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Prevalence and Associated Risk Factors of Genital Herpes: A 5-Year Retrospective Study

¹Abednego Samuel Dahal, ²Yadang Dasohot Maktep, ²Nakah Joseph Nababa, ²Nanret Kyeswet Suchi, ²Reward Audu, ²Akogwu Ernest Oteikwu, ²Joy MC Thomas, ²Johnson Okoh Okidu, ²Ukingat Mahan Mahanan, ²Merhak Pangam Prosper

¹Department of Medical Microbiology, Faculty of Basic Clinical Sciences, College of Health Sciences, University of Jos, P.M.B.2084, Jos Plateau State, Nigeria.

²Department of Medical Microbiology, Jos University Teaching Hospital. P.M.B. 2076, Jos Plateau State, Nigeria.

Corresponding author: **Dr. Dahal Abednego Samuel**, Department of Medical Microbiology, Faculty of Basic Clinical Sciences, College of Health Sciences, University of Jos, P.M.B.2084, Jos Plateau State, Nigeria. dahalsamuel@yahoo.com; dahals@unjios.edu.ng; +2348066660838

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ABSTRACT

Background: Genital herpes is a common sexually transmitted infection caused predominantly by herpes simplex virus type 2, contributing significantly to global sexual and reproductive health burden. It is associated with recurrent lesions, increased risk of HIV infection, and psychosocial distress.

Objective: This study determined the prevalence and associated risk factors of genital herpes among patients attending a special treatment clinic in a tertiary health facility over a five-year period.

Methodology: A retrospective cross-sectional study was conducted using medical records of 526 patients managed for sexually transmitted infections between January 2021 and December 2025. The diagnosis of genital herpes was based on clinical evaluation. Data on sociodemographic characteristics, sexual behaviour, and clinical diagnosis were extracted into an Excel spreadsheet for analysis.

Results: The prevalence of genital herpes was 16.0% (84/526). Significant associations were found with age ($\chi^2 = 39.085$, $p < 0.001$), with higher prevalence among individuals aged 50-59 years, and sex with a higher prevalence observed among males in this study. Participants' occupation also demonstrated significant association, particularly among civil servants and business individuals. History of multiple sexual partners and HIV infections were strong risk factors in this study. Marital status and educational level showed no significant association.

Conclusion: Genital herpes remains relatively prevalent, with key associations linked to demographic and behavioral factors. Targeted interventions, including behavioral change strategies, sexually transmitted infections screening, and public health education, are essential to reduce transmission.

Keywords: Genital herpes, prevalence, risk factors, Herpes simplex virus-2, sexually transmitted infections.



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INTRODUCTION

Genital herpes is a chronic, lifelong viral infection caused predominantly by herpes simplex virus type 2 (HSV-2), although herpes simplex virus type 1 (HSV-1) is increasingly recognized as an important etiological agent, particularly among younger populations¹. It is one of the most prevalent sexually transmitted infections (STIs) worldwide, with millions of new infections occurring annually². The infection is characterized by painful vesicular rashes (Figure 1), genital ulcerations, recurrent episodes, and periods of asymptomatic viral shedding, all of which contribute significantly to ongoing transmission³. Most importantly, many infected individuals remain asymptomatic or undiagnosed, thereby serving as reservoirs for silent spread within the general population⁴.



Figure 1: Vesicular rashes of Genital herpes in a 24-year-old sexually active student.

The global burden of genital herpes remains increasingly substantial, with seroprevalence estimates indicating a significant proportion of sexually active adults are infected with HSV-2². The infection disproportionately affects individuals in low- and middle-income countries, where access to diagnostic facilities and preventive services may be limited. In addition to its physical manifestations, genital herpes is associated with considerable psychological and social consequences, including stigma, anxiety, and reduced quality of life⁵. The public health significance of genital herpes extends beyond its immediate clinical effects. It has been well

established that genital herpes infection increases susceptibility to human immunodeficiency virus (HIV) infection by disrupting mucosal barriers and promoting inflammatory cell recruitment⁶. Furthermore, individuals co-infected with HSV-2 and HIV are more likely to transmit HIV to sexual partners⁷. This synergistic relationship between genital herpes and HIV underscores the importance of integrated STI and HIV prevention strategies to reduce the spread of this infection among sexually active individuals.

