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Full Length Research Article

PREVALENCE OF *TRICHOMONAS VAGINALIS* AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC IN TWO HEALTH FACILITIES WITHIN KADUNA METROPOLIS, KADUNA, NIGERIA

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ABSTRACT
Trichomoniasis being referred to as the most prevalent sexually transmitted infection of both male and female urogenital organs. This study was aimed at determining the prevalence of *Trichomonas vaginalis* among pregnant women attending antenatal at Sabon Tasha General Hospital (STGH) and Yusuf Dantsoho Memorial Hospital (YDMH) who were not on any treatment for sexually transmitted infection for 30 days prior to the period of this research. A total of four hundred and five (405) pregnant women consisting of two hundred and one (201) and two hundred four (204) from Sabon Tasha General Hospital and Yusuf Dantsoho Memorial Hospital respectively, were involved in the study between the periods of September 2019 to January 2020. Socio-demographic information such as age and marital status were obtained from all participating women within the age range of 15-43 years. The prevalence of trichomoniasis 25(6.17%) and 9(4.48%) for YDMH and STGH respectively was observed. Although the highest rate of trichomoniasis infection was recorded in age group of sexually active women (26-30), the prevalence of trichomoniasis in this study was not significantly affected by age and marital status (P>0.05). However, the variation of infection rate between the two health facilities in this study is an indication that the prevalence rate of trichomoniasis varies with location, nature of hygiene, sexual habit and level of education of the individual. The study advocates for sexual and health education at every antenatal clinic and routine screening for trichomoniasis among pregnant and women of reproductive age in order to curb the outbreak of the disease.

Keywords: Prevalence, *Trichomonas vaginalis*, Pregnant Women, Antenatal, Health Facilities, Kaduna Metropolis

INTRODUCTION
Trichomonas vaginalis is a protozoan parasite and it is the most prevalent non-viral sexually transmitted infection worldwide causing the curable sexually transmitted disease called trichomoniasis (Secor *et al*., 2014; Adegbaju and Morenike, 2008). It has been recognized as a cosmopolitan parasite of genital tract of both male and female as reported by Jatau*, et al*. (2006) with an annual prevalence of about 180 million cases in the world (World Health Organisation, 2012). The majority of cases of trichomoniasis are localized in regions of low income particularly in African countries where the prevalence rate ranges from 15 to 37% (Swygard, *et al*., 2004; Usanga *et al.,* 2009; Okoko, 2011; Sam -wobo *et al.,*2012; and Chinedum, *et al*., 2014), due to lack of adequate resources for health care (WHO, 2012). *T. vaginalis* is mainly transmitted through sexual contact but may also be transmitted through sharing of towels and under wears with infected individuals (Alcamo, 2000). Most cases of *T. vaginalis* remain undiagnosed as it is currently not a target of sexually transmitted infections control and besides, because of its asymptomatic nature in about half of infected men and women (Fouts and Kraus, 1980). The disease is reported as a major cause of pathology in obstetrics and gynecology (Hook, 1999; Hobbs *et al*., 2006). The life cycle of *T. vaginalis* is still poorly understood like many other protozoan parasites, it is known to exist only as astrophozoite and lacks a cystic stage. It is a primitive eukaryotic organism that in its carbohydrate and energy metabolism shows remarkable similarity to anaerobic bacteria (Petrin, *et al.,* 1998). *T. vaginalis* trophozoite is an oval, parasite with five flagella and an axostyle project which may be used for attachment to surface and may also cause tissue damage noted in *T. vaginalis* infection (Swygard, *et al.,* 2012).
Historically, the presence of *T. vaginalis* has been viewed as a risk marker for other sexually transmitted agents such as *Chlamydia trachomatis*, *Neisseria gonorrhea* or bacterial vaginosis (Wolner – Hanssen *et al.,* 1989; Petrin *et al.,* 1998). Its importance is also being reassessed in the light of recent evidence that is associated with adverse pregnancy outcome and facilitates the sexual transmission of HIV infection (Mabey *et al.,* 2006; McClelland *et al.,* 2007). Reports have also implicated *T. vaginalis* in upper reproductive tract post-surgical infection, reversible infertility, neonatal morbidity and mortality (Laga *et al.,* 1993; Draper *et al.,* 1995; Pastorek *et al.,* 1996). *T. vaginalis* is also increasingly been recognized to be associated with reproductive tract complications including sepsis that occurs after abortion and after cesarean section (Minkoff *et al.,* 1984) as well as adverse pregnancy outcome (Cotch *et al.,* 1997). It has also been reported that the disease causes discomfort and psychosocial distress in infected patients (Jatau *et al.,* 2006). Complications of *T. vaginalis* reported among pregnant women and non-pregnant patients may include premature rupture of membrane, premature labour, low birth weight, post abortion infections, pelvic inflammatory disease, urinary tract infections, bronchitis pneumonia and oral lesions (Soper, 2004) and infertility (Gookin *et al.,* 2005; Fichorova, 2009). It has also been linked to one of the predisposing factors of HIV infection, acquired immune deficiency syndrome and cervical cancer (Soper, 2004; Sobel, 2005; Mabey *et al.,* 2006; McClelland *et al.,* 2007).
The symptoms of *T. vaginalis* which is commonly observed in women than in men (Smith and Ramos, 2010) may include frothy-greenish foul-smelling vaginal discharge accompanied with

