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Prevalence And Epidemiological Factors of Genito-Ulcerative Diseases and Associated HIV Co-Infection: A Cross-Sectional Study in A Tertiary Care Center

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ABSTRACT

Background: Genito-ulcerative diseases (GUDs) significantly impact public health by contributing to morbidity, stigma, and increased HIV transmission risk. Understanding their epidemiology and aetiology is essential for targeted interventions.

Objectives: To assess the distribution of venereal and non-venereal GUDs, identify socio-demographic patterns, determine causative agents, and evaluate HIV prevalence among patients with venereal GUDs.

Methods: A cross-sectional observational study was conducted at the Department of Skin & VD, New Civil Hospital, Asarwa, Ahmedabad, from August 2016 to July 2018. A total of 628 patients presenting with genital ulcers were enrolled. Data on socio-demographics, clinical features, and laboratory findings were collected. Statistical analysis was performed using MS Excel and EpiInfo 7, with $p<0.05$ considered statistically significant.

Results: Our study found that 80.74% of genital ulcerative disease (GUD) cases were venereal, with herpes genitalis being the most prevalent (58.76%), followed by syphilis (8.44%) and chancroid (4.78%). The disease predominantly affected males (73.76%) and individuals aged 25-34 years (38.46%), with the majority belonging to lower socio-economic classes and having secondary education. Risk factors included multiple sexual partners (61.73%) and contact with female sex workers (41.17%) among males, while females commonly reported known acquaintances (15.04%) as partners. Heterosexual transmission was the primary mode (83.9%), and HIV seroprevalence was 18.93%, with mixed venereal diseases and herpes genitalis showing the highest association.

Conclusion: Venereal GUDs, particularly herpes genitalis, are the predominant cause of genital ulcers and are closely linked to HIV co-infection. Non-venereal GUDs also pose diagnostic challenges. Targeted health education, improved diagnostic facilities, and integrated STI/HIV programs are crucial for effective management and prevention.

Keywords: Genito-ulcerative diseases, sexually transmitted infections, herpes genitalis, non-venereal ulcers, HIV co-infection.

INTRODUCTION

Genito-ulcerative diseases (GUDs) represent a diverse group of conditions affecting the genital region, encompassing both venereal and non-venereal etiologies. These conditions pose a significant public health burden due to their associated morbidity, stigma, and potential to facilitate the transmission of sexually transmitted infections (STIs), particularly HIV. Globally, ulcerative STIs remain prevalent despite advancements in medical care, disproportionately affecting resource-limited settings.[1,2]

Historically, venereal diseases have been a recognized public health concern, with their origins often tied to social and cultural contexts. Advances in pharmacological treatments, such as antibiotics and antivirals, have improved the management of GUDs. However, socio-economic disparities and limited access to healthcare continue to challenge disease prevention and control efforts. Misconceptions about STIs, particularly in underserved populations, exacerbate delays in seeking care, contributing to disease progression and transmission.[3,4]

Venereal GUDs, such as herpes genitalis, syphilis, and chancroid, are primarily transmitted through sexual contact and account for a significant proportion of genital ulcers. Herpes genitalis, caused by the herpes simplex virus, is the leading cause of venereal GUDs worldwide. In contrast, non-venereal causes include drug reactions, autoimmune blistering disorders, and malignancies, which often pose diagnostic challenges due to their varied presentations.[2,5]

The interplay between GUDs and HIV underscores the importance of integrated management approaches. Genital ulcers increase the risk of HIV acquisition by disrupting mucosal barriers and facilitating viral entry.[6] Co-infection with HIV further complicates the clinical presentation and management of GUDs, emphasizing the need for targeted prevention and treatment strategies.[7] This study aims to evaluate the prevalence and distribution of venereal and non-venereal GUDs, analyze the socio-demographic characteristics of affected patients, identify the causative agents, and assess the prevalence of HIV co-infection among venereal GUD patients.

MATERIALS AND METHODS

Study Design: This observational, cross-sectional study was conducted at New Civil Hospital, Asarwa, Ahmedabad. The study was carried out over two years, from August 2016 to July 2018, involving patients attending the Skin and VD outpatient department or referred from other departments.

Study Participants: The study included 628 patients with genital ulcers. Inclusion criteria were all patients, irrespective of age or gender, presenting with genital ulcers. Patients who were terminally ill, unwilling to participate or provide informed consent were excluded from the study.

Data Collection: Patients' demographic information, including age, sex, education level, occupation, marital status, and income, was documented to evaluate socio-economic and cultural influences on disease prevalence. A detailed history of ulcers was recorded, encompassing onset, duration, progression, symptoms, sexual exposure details (e.g., partner type, number, type of contact, protection use), substance abuse, and systemic symptoms. Physical examinations included general and dermatological assessments, with per-speculum evaluations for married females to check for internal genital involvement. Laboratory investigations were tailored to clinical findings and included microscopy (Gram stains, Tzanck smears, dark field microscopy), serology (HSV IgM/IgG, RPR, TPHA), cultures, biopsies, urine analyses, and HIV testing with pre-test counselling. Recent sexual partners were invited for evaluations to identify sources and prevent further transmission. Informed consent was obtained for data and photographic use, ensuring confidentiality and adherence to ethical guidelines.

