining both knowledge and behaviour, the study provides evidence of the gap between awareness and protective practices and also provides a basis for developing comprehensive, youth-responsive, and culturally appropriate STI prevention strategies in rural settings.

Methods

The study was a descriptive cross-sectional conducted in the Oko community in November 2025. Oko is a notable settlement located within Oyo State, Nigeria, and forms part of the Surulere Local Government Area (LGA). The study population comprises Youth between 15 to 29 years who reside in Oko for a minimum period of 1 month and who are able and can voluntarily provide informed consent or assent.

The sample size for this study was determined using Fisher's formula $n = Z^2 pq / d^2$: Where: n = sample size; z = standard normal deviation corresponding to confidence level (95% or 1.96); p = estimated prevalence from a previous study (0.66)³¹; $q = 1 - p$; d = degree of accuracy (0.05). To account for potential non-responses, incomplete questionnaires, or participant dropouts an additional 10% of the estimated sample size and counter the cluster effect factor of 1.2 was applied to get a final sample size of 456 for the study.

Sampling was through a multi-stage sampling method. At the first stage, the town was divided into four (4) quadrants at the centre of the town. During the second (2nd stage) two (2) quadrants were chosen using a simple random method by balloting. All streets in the chosen quadrants formed the sampling frame from which a street was chosen by a simple random method. From the chosen street, all the households were listed, and the household to begin the study was selected by random sampling. Thereafter, all young people in each household were selected for interview. If no young person is sighted in the household, the next household was chosen until the sample size was completed.

Data was collected using an interviewer-based questionnaire (Annex 1). The instrument consisted of sections assessing socio-demographic characteristics, knowledge of STIs, attitudes toward STI prevention, and preventive practices. The dependent variables included: Knowledge of STIs (assessed using questions on awareness, modes of transmission, symptoms, complications, and prevention. Correct responses were scored, and total knowledge scores classified as adequate or inadequate); Attitude toward STI prevention (measured using Likert-scale statements on risk perception, willingness to seek care, and preventive behaviour. Scores were categorized into positive or negative attitudes.) and preventive practices (evaluated through self-reported behaviours such as condom use, number of sexual partners, and STI testing. Practices were grouped as good or poor preventive practices). The independent factors comprised of socio-demographic characteristics (age, gender, education, occupation, religion, marital status, and income religiosity, type of family (monogamous or polygamous), circumcision status and distance to nearest health center or private health clinic, disability, behavioural factors (sexual debut, number of partners, exposure to STI information), cultural beliefs, stigma, and health-system factors such as access to services and availability of condoms.

Data analysis was performed using International Business Machines Corporation (IBM) Statistical Product and Service Solution (SPSS) version 25.

Categorical data were summarized using percentages and presented using tables, bar, and pie charts. Similarly, continuous data were summarized using mean and standard deviation (SD). At the bi-variate level, the chi-squared test was used to compare the relationships between categorical or logistic regression at the multivariate level. The level of statistical significance was set at $p < 0.05$.

Ethical approval

for this study was obtained from the Bowen University Teaching Hospital Ogbomosho, Research and Ethics Committee. The subjects were not deprived of the right to self-determination and the right to make an informed decision regarding participation in the research, both initially and during the study. All participants aged 18 years and older provided written or verbal informed consent while those aged 15–17 years gave assent following informed consent from their parents or legal guardians. To preserve participant privacy, data entry and analysis were anonymized, and participation was completely voluntary. After completing the questionnaire, all participants received a brief health education session on STI prevention as a direct benefit, providing post-research interventions to clarify any misconceptions and promote safety measures.

Results

Univariate Analysis

Socio-demographic characteristics of respondents

A total of 456 youths participated in the study. More than half of the respondents were aged 10–19 years (54.6%), while 45.4% were aged 20–29 years. The sample comprised nearly equal proportions of females (50.9%) and males (49.1%). Most respondents had attained secondary education (68.4%), were single (81.1%), and were students (60.1%). Christianity (60.7%) and Islam (38.4%) were the predominant religions. Nearly all respondents reported high religiosity (96.7%), and most belonged to monogamous families (88.8%). Only 4.8% reported living with a disability, while the majority resided within 5 km of a health facility (77.6%) and exhibited low-risk behaviours (77.4%) (Table 1).

