

Prevalence of *Trichomonas vaginalis* infection to women of reproductive age in Kosova

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ABSTRACT

Aim. This study was undertaken to determine the prevalence of *Trichomonas vaginalis* infection to women of reproductive age in Kosova.

Method. The study was carried out in Obstetrics and Gynecology Clinical, Faculty of Medicine, University of Pristine, Kosova, between April and July 2022. The study population consists of a total of 207 women. Sexually active women aged 20 years and older were used for the study. A semi-structured questionnaire was distributed to the participants to seek information such as age, marital status, occupation, and pregnancy status. Every woman's informed consent was sought before the collection of specimens by qualified medical personnel. The specimens were carefully and aseptically collected from the high vaginal area using well-labeled, sterile, non-abrasive high vaginal swab sticks. A few drops of normal saline were added to each swab stick, and a wet mount examination was performed within less than half an hour of collection in order to get optimal results. The wet preparation of the vaginal discharge was made by applying a drop from the sample to a small area of a clean glass slide with a cover slip in order not to trap air bubbles. The wet smear was examined microscopically for motile *T. vaginalis* with a low-power objective (x10) and then with a high-power objective (x40). The vaginal secretion was characterized by the presence of epithelial cells, white blood cells, and red blood cells. The *T. vaginalis* trophozoite was identified by its oval, flagellated, and distinctive motility (jerky movement).

Result. An overall prevalence rate of 12.56% was found in the Kosova. The prevalence of *T. vaginalis* infection differed from place to place. It varied as well among the age groups, showing highest prevalence in the age group 30-39 years at 13.63% and lowest in the age group 20-29 years 5.70%. The prevalence varied with marital groups, with divorced women being the highest at 30.76% and the lowest among singles at 6.74%. The prevalence rate was also observed to be highest among the employed 19.71% and lowest among the students 14.81% and unemployed 7.33%. *T. vaginalis* infection was only observed in non-pregnant women at a prevalence rate of 15.20%.

Conclusion. *T. vaginalis* infection is prevalent in women of reproductive age, as evident in our country. The infection is common in sexually active female participants, especially those with multiple sex partners. Proper personal hygiene, faithfulness to one sexual partner, and massive public awareness on the prevention and control of *T. vaginalis* are advised to reduce its prevalence among women of reproductive age in our country.

Keywords: prevalence, *Trichomonas vaginalis*, infection, women, reproductive age, Kosova

INTRODUCTION

Trichomonas vaginalis infection is an infections sexuellement transmissible (STIs). This pathology is a sexually transmitted disease (STDs) that invades

the urogenital tract of sexually active women and men, causing substantial vaginal and cervical ulceration [1]. After bacterial vaginosis and candidiasis, this infection ranks third among the diseases that

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Article History:
Received: 20 December 2023
Accepted: 28 December 2023

usually cause vaginal symptoms. *Trichomonas vaginalis*, the causative organism, is extremely specific for the genitourinary tract and has been isolated from all genitourinary areas [2].

Trichomonas vaginalis has been known as a broad-based parasite of the genital tract in both males and females. The life cycle of this parasite is not well known, as it is recognized to be only as trophozoites and doesn't have a cystic stage [3]. The trophozoite is an oval parasite with five flagella and an axostyle used to anchor to surfaces [4]. It has a yearly prevalence of about 180 million cases in the world [5].

A lot of cases of trichomoniasis are localized in regions of small income, principally in Africa, where the prevalence rate is estimated between 15 to 37% [6-8], due to a dearth of sufficient facilities for healthcare [5]. The infection is largely acquired through sexual contact and rarely through non-sexual contact through contact with fomites [2]. The symptoms of *Trichomonas vaginalis* are usually seen in women more than in men [9]; they may comprise frothy greenish, foul-smelling vaginal discharge followed by vulvovaginal irritation, postictal bleeding, frequency in micturition, lower abdominal pains and dysuria [10]. Low birth weight infants, neonatal mortality, preterm delivery, preterm rupture of membranes, and morbidity are consequences related with pregnancy [11].

The public health significance of this infection is underscored by the fact that *Trichomonas vaginalis* infection is prevalent in women of reproductive age and is linked with stern adverse pregnancy consequences [12]. This infection could also increase the risk of human immunodeficiency virus (HIV) transmission and other STD infections, which are witnessed significantly more common in women [13].

This present study was designed to determine the prevalence of *Trichomonas vaginalis* infection among women of reproductive age in Kosovo.

MATERIALS AND METHODS

The study was carried out in Obstetrics and Gynecology Clinical, Faculty of Medicine, University of Pristine, Kosova, between April and July 2022. This clinic offers tertiary healthcare.

