



A-JMRHS

ETIOLOGICAL SPECTRUM AND CLINICAL PROFILE OF SYMPTOMATIC VAGINAL DISCHARGE AMONG WOMEN ATTENDING A TERTIARY CARE HOSPITAL: A PROSPECTIVE CROSS-SECTIONAL STUDY

Aiman Fatima^{1*}, Taruni², S. Ruth Ramya³

^{1*}Senior Resident, Department of Microbiology, Government Medical College, Nagarkurnool, Telangana, India.

²Head of Department, Department of Microbiology, Government Medical College, Suryapet, Telangana, India.

³Assistant Professor, Department of Microbiology, Government Medical College, Suryapet, Telangana, India.

Corresponding Author: Dr. Aiman Fatima

Senior Resident, Department of Microbiology, Government Medical College, Nagarkurnool, Telangana, India.

Email: aimmu1406@gmail.com

ABSTRACT

Background: Symptomatic vaginal discharge is a frequent reproductive health complaint among women and may result from physiological changes or infections such as vulvovaginal candidiasis, bacterial vaginosis, trichomoniasis, and cervicitis. Considerable overlap among clinical manifestations often limits accurate etiological diagnosis based on symptoms alone.

Objectives: To determine the etiological spectrum of symptomatic vaginal discharge among women attending a tertiary care hospital and to describe their demographic, clinical, and microbiological characteristics.

Materials and Methods: A prospective cross-sectional study was conducted among 300 symptomatic women aged 15–55 years attending the outpatient departments of Dermatology, Venereology and Leprosy, Sexually Transmitted Diseases, and Obstetrics and Gynaecology at Government General Hospital, Suryapet, over a 12-month period during 2023–2024. Demographic, reproductive, contraceptive, and clinical histories were recorded. Vaginal specimens were subjected to pH estimation, saline wet mount, potassium hydroxide preparation, Whiff test, Gram staining, and culture. Sabouraud's dextrose agar was used for fungal culture and CPLM medium for *Trichomonas vaginalis*. Endocervical specimens were examined microscopically and cultured where indicated.

Results: Of the 300 participants, 184 (61.33%) were aged 15–25 years and 251 (83.6%) were married. Female sex workers constituted 90 (30%) participants. Foul-smelling discharge was the most common presenting complaint in 113 (37.6%) women, followed by itching/curdy discharge in 100 (33.4%) and excessive discharge in 87 (29%). A specific infectious etiology was identified in 101 (33.7%) women. Vulvovaginal candidiasis was the most frequent infection, occurring in 75 (25%), followed by bacterial vaginosis in 21 (7%), trichomoniasis in 3 (1%), and cervicitis in 2 (0.67%). The remaining 199 (66.3%) women were classified as having normal vaginal discharge/no specific infectious etiology.

Conclusion: Vulvovaginal candidiasis was the predominant identifiable infectious cause of symptomatic vaginal discharge, followed by bacterial vaginosis. Considerable overlap among clinical presentations and the substantial proportion of women without a specific infectious diagnosis emphasize the importance of laboratory-supported etiological evaluation rather than symptom-based empirical management alone.

Keywords: Vaginal Discharge, Vulvovaginal Candidiasis, Bacterial Vaginosis, Candida, *Trichomonas Vaginalis*, Cervicitis, Reproductive Tract Infection, Microbiological Diagnosis.

INTRODUCTION

Abnormal vaginal discharge is a common reproductive health complaint, particularly among sexually active and reproductive-age women.

Although vaginal secretion is physiological, changes in its volume, colour, consistency, or odour, particularly when associated with itching, irritation, dysuria, dyspareunia, or lower abdominal discomfort, may indicate an underlying genital tract disorder or infection [1]. Infectious vaginal discharge is of clinical importance because reproductive tract infections may be associated with pelvic inflammatory disease, infertility, adverse pregnancy outcomes, and increased susceptibility to sexually transmitted infections [1,2].



www.ajmrhs.com
eISSN: 2583-7761

Date of Received: 24-06-2026
Date Acceptance: 02-07-2026
Date of Publication: 20-07-2026

The normal vaginal microbial environment is predominantly maintained by *Lactobacillus* species, which contribute to an acidic vaginal pH and restrict colonization by potentially pathogenic microorganisms. Disruption of this microbial balance can result in bacterial vaginosis (BV), characterized by a reduction in protective lactobacilli and proliferation of organisms such as *Gardnerella vaginalis* and other anaerobic bacteria [2]. Clinically, BV may be associated with homogeneous vaginal discharge, elevated vaginal pH, positive amine or Whiff test, and the presence of clue cells on microscopy [2,3].

