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Predictors and Occurrences of Sexually Transmitted Infections amongst Students of a Tertiary Institution in Keffi, Nasarawa State, Nigeria

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ABSTRACT: This Study aims to investigate the predictors and occurrences of sexually transmitted infections among students of a tertiary institution in Keffi, Nasarawa State, Nigeria. A self-administered questionnaire was distributed to a sample of 156 students, aged ≥ 18 years. The results revealed a higher-than-expected prevalence of gonorrhoea, whereas other STIs such as trichomoniasis, hepatitis B, and HIV/AIDS showed lower-than-expected cases. Significant behavioural risk factors included smoking (37.2%), alcohol consumption (39.7%), and engaging in unprotected sex (71.1%, sometimes or always). Peer pressure played a notable role in sexual behaviour, with 51.9% of the students feeling pressured to engage in risky sex. The study found that while 66.7% of the students received sexual health education and 76.9% knew how STIs were transmitted, only 43.6% had ever been tested for STIs. Additionally, 64.1% of students perceived stigma associated with STIs, and 38.5% felt uncomfortable discussing their sexual health. These findings highlight critical public health concerns and gaps in sexual health education and service accessibility. Recommendations include enhancing comprehensive sexual health education, improving access to on-campus testing and counselling services, and implementing. Stigma reduction campaigns. This research provides valuable insights for policymakers, health educators, and university administrators to develop effective strategies for STI prevention and management among university students.

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Sexually transmitted infections (STIs) remain a significant global public health challenge affecting millions of people annually. The global prevalence of STDs is alarmingly high, with millions of new cases being reported annually. According to the World Health Organization (WHO,2024) over one million sexually transmitted infections (STIs) are acquired each day globally (Alam *et al*., 2010). These infections are caused by diverse agents such as bacteria, viruses, and parasites, which are primarily transmitted through sexual contact or contaminated needles. STIs can be categorized as curable e.g., syphilis, gonorrhoea or incurable but manageable e.g., human immunodeficiency virus, herpes simplex virus (CDC, 2018). The burden of STDs extends far beyond the physical health of the individuals. This has profound social and economic implications. STDs can result in severe reproductive health issues, including infertility, ectopic pregnancies, and adverse pregnancy outcomes (Auvert *et al*.,2012). Moreover, they can lead to stigma, discrimination, and psychological distress, often resulting in delayed diagnosis and treatment due to fear of social consequences. (Aral and Cates 2012) Economically,

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the cost of treating STDs and their complications is high. Direct medical expenses, including diagnostics, treatment, and follow-up care, considerably burden healthcare systems considerably (Ilyushina *et al*., 2014). The indirect costs related to lost productivity and reduced quality of life are substantial, particularly in resource-limited settings (Auvert *et al*.,2009). Young adults, including university students, represent a high-risk group due to factors such as limited awareness, risky behaviours, and restricted access to healthcare services. Globally, one in twenty young people contracts an STI annually, and sub-Saharan Africa bears a disproportionate burden, with over 22.5 million people living with HIV/AIDS (WHO., 2016). This region also faces unique socio-cultural and economic barriers that exacerbate the spread of STIs (Mansor *et al*.,2020). Sexually transmitted diseases (STDs) pose significant public, social, and economic challenges in Nigeria. Gonorrhoea is the most prevalent STD, with a reported prevalence as high as 28.1%. This infection is strongly associated with infertility in both males and females. Additionally, the prevalence of penicillin-resistant *Neisseria gonorrhoea* varies across regions, ranging from 44.4% in Zaria to 80% in Ibadan (Ogunbanjo, 1989). Recent studies have reported rising STI prevalence, particularly among female students, at Nasarawa State University, Keffi (NSUK). These findings highlight the urgent need for targeted education, prevention, and healthcare strategies tailored for this population. Despite the documented burden, awareness of STIs beyond HIV/AIDS remains low, limiting effective prevention and management efforts (Yahaya *et al*., 2024). Hence this Study aims to investigate the predictors and occurrences of sexually transmitted infections among students of a tertiary institution in Keffi, Nasarawa State, Nigeria.

