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Prevalence of Trichomoniasis among pregnant women attending antenatal clinic of the general hospital Dutsin-ma, Katsina State

Abstract

This study was carried out to investigate the Prevalence of Trichomoniasis among Pregnant Women attending General Hospital Dutsin-Ma. A total number of 181 high vaginal swab (HVS) samples were examined in General Hospital Dutsin-ma. Fifty-six (30.9%) samples were positive considering the risk factors of Age, number of sexual partners, method of douche and type of latrine. The age range of 26-30 had high incidence of 36% while 36-40 recorded 23%. With respect to the number of sexual partners, participants with four (4) sexual partners had the highest incidence of 60%. Participants with three (3) sexual partners had the incidence of 41%, participants with two (2) sexual partners had the incidence of 31%, while participants with one (1) sexual partner had the prevalence of 27%. Considering the method of douche, it showed that participants that use water only to douche had the highest incidence of 46%, participants who use water and soap to douche had the incidence of 39%, and those that use herbal concoctions to douche had the incidence of 7.5%. Based on type of latrine, participants who use pit latrine or public toilets had the highest prevalence of 34%, and participants who use water closet had the incidence of 25%.

Keywords: prevalence, trichomoniasis, pregnant women

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Introduction

Trichomoniasis is a disease caused by the *Trichomonas* species, which is the cause of *Trichomonas vaginalis*. *Trichomonas vaginalis* is an anaerobic flagellate protozoan first discovered in 1836 by Alfred Francois Donne through microscopic observation of motile trophozoites in vaginal or cervical secretion. *T. vaginalis* a sexually transmitted disease (STD) of worldwide public health importance and one of the most prevalent causes of non-viral sexually transmitted disease.[1] It is the causative agent of trichomoniasis. It measures 7-3 µm length and 5-12 µm width. It has four anterior flagella and a posterior flagellum attached to an undulating membrane *Trichomonas vaginalis* inhabits the female genital tract and urinary tract of both males and females. In female it is accompanied by frothy-greenish yellow foul-smelling discharge, vulvo-vaginal secretion, dysuria and lower abdominal pains.[2] It was reported that the vaginal pH increases by shifting from a stronger acidic (3.8-4.2) to a weaker form (5.0-6.0) thereby being conducive for the growth of *T. vaginalis*.[3] It has also been reported in pregnant women to cause premature rupture of the membrane, premature labour, low birth weight and post abortion infection (Soper *et al*., 2004). *T. vaginalis* may be an important co-factor in promoting the spread of human immunodeficiency virus (HIV) In Africa.[4] It also serves as vector of other organisms by carrying pathogens attached to their surface into fallopian tube.[5] Trichomoniasis is reported to be the most common pathogenic protozoan infections of human in industrialized countries with an estimated 180 million infection acquired annually word wide Bowden(2000), Wito et al.,[6] while in the United State of America 5 million women and 1 million men are infected annually Wito et al.,[6] the Centre for Disease Control (2016) has estimated that *T. vaginalis* is responsible for 7-9 million cases of infection each trichomoniasis is reported to be much higher. Increasing incidence of trichomoniasis has been reported in many states of Nigeria including Oyo, Lagos, Sokoto, Plateau and Imo states.[7]

About 50% of infected women do not have any sign or symptom in some women the infection results in burning sensation when urinating, painful sexual intercourse or abdominal discomfort. Trichomoniasis can increase the risk of getting and spreading other sexually transmitted infections such as gonorrhoea, chlamydiasis, syphilis and HIV/AIDS.[8] In pregnant women, trichomoniasis can be serious. It has been reported that infected women were 40% more likely to have infants who are both preterm and of low birth weight preterm child birth is the leading cause of illness and death in new born babies. Trichomoniasis also play a role in infertility and neoplastic transformation of cervical tissues. Mairiga et al.,[1] transmission of *T.vaginalis* infection from mother to neonate has been reported.[4] Poverty, poor personal hygiene and illiteracy with multiple sexual partners are known risks factors for acquisition of *T. vaginalis* infection [9] and Rein. *et al.,* 2009). For the fact that *T.vaginalis* is mainly transmitted through sharing of towels and Underwear with infected individuals.[10] Most cases of *T .vaginalis* remain undiagnosed as it is currently not a target of sexually transmitted infections control and besides because of infected men and women.[11]The disease is reported as a major cause of pathology in obstetrics and gynecology.[12] It has also been reported that the disease cause discomfort and psychosocial distress in infected patient.[13] Usually treatment consist of metronidazole and tinidazole.