Vulvovaginal candidiasis (VVC) is another important cause of symptomatic vaginal discharge and commonly presents with vulvovaginal pruritus, irritation, burning sensation, soreness, and thick or curdy white discharge [4]. Although *Candida albicans* remains a predominant etiological species, non-*albicans* *Candida* species have gained increasing clinical importance because of differences in antifungal susceptibility and their association with difficult-to-treat or recurrent infections [4].

The changing epidemiology of *Candida* infections and the emergence of antifungal resistance are relevant beyond mucosal candidiasis. Paul et al. evaluated invasive fungal infections among critically ill patients at a tertiary care centre and highlighted the clinical importance of *Candida* species distribution, non-*albicans* *Candida*, and antifungal susceptibility testing [5]. Although invasive candidiasis and vulvovaginal candidiasis are distinct clinical entities, these observations underscore the broader importance of species-level identification and surveillance of antifungal resistance in *Candida* infections.

Trichomoniasis is a sexually transmitted infection caused by *Trichomonas vaginalis* and may present with profuse, malodorous, yellow-green or frothy discharge, vulval irritation, and increased vaginal pH [3]. Infectious cervicitis, including gonococcal cervicitis, may similarly manifest with abnormal vaginal or mucopurulent cervical discharge. Thus, infections of different microbial etiologies may produce overlapping clinical presentations despite requiring different therapeutic approaches.

Clinical manifestations alone may therefore be insufficient for establishing an accurate etiological diagnosis. Hillier et al. demonstrated the diagnostic challenges encountered in women presenting with vaginal discharge syndromes in routine clinical practice and emphasized the importance of accurate diagnosis and appropriate treatment [6]. Empirical or syndromic therapy without adequate microbiological confirmation may result in unnecessary antimicrobial exposure, persistence of

symptoms, treatment failure, or missed sexually transmitted infections.

Simple microbiological methods such as vaginal pH testing, saline wet mount, potassium hydroxide preparation, Whiff testing, Gram staining, and culture can provide clinically useful diagnostic information. Integration of clinical assessment with microbiological investigation can facilitate etiological diagnosis and support rational treatment, particularly in tertiary healthcare settings managing women with diverse reproductive and sexual health profiles.

The present study was undertaken to determine the spectrum of infectious etiologies among women presenting with symptomatic vaginal discharge and to characterize their demographic, clinical, and microbiological features.

Aim

To determine the etiological spectrum of symptomatic vaginal discharge among women attending a tertiary care hospital.

Objectives

The study aimed to determine the frequency of different infectious etiologies associated with symptomatic vaginal discharge, describe the demographic and clinical characteristics of the study population, evaluate selected bedside and microbiological findings, and determine the relative contribution of vulvovaginal candidiasis, bacterial vaginosis, trichomoniasis, and cervicitis among symptomatic women.

MATERIALS AND METHODS

Study Design: A prospective cross-sectional study was conducted over a period of 12 months during 2023–2024.

Study Setting: The study was carried out at Government General Hospital, Suryapet, among women attending the outpatient departments of Dermatology, Venereology and Leprosy, Sexually Transmitted Diseases, and Obstetrics and Gynaecology.

Study Population: A total of 300 women presenting with symptomatic vaginal discharge were enrolled. The original study included women aged 15–55 years.

Inclusion Criteria

- i. Age between 15 and 55 years
- ii. Symptomatic sexually active women
- iii. Symptomatic pregnant women
- iv. Women belonging to high-risk groups
- v. Women with other venereal diseases
- vi. Women willing to provide consent

Exclusion Criteria

- i. Women younger than 15 years or older than 55 years
- ii. Women menstruating at the time of examination

- iii. Women who had received systemic antibiotics or vaginal medications during the preceding two weeks
- iv. Women who did not consent to participate

Ethical Considerations

Institutional Ethics Committee approval was obtained before commencement of the study. Informed consent was obtained from all participants included in the study.