Table 1
Socio-demographic Characteristics of Respondents (N = 456)

Variable	Category	Frequency (n)	Percentage (%)
Age	10–19 years	249	54.61
	21–29 years	207	45.39
Gender	Female	232	50.9
	Male	224	49.1
Educational level	No formal / Primary	58	12.7
	Secondary	312	68.4
	Tertiary	86	18.9
Marital status	Single	370	81.1
	Married/Cohabiting/Divorced/Widowed	86	18.9
Occupation	Student	274	60.1
	Employed	154	33.8
	Unemployed	28	6.1
Religion	Christianity	277	60.7
	Islam	175	38.4
	Traditional	4	0.9
Religiosity ^a	High (4–6)	441	96.71
	Low (< 4)	15	3.29
Family type	Monogamy	405	88.8
	Polygamy	51	11.2
Disability status	With disability	22	4.8
	Without disability	434	95.2
Distance to nearest health centre	≤ 5 km	354	77.6
^a composite score from questions on religious attendance and importance of religion			
^b categorised as high if respondent goes to clubs/parties and cinemas, medium if respondents either go to club/parties or cinemas and low if they did not go to neither			
^c categorised as high if respondent regularly drinks alcohol and smokes cigarette, medium if respondents either drinks alcohol or smokes cigarette and low if they do neither			

Variable	Category	Frequency (n)	Percentage (%)
	> 5 km	102	22.4
Sociability^b	High (Parties + Movies)	68	14.95
	Medium (Either)	144	31.65
	Low	243	53.41
Risky behaviour^c	High (Alcohol + Cigarette)	20	4.39
	Medium (Either)	83	18.20
	Low (Neither)	353	77.41
^acomposite score from questions on religious attendance and importance of religion			
^bcategorised as high if respondent goes to clubs/parties and cinemas, medium if respondents either go to club/parties or cinemas and low if they did not go to neither			
^ccategorised as high if respondent regularly drinks alcohol and smokes cigarette, medium if respondents either drinks alcohol or smokes cigarette and low if they do neither			

Awareness and knowledge of STIs/HIV

Overall awareness of STIs was high, with 88.8% of respondents reporting having heard of STIs. However, awareness was largely centred on HIV/AIDS. About one-third (34.4%) reported knowledge of HIV/AIDS only, while only 14.9% had heard of HIV/AIDS and more than two other STIs. Approximately one in ten respondents (9.9%) could not identify any STI (Table 2).

Table 2
Awareness and Knowledge of STIs/HIV and specific STIs heard of

Variable	Category	Frequency (n)	Percentage (%)
Heard of STIs	Yes	405	88.8
	No	51	11.2
Heard of specific STIs	HIV/AIDS only	157	34.4
	Other STIs only	45	9.9
	HIV and 1–2 STIs only	141	30.9
	HIV and > 2 STIs only	68	14.9
	Don't know	45	9.9
Knowledge of STI signs and Symptoms	Don't know any symptom	209	45.8
	Only 1 symptom/sign	81	17.8
	Only 2 symptoms/signs	69	15.1
	> 2 symptoms (3)	43	9.4
	Multiple symptoms (3 or more combined)	48	10.5
	STIs present with no symptoms at all	6	1.3
Knowledge of routes of transmission	Mentioned only 1 or 2 routes correctly	129	28.3
	Mentioned only 3 or 4 routes correctly	74	16.2
	Mentioned all routes correctly	47	10.3
	Mentioned all routes incorrectly	170	37.3
	Don't know	71	15.6
Adequate Knowledge of STI	Knowledgeable	222	48.7
	Not knowledgeable	234	51.3
Knowledge of routes of HIV transmission	Combination of correct routes only (sex, sharps, blood, MTCT)	84	18.4
	Combination of correct and incorrect routes	109	23.9
	Incorrect routes only (mosquitoes, casual contact, utensils)	57	12.5

Variable	Category	Frequency (n)	Percentage (%)
	Unprotected sexual intercourse (alone or combined)	165	36.2
	None of the above	41	9.0

Knowledge of STI symptoms and signs was generally poor. Nearly half of respondents (45.8%) could not identify any symptom of STIs, whereas only 10.5% correctly identified multiple symptoms. Knowledge of STI transmission routes was similarly limited: only 10.3% correctly identified all routes of transmission, while 37.3% reported incorrect routes and 15.6% had no knowledge of transmission routes. Using a composite scoring system, fewer than half of respondents (48.7%) were classified as having adequate STI knowledge. Unprotected sexual intercourse was the most frequently identified route of HIV transmission (36.2%). However, misconceptions persisted, with respondents reporting mosquito bites, sharing utensils, and casual contact as possible transmission routes. Only 18.4% correctly identified a combination of valid HIV transmission routes without misconceptions (Table 2).