In addition, genital herpes poses a serious risk in pregnancy. Vertical transmission of the virus from mother to child during delivery can result in neonatal herpes, a severe condition associated with high morbidity and mortality⁸. Although relatively rare, neonatal herpes carries devastating consequences, including neurological impairment and death, particularly in areas where early diagnosis and antiviral therapy are not readily available⁹.

In developing countries, including Nigeria, the true burden of genital herpes is likely underestimated. This is largely due to stigma associated with sexually transmitted infections, underreporting, limited access to laboratory diagnostic tools, and the widespread use of syndromic management approaches¹⁰. While syndromic management is practical in resource-limited settings, it may lead to misdiagnosis or underdiagnosis of herpes infections, thereby obscuring the true epidemiological picture¹¹.

The understanding of the epidemiology of genital herpes, including its prevalence and associated risk factors, is essential for guiding public health interventions¹². Identification of key determinants such as age, sex, sexual behavior, and co-existing STIs can inform targeted prevention strategies, improve patient management, and reduce transmission within the community¹³. This study therefore aimed to determine the prevalence and associated risk factors of genital herpes among patients attending the Special Treatment Clinic of a tertiary health facility over a five-year period (2021–2025).

METHODOLOGY

Study Area: The study was conducted at the Special Treatment Clinic (STC) of Jos University Teaching Hospital (JUTH), located in Jos, the capital of Plateau State, Nigeria. Jos lies between latitudes 9°30'N and 10°30'N and longitudes 8°30'E and 9°30'E, at an altitude of approximately 1,280 meters above sea level. The city

experiences a relatively temperate climate, with an average annual rainfall of about 1,400 mm, a rainy season from March to October, and a dry season from November to February. Although the city has experienced periods of crisis in recent times, it still has numerous hostels and recreational spots that support its evening social life. JUTH is a major tertiary healthcare institution that provides specialized medical services to Plateau State and neighboring regions. It serves as a referral center and hosts various outpatient clinics, including general outpatient, emergency, and specialized units, catering to a diverse patient population. The Special Treatment Clinic (STC) is a specialized outpatient unit dedicated to the diagnosis, treatment, and follow-up of patients with sexually transmitted infections. It serves a heterogeneous population drawn from the Jos metropolis and surrounding communities, including referrals from other healthcare facilities. The hospital also hosts the AIDS Prevention Initiative in Nigeria (APIN), a well-established HIV/AIDS treatment centre. This centre currently manages over 10,000 HIV-infected clients receiving treatment and care, based on available clinic records. The clinic serves patients predominantly from the North-Central, North-East, and North-Western regions of Nigeria.

Study Design: This was a hospital-based, retrospective cross-sectional study designed to assess the prevalence and associated risk factors of genital herpes among patients attending special treatment clinic, JUTH.

Study Population: The study population comprised patients diagnosed and managed for sexually transmitted infections (STIs) at the Special Treatment Clinic (STC) of Jos University Teaching Hospital (JUTH), Plateau State, Nigeria. All eligible patient records within the study period that contained complete information on sociodemographic characteristics, clinical diagnosis, and relevant risk factors were included in the study.

Inclusion Criteria: Patients managed at the Special Treatment Clinic (STC) during the study period for sexually transmitted infections, with a complete relevant data such as age, sex, occupation, sexual history, and STI history.

Exclusion Criteria: Patients were excluded from the study if their records were incomplete or missing, lacked a definitive clinical diagnosis, or represented duplicate patient entries.