Study Population

The study population consists of a total of 207 women. Women of reproductive age not less than 20 years old were used for the study. A structured questionnaire was distributed to the participants to seek information such as age, marital status, occupation, and pregnancy status. The obtained bio data was

used to determine the independent variables in the transmission of *T. vaginalis* infection.

Ethical Consideration and Exclusion Criteria

An ethical approval letter was obtained from the Chamber of Doctors of Kosovo, to facilitate the study. Participation was voluntary, and informed consent was sought from each participant before the collection of specimens.

The study was conducted with strict adherence to the ethical standards and procedures for research with human participants. Participants selected for the study were all women visiting the obstetrics and gynecology clinical. Sexually active women aged 20 years and older were used for the study. The females in their menstrual period were exempted from the study.

Specimen Collection

Specimens of vaginal discharge were carefully collected aseptically from the high vaginal area using a well-labeled, sterile, non-abrasive swab stick. The samples were collected with the aid and supervision of the medical staff of the hospitals. The samples were taken to the hospital laboratory units and microscopically examined within 2 hours of collection.

Parasitological Examination

A few drops of normal saline were added to each vaginal swab stick. Each specimen was then placed on a clean, grease-free slide covered with a cover slip and examined microscopically with low power (x10) and high power (x40) objectives [10]. Identification of the presence of *T. vaginalis* was done according to Onyido AE, et al. Stated that the presence of *T. vaginalis* is detected by the characteristic jerky movement of the parasite and identified by the characteristic four flagella, axostyle, and oval shape.

Data Analysis

The data obtained were analyzed by IBM SPSS Statistics, version 21.0. Differences and associations between categorical variables were tested using Pearson's chi-square test and considered statistically significant at $P < 0.05$. The resulting output was presented in tables.

RESULT

Table 1 shows the overall prevalence of *T. vaginalis* infection in Obstetrics and Gynecology Clinical. Out of 207 women examined, 26 (12.5.0%) were positive, while 181 (87.4%) were negative.

TABLE 1. Prevalence of *T. vaginalis* infection among participants in the hospitals used

Name of hospitals	Women examined	Number infected	Prevalence (%)
Obstetrics and gynecology Clinical	207	26	12.5
Total	207	26	12.5%

Table 2 shows the age-specific prevalence of *T. vaginalis* infection among the participants. Out of the 69 women in the age group 20-29, 12 (5.70%) were positive. In the age group of 30-39, 9 (13.63%) out of 66 were positive. Of the 58 women in the age group 40-49, 5 (9.09%) were positive. In the last age group, 50-59, none of the 17 women examined were positive. *T. vaginalis* infection was significantly higher among reproductive women aged 30-39 (13.63%) than in other age groups ($P < 0.05$).

TABLE 2. Prevalence of *T. vaginalis* infection in the different age groups of participants

Age groups	Number examined	Number infected	Prevalence (%)
20 - 29	69	12	5.70
30 - 39	66	9	13.63
40 - 49	55	5	9.09
50 - 59	17	0	0.00
Total	207	26	12.56

Table 3 shows the rate of prevalence of *T. vaginalis* infection according to the marital status of the participants. Out of the 89 single participants, 6 (6.74%) tested positive. Out of 97 married women examined, 16 (16.49%) were positive. 4 (30.76%) out of 13 divorced women were positive. All eight widowed women used for the study were negative. *T. vaginalis* infection has a likelihood of being significantly higher in divorced women than in married and single women ($P < 0.05$).

TABLE 3. Prevalence of *T. vaginalis* infection based on the marital status of the participants

Marital status	Number examined	Number infected	Prevalence (%)
Single	89	6	6.74
Married	97	16	16.49
Divorced	13	4	30.76
Widowed	8	0	0.00
Total	207	26	12.56

Table 4 shows the prevalence of *T. vaginalis* infection based on the occupation of the participants. Out of 71 employed examined, 14 (19.71%) were positive. Out of 27 students who participated in the study, 4 (14.81%) were found to be positive. Among

the unemployed, 8 (7.33%) out of 109 turned out to be positive. Hence, *T. vaginalis* infection is likely to be significantly higher in employed than in students and unemployed ($P < 0.05$).

