

A Prospective Research on Vaginal Candidiasis among the AdultsSireesha Chava¹, Gayatri Koyya², Thotlapalepu Sahiti Royal³, Kunam Nikitha⁴¹Assistant Professor, Department of Microbiology, Government Medical College, Rajahmahendravaram.²Associate Professor, Department of Obstetrics and Gynecology, Dr B S Kushwah Institute of Medical Sciences, Kanpur, Uttar Pradesh – 208024.³Assistant Professor, Department of Obstetrics & Gynecology, NRI Institute of Medical Sciences, Visakhapatnam.⁴Assistant Professor, Department of General Medicine, GSL Medical College, Rajahmahendravaram.

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Abstract

Introduction: Recent research highlights the global challenge of Candida infections among adults, necessitating comprehensive understanding. Investigating prevalence and risk factors of vaginal candidiasis (VC) in pregnancy versus non-pregnancy aims to contribute insights into this common fungal infection's epidemiology and its implications for maternal health.

Methods: It was a prospective research conducted in GSL Medical College. Pregnant women aged > 18 years were considered in the test and non pregnant women in control group. Collection of vaginal swab, microscopic examination, culture were practised as per the guidelines. For analysis, Chi square test was used, P<0.005 was considered to be significant.

Results: In this study 174 participants, evenly divided into test and control groups, the mean ages were similar. VC incidence was 31.6%, with 19.5% in the test and 12% in the control group, showing no significant difference. *Candida albicans* predominated, with a 10:1 ratio of non-albicans species.

Conclusion: This study found a comparable incidence of VC between pregnant and non-pregnant groups, suggesting pregnancy status may not significantly influence VC risk. *Candida albicans* predominated among isolated species. Further research is warranted to elucidate VC's multifactorial etiology and optimize preventive strategies.

Key words: Vaginal candidiasis, Incidence, *Candida albicans*, Non-albicans, Epidemiology.

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Introduction

Candida infections represent a significant clinical challenge among adults, particularly in immunocompromised individuals and those with underlying medical conditions. [1] As opportunistic pathogens, Candida species can cause a range of infections, including mucosal and invasive diseases, leading to substantial morbidity and mortality.

Recent studies have highlighted the increasing prevalence of Candida infections worldwide, emphasizing the need for comprehensive research in this area. A study by Pfaller et al. [2] reported a rising trend in Candida bloodstream infections, with notable variations in species distribution and antifungal susceptibility patterns. Similarly, a systematic review by Kullberg and Arendrup [2] underscored the global burden of invasive candidiasis, emphasizing the importance of early detection and appropriate antifungal therapy.

Furthermore, recent investigations have identified specific risk factors associated with Candida infections in adults. A prospective cohort study by Blot et al. [3] identified prior antibiotic exposure, central venous catheter use, and immunosuppressive therapy as significant predictors of candidemia among critically ill patients. Similarly, a multicenter study by Bassetti et al. [4] highlighted the impact of healthcare-associated factors on the epidemiology of candidemia, emphasizing the role of invasive procedures and prolonged hospitalization.

In addition to epidemiological trends and risk factors, understanding the clinical spectrum of Candida infections is essential for optimizing patient care. Recent research by Guinea [5] emphasized the diversity of clinical presentations, ranging from superficial mucosal lesions to life-threatening invasive diseases. With this a study was conducted with aim to investigate the prevalence of

vaginal candidiasis (VC) in pregnancy and non pregnancy.

Methods

It was a prospective study, conducted in the department of general Medicine GSL Medical College, Rajahmundry. Study was conducted between December 2022 to March 2023. Study protocol was approved by the Institutional Ethics Committee. Informed written consent was taken from the study members. Pregnant women, aged ≥ 18 come to gynaecology department for general check up on outpatient basis were included in this research and these were considered to be the test group. Simultaneously non pregnant women those attend general Medicine department for no gynaecological problem were also included and considered in control group. Non cooperative patients, those on immunosuppressive therapy, known HIV individuals, known vaginal candidiasis were not considered in this research.

The study participants were clearly explained about the research and all the clinical findings were noted in the study proforma. It was also assured that there was no influence of this research on the health of the study members. Then vaginal swab was collected as per the study by T Dermendzhiev et al. [6] Then swabs were transported to the

Microbiology laboratory. In the lab, smear was prepared and stained by Gram staining. Another swab was used to culture on Blood agar, MacConKey agar and incubated at 37°C 24 to 48 hrs. Culture and identification of *Candida* was carried as per the Chandra TJ et al. [7] Further CHROM agar as well as Biochemical tests were used for species identification.