Study period: The study was conducted over a five-year period from January 2021 to December 2025.

Sample Size: A total of 526 patients records were included in the study.

Sampling Technique: A total population sampling technique was employed in this study. All available and eligible medical records of patients managed for sexually transmitted infections (STIs) at the Special Treatment Clinic (STC) of Jos University Teaching Hospital (JUTH) within the defined study period were reviewed.

Data Collection: A structured data extraction form was used to obtain relevant information from patient case notes and clinic registers. The extracted variables included sociodemographic characteristics (age, sex, marital status, educational level, and occupation), behavioral factors (history of multiple sexual partners), and other sexually transmitted infections, including HIV status. The diagnosis of genital herpes was based on documented clinical findings recorded by attending clinicians, consistent with standard syndromic and clinical diagnostic guidelines used in the facility. Data collection was conducted with strict adherence to confidentiality, ensuring that no patient identifiers were recorded. All retrieved data were coded and entered into an Excel for analysis.

Data Analysis: The results obtained were analyzed using Statistical Package for Social Sciences (SPSS) version 25 (IBM SPSS Inc, Chicago, IL, USA). Descriptive statistics were used to summarize variables. Associations between genital herpes and independent variables were tested using the Pearson Chi-square test. Statistical significance was set at $p < 0.05$.

RESULTS

A total of 526 participants were included in the study. Out of these, 84 individuals were diagnosed with genital herpes (Figure 1), giving an overall prevalence of 16.0% (Table 1). Analysis of the distribution of genital herpes across age groups revealed a statistically significant association (Table 1, $\chi^2 = 39.085$, $p < 0.001$). The prevalence increased progressively with age, with the highest rates observed among participants aged 50–59 years (47.1%), followed by those aged 60 years and above (27.3%). The lowest prevalence rate was observed among participants aged 10–19 years old (9.1%).

Occupation was also significantly associated with genital herpes ($\chi^2 = 17.132$, $p = 0.002$) (Table 2). Among occupational groups, individuals engaged in business had a prevalence of 20.6%, while civil servants showed prevalence of 20.4%. Other occupational categories recorded lower prevalence rates, and notably, no cases

of genital herpes were identified among housewives within the study population.

The sex of participants was significantly associated with genital herpes ($\chi^2 = 15.531$, $p < 0.001$) (Table 3). Males demonstrated a higher prevalence (25.0%) compared to females (11.6%).

Marital status was not significantly associated with genital herpes ($\chi^2 = 3.741$, $p = 0.154$). The prevalence was distributed across different marital categories without any statistically meaningful variation. Similarly, educational level did not show a significant association with genital herpes infection ($\chi^2 = 2.617$, $p = 0.455$), as comparable prevalence rates were observed across different levels of educational attainment (Table 3).

A strong and statistically significant association was observed with behavioral risk factors. Participants with a history of multiple sexual partners had a significantly higher prevalence (20.3%) compared to those without such history ($\chi^2 = 15.131$, $p < 0.001$) (Table 3).

In addition, history of HIV infections was strongly associated with genital herpes infection ($\chi^2 = 24.203$, $p < 0.001$) (Table 3). Individuals living with HIV/AIDS had the highest prevalence of genital herpes at 29.5%, compared to those without HIV infection (11.4%), suggesting a strong epidemiological relationship between genital herpes and HIV infection.