Clinical Evaluation

A detailed clinical history was recorded, including age, occupation, socioeconomic status, marital and sexual history, obstetric history, contraceptive usage, previous medical history, treatment history, and history related to sexually transmitted infections.

External genital examination was performed and findings such as swelling, growth, or discharge were documented. Pelvic examination was subsequently performed using a sterile, clean, unlubricated Cusco's bivalve self-retaining speculum. The amount, colour, odour, consistency, and appearance of vaginal discharge were recorded.

Specimen Collection

Vaginal discharge was collected from the posterior vaginal fornix using sterile cotton swabs. Five vaginal swabs were obtained from each participant. The first swab was used to determine vaginal pH and was subsequently inoculated onto blood agar.

The second swab was subjected immediately to saline wet-mount microscopy at 10× and 40× magnification to detect clue cells and motile *Trichomonas vaginalis*.

The third swab was used for potassium hydroxide preparation and Whiff testing. Ten percent KOH was added to assess the presence of a characteristic amine or fishy odour. Microscopic examination was simultaneously performed for budding yeast cells and pseudohyphae.

The fourth specimen was subjected to Gram staining for demonstration of clue cells, budding yeast cells, and pseudohyphae. It was subsequently inoculated onto Sabouraud's dextrose agar and incubated for fungal isolation. Presumptive *Candida* colonies were identified by their morphological characteristics and Gram staining. Germ-tube

testing was used to differentiate *Candida albicans* from non-*albicans Candida*.

The fifth vaginal swab was inoculated into CPLM medium for detection of *Trichomonas vaginalis*.

After cleaning the ectocervix, two endocervical swabs were collected. One was subjected to Gram staining to evaluate epithelial cells, polymorphonuclear leukocytes, and organisms. The second was inoculated onto selective chocolate agar containing vancomycin, colistin, nystatin, and trimethoprim and incubated at 37°C in 5–10% CO₂.

Diagnostic Criteria

Bacterial vaginosis was assessed using Amsel's criteria, Nugent scoring, microscopy, and culture findings [2,3].

Vulvovaginal candidiasis was diagnosed on the basis of compatible clinical manifestations supported by microscopy and fungal culture [3,4].

Trichomoniasis was evaluated using wet-mount microscopy and CPLM culture. Endocervical Gram staining and culture were employed for evaluation of suspected gonococcal cervicitis.

Statistical Analysis

Data were analyzed descriptively. Categorical variables were expressed as frequencies and percentages. The present manuscript uses the finalized aggregate results reported in the original dissertation and does not retrospectively introduce inferential statistical comparisons that were not part of the source analysis.

RESULTS

Demographic Characteristics

A total of 300 women with symptomatic vaginal discharge were included.

The majority belonged to the 15–25-year age group, comprising 184 (61.33%) participants. Eighty-seven (29%) were aged 26–35 years, 21 (7%) were aged 36–45 years, and 8 (2.67%) were aged 46–55 years. Female sex workers constituted the largest occupational group, comprising 90 (30%) women. Students accounted for 74 (24.6%), skilled workers for 72 (24%), and housewives for 64 (21.33%).

Most study participants were married. Married women accounted for 251 (83.6%), while 22 (7.33%) were unmarried and 27 (9.1%) were widowed or separated.

Table 1. Demographic Characteristics of the Study Population

Characteristics	Number (n=300)	Percentage (%)
Age group		
15–25 years	184	61.33
26–35 years	87	29.00
36–45 years	21	7.00
46–55 years	8	2.67
Occupation		
Female sex worker	90	30.00

Student	74	24.60
Skilled worker	72	24.00
Housewife	64	21.33
Marital status		
Married	251	83.60
Unmarried	22	7.33
Widowed/separated	27	9.10

Contraceptive Practices

Barrier contraception was reported by 126 (42%) women. Ninety-six (32%) were not using any

contraceptive method, 63 (21%) had undergone sterilization, and 15 (5%) were using an intrauterine contraceptive device.