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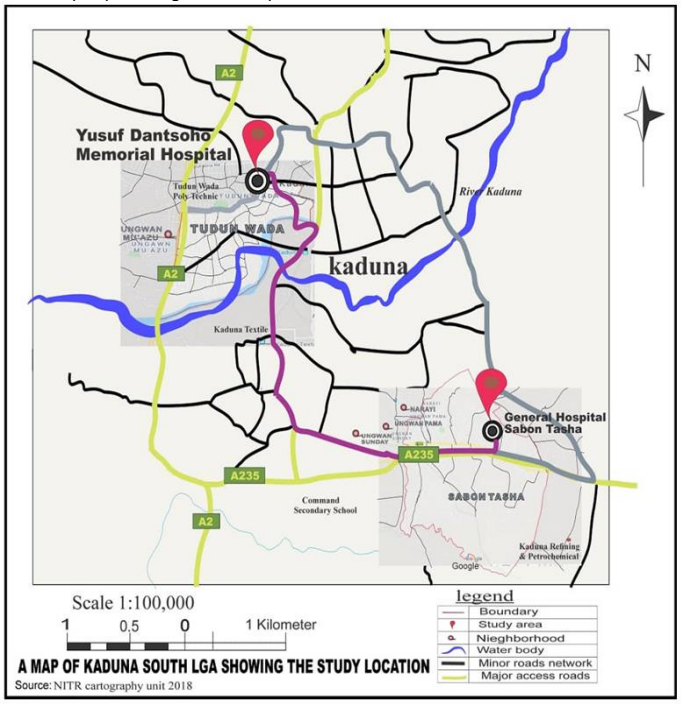
vulvovaginal irritation, postictal bleeding, frequency in micturition, dysuria and lower abdominal pains (CDC, 2006). Lower birth weight infants, preterm rupture of membranes, preterm delivery and neonatal mortality and morbidity are symptoms associated with pregnancy (Johnson *et al.,* 2011).

Multiple sex partners, poor personal hygiene, low socio-economic status and underdevelopment are factors reported to be associated with high incidence of infection (Huppert, 2009). *Trichomonas vaginalis* is detected in vaginal prostatic or urethral secretions, semen and urine of infected individuals using different laboratory methods such as wet mount, various staining methods, culture, latex agglutination, Enzyme Linked Immunosorbent Assay (ELISA) and more recently, Polymerase Chain Reaction (PCR) (Radonjic *et al.,* 2006). The most common means of diagnosis still remains microscopic visualization of the vaginal fluid (Schwebke and Burgess, 2004). Direct examination of wet mount preparation of clinical specimen is the most rapid and least expensive technique for identifying *T. vaginalis*.

MATERIALS AND METHODS

Study Area

The study was conducted in two major Government owned hospitals in Kaduna metropolis which include Sabon Tasha General Hospital with GPS coordinate of 10º 26′56.9′′N 7º 28′43.′′E and Yusuf Dan Tsoho Memorial Hospital with GPS coordinate of 10º31′15′′N 7º24′59′′E in Kaduna South Local Government Area of Kaduna State. The two health facilities were established to provide secondary health services to people living in the respective wards and environs



Ethical approval

Ethical approval was obtained from Kaduna State Ministry of Health, Sabon Tasha General Hospital and Yusuf Dantsoho Memorial Hospital, Kaduna.

Specimen collection and processing

Method described by Cheesbrough (1999) was used to obtain the vaginal swab from each participating woman. The high vaginal swab was obtained by inserting a sterile cotton wool swab stick into the posterior formix of the vagina with the aid of plastic disposable speculum and gently rotated about 2-3times in order to pick the vaginal exudate. It was immediately replaced in its casing and transported to the laboratory. Wet mount was prepared by emulsifying the vaginal exudate on a drop of normal saline placed on a grease-free microscopic slide, and viewed microscopically for the presence or absence of motile trophozoites using 10x and 40x objective lenses. Giemsa staining was also conducted as described by Manson *et al*. (1976) by making smear of the exudate on a grease-free microscopic slide, fixing it in absolute ethanol for 1minute and allowed to air-dry. Diluted Giemsa was poured on the smear and allowed to stain for 10min after which it was washed, air-dried and examined microscopically with oil immersion 100x objective lens for the presence or absence of trichomonas vaginalis.

