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Epidemiological Trends and Risk Factors Associated with Genital Candidiasis: An Institutional-Based Study

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Abstract

Genital candidiasis is a common fungal infection affecting individuals worldwide. Understanding the demographic characteristics, clinical history, microbiological evaluation and prevalence of risk factors associated with genital candidiasis is crucial for effective management and prevention strategies. The present study was aimed to investigate the demographic characteristics, clinical history, microbiological evaluation and prevalence of risk factors associated with genital candidiasis in a study population. Demographic characteristics, including age, gender distribution and socio-economic status, were recorded for participants. Clinical history data, including duration and frequency of symptoms and previous episodes of candidiasis, were collected. Microbiological evaluation, focusing on fungal isolation and identification, was performed. Additionally, the prevalence of risk factors associated with genital candidiasis was assessed. The study found that the mean age of participants was 37.6 years, with a majority being male (62%) and belonging to the middle socio-economic class (46%). Clinical history data revealed a chronic and recurrent nature of genital candidiasis, with participants reporting an average duration of symptoms of 7.2 months and a frequency of 4.1 symptomatic episodes per year. Microbiological evaluation showed gender-related differences in the rates of fungal isolation and identification, with males exhibiting a slightly higher mean percentage of positive findings compared to females (70% vs. 60%). The prevalence of risk factors associated with genital candidiasis was notable, with hormonal factors (50%), antibiotic use (40%) and sexual activity (45%) being the most prevalent. This study provides valuable insights into the demographic characteristics, clinical history, microbiological evaluation and prevalence of risk factors associated with genital candidiasis. These findings contribute to a better understanding of the disease burden and inform the development of targeted prevention and management strategies tailored to the needs of the affected population.

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Key Words

Genital candidiasis, microbiological evaluation, risk factors, socio-economic status

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INTRODUCTION

Genital candidiasis, predominantly caused by the fungus Candida albicans, is a prevalent mucosal infection affecting millions worldwide, with significant morbidity and healthcare costs[1]. The condition encompasses a spectrum of clinical presentations, ranging from asymptomatic colonization to acute symptomatic episodes and chronic recurrent infections. Despite its widespread occurrence, the epidemiology of genital candidiasis remains complex and multifaceted, influenced by a myriad of host-related, environmental and microbial factors[2]. The incidence and prevalence of genital candidiasis have exhibited notable variations across different geographical regions and populations, highlighting the intricate interplay between genetic predisposition, socio-demographic characteristics and behavioral factors[3]. Understanding the epidemiological trends and risk factors associated with this condition is essential for effective prevention, diagnosis and management strategies[4].

Several epidemiological studies have documented the changing landscape of genital candidiasis, indicating both temporal and spatial variations in its occurrence[5]. While the condition affects individuals of all ages, genders and ethnicities, certain demographic groups appear to be disproportionately affected. For instance, women, particularly those in their reproductive years, exhibit a higher prevalence of vaginal candidiasis compared to men, suggesting hormonal influences and anatomical differences as potential contributing factors[6].

Furthermore, the prevalence of genital candidiasis has been observed to vary with age, with peak incidence reported among women of childbearing age and individuals with compromised immune function, such as those living with HIV/AIDS or undergoing immunosuppressive therapy[7]. Additionally, socio -economic factors, including income level, education and access to healthcare services, may influence the prevalence and severity of genital candidiasis within populations, underscoring the importance of addressing healthcare disparities in disease prevention and management[8].

The development of genital candidiasis is intricately linked to a multitude of risk factors, encompassing both modifiable and non-modifiable determinants. Host-related factors such as immunocompromised status, diabetes mellitus, pregnancy and use of systemic or local immunosuppressive agents have been consistently implicated in predisposing individuals to candidal overgrowth and infection. Similarly, behavioral factors including sexual activity, contraceptive use, hygiene practices and dietary habits may influence the risk of acquiring and sustaining genital candidiasis.

Moreover, alterations in the vaginal microbiota, commonly associated with antibiotic use, hormonal fluctuations and lifestyle factors, can disrupt the delicate balance between commensal and pathogenic microorganisms, facilitating Candida colonization and subsequent infection[9]. Emerging evidence also suggests a potential role for genetic susceptibility in predisposing certain individuals to recurrent or refractory forms of genital candidiasis, emphasizing the need for further research into host-microbe interactions and personalized treatment approaches.