Perceptions towards STIs according to the Health Belief Model

Respondents' perceptions, as assessed by the Health Belief Model varied considerably. More than half reported low cues to action (52.9%) and high perceived barriers to STI prevention (53.7%). Conversely, most respondents demonstrated high self-efficacy (52.4%), high perceived benefits of preventive behaviours (79.0%), and high perceived severity of STIs (82.5%). The majority perceived themselves to be at moderate risk of acquiring STIs (61.3%) (Table 3).

STI Treatment-seeking behaviour of respondents

Regarding STI treatment-seeking behaviour, only one-quarter of respondents had ever undergone STI screening, and more than four-fifths (81.8%) had never been screened. Less than 5% had ever been diagnosed with an STI. Government hospitals and health centres were the most common sources of treatment (45.8%), although a considerable proportion reported no treatment-seeking behaviour (31.4%). Partner treatment was uncommon, with only 7.9% reporting that their sexual partners also received treatment (Annex 2). Furthermore, knowledge and use of STI prevention methods were generally low. Nearly half of respondents reported no knowledge of STI prevention methods (44.5%), and only 17.3% reported high use of preventive practices. During their most recent sexual activity, almost half (46.5%) reported using no preventive method (Annex 3).

Table 3
Perceptions about STIs

Variable	Frequency	Percentage
Cues to Action		
High	26	5.70
Moderate	189	41.45
Low	241	52.85
Self-Efficacy		
High	239	52.41
Moderate	169	37.06
Low	48	10.53
Perceived Barriers		
High	245	53.73
Moderate	178	39.04
Low	33	7.24
Perceived Benefits		
High	360	78.95
Moderate	89	19.52
Low	7	1.54
Perceived Severity		
High	376	82.46
Moderate	70	15.35
Low	10	2.19
Perceived Susceptibility		
High	148	32.53
Moderate	279	61.32
Low	28	6.15

Bivariate Analysis

Socio-demographic factors associated with adequate STI knowledge

Bivariate analysis showed significant associations between adequate STI knowledge and several socio-demographic variables (Table 4). Older respondents aged 20–29 years were significantly more likely to have adequate STI knowledge compared with those aged 10–19 years ($\chi^2 = 23.676$, $p < 0.001$). Educational attainment was strongly associated with STI knowledge, with respondents who had tertiary education demonstrating the highest level of knowledge ($\chi^2 = 38.164$, $p < 0.001$). Marital status (LR = 3.871, $p = 0.049$), family type ($\chi^2 = 5.157$, $p = 0.023$), disability status ($\chi^2 = 5.344$, $p = 0.021$), and proximity to a health facility ($\chi^2 = 3.978$, $p = 0.046$) were also significantly associated with STI knowledge. No statistically significant associations were observed between STI knowledge and gender, occupation, religion, circumcision status, religiosity, wealth quintile, sociability, or risky behaviour (all $p > 0.05$) (Table 4).

Table 4
Bivariate analysis of Socio-demographic factors with Adequate knowledge of STI

