

Epidemiology of urino-genital trichomoniasis in a north-eastern State, Nigeria

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Citation

A Abdulazeez, E Alo, R Livingstone. *Epidemiology of urino-genital trichomoniasis in a north-eastern State, Nigeria*. The Internet Journal of Parasitic Diseases. 2006 Volume 2 Number 2.

Abstract

There have been a paucity of published data on the distribution of urino-genital trichomoniasis in this part of the globe. The study was intended to determine the epidemiology of the infection so as to serve as baseline information for future studies in this part of the world. One thousand five hundred and twenty subjects aged 15-64 years, were randomly selected from some health facilities in the state. Ethical approval from the State Ministry of Health was obtained and informed consent of the subjects was sought before commencing the research. Culture, staining and wet preparation techniques were employed to identify the causative parasite. An overall prevalence of 2.6%, was recorded which varied significantly by settlement status ($P < 0.005$). No significant difference in the infection rate in relation to Age ($P > 0.05$), gender ($P > 0.005$) and marital status of the subjects ($P > 0.05$). Although relatively low rate of the infection was recorded in this study, adequate management and control of the infection was advocated to prevent future epidemic of the infection.

INTRODUCTION

Urino-genital trichomoniasis can be defined as an infection of male and female urino-genital tracts by *Trichomonas vaginalis*. Over 120 million females are infected annually worldwide while the prevalence ranges between 2% and 50% among women in Africa (1). In spite of frequent reports on the public health importance of urino-genital trichomoniasis, its prevalence still continues to rise in many countries of the world (2).

Trichomonas vaginalis, the aetiological agent of urino-genital trichomoniasis, is a flagellated protozoan, site-specific and mostly sexually transmitted human parasite. It was first identified in 1836 as a harmless vagina commensal, but was later associated with vaginal discharge hence said to be pathogenic. (3). The infection is common among sexually active males and females especially during the child bearing age. It is frequently encountered among 50% of women complaining of abnormal vaginal discharge and itching. (4). Vaginal trichomoniasis may be transmitted to neonates in a similar way as other genital infections during birth (5).

In New York, a study carried out among some women in the city reported (6) 47% prevalence rate while in another, conducted between 1992 and 1995 among a cohort of 212 women in Los Angeles, urino-genital trichomoniasis was the most frequently identified sexually transmitted infection

with 19.4% prevalence rate (7). In Kenya, a study reported (8) a prevalence of 34.4% of urino-genital trichomoniasis in the country.

In Nigeria a research conducted at Lagos University Teaching Hospital showed trichomoniasis prevalence rate of 8.2% among the women sampled (9). At University Hospital, Ibadan a prevalence rate of 20.5% out of 151 women attending infertility clinic was recorded. In Jos, Adebayo recorded (10) 12.3% prevalence rate of *Trichomonas vaginalis* from pregnant women attending gynaecology clinic (11), while 24.1% was recorded in a similar work done among pregnant women in the same city (12).

However, there have been a paucity of published data on the distribution of the infection in Adamawa State, Nigeria. This study was therefore focused on the determination of the epidemiological distribution of the infection in the state with the aim of providing baseline information for future studies on urino-genital trichomoniasis in north-eastern Nigeria.

SUBJECTS AND METHODS

STUDY POPULATION

The study was conducted between January 2006 and October 2007 in rural and urban settlements of Adamawa State, Nigeria. It was health-centre based to avoid inadequate sample that may arise from stigma attached to sexually

transmitted infection. A total of 1520 subjects aged 15-64 years were randomly examined among pregnant and non-pregnant women, sick and apparently health men and some women attending family planning clinics in the selected health centres. Prior to the commencement of sample collection ethical approvals were obtained from all the selected health institutions for the study. Also the informed consent of the subjects was sought.

