

Original Research Article

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Prevalence of Bacterial Vaginosis among Patients with White Discharge in A Tertiary Care Hospital-A Hospital Based Study

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ABSTRACT

Keywords

Bacterial vaginosis, White discharge, Tertiary care hospital, Nugent scoring

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Bacterial vaginosis is polymicrobial syndrome caused by alteration in the normal vaginal flora. It is the most common cause for vaginal discharge in the reproductive age group. When the normal flora, ie. Grampositive lactobacilli is replaced by anaerobic organisms like Gardnerella vaginalis, Mycoplasma hominis, Mobiluncus species, Bacteroides species, bacterial vaginosis occurs. A Retrospective study was done in Rajiv Gandhi Women and Children Hospital, (tertiary care hospital), Puducherry, for the period of one year from July 2025 to June 2026. With the patient records, after applying the inclusion and exclusion criteria, the study was done to estimate the prevalence of bacterial vaginosis in women attending the Gynaecology OPD with complaints of white discharge. Gram stain of vaginal swab is done and bacterial vaginosis was diagnosed based on Nugent's scoring system. Total number of cases included were 321. Age group included were 21 to 70 years. However, in our record only 2 cases were in the age group 61 to 70 years. In our study the prevalence rate of bacterial vaginosis was 13.4% among the patients presented with white discharge. Prevalent age group was 31 to 50 (32.5%) in our study. A simple gram stain can be done for patients presenting with white discharge using high vaginal swab to prevent morbidities and appropriate treatment can be given and thus we can prevent misuse of antibiotics.

Introduction

Bacterial vaginosis (BV) is the most common cause of vaginal discharge in women of reproductive age group [1]. Most common infection encountered in the Gynaecological outpatient department is bacterial

vaginosis. The prevalence rate of Bacterial vaginosis in reproductive age group ranges from 17.8% to 63.7% in India [2]. Lactobacilli are the predominant organism in the vaginal flora which contributes to the acidic nature of pH. (3) Vaginitis refers to infection but Vaginosis is the alteration in the normal vaginal flora (4). BV is a poly

microbial syndrome characterized by complex changes in the normal vaginal flora attributed to reduced or absence of Lactobacilli and presence of pathogenic organisms like Gardnerella and Mobiluncus species [4]. BV is clinically characterised by a thin homogenous, malodorous adherent vaginal discharge, pruritis, dyspareunia and lower abdominal pain (5). Bacterial vaginosis is associated with pelvic inflammatory disease, premature rupture of the membranes (PROM), spontaneous abortion, post-operative infections. Risk factors and behaviors like smoking, alcohol intake, multiple sexual partners, Sexually transmitted diseases, use of Intrauterine contraceptive devices, vaginal douching, recent antibiotic use and race/ethnicity contribute to Bacterial vaginosis [6].

Most of the prevalence studies are conducted among the patients within the reproductive age groups. The prevalence data among the overall women population with the white discharge is rare among the South Indian population. This study was conducted to know the prevalence of bacterial vaginosis in cases with white discharge in a tertiary care hospital, Puducherry.

The aim of the present study was to estimate the prevalence of bacterial vaginosis among women presenting with complaints of abnormal white vaginal discharge at a tertiary care hospital. The study also aimed to assess the occurrence of bacterial vaginosis in this population and provide relevant clinical and epidemiological insights into its prevalence among women seeking healthcare for vaginal discharge.

Material and Methods

This is a retrospective cross sectional study conducted in the Department of Microbiology at Rajiv Gandhi Women and Children Hospital, Puducherry. The case records of the women, attended the Gynecology Outpatient during the study period from July 2025 to June 2026 were identified. The case records, with all relevant clinical and laboratory information for the diagnosis of Bacterial vaginosis, were selected. The data was extracted. The case records with incomplete information for the diagnosis of BV, were excluded.

Diagnosis of Bacterial Vaginosis by Nugent's Criteria

The Nugent scoring method is the most frequently used

laboratory-based diagnostic tool for detecting BV (12). The diagnosis of BV was done based on Nugent's criteria. The laboratory data of the cases were collected from the laboratory records and the scoring was taken as follows:

Results and Discussion

Among the cases presenting with complaints of white discharge, the highest proportion was observed in the 31–50-year age group (69.1%), whereas the lowest proportion was observed among those aged 51–70 years (9.6%).

The prevalence of Bacterial Vaginosis among the study population is found to be 13.4%.

The cases of Bacterial Vaginosis (n=43) were almost equally distributed among the age groups of 21-30, 31-40 and 41-50 years and the age group 51-60 had the lowest proportion without any case reported in the age group of 61-70 years.

Among the total study population, the age group 21-30 had the highest prevalence (19.11%), the age group 31-40 and 41-50 had equal prevalence (14.28%).

Bacterial vaginosis is a polymicrobial syndrome characterised by foul smelling discharge per vaginum. It is the most common cause of vaginal discharge in reproductive age group. If not identified and treated, it can lead to complications like miscarriage, pre-term delivery, low birth weight baby, pre-mature rupture of membranes, chorioamnionitis, post-partum endometritis, vaginal cuff cellulitis and pelvic inflammatory disease (11). So early diagnosis and treatment is necessary to prevent the complications.

