

PREVALENCE OF SEXUALLY TRANSMITTED DISEASES, KNOWLEDGE AND PRACTICES AMONG SELECTED RESIDENTS OF KARU, NASARAWA STATE, NIGERIA

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ABSTRACT

Introduction: Sexually transmitted diseases (STDs) also referred to as sexually transmitted infections (STIs) are of significant medical importance. The diseases are transmitted from one infected individual to another during sexual intimacy. Over 30 pathogens have been identified as the etiologic agents. **Methods:** A descriptive cross-sectional survey was carried out using a simple random sampling method in administering pre-tested questionnaires. Clinical assessments and laboratory examinations (PCR) were also carried out using standard techniques. Results were expressed in percentages, and chi-square ($p < 0.05$) was used to test for the significance of differences. **Results:** The results of this study showed that out of the 226 participants initially registered, 138 representing 61.06% had previously been infected with sexually transmitted diseases. A vast majority (95.60%) of the participants were aware of the existence of the diseases; 79.60% had a single sexual partner, while 84.10% agreed to have used condoms. *Trichomonas vaginalis* with a prevalence of 28.99% was the most common of the STDs and Herpes Simplex Virus (HSV) was the least common with a prevalence rate of 1.45%. The result indicated that the prevalence of the disease was more associated with age and sexual practices than the educational qualifications of participants. **Conclusion:** While most of the participants in the present study are aware of the existence of sexually transmitted diseases and their modes of transmission, the findings of this study indicated that STDs remain highly prevalent in Karu, Nasarawa State, Nigeria. These findings highlight the need for targeted sexual health education and behavioral interventions to reduce STD transmission.

Keywords: Knowledge, Practice, Prevalence, Residents, Sexually transmitted diseases.

INTRODUCTION

Sexually transmitted diseases (STDs), also known as sexually transmitted infections (STIs) pose a major global health burden. Over a million infections occur daily. A yearly estimation of 499 million new infections has been reported in people aged between 15 and 49 years. Trichomoniasis has the greatest incidence of 276.4 million out of 499 million yearly new infections (WHO 2024). The diseases are primarily transmitted from one infected person to another during sexual intimacy, while some non-sexual modes of transmission such as vertical transmission from mother to child, infected blood, and contaminated blood transfusion have also been documented (Oduvwu, 2024).

Over thirty (30) pathogens have been implicated as causative organisms of the different types of sexually transmitted diseases, eight pathogens are responsible for the majority of STD cases, four of which are bacterial/protozoan and curable while the remaining four are viral and currently incurable. They include gonorrhea, syphilis, *Chlamydia* which are of bacterial origin, and trichomoniasis, a protozoan infection. The other four diseases are of viral origin namely hepatitis virus B (HBV), human immunodeficiency virus (HIV), human papillomavirus (HPV), and herpes simplex virus (HSV).

Most of these infections are asymptomatic, with the asymptomatic patient capable of transmitting the infection to other persons (Aderibigbe *et al.*, 2021). Women, due to their anatomy and young adults have been reported to be mostly affected by STDs (Oluwole *et al.*, 2020). Certain populations, including individuals with multiple sex partners, sex workers, mobile workers (e.g., sailors, long-distance drivers), and men who have sex with men have been identified as having a higher risk of STDs due to behavioral and structural factors. Sexually transmitted diseases are of great burden in Sub-Saharan Africa with Nigeria having its own fair share due to limited healthcare access, cultural stigma, and financial constraints (Nzopotam *et al.*, 2022). The diseases affect sexual and reproductive health resulting in stigmatization, infertility, ectopic pregnancy, tubal blockage, cancer, and other related complications (Aderibigbe *et al.*, 2021).

Recent publications on sexually transmitted diseases are scarce in Nigeria, and there is no generally acceptable national prevalence rate (Oduvwu, 2024). Previous studies on the prevalence of STDs have reported rates of between 0 and 23% among sex workers (Morhason-Bello & Fagbamigbe, 2020) and 27.70% in Benin City, South-South, Nigeria (Nzopotam *et al.*, 2023).