SPECIMEN COLLECTION, HANDLING AND PARASITE DETECTION

Two sterile swabs were utilized to collect high vaginal swabs from each subject. The first one was used for making smears for Papanicolaou and Geimsa staining methods and for saline wet preparation while the second swab was specifically meant for culture. The culture technique previously described (13) was followed but with horse serum substituted with bovine serum. Saline wet preparation of each swab was prepared by adding 0.5ml of 0.85% saline solution to the swab, after proper mixing in the tube containing the swab, a drop was put on a slide and cover slip applied. The preparation was examined using x 10 and x 40 objectives of the microscope for motile flagellates. Papanicolaou and Giemsa staining techniques described by Ramnik were employed. (14) Differential staining of the trophozoites cytoplasm and flagella were used as guide for the identification of the stained parasite under the microscope. Also turbid appearance of the cultured specimen after incubation indicated the presence of the parasite. To obtain some demographic information about the age gender and marital status of the subjects, structured questionnaires were administered to all the subjects examined, while in depth interviews were conducted on some subjects where questionnaires were not helpful. Data obtained were analysed statistically by using chi-square test (X^2) and students' T-test.

RESULTS

Table 1 shows the distribution of urino-genital trichomoniasis by settlement status in the state. Assessing the overall prevalence of the infection, 13 (2.6%), 6 (2.3%) and 20 (2.8%) were recorded in the north, southern and central zones of the state respectively. The break-down of the frequency of infection in the northern settlement showed 1 (0.2%) in the rural areas and 12 (2.4%) in the urban centres. Similarly, in the southern zone, no positive case was recorded in rural area while 6 (2.3%) subjects were tested positive in the urban settlement. Also, in the central zone, 1 (0.14%) positive case was recorded in the rural areas while

19 (2.6%) infection rates was recorded in the urban areas. Statistical analysis by student T-test showed a significant difference in the prevalence of the infection in relation to settlement status ($P < 0.05$).

Figure 1

Table 1: Prevalence of urino-genital trichomoniasis by settlement in Adamawa State.

Georg Zone	No Examined	Infection/Settlement in:		
		Rural	Urban	Total
North	490	1(0.2%)	12(2.4)%	13(2.6%)
South	251	0(0.0%)	6(2.3%)	6(2.3%)
Central	710	1(0.14%)	19(2.6%)	20(2.8%)
Total	1520	2(0.13%)	37(2.4%)	39(2.8%)

The prevalence rate of urino-genital trichomoniasis with respect to age and gender is as shown in table 2. Out of the 1520 subjects examined, there were 39 cases of infection by the parasite. The highest 17(1.1%) prevalence fell within the age group 16-24 years while the lowest rate 3 (0.2%) was recorded within the age bracket 45-54 years. By gender consideration, the infection rate 8 (1.1%) was recorded among males where as female recorded 31 (3.8%). Statistical analysis by Chi-square showed no significant difference in the prevalence of infection by age ($P > 0.005$), and by gender ($P > 0.005$).

Figure 2

Table 2: Distribution of urino-genital trichomoniasis by Age and gender.

Age (Year)	Geographical Zone			
	North	South	Central	Total
15-24	4(0.26%)	1(0.07%)	12(0.79%)	17(1.1%)
25-34	1(0.07%)	1(0.07%)	4(0.26%)	6(0.39%)
35-44	3(0.20%)	2(0.13%)	3(0.20%)	8(0.52%)
45-54	2(0.13%)	0(0.0%)	1(0.07%)	3(0.2%)
55-64	3(0.85%)	6(0.39%)	20(1.3%)	39(2.8%)
Total	13(0.6%)	6(0.39%)	20(1.3%)	39(2.8%)
Sex				
Male	4(0.6%)	1(0.15%)	3(0.45%)	8(1.2%)
Female	9(1.1%)	5(0.61%)	17(2.1%)	31(3.8%)

The frequency of urino-genital trichomoniasis among married, singled and divorced subjects is as shown in table 3. Of the 39 positive cases recorded in this study, the highest 21(53.8%) was observed among the divorced, 11(28.3) was recorded among the married, while the least 7(17.9%) was recorded among the single subjects, out of the 21 divorced subject infected with the parasite, 10(25.6%) were from the central zone, 7(17.9%) from the northern part while 4(10.2%) were from the central zone, 7(17.9%) from the northern part while 4(10.2%) were from the southern part of

the state. Similarly, out of the eleven married subjects infected with the parasite, 6(15.3%), 4(10.2%) and 1(2.6%) were recorded from central, northern and southern zones respectively. Also, among the seven infected single, 4(10.2%) were recorded from the central zone, 2(5.1%) from the northern zone and 1(2.6%) was recorded from southern part of the state. Statistically, no significant difference in the prevalence of infection with respect to marital status of the subjects was observed ($P>0.05$).

