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PREVALENCE AND RISK FACTORS OF *TRICHOMONAS VAGINALIS* INFECTION AMONG PREGNANT WOMEN RECEIVING ANTENATAL CARE IN ABEOKUTA, NIGERIA.

[a]Ivie Maureen Etuketu., [a*]Hammed Oladeji Mogaji., [a]Oladimeji Micheal Alabi., [a]Adebiyi Abdulhakeem Adeniran., [a]Akinola Stephen Oluwole and [a]Uwemedimo Friday Ekpo.

[a]Parasitology Unit, Department of Biological Sciences, Federal University of Agriculture Abeokuta, Ogun state, Nigeria
***E-mail:** mogajihammed@gmail.com

Abstract

Background: Trichomoniasis is the most prevalent treatable sexually transmitted disease in the world. This study investigated the prevalence of trichomoniasis and associated risk factors among pregnant women attending ante-natal sessions in a tertiary health care facility in Abeokuta.
Materials and Methods: High Vaginal Swabs (HVS) were collected and analyzed microscopically from 300 randomly selected ante-natal attendees. Questionnaires were concurrently administered to investigate associated risk factors about infection. Descriptive analysis was employed using SPSS (IBM, Amonk, NY, USA) version 20.0 and associations were ascertained using Pearson chi square. Significance level was set at $p \leq 0.05$
Results: An overall prevalence of 10.3% was recorded. Age group 40-44(14.8%) had the highest infection, while lowest infection was recorded among age group 25-29(9%). Majority of the infected patients were married 26(11%) and in their second trimester stage of pregnancy 11(11.1%). Type of toilet used and shared usage of toiletries show significant relationship with infections among patients with (P=0.024) and (P=0.000) respectively. Occupational related prevalence showed that traders were the most infected 12(18.5%).
Conclusion: Our findings present higher prevalence of *Trichomonas vaginalis* among older women of reproductive age. Poor hygiene practices and knowledge about infection are major risk factors predisposing patients to infection. However, measures geared towards promoting prevention mechanism/s through safe hygiene practices should be emphasized through public enlightenment programs. Inclusion of *Trichomonas vaginalis* clinical testing during antenatal care services will also assist prompt diagnosis, management and control of infection.

Key-words: Abeokuta, Ante-natal care, Clinical testing, Pregnant women, Trichomoniasis, Nigeria

Introduction

Despite the annual worldwide burden of over 174 million sexually transmitted infections (STI), majority of the causative agent still receives little or no attention in clinical practice and STI control efforts (WHO, 2001). Trichomoniasis caused by *Trichomonas vaginalis* is one of the most common STI (Schwebke, 2002). Women acquire the infection from infected men or women, but men acquire it only from infected women during unprotected sexual intercourse (WHO, 2001). The infection can also be transmitted through contaminated means such as towels and clothing (Alcamo, 2000). Signs of infections in symptomatic women include vaginal discharge, odour, edema or erythema and colpitis macularis; a clinical sign which is characterized by punctuate hemorrhagic lesions, others are dysuria, yellowish-green frothy discharge, pruritis, dyspareunia and lower abdominal pain (Schwbke and Burges, 2004; Sood and Kapil, 2008). Several studies in pregnant women have showed trichomoniasis as the cause of premature rupture of membranes, premature labour, low birth weight infants and in some cases amplify HIV transmission (Hardy et al. 1994; Cotch, 1990; Cameron and Padian, 1990; Laga et al. 1994). Despite this trichomoniasis scourge, little or no attention is given to the infection during ante-natal care services as majority of the routine ante-natal care services tends to focus more on malaria and HIV (Winfred et al., 2007) In Nigeria, reported studies on prevalence of trichomoniasis shows that the infection is still endemic (Adetokunbo and Giles, 1990; Ogbonna et al. 1991; Hassan et al. 2011; Samwobo et al.2012). Nevertheless, there is paucity in available information on recurrence of trichomoniasis among pregnant women receiving ante-natal care in Ogun state. This study therefore reports the prevalence of trichomoniasis, perception about the infection and risk factors associated with the parasite transmission among pregnant women presenting themselves for ante-natal care in Federal Medical Centre, Idi Aba, Abeokuta, Nigeria.