Follow-Up: Patients were followed up according to CDC guidelines to monitor treatment response, manage complications, and evaluate disease progression. Follow-up visits were scheduled based on the initial clinical presentation and treatment plan. Clinical assessments were repeated during these visits to monitor lesion healing and identify any recurrence. HIV-positive patients were provided with additional counselling and referred to HIV care

programs; for patients with persistent or non-healing ulcers, advanced diagnostic tests and specialist consultations were conducted. Compliance with prescribed treatments was emphasized during follow-ups to ensure optimal outcomes.

Data Analysis: Statistical analysis was conducted using MS Excel and Epi Info 7. Descriptive statistics summarized demographic and clinical data. Associations between variables were analyzed, and a p-value of <0.05 was considered statistically significant to determine the strength of observed relationships.

RESULTS

Table 1: Prevalence of Genito- ulcerative diseases.

Characteristic	Frequency
GUDs	**(n=628)**
Venereal GUDs	507 (80.74%)
Non-venereal GUDs	121 (19.26%)
Types of Venereal GUDs	**(n=507)**
Herpes Genitalis	369 (58.76%)
Chancre (Syphilis)	53 (8.44%)
Chancroid	30 (4.78%)
Mixed Venereal Diseases	55 (8.75%)
Others	45 (7.17%)

Table 1 Summarises the prevalence of genito-ulcerative diseases among 628 participants, with venereal GUDs accounting for (80.74%) and non-venereal GUDs comprising (19.26%). Among venereal GUDs, Herpes genitalis was the most frequent diagnosis, observed in (58.76%) of participants, followed by mixed venereal diseases (8.75%), syphilis (8.44%), and chancroid (4.78%), with other causes collectively representing (7.17%).

Table 2: Socio-demographic profile of study participants (n=507)

Characteristic	n (%)
Age Distribution	
• <15 years	3 (0.59%)
• 15-24 years	114 (22.49%)
• 25-34 years	195 (38.46%)
• 35-44 years	109 (21.50%)
• >44 years	86 (16.96%)
Gender Distribution	
• Male	374 (73.76%)
• Female	133 (26.23%)
Education Levels	
• Illiteracy	97 (19.13%)
• Primary	127 (25.05%)
• Secondary	181 (35.69%)
• Higher Secondary	70 (13.80%)
• Graduation and above	32 (6.31%)
Marital Status	

• Married	325 (64.10%)
• Unmarried/divorced/living alone	182 (35.89%)
Socio-Economic Status	
• Class I	28 (5.52%)
• Class II	73 (14.40%)
• Class III	153 (30.17%)
• Class IV	198 (39.05%)
• Class V	55 (10.85%)
Addiction Types	
• No addiction	266 (52.46%)
• Tobacco use	35 (6.90%)
• Smoking	37 (7.30%)
• Alcohol	108 (21.30%)
• Mix	61 (12.03%)

As per Table 2, the age group 25-34 years formed the largest cohort (38.46%), and males constituted the majority (73.76%). Most participants had secondary education (35.69%), with 64.10% being married. Socioeconomic status was predominantly Class IV (39.05%). Over half of the participants reported no addiction (52.46%), while alcohol use was noted in 21.30%.

Table 3: Sexual Behaviours Partners

Sexual behaviour	n(%)
Number of Sexual Partners	**(n=507)**
• Single Partner	194 (38.26%)
• Multiple Partners	313 (61.73%)
Type of sexual partners in male	**(n=374)**
• FSW	154 (41.17%)
• MSM	38 (10.16%)
• Acquaintance	112 (29.94%)
• Prefer not to say	65 (17.37%)
Type of sexual partners in females	**(n=133)**
• Acquaintance	20 (15.04%)
• Client	07 (5.26%)

According to Table 3, 61.73% had multiple sexual partners. Among males, the most common sexual partners were female sex workers (FSW) (41.17%), while among females, acquaintances were reported most frequently (15.04%).
Table 4 evaluates the prevalence of HIV among venereal GUD patients, showing an overall prevalence of (18.93%). Mixed venereal diseases had the highest HIV positivity rate (21.82%), followed by herpes genitalis (19.51%), syphilis (15.09%), chancroid (13.33%) and others(0%).

Table 4: HIV Prevalence Among Venereal GUD Patients

Type of Venereal GUD	HIV Positive Cases n (%)
Herpes Genitalis	72 (19.51%)
Chancre (Syphilis)	8 (15.09%)
Chancroid	4 (13.33%)
Mixed Venereal Diseases	12 (21.82%)
Total	96 (18.93%)

DISCUSSION

Genital ulcerative diseases (GUDs) are significant public health concerns due to their role in facilitating the transmission of sexually transmitted infections (STIs), including HIV. Understanding the socio-demographic and behavioural factors associated with GUDs is essential for developing effective preventive and management strategies.