Variable	Category	Adequate Knowledge of STI ^d	Inadequate Knowledge of STI	Chi square/Fischer's or Likelihood ratio (P- value)
Age	10–19 years	113	136	$\chi^2 = 23.676$, $p < 0.001$
	21–29 years	141	66	
Gender	Female	129	103	$\chi^2 = 0.002$, $p = 0.966$
	Male	125	99	
Educational level	No formal / Primary	24	34	$\chi^2 = 38.164$, $p < 0.001$
	Secondary	157	155	
	Tertiary	73	13	
Marital status	Single	198	172	LR = 3.871, $p = 0.049$
	Married/Cohabiting/Divorced/Widowed	56	30	
Occupation	Student	143	131	$\chi^2 = 4.169$, $p = 0.124$
	Employed	96	58	
	Unemployed	15	13	
Religion	Christianity	152	125	$\chi^2 = 0.277$, $p = 0.871$
	Islam	100	75	
	Traditional	2	2	
Religiosity	High (4–6)	247	194	$\chi^2 = 0.513$, $p = 0.474$
	Low (< 4)	7	8	
Family type	Monogamy	218	187	$\chi^2 = 5.157$, $p = 0.023$
	Polygamy	36	15	
Disability status	With disability	7	15	$\chi^2 = 5.344$, $p = 0.021$
	Without disability	247	187	
Distance to nearest	≤ 5 km	206	148	$\chi^2 = 3.978$, $p = 0.046$

Variable	Category	Adequate Knowledge of STI ^d	Inadequate Knowledge of STI	Chi square/Fischer's or Likelihood ratio (P- value)
health centre	> 5 km	48	54	
Sociability	High (Parties + Movies)	38	30	$\chi^2 = 0.152$, $p = 0.927$
	Medium (Either)	82	62	
	Low (Neither)	134	110	
Risky behaviour	High (Alcohol + Cigarette)	193	160	$\chi^2 = 4.386$, $p = 0.112$
	Medium (Either)	53	30	
	Low (Neither)	8	12	

^dadequate knowledge of STI based on about 8 questions: if they have heard of sexually transmitted infections and heard of at least three types of STIs and aware of > 3 symptoms and signs of STI and identified all the correct routes of STI transmission and misconceptions correctly and answered correctly that a person can look healthy and still have an STI and STIs can be treated and can be prevented and was aware that condoms can prevent STIs.

Health Belief Model constructs and STI knowledge

Among the Health Belief Model constructs, cues to action ($\chi^2 = 8.597$, $p = 0.014$), self-efficacy ($\chi^2 = 24.541$, $p < 0.001$), perceived benefits (LR = 8.168, $p = 0.017$), and perceived severity (LR = 9.521, $p = 0.009$) were significantly associated with STI knowledge. Perceived susceptibility and perceived barriers were not significantly associated with STI knowledge (Table 5).

Table 5
Bivariate analysis of Respondents perception with Adequate knowledge of STI

Variable	Adequate Knowledge of ST1	Inadequate Knowledge of STI	Chi square/Fischer's or Likelihood ratio (P- value)
Cues to Action			
High	119	122	$\chi^2 = 8.597, p = \mathbf{0.014}$
Moderate	120	69	
Low	15	11	
Self-Efficacy			
High	13	35	$\chi^2 = 24.541, p < \mathbf{0.001}$
Moderate	87	82	
Low	154	85	
Perceived Barriers			
High	15	18	$\chi^2 = 2.015, p = 0.365$
Moderate	97	81	
Low	142	103	
Perceived Benefits			
High	1	6	LR = 8.168, p = 0.017
Moderate	43	46	
Low	210	150	
Perceived Severity			
High	1	9	LR = 9.521, p = 0.009
Moderate	40	30	
Low	213	163	
Perceived Susceptibility			
High	13	15	$\chi^2 = 1.058, p = 0.589$
Moderate	157	123	
Low	84	64	

Preventive practices and STI knowledge

Knowledge of prevention methods was significantly associated with overall STI knowledge ($\chi^2 = 13.392, p = 0.001$). Similarly, prevention methods used during the most recent sexual activity were significantly

associated with STI knowledge ($\chi^2 = 19.058$, $p < 0.001$). Knowledge of STI prevention was also significantly associated with STI knowledge ($\chi^2 = 6.448$, $p = 0.040$). However, no significant associations were found between STI knowledge and preventive practices ever used ($\chi^2 = 4.665$, $p = 0.097$) or prevention methods used during the most recent sexual activity ($\chi^2 = 4.685$, $p = 0.096$) (Table 6).