Materials and Methods

The study was carried out at Federal Medical Centre (FMC), Idi-Aba, Abeokuta. FMC is a tertiary health facility in Abeokuta, the capital and largest city of Ogun State located in the Southern-western part of Nigeria on approximately 7^{o} 10'N and 3^{o} 21'E geographic coordinates. Pregnant women receiving care at the antenatal care unit of FMC, Idi-Aba between June –July, 2013 were recruited for the study. Three hundred (300) patients were randomly selected from the entire population. Prior to the commencement of the study, ethical approval was obtained from the FMC, Idi Aba ethical review committee. The patients were fully informed about the study, and only volunteering patients were included in the sampling frame for selection. A well structured questionnaire was administered to the selected patients to investigate their demographic characteristics, hygiene practices and knowledge about trichomoniasis. High vaginal swabs (HVS) were collected concurrently from the selected patients aseptically by a trained nurse at the antenatal care unit. The collected HVS were then transported to the FMC laboratory for microscopic examination. Wet mount preparation was made for each of the HVS collected, according to the methods of Cheesbrough (Cheesbrough, 2006). Data obtained from the study were inputted and analyzed using SPSS (IBM, Amonk, NY, USA) version 20.0. Descriptive analysis was employed and association between risk factors, patient's variables and prevalence were also ascertained using Pearson chi square. Significance level was set at $p \leq 0.05$.

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Table 1: Overall prevalence of trichomoniasis among patients receiving antenatal care in Abeokuta, Nigeria.

	NUMBER OF PATIENTS	PERCENTAGE(%)
POSITIVE	31	10.3
NEGATIVE	269	89.7
TOTAL	300	100

Results

Out of 300 HVS samples collected from randomly selected pregnant women, 31(10.3%) were positive for trichomoniasis (Table 1). Infection is highest among age group 40-44 with 4(14.8%) while the least infection is seen in the age group 25-29 with 9(9%) (Table 2). By Occupation, majority of the infected patients were traders 12(18.5%), while the least infected patients were the teachers 3(4.4%). Health workers, religious workers, housewives and the unemployed pregnant women had no infection (Table 2). Of the 236 married women recruited for the study, 26(11%) had *Trichonomiasis vaginalis* infection followed by the single women 5(10%), none amongst the separated or divorced women had infection (Table 2). There is no significant association between the socio-demographic variables of patients and prevalence of *Trichomonas vaginalis* ($P > 0.05$).

Table 3 shows prevalence of trichomoniasis in different stages of pregnancy among patients. Patients with pregnancy in their second trimester were mostly infected 11(11.1%), followed by those in their first trimester 12(10.9%) and third trimester 8(8.8%).

Majority of the infected patients 30(10.1%) reported having a toilet facility, with 8(21.1%) of them using an open pit latrine, 4(19.0%) using other type of toilet facility and 8(10.7%) using pit latrine with slab. The least infected group were patients that are water-closet users 10(6.1%) (Table 4). There is a significant relationship between infection and type of toilet facility ($P < 0.05$).

Infection is highest among users of public toilets 17(12.9%), while users of private toilets had the least infection 13(7.9%). Majority of the users of private toilets who had infection reported not using their toilet alone 11(9.2%) (Table 4). Sharing of toiletries is common among the infected patients 22(17.1%). Soaps and towels were the most shared toiletries among infected patients 4(50%), though the least infection is recorded among patients sharing soap and other formites 2(11.1%), a significant relationship still exist between infection and sharing of toiletries ($P < 0.05$).