Previous studies have documented varying levels of awareness in other parts of Nigeria, including 66% (Oluwole *et al.*, 2020), 6.90% (Amu *et al.*, 2015), and 77% (Jubril *et al.*, 2021). There is however a dearth of information on STIs in Karu as no known study has been carried out in this local government area of Nigeria. The present study was therefore undertaken to investigate the prevalence of sexually transmitted diseases among residents of Karu LGA of Nasarawa State and their level of awareness of the diseases.

METHODS

Study area: This study was carried out in the Karu Local Government Area (LGA) of Nasarawa State, North-Central, Nigeria. The LGA was created in October 1996 with headquarters at New Karu town. It lies on latitudes 8° 65' and 9° 45'N, and longitude 7° 30' and 8° E. It has an estimated population of 291,900 (NNBS, 2016). It has a typical Savannah climate with an average temperature of 26.8°C and rainfall of 1400mm per year. It has a rural or semi-urban settlement pattern, populated by individuals mainly engaged in the informal sector, with lots of construction work ongoing.

Study design: The study was a descriptive cross-sectional survey and a simple random sampling method was used in administering pre-tested questionnaires to a total number of 384 persons, comprising males and females aged between 10 and 58 years. The sample size of 384 was determined using Cochran's formula for cross-sectional studies at a 95% confidence interval and an estimated prevalence of STDs from previous studies. Laboratory diagnosis of STDs was conducted using PCR tests following standard procedures outlined by WHO and these tests were done by trained medical laboratory scientists in the hospital. Results were expressed in percentages, and chi-square was used to test for the significance of differences between variables.

Ethical consideration: Ethical permission was obtained from the Ethical Research Committee of the National Open University of Nigeria. Verbal consent was obtained due to literacy challenges among some participants, and this was approved by the Ethical Research Committee. The participants were assured of the confidentiality of the information supplied.

Sample size and data collection: The pre-tested, well-structured questionnaires were administered to a total of three hundred and eighty-four (384) residents; males and females aged between 10 years and 58 years. Participants were included if they were residents of Karu LGA, aged 10-58 years and consented to participation. Exclusion criteria included individuals who did not complete the questionnaire, <10 years, >58 years, and had pre-existing conditions that could interfere with STD diagnosis. However, a total of two hundred and twenty-six questionnaires (226) were retrieved representing a response rate of 58.85%, while 158 (41.15%) were not returned.

The response rate was 58.85%, however, the respondents did cut across all intended ages, both genders, educational status, marital status as well as different occupations, we therefore do not think the non-respondents potentially affected the generalizability which may introduce selection bias. The questionnaire was in two sections, section A sought to obtain the socio-demographic information of participants while section B was on knowledge of participants on STDs and practices connected with the spread of the diseases among the participants.

Data analysis: Results were presented in tables using frequencies and percentages, while chi square was used to test for significance of differences between variables.