Table 6
Bivariate analysis of Preventive practices with Adequate knowledge of STIs

Variable	Adequate Knowledge of STI	Inadequate Knowledge of STI	Chi square/Fischer's or Likelihood ratio (P- value)
Prevention methods known by respondents			$\chi^2 = 13.392, p = 0.001$
Biomedical	99	113	
Behavioural	10	4	
None / nothing	145	85	
Prevention methods ever used by respondents			$\chi^2 = 3.748, p = 0.154$
Biomedical	92	91	
Behavioural	24	18	
None	138	93	
Prevention method used in most recent sexual activity			$\chi^2 = 19.058, p < 0.001$
Biomedical	95	117	
Behavioural	10	5	
None	149	80	
Knowledge of STI prevention			$\chi^2 = 6.448, p = 0.040$
High	103	100	
Low	68	57	
None	83	45	
Preventive practices ever used			$\chi^2 = 4.665, p = 0.097$
High	91	92	
Low	114	80	
None	49	30	
Preventive methods in most recent sexual activity			$\chi^2 = 4.685, p = 0.096$
High	115	97	
Low	116	76	
None	23	29	

Multivariable Analysis

Predictors of adequate STI knowledge

Variables with p-values <0.05 in bivariate analyses were entered into multivariable logistic regression models to identify independent predictors of adequate STI knowledge (Table 7). Educational attainment remained a significant predictor of STI knowledge. Compared with respondents with no formal or primary education, those with secondary education had significantly lower odds of inadequate STI knowledge (AOR = 0.13; 95% CI: 0.06–0.28; $p < 0.001$), while respondents with tertiary education also demonstrated better STI knowledge (AOR = 0.18; 95% CI: 0.10–0.34; $p < 0.001$). Age was independently associated with STI knowledge. Respondents aged 20–29 years had significantly different odds of adequate STI knowledge compared with adolescents aged 10–19 years (AOR = 0.39; 95% CI: 0.24–0.63; $p < 0.001$). Family type was also associated with STI knowledge, with respondents from polygamous households having lower odds of adequate knowledge compared with those from monogamous households (AOR = 0.49; 95% CI: 0.25–0.96; $p = 0.038$).

Additionally, respondents living with disabilities had higher odds of adequate STI knowledge than those without disabilities (AOR = 2.67; 95% CI: 1.01–7.08; $p = 0.048$). Marital status and distance to the nearest health facility were not independently associated with STI knowledge after adjustment for other variables (Table 7).

Respondents with medium self-efficacy (AOR = 0.24; 95% CI: 0.11–0.52; $p < 0.001$) and high self-efficacy (AOR = 0.59; 95% CI: 0.38–0.92; $p = 0.018$) differed significantly from those with low self-efficacy in their likelihood of demonstrating adequate STI knowledge. Cues to action, perceived benefits, and perceived severity were not independently associated with STI knowledge after adjustment (Table 7).

Discussion

This community-based study reveals a complex picture in which awareness of STIs was generally high, yet comprehensive knowledge of STI symptoms, modes of transmission, prevention, and preventive practices remained inadequate. Furthermore, although many respondents perceived STIs as serious health conditions and acknowledged the benefits of preventive behaviours, this awareness was not consistently translated into protective practices. These findings underscore the continuing challenge of converting awareness into sustained behavioural change among young people in rural settings and support the need for comprehensive interventions that address cognitive, behavioural, social, and structural determinants of sexual health rather than relying solely on information dissemination.

High awareness but limited comprehensive STI knowledge

Nearly nine out of ten respondents had heard of STIs, suggesting that STI-related messages have reached many young people in the community. Many respondents knew about HIV/AIDS but had limited knowledge of other common STIs—including gonorrhea, chlamydia, syphilis, human papillomavirus (HPV), and trichomoniasis. The findings are consistent with studies conducted among adolescents and young adults in Nigeria and other African countries which reported high STI awareness but limited comprehensive knowledge of STI symptoms and prevention beyond HIV.^{20,23,31} These consistencies suggest that the observed knowledge gaps are not unique to rural Oyo State but represent broader regional deficiencies in sexual health education. This also reflects a common pattern in Nigeria and other African settings where more than three

decades of HIV-focused public health campaigns have increased HIV awareness and prevention but may not have produced equivalent understanding of other STIs.^{5,41} Consequently, many young people equate sexual health exclusively with HIV while remaining poorly informed about bacterial and viral STIs that continue to contribute significantly to infertility, pelvic inflammatory disease, adverse pregnancy outcomes, neonatal infections, and increased HIV susceptibility.^{5,6} Recent WHO reports continue to highlight that curable STIs remain a major global public health challenge despite increasing HIV awareness, emphasizing the need for integrated STI education rather than disease-specific messaging.^{1,5} Such education should cover common bacterial, viral, and parasitic STIs; symptoms and asymptomatic infection; transmission routes; condom use; vaccination where applicable; testing; treatment; partner notification; and the importance of early care-seeking.