Table 2. Contraceptive Practices Among Study Participants

Contraceptive method	Number	Percentage (%)
Barrier method	126	42.0
No contraception	96	32.0
Sterilization	63	21.0
IUCD	15	5.0
Total	300	100

Clinical Presentation

Foul-smelling vaginal discharge was the most frequently reported complaint, observed in 113 (37.6%) women. Itching associated with curdy

discharge was reported by 100 (33.4%) participants, while 87 (29%) presented predominantly with excessive vaginal discharge.

Table 3. Predominant Presenting Complaints

Complaint	Number	Percentage (%)
Foul-smelling discharge	113	37.6
Itching/curdy discharge	100	33.4
Excessive discharge	87	29.0
Total	300	100

Vaginal pH

Vaginal pH was 4.5 in 157 (52.4%) women. A pH of 5.0 was recorded in 125 (41.6%) participants, while 18 (6%) women had a vaginal pH of 5.5.

Table 4. Distribution of Participants According to Vaginal pH

Vaginal pH	Number	Percentage (%)
4.5	157	52.4
5.0	125	41.6
5.5	18	6.0
Total	300	100

Wet-Mount and Whiff-Test Findings

Clue cells were detected in 21 (7%) participants on wet-mount examination. Motile Trichomonas

vaginalis was observed in 3 (1%) women. The Whiff test was positive in 24 (8%) participants and negative in 276 (92%).

Table 5. Wet-Mount and Whiff-Test Findings

Investigation	Positive n (%)	Negative n (%)
Clue cells	21 (7.0)	279 (93.0)
Trichomonas vaginalis	3 (1.0)	297 (99.0)
Whiff test	24 (8.0)	276 (92.0)

Etiological Spectrum of Symptomatic Vaginal Discharge

Vulvovaginal candidiasis was the most frequently diagnosed infectious condition, detected in 75 (25%) participants. Bacterial vaginosis was diagnosed in 21 (7%) women, followed by trichomoniasis in 3

(1%). Cervicitis was detected in 2 (0.67%) women. Overall, a specific infectious etiology was identified in 101 of 300 participants, corresponding to 33.7% of the study population. The remaining 199 women, representing 66.3%, were categorized in the original study as having normal vaginal discharge.

Table 6. Etiological Spectrum of Symptomatic Vaginal Discharge

Etiology	Number	Percentage (%)
Vulvovaginal candidiasis	75	25.00
Bacterial vaginosis	21	7.00
Trichomoniasis	3	1.00
Cervicitis	2	0.67
Normal vaginal discharge/no specific infectious diagnosis	199	66.30
Total	300	100

Among the 101 women in whom an infectious diagnosis was identified, VVC constituted approximately 74.3% of infections, followed by BV at 20.8%, trichomoniasis at approximately 3.0%, and cervicitis at approximately 2.0%.

DISCUSSION

The present prospective cross-sectional study evaluated the clinical and microbiological spectrum of vaginal discharge among 300 symptomatic women attending a tertiary care hospital. A specific infectious etiology was established in approximately one-third of the study population. VVC was the predominant infectious diagnosis, followed by BV, whereas trichomoniasis and cervicitis accounted for comparatively few cases.

Age Distribution

Women aged 15–25 years constituted 61.33% of the study population, while 29% were between 26 and 35 years. Thus, more than 90% of participants were younger than 36 years.

The predominance of younger reproductive-age women is comparable to observations from previous studies. Boyer et al. identified sociodemographic and behavioural factors associated with sexually transmitted infections among adolescent and young adult women [7]. Nyati et al. also reported a substantial burden of sexually transmitted infections among younger patients attending a tertiary care hospital in Rajasthan [8].

Madhivanan et al. evaluated bacterial vaginosis among young women in Mysore and demonstrated the relevance of vaginal microbial abnormalities within the reproductive-age population [9]. Sharma et al. similarly evaluated abnormal vaginal flora among reproductive-age women [10]. Puri et al. reported different causes of vaginal discharge among sexually active women and also highlighted the prominence of younger age groups in clinical presentations [11].

The predominance of young women in the current study indicates the importance of reproductive health education, awareness regarding genital symptoms, timely healthcare seeking, and access to diagnostic services in this population.

Occupational Distribution

Female sex workers constituted the largest occupational group, representing 30% of participants. Students constituted 24.6%, skilled workers 24%, and housewives 21.33%.