In the present study, the prevalence rate of Bacterial vaginosis is 13.39% (43 out of 321, Table 3). Various other studies have shown prevalence of 25% to 34% (13). In a study by Vinyl Kumar Pahuja the prevalence rate is 46% (14) and in the study by Anu Nagpal et al. on the prevalence is 26.2% (15).

All these studies were conducted on the study population of reproductive age group whereas our study was conducted among all patients attending the OPD between the age 21-70 years.

Table.1 Nugent scoring of Gram-stained smear for diagnosis of bacterial vaginosis

Organism Morphotype	Number/oil immersion Field	Score
Lactobacillus-like (gram positive rods)	>30	0
	5-30	1
	1-4	2
	<1	3
	0	4
Mobiluncus like (curved, gramnegative rods)	>5	2
	<1-4	1
	0	0
Gram variable coccobacilli and pleomorphic rods Gardnerella/bacteroides-like	>31	4
	5-30	3
	2-4	2
	1	1
	0	0

Note: Total score: 0-3 Normal; 4-6 Intermediate (to repeat the test later); 7-10 Bacterial vaginosis.

Table.2 Age wise distribution of Subjects

Age group (years)	Subjects (n=321)	Percentage
21-30	68	21.2 %
31-40	98	30.5 %
41-50	124	38.6 %
51-60	29	9.0 %
61-70	2	0.6 %

Table.3 Nugent's scoring of Gram staining for Diagnosis of Bacterial Vaginosis

Nugent's scoring	Subjects (n=321)	Percentage
BV	43	13.39 %
Intermediate	10	3.11 %
Normal	268	83.5 %

Table.4 Age wise distribution of positive subjects (Bacterial Vaginosis)

Age group (years)	Subjects n=43	Percentage
21-30	13	30.21
31-40	14	32.5
41-50	14	32.5
51-60	2	4.65
61-70	0	0

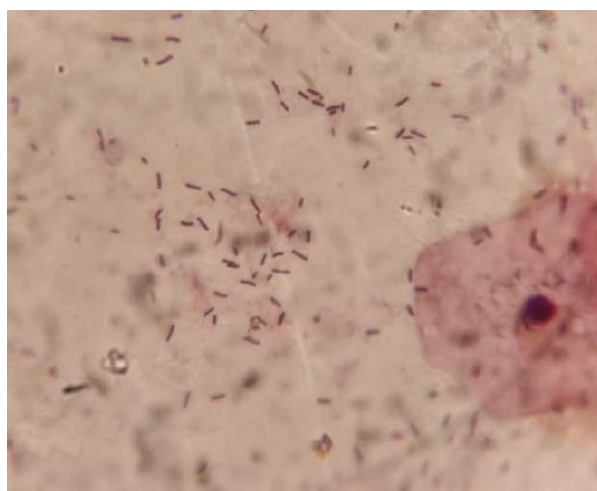
Table.5 Prevalence of Bacterial Vaginosis among the different age groups.

Age group (years)	Subjects	Positive cases	Age-wise Prevalence
21-30	68	13	19.11 %
31-40	98	14	14.28 %
41-50	124	14	14.28 %
51-60	29	2	4.65%
61-70	2	0	0%

Figure.1 Gram stain of vaginal swab showing gram variable coccobacilli studded with epithelial cell (Nugent scoring >7)



Figure.2 Gram stain of vaginal swab showing gram positive lactobacilli (Normal Flora)



The cases of bacterial vaginosis were equally distributed among the three age groups (21- 30; 31-40; 41-50) of our study population. The proportion of BV is similar in other studies conducted among the active reproductive age group (16).

Among the total study population, highest prevalence was observed among participants in the 21–30-year age group (19.11%). Participants in the 31–40-year and 41–50-year age groups showed an equal prevalence of 14.28%. This implies that, BV is the major cause for

white discharge in the 21–30-year age group compared to other causes. A study by Aarti et al showed prevalence of bacterial vaginosis in 18 to 25 yrs (16.3%) 26 to 35 yrs (43.5%) and 36 to 45 yrs (40.2%) (16).

In conclusion, the present study found a prevalence of bacterial vaginosis (BV) of 13.39% among women attending a tertiary care hospital in Puducherry, which appears to be lower than that reported in several previous studies. Among women presenting with white discharge, BV was more frequently observed in the 21–30-year age group, followed by those aged 31–40 and 41–50 years. These findings highlight the importance of considering BV in the evaluation of women presenting with abnormal vaginal discharge, particularly among younger reproductive-age women.

Limitations

Since the cases (case records) are recruited from the hospital settings, the study population may not represent women in the general community and the findings may have limited generalizability to other hospitals or the wider community.

Since the data was collected from the case records, data regarding demographic characteristics, sexual behavior, hygiene practices, contraceptive use, and other risk factors was not considered.

Author Contributions

B. Radhakrishnan: Investigation, formal analysis, writing—original draft. Vani Gopal: Validation, methodology, writing—reviewing. R. Aruna:—Formal analysis, writing—review and editing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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