Patients that have heard of trichomoniasis prior the study were the most infected 7(17.1%) (Table 5). Previous history of patients revealed that, 1(14.3%) of the infected subjects have been treated of trichomoniasis before the study, while 30(10.2%) have not been treated. Patients that had vaginal itching recently 17(34.7%) had the highest prevalence, the least prevalence 2(8.7%) was reported amongst those that cannot remember when last they had vaginal itching (Table 5). Majority of the infected patients attributed the cause of vaginal itching to bacterial infections 1(33.3%), the least prevalence was seen in those that attributed the cause to dirty toilets 8(4.4%) (Table 5). Highest infection 17(43.6%), was also observed among patients that had experienced other forms of vaginal symptoms.

Discussion

Decades back, Adetokunbo and Giles (1990) and Ogbonna *et al*. (1991) had previously reported the prevalence of 29.1% and 37.6% for trichomoniasis among pregnant women in southwestern part and northern part of Nigeria respectively . Recent study of Sam-wobo *et al.* (2012) among ante-natal attendees in a tertiary health facility of Ogun state also presented a prevalence of 19.5%. These findings, shows that trichomoniasis is still endemic in Nigeria. An overall prevalence of 10.3% reported in our study corroborate with that of Hassan *et al*. in a study conducted in Osogbo, southeastern part of Nigeria using the same diagnostic method (Hassan et al., 2011). These high prevalence may be implicative on health challenges to unborn babies and also in amplifying transmission of other sexually transmitted infections, most importantly HIV (Hardy et al. 1994;Cotch, 1990; Cameron and Padian, 1990; Laga et al. 1994). Trichomoniasis is commonly associated with sexually active patients under 25 years of age than older women (Crosby et al., 2002;Weinstock et al., 2004). Reports of Sam-wobo et al. (2012) in support of this contradicts our findings as infection is highest among age group 40-44 (14.8%). Segundo *et al*. in a study conducted in three urban coastal peruvian cities had previously reported the possibility of high prevalence among older women (Segundo et al., 2009). Lack of focus on these age group during screening programs which usually results into long term prevalent infection have been associated with unusual presentations of trichomoniasis (Sutton et al., 2007). The high prevalence rate of infection amongst traders 12(18.5%) agrees with the findings of Sam-wobo *et al*. (2012) which might be associated with sexual activeness as well as exposure to factors such as poor sanitary facilities, shared usage of toiletries that are characteristic of most trading centers in this part of the country. Trichomoniasis is believed to be transmitted usually through unprotected sexual intercourse, however, some infections probably are acquired through fomites such as towels, toilet seats, and sauna benches which serve as reservoir host (Krowchuk et al., 1989). Majority of the infected patients in our study reported using unimproved sanitary facilities such as public toilets, even among those that use private toilets, shared usage is predominant.

Conclusion

This study has shown that poor hygienic conditions and lack of adequate public enlightment programs are the major risk factors predisposing patients to *Trichomonas vaginalis* infections. Provision of improved hygiene conditions and appropriate public enlightment will contribute to the prevention of trichomoniasis and other STI. More importantly, the inclusion of *Trichomonas vaginalis* clinical testing during ante-natal care services will also aid prompt diagnosis, recommendation or provision of appropriate control intervention.

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Table 2: Socio-demographic factors and prevalence of trichomoniasis among patients receiving antenatal care in Abeokuta, Nigeria.

	NUMBER EXAMINED	NUMBER INFECTED (%)	P value
Age group			
15-19	1	0(0%)	
20-24	30	3(10%)	
25-29	100	9(9%)	
30-34	92	9(9.8%)	
35-39	50	6(12%)	
40-44	27	4(14.8%)	
			P > 0.05, 0.956
Martial status			
Single	50	5(10%)	
Married	236	26(11%)	
divorced	6	0(0%)	
separated	8	0(0%)	
			P >0.05, 0.628
Religion			
Christainity	151	21(13.9%)	
Islam	143	10(7%)	
Others	6	0(0%)	
			P >0.05, 0.106
Occupation			
Teacher	68	3(4.4%)	
Student	45	7(15.6%)	
Artisan	39	2(5.1%)	
Househelp	6	0(0%)	
Religious worker	1	0(0%)	
Unemployed	5	0(0%)	
Health worker	5	0(0%)	
Civil servant	30	3(10%)	
Housewife	26	2(7.7%)	
Trader	65	12(18.5%)	
Business man/ woman	10	2(20%)	
			P >0.05, 0.233

Table 3: Prevalence of trichomonasis in various stages of pregnancy among patients receiving antenatal care in Abeokuta, Nigeria.