TABLE 4. Prevalence of *T. vaginalis* infection based on the occupation of the participants

Age groups	Number examined	Number infected	Prevalence (%)
Students	27	4	14.81
Employed	71	14	19.71
Unemployed	109	8	7.33
Total	207	26	12.56

Table 5 shows the prevalence of *T. vaginalis* infection among pregnant and non-pregnant women that participated in the study. All 36 pregnant participants were negative. However, 26 (15.20%) of the 171 non-pregnant women used in the study were positive. *T. vaginalis* was observed only among non-pregnant women. *T. vaginalis* infection was significantly higher in non-pregnant women ($P < 0.05$).

TABLE 5. Prevalence of *T. vaginalis* infection among pregnant and non-pregnant participants

Pregnancy status	Number examined	Number infected	Prevalence (%)
Pregnant	36	0	0.00
Non-pregnant	171	26	15.20
Total	207	26	12.56

DISCUSSION

This study showed an overall prevalence of 12.56%, out of the 207 women from the Obstetrics and Gynecology Clinical, Pristine, Kosova. The prevalence of 12.56% observed in this present study could be explained by the fact that the majority of cases of trichomoniasis are localized in regions of low income, compared to in African countries, where the prevalence rate ranges from 11 to 37% [8,14-18].

T. vaginalis infection prevalence varied with respect to age. The highest prevalence was seen among women aged 30-39 (13.63%) and the least in the age group of 20-29 (5.70%). This result is in tandem with the findings of Auta I, et al., who recorded the highest prevalence among women aged 30-36 (9.32%) and the least prevalence in the age group of 26-30 (6.10%). The result disagrees with Iwueze MO, et al., who observed the highest prevalence, in the age group of 21-30 (47.2%) and the lowest prevalence among women aged 31-40 (8.6%). Nevertheless, the result is similar to the findings of Onyido AE, et al., who observed a prevalence of 35.0% among the 30-39 age group and 0% amidst the younger age group of 20-29. The result recorded among women aged

40-49 (9.09%) corresponds with the findings of the above-mentioned authors, who also observed prevalence rates of 4.7%, 9.6%, and 8.0%, respectively, among women aged 40-49. On the contrary, none of the women in the age group of 50-59 was positive, which is not in agreement with the findings of Onyido AE, et al. (21.43%) and Iwueze MO, et al., (8.0%). The age-specific prevalence could be as a result of a higher sexual activity amongst the age group of 20-29 years old and probably as a result of the asymptomatic persistence of earlier infections and inadequate hygiene. However, *T. vaginalis* infection remains prevalent among highly sexually active women aged 30-49. Onyido AE, et al. reported that 2–3 million infections occur normally among sexually active women. Hence, it is justified since sexual intercourse is the primary route of *T. vaginalis* infection.

The prevalence of *T. vaginalis* also varied with marital status, with divorcees (30.76%) having the highest prevalence and singles showing the least prevalence (6.74%). A prevalence level of 16.49% was observed among married women. The high prevalence among divorced women could be due to their more active sexual life, as having multiple sex partners play a vital role in prevalence rate. The prevalence among married and single women could be as a result of infected partners, poor hygiene and the persistence of the infection without treatment.

T. vaginalis prevalence differed among the occupations of the participants. The employed undoubtedly had the highest prevalence of 19.71%, followed by the students (14.81%), and the unemployed had the least prevalence of 7.33%. The result is not in

agreement with the findings of Obiukwu MO, et al., who observed that the prevalence was higher in students (6.7%), employed (2.7%), and unemployed (1.3%). The high prevalence among employed could be due to the fact that employed encompasses all sorts of travel. The low prevalence among unemployed and students is a result of a high level of literacy, fewer travel and proper awareness. However, the prevalence was slightly higher in the present study and could be due to the practice of poor hygiene, sexual activity, and occasionally non-sexual contact with fomites or surfaces that are contaminated by an infected individual's fluid [2].

Trichomonas vaginalis infection was not detected in all the pregnant women who participated in the study; a prevalence rate of 15.20% was observed in non-pregnant women. The infection was not prevalent in pregnant women, probably as a result of incorrect collection of vaginal discharge from the high vaginal wall.

CONCLUSION

Trichomonas vaginalis infection is prevalent in women of reproductive age, as evident in our country. The infection is common in sexually active female participants, especially those with multiple sex partners. Proper personal hygiene, faithfulness to one sexual partner, and massive public awareness on the prevention and control of *T. vaginalis* are advised to reduce its prevalence among women of reproductive age in our country.