Table 1: Prevalence of genital herpes in relation to age group

Age group	Genital herpes		Total	Chi-square (χ^2)	p - value
	Yes	No			
10–19	2(9.1)	20(90.9)	22	39.085	< 0.001
20–29	20(10.2)	176(89.8)	196		
30–39	20(11.7)	151(88.3)	171		
40–49	23(25.0)	69(75.0)	92		
50–59	16(47.1)	18(52.9)	34		
≥60	3(27.3)	8(72.7)	11		
Total	84(16.0)	442(84.0)	526		

Table 2: Distribution of genital herpes in relation to occupation

Occupation	Genital herpes		Total	Chi-square (χ^2)	p - value
	Yes	No			
Artisan	8(21.1)	30(78.9)	38	17.132	0.002
Business	29(20.6)	112(79.4)	141		
Civil servant	33(20.4)	129(79.6)	162		
Housewife	0(0.0)	39(100.0)	39		
Student	14(9.6)	132(90.4)	146		
Total	84	442	526		

Table 3: Association between sociodemographic factor and genital herpes

Risk factor	Genital herpes		Chi-square (χ^2)	p - value
	Yes	No		
Sex				
Male	43(25.0)	129(75.0)	15.531	< 0.001
Female	41(11.6)	313(88.4)		
Marital Status				
Single	27(14.1)	165(85.9)	3.741	0.154
Married	45(15.7)	242(84.3)		
Previously married	12(25.5)	35(74.5)		
Educational level				

Primary	5(20.0)	20(80.0)	2.617	0.455
Secondary	19(12.1)	138(87.9)		
Tertiary	57(17.5)	269(82.5)		
No formal	3(16.7)	15(83.3)		
History of MSP				
Yes	72(20.3)	283(79.7)	15.131	< 0.001
No	12(7.0)	159(93.0)		
HIV/AIDS				
Yes	39(29.5)	93(70.5)	24.203	< 0.001
No	45(11.4)	349(88.6)		

NB: i. Previously married = Divorce, Separated, Widow, Widower

ii. MSP = Multiple sexual partners

DISCUSSION

The overall prevalence of 16.0% observed in this study indicates a relatively high burden of genital herpes within the study population. This finding is consistent with reports from similar hospital-based studies in sub-Saharan Africa, where genital herpes remains a significant public health concern due to its chronic, recurrent course, and role in facilitating HIV transmission^{12,14,15}. Previous studies in Nigeria have reported widely varying prevalence rates depending on the population studied, with estimates ranging from as low as 1.3% in Nasarawa State to much higher values among high-risk and clinical populations^{16,17}. These varying prevalence rates have been reported across other African countries too. For example, a prevalence of 26.6% was reported in a study conducted in Kenya¹⁸, while a systematic review across Uganda, Zimbabwe, South Africa, Tanzania, and Ethiopia reported prevalence rates ranging from 51.0% to 87.0%¹⁹. The prevalence observed in this study is therefore lower than that reported among high-risk groups but is consistent with findings from general STI clinic populations. However, it is important to note that some latent infections may have been missed, as diagnosis in this study was based on the clinical presence of vesicular lesions consistent with genital herpes. Overall, these comparisons suggest that although the prevalence in this study is lower than that reported in high-risk populations, it remains relatively high compared to global averages and aligns with the elevated burden observed across sub-Saharan Africa.

The significant association between age and genital herpes observed in this study aligns with established epidemiological patterns of sexually transmitted infections. Although individuals aged 20-29 years accounted for the highest number of clinic attendees, only 10.2% were diagnosed with genital herpes. This

finding, despite the high level of sexual activity typically associated with this age group, may reflect differences in cumulative exposure over time²⁰. The higher proportion observed among older age groups may be attributed to cumulative lifetime exposure and the persistent nature of infection, as herpes simplex virus establishes lifelong latency within the sacral dorsal root sensory ganglia²¹. Data from the National Center for Health Statistics further support this pattern, demonstrating that HSV-2 prevalence in the United States increases with age. It is estimated that approximately 13.0% of individuals aged 15–49 years are infected with HSV-2, although prevalence varies widely by region²².