Uma et al. evaluated bacterial vaginosis among female sex workers in Chennai and highlighted the importance of genital tract infections in populations experiencing greater sexual exposure and associated behavioural risks [12].

However, the occupational profile of the present study should be interpreted in the context of recruitment from Dermatology, Venereology, STI, and Obstetrics and Gynaecology outpatient services. Therefore, these proportions cannot be considered representative of the occupation distribution of women with vaginal discharge in the general population.

Marital Status

Most women in the present study were married, accounting for 83.6% of participants.

Kataria et al. evaluated vaginal discharge among sexually active women and similarly included a predominantly reproductive-age clinical population [13]. A high representation of married women has also been reported in other Indian studies evaluating genital tract complaints.

Nevertheless, marital status in the present study represents the demographic composition of attendees and does not establish marriage itself as an independent risk factor for vaginal infection. Demonstration of such an association would require comparison between infection-positive and infection-negative participants with appropriate statistical adjustment for potential confounding factors.

Contraceptive Practices

Barrier contraception was reported by 42% of participants, while 32% did not use any contraceptive method. Sterilization had been performed in 21% and IUCDs were used by 5%.

Contraceptive practices may influence sexual exposure and reproductive behaviour, and condom use remains an important strategy for reducing transmission of sexually transmitted infections [3]. However, because the current analysis is descriptive, the observed contraceptive distribution cannot establish an association between individual methods and specific vaginal infections.

Clinical Presentation

Foul-smelling discharge was the most common presenting complaint and occurred in 37.6% of women. Itching or curdy discharge was reported by 33.4%, while 29% complained primarily of excessive vaginal discharge.

These findings demonstrate the considerable overlap in symptoms among different causes of vaginal discharge.

Hillier et al. evaluated vaginal discharge syndromes in community practice and emphasized that accurate diagnosis can be challenging when management is based predominantly on clinical presentation [6].

Singamsetty and Sravani described the clinicomicrobiological spectrum of abnormal vaginal discharge among women in coastal Andhra Pradesh and documented diverse clinical manifestations including curdy discharge and pruritus [14].

Yano et al. reported pruritus, burning sensation, redness, and dyspareunia as important patient-reported manifestations of VVC [4]. The substantial overlap between clinical presentations supports the need for microbiological investigation instead of assigning etiological diagnoses solely on the basis of symptoms.

Vaginal pH

A pH of 4.5 was recorded in 52.4% of participants, whereas 41.6% had a pH of 5.0 and 6% had a pH of 5.5.

Vaginal pH provides a simple adjunct to clinical evaluation. An elevated pH is commonly encountered in BV and trichomoniasis, whereas VVC frequently occurs despite maintenance of a relatively acidic vaginal environment [2,3].

The present findings therefore demonstrate the usefulness of pH as a rapid screening parameter but also highlight that pH alone cannot establish an etiological diagnosis.

Microscopic Findings

Clue cells were detected in 7% of study participants, corresponding to the proportion ultimately diagnosed with BV.

Motile *Trichomonas vaginalis* was detected in 1% of women.

Konje et al. investigated *Gardnerella vaginalis*, *Trichomonas vaginalis*, and *Candida albicans* among women attending a clinical service and demonstrated variations in the prevalence of these organisms depending upon the population studied [15].

Wet-mount examination therefore remains a rapid and inexpensive diagnostic procedure, although its diagnostic performance varies according to pathogen concentration, specimen quality, examination technique, and time between collection and microscopy [3].

Vulvovaginal Candidiasis

VVC was the most frequently identified infectious etiology in the present study and was diagnosed in 75 women, representing 25% of all participants and approximately 74% of women with an identified infectious etiology.

This finding underscores the importance of Candida-related vaginal disease among women presenting with symptomatic discharge.

Rawat et al. evaluated *Candida* isolates from women with VVC at a North Indian healthcare centre and demonstrated the predominance of *Candida albicans* while also highlighting the clinical relevance of non-*albicans* *Candida* and antifungal susceptibility [16]. Tsega and Mekonnen similarly reported VVC among women attending a referral hospital and demonstrated the importance of both species distribution and antifungal susceptibility testing [17]. Intra et al., in a long-term study of microorganisms isolated from women with VVC, demonstrated that *Candida* species distribution may evolve over time [18].