Conflict of interest: none declared

Financial support: none declared

REFERENCES

- Krieger JN. Urologic aspects of trichomoniasis. *Invest Urol.* 1981 May;18(8):411-7. PMID: 7014514.
- Ozougwu JC, Imakwu CA, Nwachukwu I, Okeke OA. Prevalence of *Trichomonas vaginalis* Infection among Women of Reproductive Age in Anambra State, South Eastern, Nigeria. *International STD Research & Reviews.* 2023 Jun 14;12(2):1-7.
- Ijasan O, Okunade KS, Oluwole AA. The prevalence and risk factors for *Trichomonas vaginalis* infection amongst human immunodeficiency virus-infected pregnant women attending the antenatal clinics of a university teaching hospital in Lagos, South-Western, Nigeria. *Niger Postgrad Med J.* 2018 Jan-Mar;25(1):21-26. doi: 10.4103/npmj.npmj_7_18. PMID: 29676341; PMCID: PMC6143675.
- Swygard H, Seña AC, Hobbs MM, Cohen MS. Trichomoniasis: clinical manifestations, diagnosis and management. *Sex Transm Infect.* 2004 Apr;80(2):91-5. doi: 10.1136/sti.2003.005124. PMID: 15054166; PMCID: PMC1744792.
- World Health Organization. (2012). Global Prevalence and Incidence of selected Curable Sexually Transmitted Diseases Overview and Estimates. WorldHealth Statistics. <https://apps.who.int/iris/handle/10665/66818>
- Okoko FJ. Prevalence of trichomoniasis among women at Effurun metropolis, Delta state, Nigeria. *CJ. Biol Sci.* 2011;4(2):45-8.
- Sam-Wobo SO, Ajao OK, Adeleke MO, Ekpo UF. Trichomoniasis among ante-natal attendees in a tertiary health facility, Abeokuta, Nigeria. *Mun Ent Zool.* 2012;7:380-4.
- Chinedum OK, Ifeanyi OE, Uzoma UG, Ngozi GC. Prevalence of *Trichomonas vaginalis* among pregnant women attending hospital in Irrua specialist teaching hospital in Edo State. *Nigeria J Dent Med Sci.* 2014;13(9):79-82.
- Smith, D. A. and Ramos, N. (2010). Trichomoniasis. E-Medicine Specialties; Available from: <http://www.emedicine.medscape.com>.
- Centers for Disease Control and Prevention; Workowski KA, Berman SM. Sexually transmitted diseases treatment guidelines, 2006. *MMWR Recomm Rep.* 2006 Aug 4;55(RR-11):1-94. Erratum in: *MMWR Recomm Rep.* 2006 Sep 15;55(36):997. PMID: 16888612.
- Johnson HL, Ghanem KG, Zenilman JM, Erbdelding EJ. Sexually transmitted infections and adverse pregnancy outcomes among women attending inner city public sexually transmitted diseases clinics. *Sex Transm Dis.* 2011 Mar;38(3):167-71. doi: 10.1097/OLQ.0b013e3181f2e85f. PMID: 20852454
- Silver BJ, Guy RJ, Kaldor JM, Jamil MS, Rumbold AR. *Trichomonas vaginalis* as a cause of perinatal morbidity: a systematic review and meta-analysis. *Sex Transm Dis.* 2014 Jun;41(6):369-76. doi: 10.1097/OLQ.000000000000134. PMID: 24825333

13. Kissinger P, Adamski A. Trichomoniasis and HIV interactions: a review. *Sex Transm Infect.* 2013 Sep;89(6):426-33. doi: 10.1136/sextrans-2012-051005. Epub 2013 Apr 20. PMID: 23605851; PMCID: PMC3748151.
14. Onyido AE, Umeanaeto PU, Irikannu KC, Ekwunife CA, Ezeanya LC, Nwangwu UC et al. Prevalence Of Trichomonas Vaginalis Among The Rural Women Of Ekwulumili Community AnambraState, Southeastern Nigeria. *Nat Sci.* 2014;12(5):129-34.
15. Gundiri MA, Okwuosa VN. Prevalence of urinary and intestinal parasites in Kwampe, Langtang North, Nigeria. *Nigerian J Parasitol.* 2005;26(1):19-22.
16. Obiukwu MO, Onyido AE, Duru JU, Aleke O. Trichomonas vaginalis infection in Anambra State: Demography and behavioural predictors. *J Adv Med Pharm Sci.* 2010;4:16-20.
17. Iwueze MO, Ezeanyanwu LN, Okafor FC, Nwaorgu OC, Ukibe SC. Prevalence of Trichomonas vaginalis infection among women attending hospitals/health centres in Onitsha community, Onitsha North Local Government Area of Anambra State. *The Bioscientist Journal.* 2014 May 8;2(1):54-64.
18. Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. Morbidity and mortality weekly report: Recommendations and reports. 2015 Jun 5;64(3):1-37.