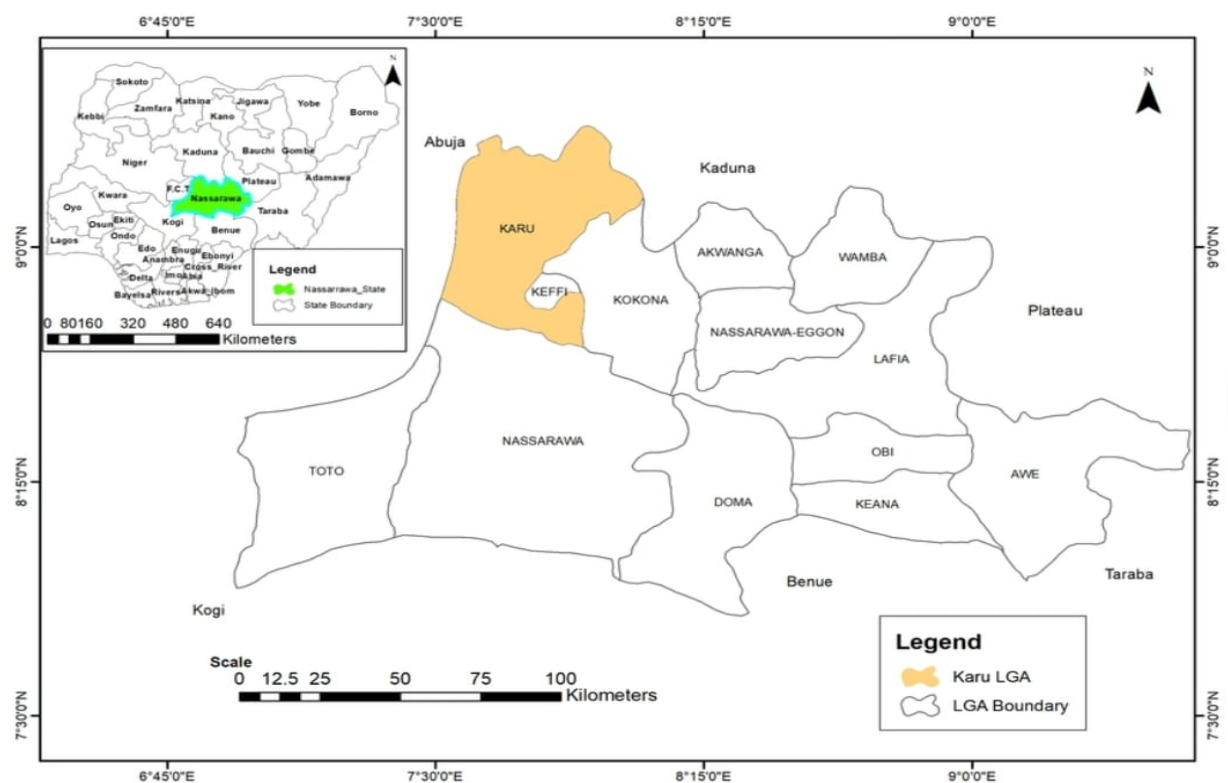


Figure 1: Map of Nasarawa State of Nigeria showing the study area (Karu LGA).

RESULTS

Socio-demographic characterization of participants: Table 1 shows the socio-demographic characterization of the participants. A total of two hundred and twenty-six (226) individuals who submitted the questionnaire served them, comprised of 105 (46.46%) males and 121 (53.54%) females. The highest number of participating residents were people aged between 40 and 49 years (41.10%), most of the people were not married (single) 110 (48.70%). Also, the majority of those sampled had no formal education 112 (49.60%) and they were mostly self-employed 96 (42.50%).

Table 1: Socio-demographic characterization of participants (n=226)

Variable	N	%
Gender		
Male	105	46.50
Female	121	53.50
Age		
10-19	6	2.70
20-29	19	8.40
30-39	66	29.20
40-49	93	41.10
50 ⁺	42	18.60
Marital Status		
Single	110	48.70
Married	63	27.90
Separated	20	8.80
Divorced	29	12.80
Widowed	4	1.80

Educational Status		
No Formal Education	112	49.60
Primary Education	63	27.90
Secondary Education	35	15.40
Tertiary Education	16	7.10
Occupation		
Civil Servant	60	26.50
Self-Employed	96	42.50
Student/Apprentice	25	11.10
Unemployed	30	13.30
Farmer	15	6.60

Knowledge and practice associated with sexually transmitted diseases:

Table 2 summarizes the level of knowledge and practices of residents of Karu Local Government Area related to sexually transmitted diseases. Two hundred and sixteen (216) representing 95.60% of the residents have heard about STIs while 215(95.10% were aware of the various preventive measures against the diseases. Also, 198 (87.60%) affirmed knowing about treatments for the diseases.

With regards to sexual practices, 180 (79.60%) of the participants had one sexual partner; 190 (84.10%) had previously made or had been making use of condoms during coitus while 200 (88.50%) agreed they would inform their spouses should they contract any of the STDs. Of the 226 participants, more than half 53.10% (120) confirmed involvement in sex for money, while 146 (64.60%) agreed to consumption of alcohol and recreational drugs.