Bauters et al. also described the prevalence of VVC and evaluated fluconazole susceptibility among *Candida* isolates [19], while Fule et al. demonstrated both *Candida albicans* and non-*albicans* *Candida* species among reproductive-age women with vulvovaginal candidiasis [20].

The growing importance of *Candida* species characterization is also supported by evidence from other forms of candidiasis. Paul et al. investigated invasive fungal infections in critically ill patients and emphasized the relevance of species-level identification, non-*albicans* *Candida*, and antifungal resistance in tertiary healthcare settings [5]. Although the population and clinical syndrome studied by Paul et al. differ substantially from VVC, their findings reinforce the broader need for surveillance of *Candida* species distribution and antifungal susceptibility.

In the current study, detailed *Candida* speciation and antifungal susceptibility findings are available but have not been extensively presented in this manuscript because they constitute a distinct microbiological research question and are more appropriately evaluated separately.

Bacterial Vaginosis

BV was identified in 21 women, corresponding to 7% of the study population.

BV is characterized by disturbance of the normal Lactobacillus-predominant vaginal microbiota and proliferation of organisms including *Gardnerella vaginalis* and anaerobic bacteria [2]. Diagnosis may involve clinical criteria such as Amsel's criteria and microscopy-based approaches including Nugent scoring [2,3].

In the present study, Amsel's criteria identified BV in 21 women. Nugent scoring also classified 21 women as BV, and culture was positive in 21 cases. Thus, all three methods produced the same aggregate number of positive results.

Kataria et al. also evaluated bacterial vaginosis and other causes of vaginal discharge among sexually active women [13]. Differences in reported BV prevalence among studies may reflect variation in patient populations, behavioural and reproductive characteristics, geography, and diagnostic criteria. The detailed diagnostic comparison among Amsel's criteria, Nugent scoring, and culture and the associated antimicrobial susceptibility profile should be evaluated independently because these parameters provide sufficient data for a dedicated BV-focused manuscript.

Trichomoniasis

Trichomonas vaginalis was identified in only 3 women, representing 1% of the study population.

The low detection rate should be interpreted in the context of the diagnostic methods employed. Although saline wet-mount microscopy is rapid and inexpensive, its sensitivity may be lower than more advanced molecular diagnostic techniques [3].

The source thesis itself acknowledges that enhanced screening strategies, including nucleic acid amplification testing, may improve detection of trichomoniasis.

The small number of positive cases limits meaningful subgroup analysis of trichomoniasis within the present dataset.

Cervicitis

Cervicitis was identified in 2 women, corresponding to 0.67% of participants.

Endocervical specimens were evaluated by Gram staining and selective culture. While the low frequency indicates that cervicitis was an uncommon identified etiology in the current study, interpretation is limited by the conventional diagnostic approach and lack of routine molecular testing for other important causes of cervicitis.

Women Without a Specific Infectious Diagnosis

An important finding of this study was that 199 women, representing 66.3% of the study population, were classified as having normal vaginal discharge despite presenting with symptoms.

This observation highlights an important distinction between the symptom of vaginal discharge and the presence of an identifiable infection.

Physiological vaginal secretion may vary with hormonal fluctuations, sexual activity, pregnancy, and other reproductive factors. In addition, noninfectious gynaecological conditions can result in vaginal discharge [3].

Consequently, empirical antibacterial, antiprotozoal, or antifungal therapy for every patient presenting with vaginal discharge may result in unnecessary medication exposure. Appropriate clinical evaluation and microbiological testing can help identify women requiring specific antimicrobial therapy.

Clinical Implications

The study demonstrates several clinically relevant observations. VVC should be considered an important infectious diagnosis among symptomatic women in this healthcare setting. However, the large proportion of symptomatic women without a specific infectious diagnosis highlights the limited specificity of symptoms.

Simple investigations such as vaginal pH determination, wet mount, KOH preparation, Whiff test, and Gram staining provide rapidly available information and can guide additional microbiological testing.

Where available, culture and species identification can improve etiological diagnosis, particularly for candidiasis and selected bacterial infections.

Laboratory-supported diagnosis can additionally contribute to antimicrobial stewardship by reducing unnecessary empirical antimicrobial exposure and enabling organism-directed treatment.