MATERIALS AND METHODS

Study Area: The study was conducted at Nasarawa State University, Keffi, located in Keffi town, Nasarawa State, Nigeria. Keffi is geographically positioned near Abuja and is easily accessible from several major routes. It is a multi-ethnic town with a rich cultural heritage that reflects the diverse ethnic composition of Nasarawa State. The university itself draws students from across the country, making it an ideal setting to explore the cultural dynamics influencing dietary habits. The study population consisted of undergraduate students at Nasarawa State University.

Data collection: A quantitative cross-sectional study design was used, with data collected through a self-administered questionnaire. The study population included registered undergraduate and postgraduate students of NSUK, aged 18 years and above. A total of 156 students voluntarily participated in the survey. The questionnaire covered key areas such as Demographics: Age, gender, education level, and marital status, Sexual behaviors: Number of sexual partners, condom use, and history of STIs, STI prevalence: Self-reported infections and treatment-seeking behavior, Socio-cultural influences:

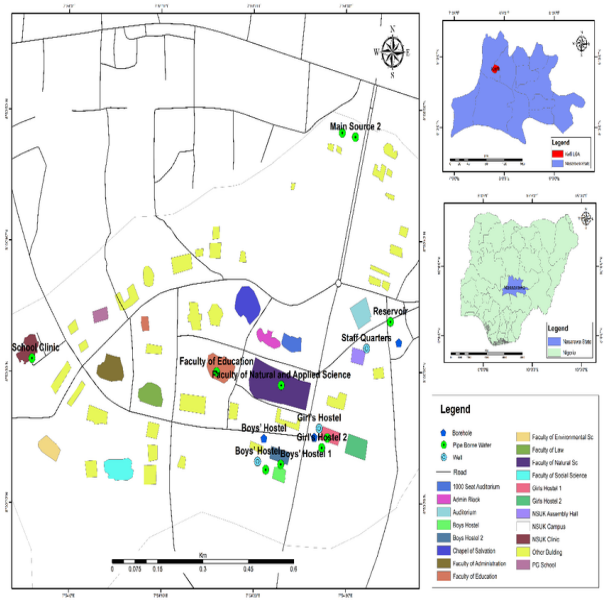

Fig 1: Map of Nasarawa State University Campus Keffi**.**
Source : (Elijah,2023)

Fig 2: Map of Nasarawa state
Source: Google map

Cultural beliefs and perceptions about STIs, Lifestyle impacts: Substance use and risky behaviors, Awareness and access to sexual health services: Knowledge of STIs, available services, and

utilization. All participants provided informed consent, ensuring they were aware of the study's objectives and their right to withdraw at any time. Confidentiality measures were strictly upheld.

Data analysis: Descriptive statistics were used to summarize the demographic characteristics and STI prevalence. Inferential statistics, such as chi-square tests and logistic regression, were applied to identify associations and predictors of STIs. Data analysis was conducted using the SPSS software.

Ethical approval was obtained from the University Institutional review board. All participants provided informed consents prior to data Collection, ensuring that they were fully aware of the study's Objectives and the right to withdraw at any time.

RESULT AND DISCUSSION

*Demographic Characteristics of Respondents***:** Table 1 shows the demographic characteristics of the study participants. The sample consisted of 59% females and 41% males, indicating a relatively balanced gender distribution. The age distribution of the participants showed that the majority (36.5%) were between 21-25 years old, which is consistent with the typical age range of university students.