Statistical analysis of data

Data obtained were analyzed using Chi-square and Odds ratio (OR) for the potential risk factors. P-value ≤ 0.05 was considered statistically significant.

RESULTS

Out of the 405 pregnant women examined,16 (7.84%) and 9 (4.48%) were positive for women attending antenatal in Yusuf Dantsoho Memorial Hospital and Sabon Tasha General Hospital respectively. There was no significant difference (P > 0.05) between the prevalence of the infection at the two health facilities (Table 1)

Table 1: Prevalence of *Trichomonas vaginalis* among pregnant women attending antenatal clinic in YDMH and STGH within Kaduna Metropolis

Health Facility	No Examined	Positive (%)	Negative (%)
YDMH	204	16 (7.84)	188 (92.15)
STGH	201	9 (4.48)	192 (95.52)
Total	405	25(6.17)	380 (93.82)

P > 0.05

Keys: YDMH = Yusuf Dan Tsoho Memorial Hospital, STGH = Sabon Tasha General Hospital

However, women between the ages of 26 and 30 years had the highest prevalence of 11 (9.32%) and 6 (5.45%) while those between ages15 and 20 years had 1 (2.38) and 1 (1.92) for YDTMH and STGH respectively. There were no significance difference between the two health facilities based on age of the women (Table 2).

Table 2: Prevalence of *Trichomonas vaginalis* among pregnant women attending antenatal clinic in STGH and YDMH in relation to age within Kaduna Metropolis

Age category (years)	YDMH		STGH		Total positive (%)
	No. examined	No. positive (%)	No. examined	No. positive (%)	
15-20	41	1 (2.38)	11	0 (0.0)	1 (1.92)
21-25	61	4 (6.55)	49	2 (4.08)	6 (5.45)
26-30	48	8 (16.6)	70	3 (4.29)	11 (9.32)
31-35	34	3 (8.82)	48	2 (4.17)	5 (6.10)
36 and above	20	0 (0)	23	2 (8.69)	2 (4.65)
Total	204	16 (7.84)	201	9 (4.48)	25 (6.17)

P> 0.05

Keys: YDMH = Yusuf Dan Tsoho Memorial Hospital, STGH = Sabon Tasha General Hospital

DISCUSSION

The findings from this study revealed the prevalence of *T. vaginalis* among pregnant women attending Yusuf Dan Tsoho Memorial Hospital and Sabon Tasha General Hospital within Kaduna Metropolis. This is similar to the findings of Aboyeji and Nwabusi (2003) who reported the prevalence of 4.7% in Ilorin. Similarly, Roger *et al. (*2019) reported the prevalence of 4.8% in Senegal. However, the prevalence of 7.84% in Yusuf Dan Tsoho memorial Hospital is similar to the finding of Oladeinde *et al. (*2016) who reported the prevalence of 7.7% among pregnant women of reproductive age in Edo state Nigeria.

The prevalence in this study is however lower than the 9.7% reported by Isiaka *et al. (*2014) in Ilorin, 13.3% reported by Obiukwu (2010) in Anambra, 17.7% reported by Okpara *et al*. (2009) in Uyo, 20.0% in Abeokuta by Ojurongbe *et al*. (2010), 18.7% reported by Jatau *et al*. (2006) in Zaria, 12.16% reported in Maryland by Coth *et al.* (1997), 16% reported by Mayaud *et al.* (1998) in Tanzania and 46.9% reported in New York by Shuter (1998). The finding is also higher than the findings of Uneke *et al. (*2005) who reported the prevalence of 2.8% in Ebonyi state South-eastern Nigeria. It is also higher than 1.4% reported by Begun *et al*. (2003) in Dakan Bangladesh, 3.3% by Adeoye and Akande (2007) in Lagos, 2.8% by Akinbo *et al*. (2017) in Benin City.

Although the prevalence rate of 4.48% and 7.84% observed in both health facilities can be considered to be within the normal range in a healthy women population. Cameron and Padian (1990) Observed infection rates of 5 to 10% in a healthy women population while it could be as high as 50% in prostitutes and female prisoners. There is a general conception that prevalence of *T. vaginalis* ranges markedly based on settings and locations (Bowden and Garnett, 2000). Hence, the variation in respect to the two health facility and findings of other authors could be due to differences in geographical location, population, personal hygiene as well as diagnostic methods used in the study.

Conclusion

Prevalence of (25) 6.17% and 9 (4.48%) were obtained for Yusuf Dan Tsoho Memorial Hospital and Sabon Tasha General Hospital respectively in the present study. The highest rate of infection was recorded in age group of sexually active women (26-30), the prevalence of trichomoniasis in this study was not significantly affected by age and marital status (P>0.05). There was variation of infection rate between the two health facilities in the study area. There should be routine screening of trichomoniasis among pregnant women and women of reproductive age in order to curb out the disease.

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