

# Prevalence, clinical features, and diagnosis of *Trichomonas vaginalis* among female STI clinic attendees in Trinidad

Aruna K. Divakaruni<sup>1</sup>, Bisram Mahabir<sup>1</sup>, F. A. Orrett<sup>2</sup>, A. Sneha Rao<sup>3</sup>,  
A. Srikanth<sup>4</sup>, Vijay K. Chattu<sup>3</sup>, A. V. C. Rao<sup>3</sup>

<sup>1</sup>Queens Park Counseling Center and Clinic, Ministry of Health, <sup>4</sup>North West Regional Health Authority, Port of Spain, <sup>2</sup>South West Regional Health Authority, <sup>3</sup>Faculty of Medical Sciences, The University of the West Indies, St. Augustine, Trinidad and Tobago

## ABSTRACT

**Background:** *Trichomonas vaginalis* (TV) is one of the most common pathogens causing sexually transmitted infections (STIs) in both men and women. Since there are no accurate prevalence data available on TV infection among women for Trinidad and Tobago and in the Caribbean region, there is a great need for research to study the dynamics of the infection and its transmission. **Objectives:** To determine the prevalence and diagnose TV infection in women attending the STI clinic and to provide recommendations for control and prevention of trichomoniasis in the community. **Study Design:** A cross-sectional study was designed after obtaining the informed consent. Following a routine clinical examination, vaginal swabs were collected – one for wet mount preparation, one for InPouch culture, and other two for OSOM rapid test/and fluorescent antibody testing. Cotton swabs and Dacron swabs were used for testing. **Results:** A prevalence of 16% of trichomoniasis out of 422 females was recorded. In all, 65 (65%) were in the age range of 15–29 years and peak of 30% in the age group of 20–24 years. Vaginal discharge was a common complaint (83%); 75.6% had foul odor and only 9.8% had typical fishy odor. The majority of them (87%) had whitish-yellow colored discharge. **Conclusion:** Prevalence of trichomoniasis is significant in the female population attending STI clinic. Targeting high-risk age group between 15 and 29 years for control and prevention would be beneficial. Prompt and accurate diagnosis using appropriate laboratory test is recommended.

**Keywords:** Prevalence, Rapid tests, sexually transmitted infections, *Trichomonas Vaginalis*, vaginal discharge, wet mount

## Introduction

*Trichomonas vaginalis* (TV) is a parasitic protozoan that is the cause of trichomoniasis, a sexually transmitted disease (STD) of worldwide importance. Recent data have shown that the annual incidence of trichomoniasis is more than 170 million cases worldwide. In fact, the World Health Organization has estimated that this infection accounts for almost half of all curable sexually transmitted infections (STIs).<sup>[1]</sup> The actual burden of the disease

remains unknown in Trinidad and Tobago. Estimates of the prevalence of TV infection in the United States range between 8.6% and 47% for women.<sup>[2]</sup> TV is highly contagious and is transmitted principally through vaginal intercourse.<sup>[3–5]</sup>

Only screening and contact tracing can identify asymptomatic individuals who will remain infected until natural recovery occurs. The rate of transmission from men to women appears to be higher (67%–100%) than women to men (14%–80%). Pathogenesis of TV is complex and involves adhesion, hemolysis, and soluble factors such as cysteine proteinases and cell-detaching factor.<sup>[3]</sup> Trichomoniasis affects all age groups but is common in

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**Address for correspondence:** Dr. Vijay K. Chattu,  
Public Health and Primary Care Unit Faculty of Medical Sciences,  
The University of the West Indies, Trinidad and Tobago.  
E-mail: [Vijay.chattu@sta.uwi.edu](mailto:Vijay.chattu@sta.uwi.edu)

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reproductive age group. The symptoms range from asymptomatic carrier state to severe acute inflammatory disease. One-third become symptomatic in 6 months. Malodorous discharge, pruritus, irritation, dyspareunia, vulvo-vaginal burning, dysuria, and frequent micturition are the various symptoms that may be present at presentation. Signs include erythema, edema, yellow-green/gray discharge, and strawberry-like cervix.<sup>[6-8]</sup> Trichomoniasis is also associated with complications such as premature labor, low birth weight babies, and post hysterectomy infections in women.<sup>[2,3,9]</sup>

There are no well-established reports about this disease in Trinidad and Tobago. A few vague reports from Queen’s Park Counseling Centre and Clinic (QPCC) were available suggesting 1%–2% prevalence (diagnosed only by wet mount preparation). There are no published reports about prevalence of this disease in the Caribbean Islands. The published reports on the prevalence of trichomoniasis in males are not available in the Caribbean. Data available are limited and biased. The incidence and prevalence have not been clearly and reliably established in the country and more so in the high-risk population at QPCC.