Aim and objectives

This research is aimed at studying the prevalence of Trichomoniasis among pregnant women attending antenatal clinic in Dutsin-Ma General Hospital.

I. To determine the prevalence of *Trichomonas vaginalis* infection among pregnant woman attending Dutsin Ma General Hospital

II. To identify the risk factors associated with Trichomoniasis

Statement of the research problem

Trichomoniasis infection cause serious infection, which may result to premature rupture of membrane, premature labour, and lead to infertility, it also leads to burning sensation when urinating and abdominal discomfort. Trichomoniasis can also increase the risk

of getting and spreading other sexual transmitted infection such as gonorrhoea, chlamydiasis, syphilis and HIV/AIDS.

Justification

The impact felt by the pregnant women due to this infection is enormous, hence the research on the prevalence of the infection among the pregnant women attending antenatal clinic in Dutsin-Ma General Hospital was very vital.

Study area

Katsina state is located between latitude 12º15N 7º30E, covering an area of 23,938km². Katsina State is located in the Northern part of Nigeria; it is bounded in the North by Niger republic, In the East by Kano State and Jigawa State. In the South by Kaduna State and Zamfara state by the West. Katsina State is a State in the North Western part of Nigeria, the state was carved out from the old Kaduna state in September 1987 under the military regime of Gen. Ibrahim Badamasi Babangida, the state is made up of two emirates which featured prominently in the establishment of the seven Hausa kingdoms. According to the 2006 census the population of Katsina State was 5,801,584. In 2011 population projection was carried out and the population of Katsina State was 6,740,500. 2006 census was carried out based on distribution according to sex, the population of males in Katsina State was 2,853,305. Dutsin-ma local government located in katsina state is located between latitude 12º27'18.19'N. longtitude 07º29'48.81'E, it is bounded by Kurfi and Charanchi local government to the North, Kankia L.G.A to the East, Safana and Dutsin-Ma, L.G.A to the west and Matazu L.G.A to the South East. Dutsin-Ma has a size of 169,829 as at 2006 national census (national population commission katsina 2006). The people are predominantly farmers, cattle rearers and traders. Figure 1

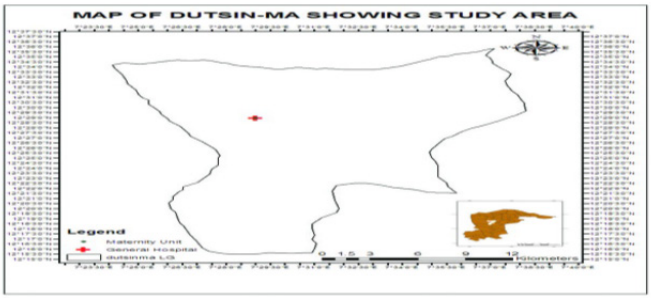

Figure 1 Map of Dutsin-Ma showing General Hospital.

Sample size determination

$$N = \frac{Z^2 (pq)}{d^2}$$

z = 1.96

d = 5

p = 13.67 (0.1367)

from a previous work. In Zaria[1]

$$n = \frac{(1.96)^2 \; x \; 0.1367 \; (1-0.1367)}{5^2}$$

$$n = \frac{3.8416 \; x \; 0.1367 \; x \; 0.8633}{25}$$

$$n = \frac{0.4533}{25}$$

n = 0.018132

n = 181

Data collection methods

A pre-tested questionnaire was used to collect information on socio-graphic characteristics as age, marital status, residence, education level, occupation, method of douche and number of sexual partners.

Sample collection

One hundred and eighty one samples of high vaginal swab were collected from pregnant women attending antenatal clinic in General Hospital Dutsin-Ma and immediately kept in a transport media (stuarts) at 25ºC to prevent dying and loss of the parasite until being tested.

Wet mount preparation

A drop of normal saline was placed on clean grease- free slide and the swab stick was rolled on the glass slide to make a smear, covered with a cover slip and then it was viewed under the microscope using x10 and x40 objective lenses.

Microscopic identification of parasite

The trophozoite of *Trichomonas vaginalis* which is about 8-15um long, was seen with an ovoid rapid, jerky motility accomplished with the aid of the organism's four flagella.[1]

Data analysis

Data obtained was summarised using descriptive statistics. Chi-square analysis was used to test for statistical differences between the distributions of *Trichomonas vaginalis* infection by age, type of latrine, methods of douching, number of sexual partners.