Strengths of the Study

The study prospectively evaluated a relatively large group of 300 symptomatic women.

Participants were recruited from several relevant clinical specialties, including Obstetrics and Gynaecology, Dermatology, Venereology, and STI services.

The diagnostic protocol incorporated clinical assessment together with multiple conventional microbiological methods, including pH estimation, saline wet mount, KOH preparation, Whiff test, Gram staining, fungal culture, trichomonal culture, and endocervical investigations.

The study simultaneously evaluated several common infectious causes of vaginal discharge rather than focusing exclusively on a single organism.

Limitations

The study was performed at a single tertiary care hospital and included symptomatic healthcare attendees; therefore, the observed proportions should not be interpreted as community prevalence estimates.

Female sex workers constituted 30% of the study population, reflecting recruitment from specialty outpatient services and potentially limiting generalizability to the general population.

The diagnostic approach primarily relied on microscopy and conventional culture. Routine molecular testing was not documented for organisms such as *Trichomonas vaginalis*, *Chlamydia trachomatis*, or other causes of cervicitis, and some infections may consequently have remained undetected.

The study results were primarily descriptive. Associations between demographic, behavioural, reproductive, or contraceptive variables and individual infections cannot be inferred without appropriate patient-level statistical analysis.

The original dissertation master chart and finalized aggregate tables show some values that require reconciliation before post-hoc multivariable or subgroup analyses are undertaken. Therefore, the present manuscript uses the finalized aggregate results reported in the thesis.

CONCLUSION

Vulvovaginal candidiasis was the most frequently identified infectious cause of symptomatic vaginal discharge among women attending the tertiary care hospital, followed by bacterial vaginosis. Trichomoniasis and cervicitis were comparatively uncommon.

The study population predominantly consisted of younger reproductive-age women, and foul-smelling discharge, itching with curdy discharge, and excessive vaginal discharge constituted the principal clinical presentations.

Importantly, almost two-thirds of symptomatic participants did not have one of the specific infectious etiologies identified using the diagnostic methods employed. Clinical symptoms alone should therefore not be considered sufficient to establish an infectious diagnosis.

Integration of detailed history, clinical examination, vaginal pH, microscopy, and appropriate culture provides a more rational approach to women presenting with vaginal discharge and may contribute to improved etiological treatment and antimicrobial stewardship.

Declarations

Ethical Approval

Institutional Ethics Committee approval was obtained before commencement of the original study.

Consent to Participate

Informed consent was obtained from the study participants before enrolment.

Funding

No specific funding information was reported in the source dissertation.

Conflict of Interest

The authors declare that conflicts of interest, if any, will be disclosed according to journal requirements.

Data Availability

The study data were generated as part of the original dissertation research and may be made available subject to institutional and ethical requirements.

REFERENCES

1. Singh A, Kushwaha S. A cross-sectional study among adolescent girls of Lucknow. *J Family Med Prim Care*. 2023;12(3):510.
2. Coudray MS, Madhivanan P. Bacterial vaginosis—A brief overview of the literature on etiology, diagnosis and treatment. *Front Public Health*. 2020;8:500.
3. Workowski KA, Bachmann LH, Chan PA, Johnston CM, Muzny CA, Park I, et al. Sexually transmitted infections treatment guidelines, 2021. *MMWR Recomm Rep*. 2021;70(4):1–187.
4. Yano J, Sobel JD, Nyirjesy P, Sobel R, Williams VL, Yu Q, Noverr MC, Fidel PL Jr. Current patient perspectives of vulvovaginal candidiasis: incidence, symptoms, management and post-treatment outcomes. *BMC Womens Health*. 2019;19(1):48.
5. Paul R, Agarwal SG, Goenka A, Jain S, Singh K, Raghuwanshi VS, Agarwal A, Singh KG, Rodrigues S, Sen V. A study of prevalence, spectrum, and risk factors of invasive fungal infection in critically ill patients attending a tertiary care center. *Indian J Microbiol Res*. 2025;12(4):479–485. doi:10.18231/j.ijmr.12137.1763613786.
6. Hillier SL, Austin M, Macio I, Meyn LA, Badway D, Beigi R. Diagnosis and treatment of vaginal discharge syndromes in community practice settings. *Clin Infect Dis*. 2021;72(9):1538–1543.
7. Boyer CB, Shafer MA, Pollack LM, Canchola J, Moncada J, Schachter J. Sociodemographic markers and behavioral correlates of sexually transmitted infections in a nonclinical sample of adolescent and young adult women. *J Infect Dis*. 2006;194(3):307–315.
8. Nyati A, Gupta S, Jain SK, Yadav D, Patidar BL, Sharma M. A retrospective study of the pattern of sexually transmitted infections from a tertiary care hospital of Rajasthan. *Indian J Sex Transm Dis AIDS*. 2017;38(2):147–151.
9. Madhivanan P, Krupp K, Chandrasekaran V, Karat C, Arun A, Cohen CR, Reingold AL, Klausner JD. Prevalence and correlates of bacterial vaginosis among young women in Mysore, India. *Indian J Med Microbiol*. 2008;26(2):132–137.