In the present study, venereal genital ulcerative diseases (GUDs) accounted for 80.74% of the cases, while non-venereal GUDs comprised 19.26%. This aligns with findings by Chua et al.,[8] who reported 91.6% venereal and 8.4% non-venereal GUDs. The high prevalence of venereal GUDs reflects a consistent trend observed in similar studies, including Bhavsar et al.[9] and Sarkar et al.,[10] which noted a predominance of sexually transmitted GUDs in their populations.

The most affected age group in the present study was 25-34 years (38.46%), followed by 15-24 years (22.49%). This finding corresponds to the sexually active age range reported by other studies, where 21-30 years constituted the highest prevalence.[11-13] The male-to-female ratio was 1.82:1, consistent with the male predominance reported by previous studies.[11-13] The higher male prevalence is attributed to risky sexual behaviours and more significant healthcare-seeking tendencies among males, while cultural and social barriers may limit female attendance at healthcare facilities.[13]

Educational attainment revealed that 35.69% of participants were educated up to the secondary level, mirroring findings from Bhavsar et al.[9] and Jain et al.,[12] which also observed lower literacy rates among patients with GUDs. Low education is strongly linked to poor awareness of sexually transmitted infections (STIs) and HIV transmission. Socio-economic analysis indicated that most participants belonged to Class IV (39.05%), comparable to findings by Mehta et al.,[14] who reported that lower socio-economic strata were more affected due to limited access to healthcare and higher engagement in high-risk occupations.

In terms of sexual behaviour, 61.73% of participants had multiple sexual partners, with males frequently reporting contact with female sex workers (41.17%), while females cited known acquaintances (15.04%). Similar patterns were observed in studies by Devi et al.,[15] where 69.7% of males reported exposure to female sex workers, and Bhavsar et al.,[9] which highlighted the significant role of sex workers in STI transmission. Heterosexual contact was the most common mode of transmission (83.9%), consistent with Devi et al.[15] (89.6%). However, bisexual (12.29%) and homosexual (3.74%) behaviours also contributed, highlighting evolving sexual practices in specific subgroups, as seen in other studies.[13,16]

Herpes genitalis was the most common GUD in the present study, affecting 58.76% of participants. This finding correlates with Sarkar et al.[10] (80.62%), Bhavsar et al.[9] (84.95%), and Devi et al.[15] (61.14%), all of which reported herpes genitalis as the dominant STI. The shift from bacterial to viral STIs over the decades, as observed in these studies, underscores the changing epidemiology of GUDs. Recurrent herpes genitalis was particularly common among people living with HIV/AIDS (PLHA), reflecting a significant challenge in managing these patients.

Syphilis accounted for 8.44% of cases in the present study, consistent with Bhavsar et al.[9] (17.7%) but lower than Mehta et al.[14] (32%). This variation may be attributed to differences in diagnostic criteria and the inclusion of secondary-stage presentations in other studies. Mixed venereal diseases were observed in 8.75% of patients, with herpes genitalis and syphilis being the most common combination, comparable to findings by Mehta et al.[14] and Koranne et al.[17]

HIV seroprevalence among venereal GUD patients in the present study was 18.93%, with mixed venereal diseases showing the highest association (21.82%), followed by herpes genitalis (19.51%). This finding aligns with Mehta et al.,[14] who also observed a high prevalence of HIV among patients with mixed STIs. Previous research established the role of GUDs in facilitating HIV transmission, reinforcing the need for early detection and management of both STIs and HIV.[18,19]

CONCLUSION

The present study highlights those venereal genital ulcerative diseases (GUDs) constituted most cases (80.74%), with herpes genitalis being the most common aetiology, followed by syphilis and chancroid. The disease predominantly affected individuals in the 25–34-year age group, with a male-to-female ratio of 1.82:1, reflecting the influence of high-risk sexual behaviours and societal factors. A significant proportion of participants reported multiple sexual partners and contact with female sex workers, emphasizing their role in disease transmission. The study also revealed a notable HIV seroprevalence of 18.93% among venereal GUD patients, with mixed venereal diseases showing the highest association, followed by herpes genitalis. These findings underscore the importance of strengthening preventive measures, promoting safe sexual practices, and implementing early diagnostic and treatment strategies to mitigate the impact of venereal GUDs and their complications.

RECOMMENDATIONS

It is recommended to strengthen sexual health education programs to promote awareness about safe sexual practices and early diagnosis of STIs. Public health initiatives should emphasize the consistent use of barrier contraceptives, particularly among high-risk groups. Additionally, targeted interventions and improved access to healthcare services are crucial to reducing the burden of venereal GUDs and associated complications like HIV.

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