Results

The total number of 181 samples from pregnant women were examined in Dutsin-ma General Hospital at the antenatal clinic where 56 cases were found positive which result to the total percentage of 30.9%. Table 1,2 The prevalence of Trichomoniasis by age show that pregnant women of the age group 20-30 had the highest incidence of 35%, where 60 participants were examined under this group and 22 were positive. Followed by the 31-35 age group where 28 participants were tested and 9 were positive 32%20-25 age group had 27% incidence, where 80 participants were tested and 22 were positive the least percentage in the age group where 13 participants were examined and 3 participants were positive having 23% incidence (Table 3). The prevalence of Trichomoniasis according to number of sexual partners was examined according to the number of wives a man has. The participants with 4 sexual partners had the highest incidence of 66%, where 6 participants were examined and 4 of them were positive followed by the participants have 3 sexual partners where 17 participants were examined and 7 were positive giving the percentage of (41%) 58 participants with 2 sexual partners were examined and 18 of the participants were positive where we have the incidence of 31% of 27%, were 100 participants were examined and 27% of the participants were positive resulting to 27% incidence (Table 4). The prevalence of Trichomoniasis according to the method of douche show that participant who douche with water only had the highest incidence of 46% where 77 participants were examined and 36participants were found positive that use soap and water to douche had the prevalence of 39% where 38 participants were tested and 15 of them were positive. Participants that used herbal concoction had the least incidence where 66 participants were examined and five were positive giving the prevalence of 7.5% (Table 5). The prevalence of Trichomoniasis according to the type of toilet facilities show that the

participants that use pit latrine had the highest incidence where 107 participants were examined where 37 of the participants are positive giving the incidence rate of 34%. Seventy four participants use water closet where 19 were positive giving the incidence of 25%.

Table 1 Prevalence of Trichomoniasis in the study participant

Number examined	Number positive (n)	Percentage %
181	56	30.9

Table 2 Prevalence of Trichomoniasis infection by age

Age range	Number examined	Number positive	Incidence (%)	X^2
20-25	80	22	27	
26-30	60	22	36	
31-35	28	9	32	86.342
36-40	13	3	23	
Total	181	56	30.9	

P≥0.05

Table 3 Prevalence of Trichomoniasis infection by number of sexual partners

Number of sexual partners	Number examined	Number positive	Incidence E %	X^2
1	100	27	27	
2	58	18	31	
3	17	7	41	45.4
4	6	4	66	

P≥0.05

Table 4 Incidence of Trichomoniasis infection by method of Douche

Method of douch	Number examined	Number positive	Percentage (E) %	X^2
Douch with water only	77	36	46	
Douch with soap and water	38	15	36	
Douch with herbal concoction	66	5	7.5	32.8

P≥0.05

Table 5 Prevalence of Trichomoniasis infection by the type of latrine or toilet facilities

Type of latrine	Number examined	Number positive	Percentage E%	X^2
Pit latrine	107	37	34	
Water closet	74	19	25	46.4

Discussion

This study considered some risk factors that might be responsible for acquiring or transmission of the disease. Inusa *et al,* 2010 recorded a prevalence of 29% in a research carried out on pregnant women attending Specialist Hospital, Bauchi while Okojokwu et al, 2015 recorded a prevalence of 4% in a research carried out on pregnant women in Plateau; these rates are lower than and agrees with the findings of this research. The low rates recorded could be due to less number of sexual partners as well as better personal hygiene practices. (Okojokwu *et al*., 2015) In addition, Olorunfemi et al.,[14] recorded a prevalence of 45.5% in a research carried out on sexual partners of women with confirmed diagnosis in Ibadan, while Ango *et al,* 2017 recorded a prevalence of 51.8% carried out on HIV infected women in Plateau. Higher prevalence recorded in this case was because of the association between HIV and Trichomoniasis as well as other STDs, which may relate to increase shedding of HIV because of local inflammation produced by the STD and increased susceptibility to HIV because of the macro or microscopic breaks in mucosal barriers. Considering the prevalence of Trichomoniasis infection according to age distribution, pregnant women of the age of 26-30 had the highest incidence, where 60 participants were examined under this age group, and 22 among them were positive. The age group of 31-35 had the incidence rate of 32%, where 28 participants were tested and nine among were tested positive. The age group of 20-25 had the incidence rate of 27%, where 80 participants were tested 22 were positive. The least percentage was reported in the age of 36-40 where 13 participants were examined and three participants were positive. This research agrees with that carried out by Etuketu et al.,[15] where he recorded a higher incidence compared to other age groups from 25-29 age group. Whereas, the prevalence recorded in this finding differs from the result of the research carried out by John *et al*, 2017 where he recorded the highest prevalence in age group 14-18years, interestingly, *T.vaginalis* was not recorded in the age group of 24-28 years. The reason for this difference is not clear. This study also differs from that of Etuketu et al.,[15] who reported highest incidence of the disease among the age group of 40-44, whereas in this study, the age group of 26-30years had the highest incidence of 36% compared to the other age groups which might be associated with high sexual activities at this age. Trichomoniasis has been found to be prevalent among population with high level of sexual activity and in women in their reproductive age.[16]