Despite the wealth of existing literature on genital candidiasis, many gaps persist in our understanding of its epidemiology and risk factors, particularly at the population level. Population-based studies offer a valuable opportunity to elucidate the prevalence, incidence and determinants of genital candidiasis within diverse communities, providing insights into the burden of disease and informing targeted interventions aimed at reducing its impact on public health. The aim of the present study was to investigate the epidemiological trends and identify risk factors associated with genital candidiasis in a population-based setting, with the goal of informing targeted interventions and improving public health outcomes.

MATERIALS AND METHODS

Study Design: This was a cross-sectional study conducted at the Department of Dermatology, Venereology Leprosy (DVL), Kamineni Institute of Medical Sciences, Narketpally. A total of 150 consecutive patients presenting to the outpatient department with symptoms suggestive of genital candidiasis were included in the study. Patients of all ages and genders were eligible for participation. The study protocol was approved by the Institutional Ethics Committee of Kamineni Institute of Medical Sciences and written informed consent was obtained from all participants prior to enrolment.

Data Collection: Demographic data, including age, gender, occupation and socio-economic status, were recorded for each participant. Clinical history pertaining to the duration and frequency of symptoms, previous episodes of candidiasis, comorbid conditions and use of medications was obtained through structured interviews.

Clinical Examination: All participants underwent a thorough clinical examination by qualified dermatologists to assess the presence and severity of genital candidiasis. Diagnostic criteria included the presence of characteristic symptoms such as vulvar pruritus, vaginal discharge, dyspareunia and erythema.

Laboratory Investigations: Vaginal swabs were collected from female participants, while urethral swabs were obtained from male participants, for microbiological evaluation. Direct microscopy using potassium hydroxide (KOH) preparation and Gram staining was performed to detect fungal elements.

Additionally, culture on Sabouraud dextrose agar supplemented with chloramphenicol and gentamicin was employed for fungal isolation and identification.

Statistical Analysis: Data were analyzed using appropriate statistical methods, including descriptive statistics to summarize demographic characteristics and prevalence rates of genital candidiasis. Chi-square test or Fisher's exact test was utilized to assess associations between categorical variables, with p-values<0.05 considered statistically significant.

RESULTS AND DISCUSSIONS

The (Table 1) provides an overview of the demographic characteristics of the study participants. The mean age of the participants was 37.6 years, with a standard deviation of 9.8 years, indicating the variability in age distribution within the sample. Gender distribution showed that 62% of the participants were male, while 38% were female. Socio-economic status was categorized into three groups: Upper class, Middle class and Lower class. Among the participants, 21 individuals belonged to the Upper class, 46 to the Middle class and 33 to the Lower class. These values offer insights into the composition of the study population, which is crucial for understanding the demographic profile of the participants and interpreting the study findings accurately.

This (Table 2) presents key clinical history characteristics of the study participants. The mean duration of symptoms reported by the participants was 7.2 months, with a standard deviation of 2.5 months, indicating the variability in the duration of symptoms among the individuals. Additionally, the frequency of symptoms was reported to be 4.1 episodes per year on average, with a standard deviation of 1.8 episodes per year, suggesting variations in the frequency of symptomatic episodes experienced by the participants. Furthermore, participants reported an average of 2.7 previous episodes of candidiasis, with a standard deviation of 1.2 episodes, highlighting the recurrence of candidiasis among the study population. These values provide important insights into the clinical history of the participants, aiding in the characterization of the disease burden and guiding the development of targeted interventions for management and prevention.

The (Table 3) presents the microbiological evaluation data for fungal isolation and identification in male and female patients. Among male patients, the mean percentage of positive fungal isolation and identification was 70%, with a standard deviation of 15%. In contrast, among female patients, the mean percentage of positive fungal isolation and identification was slightly lower at 60%, with a standard deviation of 20%. These values provide insights into the differences in fungal isolation and identification rates between male and female patients,

Table 1: Demographic characteristics of study participants

Demographic Characteristic	Mean±SD
Age (years)	37.6±9.8
Gender	**Percentage**
Male	62
Female	38
Socio-Economic Status	**Frequency**
Upper class	21
Middle class	46
Lower class	33

Table 2: Clinical history characteristics of study participants

Clinical History Characteristic	Mean±SD
Duration of Symptoms (months)	7.2±2.5
Frequency of Symptoms (episodes/year)	4.1±1.8
Previous Episodes of Candidiasis	2.7±1.2

Table 3: Microbiological evaluation of fungal isolation and identification in male and female patients

Gender	Mean±SD for Fungal Isolation and Identification (Positive) (%)
Male	70±15
Female	60±20

Table 4: Prevalence of risk factors for genital candidiasis

Risk Factor	Percentage of Patients
Immunocompromised Status	29
Pregnancy	21
Antibiotic Use	39
Hormonal Factors	51
Sexual Activity	46
Personal Hygiene Practices	27
Dietary Factors	34
Underlying Medical Conditions	19
Genetic Predisposition	11

suggesting potential gender-related variations in susceptibility or presentation of genital candidiasis. Understanding these differences is crucial for tailoring treatment strategies and optimizing clinical outcomes for both male and female patients affected by genital candidiasis.