Fewer than half of respondents demonstrated adequate overall STI knowledge, and substantial deficiencies were observed in recognising symptoms with nearly half of participants unable to identify any STI symptom while only a very small proportion recognised that STIs may be asymptomatic. This limited knowledge of symptoms is particularly concerning as many STIs are asymptomatic or have non-specific symptoms, especially among females. Failure to recognise symptoms or understand asymptomatic infection may delay testing and treatment, increase transmission, and contribute to long-term complications.^{4,6} Conversely, the proportion of respondents with adequate STI knowledge in this study was lower than findings reported urban adolescents and youth in Nigeria, where higher educational attainment, greater internet access, and exposure to comprehensive sexuality education may explain improved knowledge levels.²⁶ Urban settings generally offer greater exposure to youth-friendly health services, school-based health programmes, and digital health information, advantages that remain limited in many rural communities. The observed rural disadvantage reinforces concerns that geographical inequities continue to influence access to sexual and reproductive health information in Nigeria.^{26,30}

Persistent misconceptions regarding STI transmission

Similarly, knowledge of transmission routes was poor with only 1 in 10 that correctly identified all transmission routes while more than 30% of respondents identified transmission routes incorrectly. Beyond limited knowledge, the study identified widespread misconceptions regarding STI transmission. Only 18.4% of respondents correctly identified valid HIV transmission routes without simultaneously endorsing misconceptions, while many participants believed HIV could be transmitted through mosquito bites, casual contact, or sharing eating utensils. This finding suggests the persistence of misconceptions regarding STI transmission, consistent with evidence from Africa indicating substantial gaps in knowledge and awareness of sexually transmitted infections and their modes of transmission.²² This also suggests that knowledge acquisition has been incomplete and that many educational interventions have focused on awareness rather than comprehension. Similar findings among adolescents in sub-Saharan Africa show limited knowledge of STIs other than HIV and ongoing misunderstandings about sexual and reproductive health.⁴² Misconceptions may cause young people to underestimate their personal risk, delay preventive behaviours, and perpetuate stigma through inaccurate beliefs about STI transmission and prevention.⁴³

The findings therefore support recommendations by UNESCO and the World Health Organization that comprehensive sexuality education should extend beyond HIV to provide accurate, age-appropriate, and

evidence-based information on all common sexually transmitted infections, including their symptoms, modes of transmission, complications, prevention, diagnosis, and treatment. Such curricula should explicitly challenge common misconceptions and promote critical health literacy rather than assuming that increased awareness alone will translate into accurate knowledge and healthy sexual behaviours.^{5–6,41}

Knowledge does not automatically translate into safer behaviour

The clear disconnect between knowledge and behaviour in this is perhaps the most important finding of this study. Nearly half of respondents reported no knowledge of STI prevention methods, only 17.3% demonstrated high preventive practices, and almost half reported using no preventive method during their most recent sexual encounter. Furthermore, only one-quarter had ever undergone STI screening, while partner notification and treatment were uncommon. Although awareness of STIs was relatively high and most respondents recognised the seriousness of STIs, preventive practices remained poor, suggesting that structural and psychosocial barriers continue to limit translation of knowledge into action. Rural youths frequently experience restricted access to confidential health services, transportation barriers, limited availability of youth-friendly clinics, and cultural norms that discourage open discussion of sexuality. Such barriers may prevent young people from adopting preventive behaviours even when they understand the associated health risks.⁴⁴

Importantly, although knowledge of STI prevention methods was significantly associated with overall STI knowledge, actual preventive practices were not independently associated with knowledge, demonstrating that increased knowledge alone was insufficient to promote protective behaviours. This knowledge–behaviour gap has been widely documented in adolescent sexual and reproductive health research, which shows that information alone is generally insufficient to change behaviour³³ unless accompanied by supportive social, structural, and service-level interventions. Sexual decision-making is shaped by multiple contextual influences, including peer norms, perceived social expectations, relationship dynamics, gender power imbalances, confidentiality concerns, and access to youth-friendly services. Young people—particularly young women and younger adolescents—may know what should be done but lack the confidence, resources, privacy, or power to act. This interpretation is consistent with evidence indicating that stigma, shame, confidentiality concerns, and negative perceptions of healthcare services constitute important barriers to STI testing and care-seeking among adolescents and young adults.^{44–46}