The participant with four (4) sexual partners had the highest incidence, where six participants were examined and 4 of them were positive. 58 participants with two sexual partners were examined and 18 of the participants were positive, where we have the prevalence of 31%, 100 participants with one sexual partner participants were examined and 27 were positive resulting to 27% prevalence. These findings agree with that of Krishan, 2010 where he recorded the

highest prevalence of 27% in participants with 4-7 lifetime sexual partners compared to other participant with 1, 2 or 3 sexual partners. John et al.,[17] also reported higher incidence of trichomoniasis among women with different sexual partners, which is comparable to these studies, which reveal the highest incidence among women with four (4) sexual partners (66%). The prevalence of trichomoniasis infection by method of douche show that participants who douche with only water had the highest prevalence of 46% where 77 'participants were examined and 36 were found positive.

The participants that use soap and water to douche had the prevalence of 39%, where 38 participants were tested and 15 of them were positive. Participants who use herbal concoction had the least incidence where 66 participants were examined and five were positive giving the prevalence of 7.5%. These findings also agree with that of John et al.,[17] who reported higher prevalence of 13.5% on women who use water only to douche and the least prevalence on women who use herbal concoctions to douche John et al.,[17] also reported a similar result with the present research, according to him; the normal vaginal has a pH of 3.8-4.2, but with *T. vaginalis* infection this increase markedly. The parasite has been reported to thrive well in vaginal environment with a pH>5. Water has a neutral pH and in no way should it alter the pH of the vaginal environment, there by favouring the survival of the parasite. It is therefore surprising that the highest prevalence of Trichomoniasis vaginal positively in this study was recorded among those who douched with water only, despite the increase advocacy on the use of water only for the purpose of douching. Lack of *T.vaginalis* positively among those who douched with herbal concoctions was thought to be due to the ability of the herbal concoctions to maintain the acidic pH of the vaginal environment against infection. While the use of antiseptic and soaps product on the other hand was thought to alter the pH and normal micro biota of the vaginal, this may favour the survival of *T.vaginalis* in the infected individual hence the positive recorded as 39% in this study. The prevalence of Trichomoniasis according to the type of toilet facilities shows that the participant that use pit latrine had the highest incidence where 107 participants were examined. Where 37 of the participants were positive resulting to the incidence of 34%. 74 participants use water closet where 19 were positive giving the incidence of 25%.According to (Njoku et al.,[18] *T.vaginalis* have been implicated in contaminated shared seats Ukoli et al.,[19] specifically stated that other means of vaginal contamination apart from sexual intercourse may be as a result of the non-venereal mode of transmission of the parasite which may remain viable in urine on lavatory seats for 30-45 minutes.

He emphasized that such agents undoubtedly occur especially in areas with poor hygiene and females with their open Biological nature could be easily be infected this explains why trichomoniasis has been recently considered a neglected disease associated with poverty.[20] This study corroborates with [21] who reported the incidence of 29.1% and Ogbonna et al., (2011) reported the incidence of 37.6%, for Trichomoniasis among pregnant women in south western part and northern part of Nigeria respectively. Resent study of Sam- Wobo *etal*., (2017) among ante-natal attendees in tertiary health facility in Ogun State also presented a incidence of 19.5% .The high incidence rate among users of pit latrine and public toilet agrees with the findings of Sam-Wobo et.al [21] of 18%. These findings show that trichomoniasis is still endemic in Nigeria.[22-49]

Conclusion

In conclusion Trichomoniasis infection exists among pregnant women in General Hospital Dutsin-Ma. The age group of 26-30 had the highest prevalence, participants with multiple sexual partners had higher prevalence of infection compared to others, participants that use water only to douch had the highest prevalence and participants who use pit latrine had a higher prevalence compared to others.

Recommendation

Poor hygiene practices and lack of knowledge about the infection are major risk factors pre disposing patient to infection, however measures geared towards prompt prevention mechanisms, safe hygiene practices should be emphasized through public enlightenment programs, inclusion of *Trichomonas vaginalis* test during anti-natal care services and assist prompt diagnosis, management and control of infection.

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None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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