Table 1 : Demographic Characteristics of Respondents(n=156)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Female	92	59.0
	Male	64	41.0
Age	18-20 years	28	17.9
	21-25 years	57	36.5
	26-30 years	41	26.3
	31+ years	30	19.2
Marital Status	Single	133	85.3
	Married	20	12.8
	Widowed	3	1.9
Ethnicity	Hausa	26	16.7
	Yoruba	23	14.7
	Igbo	13	8.3
	Others	94	60.3
Religion	Christianity	107	68.6
	Islam	49	31.4

The next largest age group was 26-30 years old, accounting for 26.3% of the sample. In terms of marital status, the majority of participants (85.3%) were single, which was expected given the demographic profile of university students. Married individuals accounted for 12.8% of the sample, and 1.9% were widowed. The ethnic composition of the sample was diverse, with the "Others" category being the largest (60.3%), followed by Hausa (16.7%), Yoruba (14.7%) and Igbo (8.3%). The religious affiliations of the participants also showed diversity, with Christianity being the predominant religion (68.6%), and Islam accounting for 31.4% of the sample.

Table 2 presents a comparison of the observed and expected cases of various sexually transmitted infections (STIs) among respondents. Notably, gonorrhea exhibited a higher-than-expected number of cases (40 observed vs. 31.2 expected), resulting in a positive residual value of 8.8. In contrast, trichomoniasis, hepatitis B, and HIV/AIDS demonstrated significantly lower observed cases than their expected counts, with substantial negative residuals (-21.2, -15.2, and -16.2, respectively). Sexually transmitted diseases (STDs) pose significant public, social, and economic challenges in Nigeria. Gonorrhea is the most prevalent STD, with a reported prevalence as high as 28.1%. This infection is strongly associated with infertility in both males and females. Additionally, the prevalence of penicillin-resistant *Neisseria gonorrhea* varies across regions, ranging from 44.4% in Zaria to 80% in Ibadan (Ogunbanjo, 1989). The findings underscore the urgent need for enhanced sexual health education and accessible testing and treatment services on campus to mitigate the spread of infections.

Table 2: Prevalence of STIs among NSUK Students

Disease	Observed Cases (N)	Expected Cases (N)	Residual
Syphilis	25	31.2	-6.2
Gonorrhea	40	31.2	8.8
Chlamydia	30	31.2	-1.2
HIV/AIDS	15	31.2	-16.2
Genital herpes	20	31.2	-11.2
Trichomoniasis	10	31.2	-21.2
Hepatitis B	16	31.2	-15.2

These findings suggest that the elevated prevalence of gonorrhea may indicate inadequate prevention and awareness of this STI. Conversely, the lower than expected counts for other STIs may be attributed to underreporting, stigma, or challenges in detection, highlighting the need for further investigation into these disparities. Table 3 shows the behavioral and social factors that contribute to the spread of STIs among university students. The majority of the respondents were female (59%). Many students reported smoking (37.2%) or alcohol consumption (39.7%). These behaviors can increase the risk of STIs. A significant proportion of students (42.9%) reported having unprotected sex sometimes and 28.2% reported having unprotected sex. Peer pressure played a role in sexual behavior, with 51.9% of the students feeling pressured to engage in risky sex.

Table 3: socio-cultural and lifestyle factors influencing their spread within the university

Variable	Category	Frequency (N)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Gender	Male	64	41.0	41.0	41.0
	Female	92	59.0	59.0	100.0
Total		156	100.0	100.0	
Do You Smoke Cigarettes Or Use Tobacco Products?	Sometimes	58	37.2	37.2	37.2
	Always	33	21.2	21.2	58.4
	Not at all	65	41.7	41.7	100.0
Total		156	100.0	100.0	
Do You Take Alcohol?	Sometimes	62	39.7	39.7	39.7
	Always	31	19.9	19.9	59.6
	Not at all	43	27.6	27.6	87.2
	Occasionally	20	12.8	12.8	100.0
Total		156	100.0	100.0	
Have You Ever Had A Same-Sex Sexual Encounter?	Sometimes	8	5.1	5.1	5.1
	Always	0	0.0	0.0	5.1
	Not at all	148	94.9	94.9	100.0
Total		156	100.0	100.0	
Do You Engage In Unprotected Sexual Activity?	Sometimes	67	42.9	42.9	42.9
	Always	44	28.2	28.2	71.2
	Not at all	45	28.8	28.8	100.0
Total		156	100.0	100.0	
Do You Feel Pressured By Peers To Engage In Risky Sexual Behavior?	Yes	81	51.9	51.9	51.9
	No	53	34.0	34.0	85.9
	Sometimes	22	14.1	14.1	100.0
Total		156	100.0	100.0	
Have Your Peers Ever Influenced Your Decision To Use Protection During Sexual Activity?	Yes	97	62.2	62.2	62.2
	No	59	37.8	37.8	100.0
Total		156	100.0	100.0	