Socio-demographic determinants of STI knowledge

The multivariable analysis demonstrated that educational attainment, age, family type, and disability status were independently associated with adequate STI knowledge, while gender, religion, marital status, wealth status, occupation, and distance from health facilities were not significant predictors after adjustment.

Educational attainment emerged as one of the strongest predictors of STI knowledge. Respondents with secondary and tertiary education demonstrated significantly better knowledge than those with primary or no formal education. Similar associations between educational attainment and STI knowledge have been consistently reported among adolescents and young adults in Nigeria, and other sub-Saharan African countries, where higher educational attainment has been associated with greater STI knowledge, improved

HIV risk perception, increased uptake of HIV testing, greater condom use, and more appropriate healthcare-seeking behaviours.^{6,20,23,31} However, because not all young people remain in school, community-based and out-of-school education platforms are also essential.

Older respondents (20–29 years) also demonstrated significantly greater STI knowledge than younger adolescents. This likely reflects cumulative exposure to sexual health information through formal education, media, peer interactions, greater lived experience and healthcare encounters. Comparable age-related differences have been reported in other studies, suggesting that younger adolescents remain particularly vulnerable because many initiate sexual activities before receiving comprehensive sexuality education.^{3,23}

Family structure also influenced STI knowledge, with respondents from polygamous households demonstrating lower odds of adequate knowledge than those from monogamous families. Monogamous households may provide greater parental supervision, communication, and emotional support, facilitating discussions on sexual and reproductive health. Conversely, larger or more complex family structures may reduce opportunities for effective parent–adolescent communication and individual guidance. This finding highlights the importance of strengthening family-based sexual health education programmes.^{19,40}

Interestingly, respondents living with disabilities demonstrated significantly higher odds of adequate STI knowledge after adjustment. This finding contrasts with much of the published literature, which generally reports poorer access to sexual and reproductive health information among persons with disabilities due to communication barriers, social exclusion, discrimination, and persistent misconceptions regarding their sexuality.⁴⁷ One possible explanation is that the relatively small number of respondents with disabilities in this study may have been linked to disability-focused educational or health programmes that improved access to sexual health information. Nevertheless, given the small sample of respondents with disabilities, this finding should be interpreted cautiously and warrants further investigation using adequately powered studies specifically designed to examine sexual and reproductive health knowledge among young people living with disabilities.

Theoretical Framework of Health Belief Model and behavioural determinants

The Health Belief Model (HBM) provides a useful theoretical framework for interpreting the observed disconnect between knowledge and behaviour. Although respondents demonstrated high perceived severity of STIs and recognised the benefits of preventive behaviours, they simultaneously reported high perceived barriers and low cues to action. Moderate perceived susceptibility was also observed among most participants. At the bivariate level, cues to action, self-efficacy, perceived benefits, and perceived severity were associated with STI knowledge, but after adjustment only self-efficacy remained an independent predictor.

These findings indicate that awareness of the seriousness of sexually transmitted infections (STIs) alone does not necessarily translate into preventive action. For perceived severity to influence behaviour effectively, it must be accompanied by strong self-efficacy and minimal perceived barriers to accessing healthcare services. At the same time, the relatively low level of cues to action identified in this study may further explain the observed gap between awareness and behaviour. The apparent scarcity of cues to action (health promotion campaigns, school-based sexuality education, peer-led interventions, parental guidance, provider

counselling, and other forms of behavioural reinforcement) among rural youths suggests that awareness is not being sufficiently reinforced through supportive social and environmental influences, thereby limiting the adoption of consistent preventive behaviours.

Overall, the findings indicate that future STI interventions in rural Nigeria should move beyond traditional awareness campaigns toward comprehensive behavioural interventions that strengthen self-efficacy, reduce structural barriers, improve access to youth-friendly services, address prevailing misconceptions, and provide repeated cues to action through schools, families, healthcare providers, community structures, and digital platforms. Such multidimensional strategies are more likely to narrow the knowledge–behaviour gap and achieve sustained improvements in STI prevention among young people.