The (Table 4) presents the prevalence of risk factors for genital candidiasis among study participants. Immunocompromised status was noted in 29% of individuals, while pregnancy was observed in 21%. Antibiotic use was reported by 39% of participants and 51% showed hormonal factors. Sexual activity was documented in 46% of the cohort, while personal hygiene practices and dietary factors were reported in 27% and 34% of individuals, respectively. Underlying medical conditions were evident in 19% of participants and genetic predisposition was noted in 11%. These findings underscore the multifaceted nature of genital candidiasis and emphasize the need for comprehensive risk assessment in infection management.

The present study aimed to comprehensively investigate the demographic characteristics, clinical history, microbiological evaluation and prevalence of risk factors associated with genital candidiasis. These findings provide valuable insights into the disease burden and contributing factors within our study population, aiding in the development of targeted interventions and management strategies.

The demographic profile of the participants revealed a mean age of 37.6 years, indicating that genital candidiasis affects individuals across various age groups. Moreover, the majority of participants

were male (62%), which contrasts with the common perception that genital candidiasis predominantly affects females. This observation underscores the importance of considering male patients in the diagnosis and management of genital candidiasis. Additionally, a substantial proportion of participants belonged to the middle socio-economic class (46%), highlighting the potential impact of socio-economic factors on disease prevalence and access to healthcare services, the present observations are in accordance with earlier study[6].

Clinical history data provided valuable insights into the chronic and recurrent nature of genital candidiasis. The reported average duration of symptoms of 7.2 months and frequency of 4.1 symptomatic episodes per year emphasize the significant burden of the disease on affected individuals. Furthermore, the recurrence of candidiasis, with an average of 2.7 previous episodes reported by participants, underscores the need for effective long-term management strategies to prevent relapses and improve patient outcomes, which are in agreement with study done by Chayachinda *et al*.,[10].

Microbiological evaluation revealed gender -related differences in the rates of fungal isolation and identification[11]. Male patients exhibited a slightly higher mean percentage of positive findings compared to female patients (70% vs. 60%), suggesting potential variations in susceptibility or presentation of genital candidiasis between genders. These findings highlight the importance of considering gender-specific factors in the diagnosis and management of genital candidiasis, which may include differences in anatomical structures, hormonal profiles, or immune responses.

The prevalence of risk factors associated with genital candidiasis was notable, with hormonal factors (50%), antibiotic use (40%) and sexual activity (45%) being the most prevalent. These findings align with previous research indicating the significance of hormonal changes, antibiotic use and sexual behavior in predisposing individuals to genital candidiasis[12]. However, it is essential to note that the prevalence of risk factors may vary across populations and geographical regions, emphasizing the importance of context-specific approaches to disease prevention and management.

Comparing the present study with earlier research by Loster *et al.*, several similarities and differences emerge. Both studies observed a predominance of middle-aged individuals affected by genital candidiasis, with a similar distribution of gender and socio-economic status. However, our study found a slightly higher prevalence of candidiasis among males, whereas their study reported a higher prevalence among females[6]. This discrepancy may be attributed to differences in study populations, geographical locations, or methodologies, highlighting the need for further research to elucidate these differences.

Furthermore, our study revealed a higher prevalence of risk factors such as hormonal factors, antibiotic use and sexual activity compared to Fidel *et al*. This difference could be due to changes in lifestyle factors, increased antibiotic prescriptions, or variations in the definition and assessment of risk factors between studies. These findings underscore the dynamic nature of disease epidemiology and the importance of continuous surveillance and research to inform evidence-based interventions[13].

CONCLUSION

In conclusion, while our study confirms several findings from previous research, it also highlights important differences and updates in the epidemiology and risk factors associated with genital candidiasis. These insights contribute to a better understanding of the disease and inform the development of targeted prevention and management strategies tailored to the needs of the affected population. Further research is warranted to elucidate the underlying mechanisms driving gender-related differences in disease presentation and to evaluate the effectiveness of intervention strategies in reducing the burden of genital candidiasis.

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