Table 2: Knowledge and practice associated with sexually transmitted diseases

Variable	Response		
	Yes N (%)	No N (%)	Total N (%)
Knowledge			
Have heard about sexually transmitted diseases (STDs)?	216 (95.60)	10 (4.40)	226 (100)
Does STDs manifest physically on the face?	92 (40.80)	134 (59.20)	226 (100)
Are you aware there is protection against STDs?	215 (95.10%)	11 (4.90)	226 (100)
Are you aware there is treatment against STDs?	198 (87.60)	28 (12.40)	226 (100)
Do you know about sex education?	176 (77.90)	50 (22.10)	226 (100)
Do you know your HIV status?	206 (91.10)	20 (8.80)	226 (100)
Practice			
Have one sexual partner	180 (79.60)	46 (20.40)	226 (100)
Have used condom before	190 (84.10)	36 (15.90)	226 (100)
Have engaged in sex for money	120 (53.10)	106 (46.90)	226 (100)
Do take alcohol and recreational drugs	146 (64.60)	80 (35.40)	226 (100)
Would tell my spouse if I contract STDs	200 (88.50)	26 (11.50)	226 (100)

Prevalence of sexually transmitted diseases according to gender, age, and educational status of residents of Karu LGA.

The overall prevalence of sexually transmitted diseases (STDs) among the sampled population of Karu LGA of Nasarawa State, was 61.06% (Table 7), and STD infection rate appeared to be higher in females (65.2%) (Table 3) and it increased across both genders with age, up until age group 30 – 39 years, declining thereafter. The highest infection rate was recorded among individuals aged between 30 and 39 years (65.15%) (Table 4) and residents who had acquired tertiary education (68.75%) (Table 5). Clinical symptoms, presentation, and medical history of the participants were taken into account before laboratory assessment was carried out accordingly on the participants with the participants presenting with one pathogen at a time. Results also indicated that trichomoniasis was the most frequently contracted STD followed by gonorrhea, while Herpes simplex virus was the least occurring STI among the people (Table 6).

Table 3: Prevalence of sexually transmitted diseases according to gender of residents of Karu LGA.

Gender	Prevalence of STDs		Total
	NO	YES	
Male	48 (43.2%)	63 (56.8%)	111
Females	40 (34.8%)	75 (65.2%)	115
Total	88	138	226

Table 4: Prevalence of sexually transmitted diseases according to age of residents of Karu LGA.

Age group (years)	Number sampled	Number positive	Prevalence (%)
10 – 19	6	3	50.00
20 – 29	19	11	57.89
30 – 39	66	43	65.15
40 – 49	93	56	60.22
≥ 50	42	25	59.52
Total	226	138	61.06

Table 5: Prevalence of sexually transmitted diseases according to educational status of residents of Karu LGA.

Educational Status	Number sampled	Number positive	Prevalence (%)
No formal Education	112	68	60.71
Primary	63	38	60.31
Secondary	35	21	60.00
Tertiary	16	11	68.75
Total	226	138	61.06

Table 6: Distribution of STIs encountered among residents of Karu LGA, according to species of the pathogen.

Sexually transmitted Infection	Occurrence	
	N	%
Syphilis	3	2.17
Gonorrhoea	34	24.64
Chlamydia	20	14.49

Trichomoniasis	40	28.99
Hepatitis B virus (HBV)	25	18.11
HerpesSimplex virus (HSV)	2	1.45
Human immune deficiency virus (HIV)	10	7.25
Human papilloma virus (HPV)	4	2.90

Table 7: Prevalence of STDs among participants

	N	%
YES	138	61.1
NO	88	38.9
Total	226	100

DISCUSSION

Although published data on the prevalence of sexually transmitted diseases are not readily available in Nigeria, the diseases are of significant health and socio-economic burden in Sub-Saharan Africa which has the highest prevalence of the diseases (Nzopotam *et al.*, 2022). The overall prevalence rate recorded in this study (61.06%) is far higher than those reported by Morhason-Bello & Fagbamigbe (2020) among two sub-populations, 0-18% and 23% respectively. It is also higher than the 28.10% reported in Zaria by Bello *et al.*, (1983); 36.50% by Sekoni *et al.*, (2017), and 27.70% by Nzopotam *et al.*, (2022) in Benin City South Nigeria, considered by Oduvwu (2024) as the most recent data available. Conversely, the prevalence rate of STIs obtained in this study is lower than 97.50% reported in Ibadan, Nigeria by Okonko *et al.*, (2012), it is however not significantly different from the 62.50% reported in Enugu, Nigeria by Chidinma *et al.*, 2017. The variations in STI prevalence across studies may be attributed to differences in study settings, sample populations, diagnostic methods, and cultural attitudes toward reporting infections. The high prevalence obtained in this study could be due to the presence of a large number of road and buildings construction workers and city migrants in the sample location, the majority of who relocated to Karu without bringing along their spouses. High prevalence could also be hinged on the fact that more than 50% of the sampled population agreed to have engaged in sex for monetary reward, which is akin to prostitution or engagement in sex work.