However, 62.2% of students reported that their peers encouraged them to use protection. A small proportion (5.1 %) of students reported having same-sex sexual encounters. This region also faces unique socio-cultural and economic barriers that exacerbate the spread of STIs [9]. Sexually transmitted diseases (STDs) pose significant public, social, and economic challenges in Nigeria.

In summary, this study found that university students engage in behaviors that increase their risk of STIs, including smoking, drinking, and unprotected sex. Peer pressure and social influence also play a role in sexual behavior.

Table 4: shows the level of awareness and availability of sexual health resources among university students. Most respondents (66.7%) received sexual health education, while 17.9% did not. Many students (76.9%) knew how STIs were transmitted, indicating reasonable awareness. However, 23.1% of the respondents lacked knowledge on this topic. Few students (43.6%) had been tested for STIs. Many students (56.4%) did not know where to get tested or did not want to use available services. While 61.5% of the students felt comfortable discussing sexual health, 38.5% did not.

Young adults, including university students, represent a high-risk group due to factors such as limited awareness, risky behaviors, and restricted access to healthcare services.

Globally, one in twenty young people contracts an STI annually and sub-Saharan Africa bears a disproportionate burden, with over 22.5 million people living with HIV/AIDS (Rageshri *et al*., 2011).

In summary, this study found that university students have some knowledge of sexual health, but gaps remain. Many students lack access to testing services and feel uncomfortable discussing their sexual health. To address these issues, it is necessary to expand sexual health education programs, promote discussions about sexual health, and improve access to testing and counselling services.

Table 4 : Level of awareness, attitudes, and accessibility to sexual health services among the students

Variable	Response	Frequency (N)	Percent (%)
Sexual health education received	Yes	104	66.7
	No	28	17.9
	Not sure	24	15.4
Knowledge of STI transmission	Yes	120	76.9
	No	36	23.1
Ever tested for STIs	Yes	68	43.6
	No	88	56.4
Testing location	Campus clinic	46	29.5
	Off-campus facility	22	14.1
	Not applicable	88	56.4
Access to condoms/contraception	Yes	109	69.9
	No	47	30.1
Perceived STI stigma	Yes	100	64.1
	No	33	21.2
	Not sure	23	14.7
Comfort discussing sexual health	Comfortable	96	61.5
	Uncomfortable	27	17.3
	Sometimes uncomfortable	33	21.2

Conclusion: This study highlights critical public health concerns among university students, emphasizing risky behaviors, socio-cultural influences, and gaps in sexual health education. While moderate awareness of STI transmission exists, persistent risks remain due to high rates of unprotected sex, alcohol use, and peer pressure. Limited testing, underutilized campus health facilities, and STI-related stigma further exacerbate the issue. Many students lack essential sexual health knowledge and feel uncomfortable discussing these topics, hindering prevention efforts. The study recommends (i) integrating comprehensive sexual health education in universities, (ii) improving access to on-campus testing, counseling, and treatment, and (iii) launching stigma reduction campaigns to encourage open discussions. Addressing these issues will help mitigate STI prevalence and enhance students' well-being. These findings provide a foundation for policymakers, health educators, and university administrators to develop effective STI prevention and management strategies.

Declaration of Conflict of Interest: The authors declare no conflict of interest.

Data Availability: Data are available upon request from the first author

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