Figure 3

Table 3: Prevalence of by marital status

Geogr. Zone	No Infected	Prevalence (%) in:		
		Single	Married	Divorced
North	13	29(15.3%)	4(30.6%)	7(54.1%)
South	6	1(16.7%)	1(16.7%)	4(66.6%)
Central	20	4(20.0%)	6(30.0%)	10(50.0%)
Total	39	7(17.9%)	11(28.2%)	21(53.9%)

DISCUSSION

The prevalence rate of infection (2.6%) recorded in this study disagrees with the result of the previous studies^(15,16) conducted in the Niger-Delta area and South-Eastern part of Nigeria respectively that reported high rates of 8.5% and 14.6% respectively. The difference could be attributed to the variation in geographical location of the studies. While this present study was conducted in the North-Eastern part of the Nigeria where the level of social activities is comparatively lower, the previous ones were carried out in the Southern part where the level is higher hence they are more exposed to risky sexual life than people in the north. Linking the infection rate with the geographical zone, central zone recorded the highest prevalence (2.8%) of the parasite indicating that inhabitants of this zone were more likely affected by the infection than any other people in the state. Poor personal hygiene and sanitary behaviour had been reported⁽¹⁷⁾, as one of the factors enhancing the transmission of the infection since the vegetative trophozoites of the protozoan could be transmitted through vaginal contamination of toilet seat, water of toilet bowls and sharing of wet towels and pants. Also, sexual permissiveness of the affluence, poverty and ignorance about the public health consequence of the infection could be some of the predisposing factors that could contribute to higher prevalence rate in the zone. Judging infection prevalence by settlement status, a higher rate of 2.4% was recorded in urban settlement as against 0.13% in rural areas. Statistical analysis by student's t-test showed a significant difference in the prevalence of infection in relation to settlement status (p

<0.05). The difference in the prevalence rate could be attributed to variation in social activities that can predispose the infection. In urban centres for instance, activities such as prostitution, night parties and ceremonies, watching blue and pornographic films are very common and can encourage risky sexual behaviour with consequent increase in prevalence of sexually transmitted infections.

When the infection rates were assessed according to age, 1.1% was the highest prevalence rate and it was recorded within 16-24 years of age bracket while the least (0.2%) was recorded within the 45-54 years age-group. Statistical analysis showed no significant difference in the distribution of the infection with respect to age ($P>0.05$). This study compares favorably with previous study⁽¹⁷⁾ in which the highest rate of infection was also recorded almost within the same age-group. However these present findings disagree with the result earlier documented⁽¹⁸⁾ in which the highest infection of *Trichomonas vaginalis* was recorded within the age group 24-39 years. The variation in the findings could be due to the difference in geographical zones and socio-cultural patterns of subjects in the studies.

The gender related prevalence study showed that females had a higher rate of infection (3.8%) than the males (1.2%). Statistical analysis however showed no significant difference in the distribution of the infection by sex ($P>0.05$). The slight variation in prevalence of infections in relation to sex could be attributed to unequal number of males and females examined in this study. It could also be due to difference in the anatomical structure of genito-urinary tract which makes females more vulnerable to sexually transmitted infections. Socio-economic inequalities and gender violence against young females could also be some factors contributing to their higher susceptibility to infections. Poverty among high risk young women is another factor. Many had taken to prostitution or at least are keeping multiple sex partners to make ends meet; consequently resulting to high rate of the infection. The findings in this study agree with the result of earlier researcher⁽¹⁵⁾.

Assessment of the infection distribution by marital status showed that divorced subjects had the highest rate of 53.9% while the least (17.9%) was recorded among the single. Higher prevalence of infection among divorced subjects could be attributed to their freedom to sexual activities. Most of them were probably still complacent about health implications of the infections. Due to lack of spouse, most of them are probably in search of replacement and may

therefore get involved in unprotected sexual activities that could lead to sexually transmitted infections. On the other hand, while singled subjects are afraid of unwanted pregnancy, hence protected sex, most married subjects always respect their matrimony by avoiding extra-marital sexual activities. Consequently the prevalence of the infection was lower among married and singled subjects than divorced. Statistical analysis by Chi-Square however showed no significant difference in the prevalence of infection by marital status ($P>0.05$).

In conclusion, although a relatively low rate of the infection was recorded in the state, these research findings could still be very useful in the management and control of the infection in the state and could also serve as a baseline information for futures studies.

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