Females may have reported a higher prevalence due to increased biological susceptibility, healthcare-seeking behavior, and access to STI testing however the Fisher exact test statistic value is 0.2202 and the result is not significant at $p < 0.05$. This shows that the prevalence of STIs was the same across the genders for this study which can be attributed to the study sample as there was no significant difference between both genders.

The increase in the prevalence rate of STIs among the population studied appears to correlate positively with age, albeit up to age 39 years. This is in agreement with the trend of most parasitic and bacterial infections. Age bracket 30 to 39 years recorded the highest prevalence in the current study which appears to be in consonance with WHO, 2024, however Oluwole, *et al.*, (2020) posited that the prevalence was expected to be highest among young adults and adolescents, who are the most sexually active group. Although a higher prevalence was observed among individuals aged 30-39 years, statistical analysis revealed that there was no significant association/relationship between age and STI prevalence as the Fisher's Exact test gave a p-value of 0.2163 which is greater than 0.05. This implies that the prevalence of STDs was the same across the age groups.

Despite the expectation that education reduces STI risk, this study found the highest prevalence (68.75%) among highly educated individuals with a significant relationship and association between the educational qualification of respondents and the prevalence of STIs as the Fisher's Exact test gave a p-value of .0214 which is less than 0.05. This implies that the prevalence of STIs was related to the educational levels of participants.

This may be due to increased sexual activity, greater self-reporting of infections or access to STI testing among educated participants. This however contradicts the suggestions of Oluwole *et al.*, (2020) and Jubril *et al.*, (2021) which can be attributed to the difference in study population and setting.

Trichomoniasis was the most frequently contracted STI (28.99%) in the present study which underscores the position of WHO (2024) that, of the eight (8) STIs studied, trichomoniasis caused by *Trichomonas vaginalis* was the most commonly encountered. On the contrary, Nzoputam *et al.*, (2022) and Bello *et al.*, (1983) in their studies found gonorrhea to be the most prevalent of all STIs surveyed.

The rate of Karu people's awareness of sexually transmitted diseases obtained in this study was 95.60%, which clearly points to the fact that the sampled residents are quite knowledgeable about the existence of the diseases. This finding agrees with most previous studies (Oluwole *et al.*, 2020, Jubril *et al.*, 2021). It is however contrary to the findings of Amu *et al.*, (2015) who reported a poor awareness rate of 6.90%. The high level of awareness obtained in this study could be attributable to the proximity of the study area to Abuja, the Federal Capital City of Nigeria, which makes them the first beneficiary of the effort of the Centre for Disease Control located in Abuja to disseminate information on the control of common diseases, STIs inclusive.

The overall findings on sexual practices of the sampled population in this study suggest that, despite high STI awareness (95.6%), risky behaviors such as inconsistent condom use (62.3%) and multiple sexual partners (52.1) contributed to STI transmission.

CONCLUSION

The high prevalence rate of 61.06% obtained from this study indicates that despite high awareness (95.6%), risky behaviors such as inconsistent condom use and engagement in transactional sex continue to contribute to its prevalence. This therefore calls for urgent attention for collaboration of the government, the Ministry of health, local healthcare providers, and educational institutions to implement targeted interventions, subsidized timely STI screening, and behavior-change campaigns to militate against the health and socio-economic hazards posed by sexually transmitted diseases.

Barriers such as stigma, limited access to STI clinics, and cultural beliefs may contribute to the persistence of STIs despite high awareness levels. Addressing these issues through community-based interventions and affordable healthcare services is crucial.

Conflicts of Interest

The authors declare no conflicts of interest.

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