Statistical Analysis: All statistical analyses were conducted using SPSS software trial version 20.0 and MS Excel-2010. The Chi-square test was employed to evaluate associations among categorical variables. A p-value of <0.05 was deemed statistically significant, indicating meaningful associations between variables.

Results

Total 174 members were included, 87 in each group. The mean age was 42.2 ± 3.4 years for the test and 43.1 ± 2.9 years for the control groups; statistically there was no significant difference. Among the study members, the incidence of VC was 31.6 (55). Here, 19.5% (34) were detected in test group and 12% in the control group; statistically there was no significant difference (Table 1). In the VC, *Candida albicans* was isolated maximum and rest were categorised under non albicans, ratio was 10.

Table 1: Analysis of vaginal candidiasis (VC) in the groups; n (%)

VC	Test	Control	Total
Present	34 (19.5)	21 (12)	55 (31.6)
Absent	53 (30.5)	66 (37.9)	119 (68.3)
Total	87 (50)	87 (50)	174 (100)
Statistical analysis	Ψ^2 value = 4.4929; P value = 0.34036.		
	No statistical significance		

Discussion

VC is a common fungal infection among women worldwide, including in India. Recent studies have shed light on the prevalence and epidemiological characteristics of this condition within the Indian population. A study conducted by Goswami et al. [8] investigated the prevalence of vaginal candidiasis among Indian women of reproductive age. The research revealed a considerable burden of the infection, with an overall prevalence rate of 17.9%. Furthermore, the study highlighted the association of vaginal candidiasis with various predisposing factors, including diabetes mellitus, pregnancy, and the use of oral contraceptives.

Subsequent investigations have provided additional insights into the prevalence and risk factors of vaginal candidiasis in India. A study by Paul et al. [9] explored the epidemiology of genital tract infections among women attending a tertiary care hospital in South India. The findings indicated that vaginal candidiasis was among the most prevalent infections, affecting a significant proportion of the study population. Moreover, the research identified

factors such as poor genital hygiene and antibiotic use as potential contributors to the high prevalence of the condition.

In this study comparing pregnant and non-pregnant groups, consisting of 87 members each, the mean ages were 42.2 ± 3.4 years for pregnant women and 43.1 ± 2.9 years for non-pregnant individuals. Importantly, there was no statistically significant difference in mean age between the two groups. This finding suggests that age is unlikely to confound the comparison between pregnant and non-pregnant individuals in the study's analysis.

Recent research corroborates the importance of accounting for demographic factors like age when studying health outcomes in pregnant women. For instance, a study by Towner et al. [10] investigated the impact of maternal age on pregnancy outcomes, emphasizing the need for age-stratified analyses to better understand risk factors and interventions. Similarly, a meta-analysis by Li et al. [11] explored age-related differences in pregnancy complications, highlighting the nuanced relationship between maternal age and adverse outcomes. By ensuring

that age does not significantly differ between groups, the current study minimizes potential confounding effects and strengthens the validity of its findings. This approach aligns with best practices in epidemiological research, where controlling for demographic variables is essential for accurate interpretation of results and informed decision-making in clinical practice.

In this study, the reported incidence of VC was 31.6%, with 19.5% detected in the test group (pregnant women) and 12% in the control group (non-pregnant individuals). Notably, statistical analysis revealed no significant difference between the two groups, indicating that pregnancy status may not be a significant risk factor for VC in this population (Table 1). These findings align with recent research that has explored the epidemiology of VC and its associated risk factors. For example, a study by Xie et al. [12] investigated the prevalence and risk factors of VC among women of reproductive age, highlighting the multifactorial nature of VC etiology. Similarly, a systematic review by Sobel et al. [13] examined the global burden of VC and identified factors such as antibiotic use, hormonal contraceptives, and diabetes mellitus as important contributors to VC development.

Regarding *Candida* species distribution, the study found that *Candida albicans* was isolated most frequently, with the remaining cases categorized as non-*albicans* species at a ratio of 10:1. This distribution pattern is consistent with previous literature indicating the predominance of *C. albicans* in VC cases, although the emergence of non-*albicans* species is becoming increasingly recognized. [12, 13]

Overall, these findings contribute to our understanding of VC epidemiology and underscore the importance of considering multiple factors, beyond pregnancy status alone, when assessing VC risk. Future research should continue to investigate the complex interactions between host factors, *Candida* species, and environmental influences to develop targeted prevention and management strategies for VC.

This study found a comparable incidence of VC between pregnant and non-pregnant groups, suggesting pregnancy status may not significantly influence VC risk. *Candida albicans* predominated among isolated species. Further research is warranted to elucidate VC's multifactorial etiology and optimize preventive strategies.

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