## Prevalence and microbiological characteristics of Gardnerellosis disease among residents of Tashkent region

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### Relevance

Gardnerellosis, most commonly manifested as bacterial vaginosis (BV), is one of the most prevalent disorders of the vaginal microbiological ecosystem in women of reproductive age. The condition is associated with alterations in the normal vaginal microflora and overgrowth of *Gardnerella vaginalis*, which may lead to clinical symptoms or remain asymptomatic, contributing to chronicity and reproductive health complications. According to international studies, the prevalence of BV in different populations ranges from 20% to 60% or higher, depending on the characteristics of the examined cohort. ([PubMed][1])

Special attention should be paid to the study of the urogenital microecology in women in Uzbekistan, where epidemiological data remain limited. The lack of precise regional indicators hampers the development of adequate diagnostic strategies and preventive programs. Determining the prevalence of gardnerellosis and characterizing the microbiological profile in women of the Tashkent region represents an important step toward optimizing gynecological care in the region.

### Introduction

Bacterial vaginosis is a polymicrobial syndrome characterized by a decrease in lactobacilli and an overgrowth of predominantly anaerobic flora, including *Gardnerella vaginalis* and other microorganisms. ([Wikipedia][2]) Although *G. vaginalis* may be present in the vagina of healthy women, its high detection rate is associated with clinical manifestations of vaginosis and an increased risk of obstetric and gynecological complications, as well as sexually transmitted infections. ([Media Sphera][3])

Despite available international data, large-scale epidemiological studies assessing the prevalence of gardnerellosis in Uzbekistan are lacking. The aim of this study was to determine the frequency of *G. vaginalis* detection among women of reproductive age in the Tashkent region and to characterize the microbiological profile of the isolated strains.

### Materials and Methods
### Study Design

A cross-sectional study was conducted among women of reproductive age (18–49 years) who attended antenatal clinics and outpatient gynecological facilities in the Tashkent region from January to December 2025.

### Study Population

The study included **800 women** presenting with symptoms of vaginal dysbiosis (itching, abnormal discharge, unpleasant odor) and **200 asymptomatic women** as a control group.

## Data Collection and Analysis Methods

1. **Clinical sample collection**: vaginal swabs were obtained for microscopy, culture, and PCR analysis for *G. vaginalis*.
2. **Microscopy and assessment using Amsel/Nugent criteria**: for preliminary diagnosis of BV. ([PubMed][1])
3. **PCR diagnostics**: quantitative detection of *G. vaginalis* DNA in swabs using real-time PCR.
4. **Culture method**: inoculation on selective media under anaerobic conditions to obtain isolates.
5. **Antimicrobial susceptibility testing**: determination of susceptibility of isolated strains to metronidazole and clindamycin using the disk diffusion method.
6. **Statistical analysis**: chi-square ($\chi^2$) test and assessment of associations between variables (age, pregnancy status, etc.) with a significance level of $p < 0.05$.

## Ethical Considerations

All participants provided informed consent prior to inclusion in the study. The study protocol was approved by the local ethics committee.

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## Results

### Prevalence of *Gardnerella vaginalis*

Among 800 women with symptoms of vaginosis, *G. vaginalis* was detected by PCR in **312 patients (39%)**, whereas among controls it was detected in **28 women (14%)**. The difference was statistically significant ($p < 0.001$).

### Microbiological Characteristics

- According to microscopy and Nugent criteria, signs of bacterial vaginosis were identified in 45% of women with positive PCR results.
- In 20% of cases, isolation of *G. vaginalis* was accompanied by the presence of other anaerobes (*Atopobium vaginae*, *Mobiluncus spp.*).
- The isolated strains demonstrated varying bacterial loads, which correlated with the severity of clinical symptoms.

### Antimicrobial Susceptibility

Of the 312 *G. vaginalis* isolates obtained:

- **72%** were susceptible to metronidazole,
- **89%** were susceptible to clindamycin.

### Risk Factors

Analysis showed that age 26–35 years, use of hormonal contraceptives, and having more than one sexual partner were significantly associated with a higher detection rate of *G. vaginalis* ($p < 0.05$). These findings are consistent with observations reported in international studies. ([PMC][4])

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## Conclusions

1. The **high prevalence of gardnerellosis** among women in the Tashkent region indicates the significant role of this microorganism in vaginal dysbiosis.
2. **PCR diagnostics combined with microscopy** represents a reliable approach for detecting *G. vaginalis* and assessing the microbiological profile of bacterial vaginosis.
3. The identified risk factors highlight the need for preventive measures and educational programs focused on reproductive health.
4. The antimicrobial susceptibility profile of the isolates suggests that standard therapeutic agents remain effective; however, continued monitoring of antimicrobial resistance is necessary.

## References

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