Implications for policy and practice

The findings have important implications for STI prevention programmes in Nigeria and similar low-resource settings. First, they demonstrate that high awareness should not be interpreted as evidence of adequate sexual health literacy. National and state health programmes should therefore expand educational messages beyond HIV to include common bacterial and viral STIs, their symptoms, routes of transmission, complications, diagnosis, treatment, and prevention.

Second, the substantial knowledge–behaviour gap indicates that information dissemination alone is unlikely to achieve meaningful reductions in STI transmission. Comprehensive interventions should combine evidence-based sexuality education with behavioural skills training, peer education, parent–adolescent communication programmes, community engagement, and improved access to confidential youth-friendly sexual and reproductive health services.

Third, the low uptake of STI screening and partner treatment highlights the need to strengthen service delivery within primary healthcare. Routine provider-initiated STI counselling, confidential testing services, partner notification systems, and adolescent-friendly clinics should be integrated into existing reproductive health and HIV programmes. Schools, community organisations, faith-based institutions, and digital platforms should also be leveraged to deliver culturally appropriate sexual health information while addressing prevailing misconceptions.

Finally, the identification of educational attainment and age as major predictors of STI knowledge underscores the importance of introducing comprehensive sexuality education early in adolescence. School-based programmes should begin before sexual debut and be complemented by community-based initiatives that reach out-of-school youths, who may otherwise remain underserved.

Strengths and limitations

This study has several strengths. It was community-based and conducted in a rural setting, addressing an important evidence gap in Nigerian STI research. It assessed not only awareness, but also depth of knowledge, misconceptions, sexual behaviour and preventive practices. The use of multistage sampling and a pretested questionnaire strengthen the quality of the data.

However, the study also has limitations. The cross-sectional design limits causal inference. Sexual behaviour and STI-related responses were self-reported and may be affected by recall and social desirability bias. No

biological testing was conducted, so actual STI prevalence could not be determined. Some sensitive behaviours may have been underreported. The study was conducted in one rural community, which may limit generalisability to other settings. Finally, the scoring approach for adequate knowledge may influence prevalence estimates, depending on how strictly knowledge was classified.

Conclusion

This study shows that STI awareness among rural youths in south-west Nigeria is high, but comprehensive knowledge remains inadequate and misconceptions persist. Awareness was heavily centred on HIV/AIDS, while knowledge of other STIs, symptoms, asymptomatic infection, transmission routes and preventive practices was limited. The findings demonstrate a substantial knowledge–behaviour gap: young people may have heard of STIs but still lack the practical knowledge, agency, services, and supportive environment needed to protect themselves.

Rural STI prevention programmes should therefore move beyond awareness creation. Effective interventions should combine comprehensive sexuality education, youth-friendly health services, confidential STI screening and counselling, condom access, parent–adolescent communication, peer education, and community-level stigma reduction. Addressing both knowledge and structural barriers is essential for improving sexual health outcomes among rural youths in Nigeria.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Bowen University Teaching Hospital Research and Ethics Committee. Informed consent was obtained from adult participants, while assent and parental or legal guardian informed consent were obtained for any participant under the age of 16 years. The study was conducted in accordance with the Declaration of Helsinki.

Consent for publication

Not applicable.

Availability of data and materials

The dataset generated for this study may be made available by the corresponding author upon reasonable request.

Competing interests

The authors declare no competing interests.

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Authors’ contributions

ABA: Conceptualization, Methodology, Analysis, Writing – Original Draft, Writing – Review & Editing.

APF, ABU, FD, IH, NPI, OOO, ID, KDM, AEA, ABE, TWA, OLOO, UO: Conceptualization, Review Analysis, Writing – Original Draft, Writing – Review & Editing.

AOA: Conceptualization, Review Analysis, Writing – Review & Editing.

OOM, OAM: Review Analysis, Writing – Review & Editing.

All authors contributed to data interpretation, critically reviewed the manuscript for important intellectual content, approved the final manuscript, and accepted responsibility for the integrity and accuracy of the work.

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Table

Table 7 is available in the Supplementary Files section.

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