	Prevalence of Trichomoniasis		
	Number of Patients (%)	**Number Infected (%)**	**P value**
Stages of Pregnancy			
First stage of pregnancy	110(100)	12(10.9)	
Second stage of pregnancy	99(100)	11(11.1)	P>0.05, 0.338
Third stage of pregnancy	91(100)	8(8.8)	

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Table 4: Prevalence of trichomoniasis and associated risk factors among patients receiving antenatal care in Abeokuta, Nigeria.

	NUMBER EXAMINED	NUMBER INFECTED(%)	P value
Do you have toilet facility			
Yes	297	30(10.1%)	
No	3	1(33.3%)	
			P>0.05, 0.188
What type of toilet facility do you use			
Water closet	163	10(6.1%)	
Pit latrine with slab	75	8(10.7%)	
Open pit latrine	38	8(21.1%)	
Others	21	4(19.0%)	
Not applicable	3	1(33.3%)	
			P<0.05, 0.024
Is your toilet private or public			
Private	165	13(7.9%)	
public	132	17(12.9%)	
Not applicable	3	1(33.3%)	
			P>0.05, 0.138
If Private, do you use it alone			
Yes	46	2(4.3%)	
No	119	11(9.2%)	
Not applicable	135	18(13.3%)	
			P>0.05, 0.198
Do you share toiletries			
Yes	129	22(17.1%)	
No	171	9(5.3%)	
			P<0.05, 0.001
If yes, what toiletries do you share			
Not applicable	171	9(5.3%)	
Soap alone	53	6(11.3%)	
Soap and sponges	40	6(15.0%)	
Soap and towel	8	4(50.0%)	
Soap, sponges and towel	5	2(40.0%)	
Soap and others	18	2(11.1%)	
Soap and tissue paper	5	2(40.0%)	
			P<0.05, 0.000

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Table 5: Prevalence of trichomoniasis and knowledge about trichomoniasis among patients receiving antenatal care in Abeokuta, Nigeria**.**

	NUMBER EXAMINED	NUMBER INFECTED (%)	P-VALUE
Have you heard of trichomomonas before			
Yes	41	7(17.1%)	
No	259	24(9.3%)	
			P>0.05, 0.127
Have you been treated of trichomonas before			
Yes	7	1(14.3%)	
No	293	30(10.2%)	
			P>0.05, 0.728
When last did you have vaginal itching			
Recently	49	17(34.7%)	
Not recently	156	12(7.7%)	
Last month	7	0(0%)	
Last year	28	0(0%)	
Cannot remember	23	2(8.7%)	
Donot know	37	0(0%)	
			P<0.005, 0.000
Cause of vaginal itching			
None	224	14(6.2%)	
No idea	36	5(13.9%)	
Bacterial infection	3	1(33.3%)	
Dirty toilet	18	8(4.4%)	
PID	3	0(0%)	
T.vaginalis	1	0(0%)	
Its normal	3	2(6.7%)	
Medicated soap	4	0(0%)	
Tight underwear	5	0(0%)	
Other infections	3	1(33.3%)	
			P,0.05, 0.000
Have you had any other vaginal symptoms			
Yes	39	17(43.6%)	
No	261	14(5.4%)	
			P<0.05, 0.000
What was the diagnosis of other vaginal symptoms			
None	265	15(5.7%)	
No idea	18	10(55.6%)	
PID	4	1(25.0%)	
Candida	2	0(0%)	
No test was done	9	5(55.6%)	
T. vaginalis	1	0(0%)	
Other infections	1	0(0%)	
			P<0.05, 0.000

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