## Materials and Methods

### Study design and sample

This was a prospective randomized cross-sectional study. Patients were recruited at the public QPCC S.T.I Clinic, Ministry of Health, Trinidad and Tobago. All males were eligible to be included if they were over 15 years of age or had sexual exposure and consented for routine genital examination. A total of 422 females were included in the study. Experienced nurses, nursing assistants, doctors, and support staff were recruited for the study. Informed consent was obtained from all the patients recruited in the study. In the case of minors (persons below the age of 18 years), informed consent was obtained from the parent or guardian. At the time of obtaining consent, the participant was given the required information regarding the purpose of the study, confidentiality, and rights and responsibilities. A questionnaire that was prepared, tested, revised, and approved by Medical Ethics Committee was administered to collect the clinical data. Following a routine clinical examination, the samples were collected for testing.

### Clinical data and specimen collection

Vaginal swabs were collected – one for wet mount preparation of TV, one for InPouch culture, and other two for OSOM rapid test/and fluorescent antibody testing. Cotton swabs and Dacron swabs were used for testing.

All these four diagnostic methods were compared with each other for technology, sensitivity, specificity, cost–effectiveness, and reliability. Culture method: InPouch was considered as “gold standard.” Based on the results of these tests, if any one of the first three tests becomes positive for TV, patients were treated according the CDC guidelines.

## Data analysis

The results were documented and statistical analysis was done using SPSS software, SPSS 20, IBM, Armonk, USA. *P* value is significant at <0.05.

## Results

Of the total 422 female participants involved in the study, it was observed that the peak age group is 20–24 years as shown below in Figure 1.

The study reveals that the prevalence of trichomoniasis is 16% [95% confidence interval (CI): 12.4–19.4] among females as shown in Table 1 below.

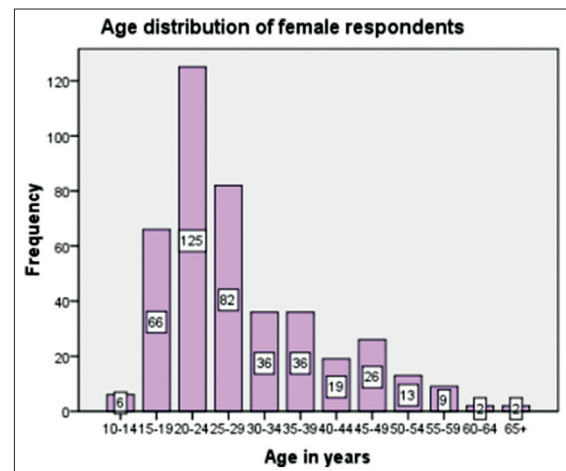
It was found that the majority of females positive for trichomoniasis fall under age group of 15–29 years. Out of the 422 female respondents, 83% complained of vaginal discharge. The percentage of cases that have vaginal discharge was higher with trichomoniasis. The discharge amount in patients without trichomoniasis and those who have trichomoniasis showed no significant difference. Comparison of odor of discharge among the trichomonas-negative respondents and those who were diagnosed with trichomoniasis revealed that foul odor was higher in those with trichomoniasis (75.6%). Only 9.8% who had trichomoniasis had the characteristic fishy odor discharge. Vaginal itching as complaint by respondents indicated that there was no significant difference in trichomonas-negative and -positive cases. The comparison of various clinical features in trichomonas-negative and -positive patients is shown below in Figure 2.

It was observed that 33.8% of 389 respondents complained of associated lower abdominal pain. About 27.7% of respondents

**Table 1: Trichomonas-positive among females**

Trichomoniasis	Number (%)	95% CI
Positive	67 (16)	12.4-19.4
Negative	355 (84)	
Total	422 (100)	

CI: Confidence interval



**Figure 1: Age distribution of female respondents**

had dysuria and 15.5% had dyspareunia. Vaginal sores were present in only 8.6% of 364 cases analyzed. There was no significant difference in the values about the signs and symptoms mentioned with respect to trichomonas-positive female patients.

The distribution of color of discharge among all respondents is shown in Figure 3 below. There was no significant difference in the color of vaginal discharge between trichomonas-positive and -negative cases.

### Discussion

Approximately 180 million women worldwide may be infected with TV. Prevalence estimates vary between populations studied; they range from 5% to 74% in women and 5% to 29% in men.

The color of vaginal discharge in all respondents was evaluated and also a comparison of trichomonas-positive and -negative cases was performed, with the highest rates reported in either sex from STI clinics and in other high-risk populations.<sup>[10]</sup> Prevalence rates of 15% or higher are common among women in many developing countries. Prevalence is also typically underestimated due to poor sensitivity of diagnostic tests. The unweighted average across studies is 21%.<sup>[10]</sup> According to recent publications, trichomoniasis is one of most common treatable STIs.