10. Sharma R, Dogra P, Sharma S, Shashikant, Tiwari S. Sociodemographic profile of women with abnormal vaginal flora: a prospective study. *Int J Clin Trials*. 2021;8(1):45–49.
11. Puri KJ, Madan A, Bajaj K. Incidence of various causes of vaginal discharge among sexually active females in age group 20–40 years. *Indian J Dermatol Venereol Leprol*. 2003;69:122–125.
12. Uma S, Balakrishnan P, Murugavel KG, Srikrishnan AK, Kumarasamy N, et al. Bacterial vaginosis in female sex workers in Chennai, India. *Sex Health*. 2005;2(4):261–262.
13. Kataria U, Siwach S, Chhillar D. Study of vaginal discharge in sexually active females 20–45 yrs. *Int Arch Integr Med*. 2015;2(4).
14. Singamsetty J, Sravani G. Clinicomicrobiological spectrum of abnormal discharge from vagina in women in coastal Andhra Pradesh. *Int J Reprod Contracept Obstet Gynecol*. 2020;10(1):150–153.
15. Konje JC, Olorin EO, Ogunniyi JO, Obisesan KA, Ladipo OA. The prevalence of *Gardnerella vaginalis*, *Trichomonas vaginalis* and *Candida albicans* in the cytology clinic at Ibadan, Nigeria. *Afr J Med Med Sci*. 1991;20(1):29–34.
16. Rawat S, Singh R, Mittal G. Phenotypic characterization and antifungal susceptibility profile of *Candida* isolates from women with vulvovaginal candidiasis at a community health center linked to a teaching institution in the Sub-Himalayan region of North India. *J Family Med Prim Care*. 2023;12(12):3326–3331.
17. Tsega A, Mekonnen F. Prevalence, risk factors and antifungal susceptibility pattern of *Candida* species among pregnant women at Debre Markos Referral Hospital, Northwest Ethiopia. *BMC Pregnancy Childbirth*. 2019;19(1):527.
18. Intra J, Sala MR, Brambilla P, Carcione D, Leoni V. Prevalence and species distribution of microorganisms isolated among non-pregnant women affected by vulvovaginal candidiasis: a retrospective study over a 20-year period. *J Mycol Med*. 2022;32(3):101278.
19. Bauters TG, Dhont MA, Temmerman MI, Nelis HJ. Prevalence of vulvovaginal candidiasis and susceptibility to fluconazole in women. *Am J Obstet Gynecol*. 2002;187(3):569–574.
20. Fule SR, Das D, Fule RP. Detection of phospholipase activity of *Candida albicans* and non-*albicans* *Candida* isolated from women of reproductive age with vulvovaginal candidiasis in rural area. *Indian J Med Microbiol*. 2015;33(1):92–95.

How to cite this article: Aiman Fatima, Taruni, S. Ruth Ramya, ETIOLOGICAL SPECTRUM AND CLINICAL PROFILE OF SYMPTOMATIC VAGINAL DISCHARGE AMONG WOMEN ATTENDING A TERTIARY CARE HOSPITAL: A PROSPECTIVE CROSS-SECTIONAL STUDY, *Asian J. Med. Res. Health Sci.*, 2026; 4 (2):2570-2578.

Source of Support: Nil, Conflicts of Interest: None declared.