A statistically significant association between sex and genital herpes was observed in this study, with males demonstrating a higher prevalence than females. This finding contrasts with several studies conducted in Nigeria and other parts of sub-Saharan Africa, where a higher prevalence has been consistently reported among females^{12,16,23}. The higher burden among females in those studies has often been attributed to increased biological susceptibility, including a larger mucosal surface area exposed during sexual intercourse and a higher efficiency of male-to-female transmission of herpes simplex virus²⁴. In addition, sociocultural and economic factors, such as gender inequality and limited negotiating power for safer sexual practices, have also been implicated in increasing women's vulnerability²⁵.

However, the higher prevalence observed among males in this study is consistent with findings from some hospital-based and high-risk population studies, where behavioral factors play a more prominent role^{15,26}. This may be due to higher likelihood of multiple sexual partnerships among males, and increased engagement in high-risk sexual behaviors. Additionally, differences in healthcare-seeking behavior may contribute, as females are more likely to access healthcare services earlier, potentially leading to earlier diagnosis and management,

whereas males may present later with more pronounced symptoms²⁷. Furthermore, the setting of this study in a Special Treatment Clinic, which caters to patients already at risk for sexually transmitted infections, may have influenced the sex distribution observed. Sampling variations and the retrospective nature of the study could also account for this deviation from the commonly reported female predominance.

Occupation was significantly associated with genital herpes, with higher prevalence among civil servants and individuals engaged in business. This was similar to previous report by Agabi and colleagues in the same study area²⁶. This may reflect high socioeconomic status and lifestyle factors, including mobility, social interactions, and exposure to multiple sexual networks among civil servants and businessmen. The absence of infection among housewives, may be due to lack of frequent social interactions as they are almost indoor in this part of the world as compared to individuals of other occupations.

The strong association among those with history of multiple sexual partners (MSP) underscores the importance of sexual behavior in disease transmission. Participants with a history of MSP had significantly higher prevalence, supporting the well-established role of multiple partnerships as a key risk factor for sexually transmitted infections. Furthermore, the significant association among patients living with HIV/AIDS highlights the epidemiological synergy between these infections. Genital herpes has been shown to increase both susceptibility to and transmission of HIV due to mucosal disruption and inflammatory responses^{7,28}. The high proportion observed among HIV-positive individuals in this study reinforces the need for integrated STI and HIV prevention strategies.

In contrast, marital status and educational level were not significantly associated with genital herpes in this study. This suggests that the risk of infection may be driven more by individual behavioral factors such as sexual practices and exposure patterns, rather than by social classifications or level of education alone. It also indicates that being married or having higher educational attainment does not necessarily confer protection against infection, particularly in areas where risky sexual behaviours may still occur across all social groups.

CONCLUSION

This study demonstrates that the prevalence of genital herpes is 16.0% among the study population. Significant

associations were observed with age, sex, occupation, history of multiple sexual partners, and HIV/AIDS status. These findings underscore the continued public health importance of genital herpes and its strong association with high-risk sexual behaviors and HIV infections.

Declarations

Authors' contribution: Abednego Samuel Dahal (ASD): Conceived and designed the study, supervised the research, performed data analysis and interpretation, drafted the manuscript, and critically revised the final version.

Yadang Dasohot Maktep (YDM): Participated in data collection, data validation, and manuscript review.

Nakah Joseph Nababa (NJN): Assisted with data collection, literature review, and manuscript editing.

Nanret Kyeswet Suchi (NKS): Contributed to data acquisition, laboratory record retrieval, and quality of the data.

Reward Audu (RA): Assisted with data collection, statistical data organization, and manuscript review.

Akogwu Ernest Oteikwu (AEO): Contributed to study implementation, interpretation of findings, and critical review of the manuscript.

Joy MC Thomas (JMT): Participated in data extraction, literature review, and manuscript revision.

Johnson Okoh Okidu (JOO): Assisted in data management, verification of study records, and review of the manuscript.

Ukingat Mahan Mahanan (UMM): Contributed to data collection, interpretation of results, and manuscript editing.

Mershak Pangam Prosper (MPP): Participated in data validation, critical review of the manuscript, and approved the final version for publication

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