The majority of the patients belonged to younger age groups and higher number of positive cases were noted between 15 and 39 years. In females, infection was found to be more frequent between 20 and 29 years. However, there was no correlation between age and trichomonas positivity. This corresponds well with some studies. One of the studies indicated that trichomoniasis was more prevalent in the 16–25 year age group (53.57%), followed by the 26–35 year age group (32.14%). Although there is a general consensus that the prevalence of TV varies markedly according to settings,<sup>[8,11]</sup> a few other age-specific prevalence studies have noted that the prevalence increases with age.<sup>[12-15]</sup>

In our study, higher infection rate at a younger age is due to the increased number of the younger age group patients attending

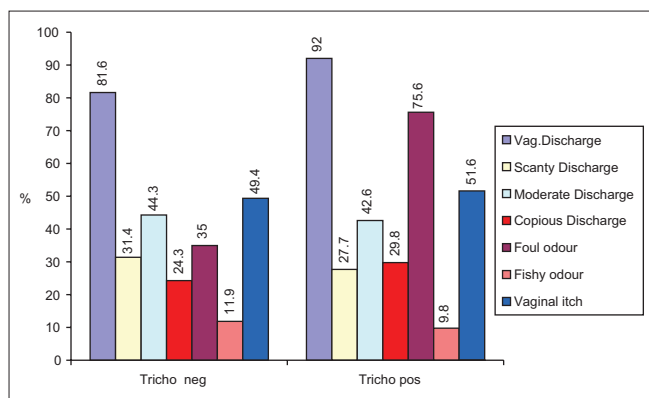
the clinic as described earlier, and thus statistical analysis did not reflect significant difference with respect to infection and age.

The type of manifestation varies with acute infection, chronic infection, and in the carrier state. They could range from acute vaginitis with copious discharge, scanty whitish discharge with pruritus in chronic infection, to being asymptomatic in carrier state. The results of different studies varied with type of study population. In some studies, it has been reported that asymptomatic cases account for 25%–50% of the cases. According to the national guidelines, 10%–50% females (Evidence Level III) are asymptomatic.<sup>[16]</sup> The common symptoms include vaginal discharge, vulval itching, dysuria, or offensive odor, and occasionally the presenting complaint is lower abdominal discomfort. In comparison to these findings, our study revealed that over 80% of female patients had discharge and over 90% with trichomoniasis presented with vaginal discharge.

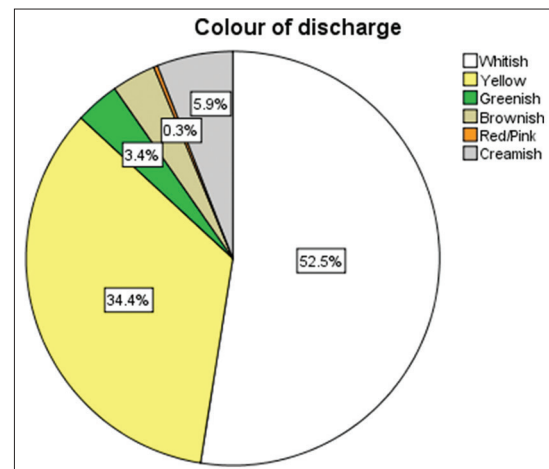
Other symptoms in females such as the amount of discharge, color, vaginal itch, dysuria, dyspareunia, and lower abdominal pain were compared with trichomonas-negative patients and there was significant difference. We found that the odor of discharge was described as “foul” in a majority of patients with trichomoniasis compared to other patients, and characteristic fishy odor was observed in only 10% of patients with the disease.

Clinical signs and symptoms of TV infection in women and men are neither sensitive nor specific enough to be used for diagnosis. Therefore, positive identification of the organism is required.<sup>[2,17,18]</sup> The disease can be difficult to diagnose due to its heterogeneous presentation and limitations, of currently available diagnostic tests that are fraught with imperfections. Insensitive traditional methods of detection greatly underestimate the prevalence of TV.

In our present study, we found that the OSOM rapid test had a sensitivity of 90.5% (95% CI = 84.4–96.6) and specificity of 98.5% (95% CI = 97.5–99.5). These results were comparable to other studies. One of the studies reported the following results: OSOMT rich rapid test had very good performance,



**Figure 2:** Vaginal discharge and clinical features among trichomoniasis-negative and -positive groups



**Figure 3:** Colour of Vaginal discharge among the study participants

with sensitivity, specificity, efficiency, positive predictive value, and negative predictive value of 94.7%, 100%, 99.9%, 100%, and 99.9%, respectively.<sup>[19]</sup> The implementation of OSOM Trich rapid test for diagnosing TV may be recommended for use in routine diagnosis. A rapid diagnostic test that does not require special equipment or a formal laboratory is needed in these settings and can be performed on site by laboratory personnel, nurses, and medical practitioners with minimal training and it would also decrease labor costs. It is important to ensure that the given batch of strips is within expiration date and passes quality control test. Rapid point-of-care test is needed where microscopy and culture are impractical.<sup>[18]</sup>

## Conclusion

Prevalence of trichomoniasis is significant in the female population attending STI clinic. Targeting high-risk age group between 15 and 29 years for control and prevention would be beneficial. Moderate to copious whitish-yellow vaginal discharge is a common clinical presentation. Prompt and accurate diagnosis using appropriate laboratory test is recommended. Undertaking regular periodic studies will give more accurate information on the prevalence and also to review the trends. Partner management is the key for effective management of this infection.

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## Conflict of interest

There are no conflicts of interest.

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