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Data Analysis of the Prevalence of *Trichomonas vaginalis* among Females of Different Age Groups in Lagos State over a 12-Year Period (1991-2002)

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Abstract: Medical records of patients with cases of trichomoniasis in nine selected hospitals in Lagos (private and public) labeled A, B, C, D, E, F, G, H, I were collated and statistically analyzed. Data collected spanned from 1991 to 2002. Of 38, 179 medial admissions during the period under consideration, 866 (2.27%) patients with cases of trichomoniasis were admitted. Trichomoniasis was preponderant among age group 18 and above (adults) when compared with other age groups. ANOVA revealed that there is significant difference among means of cases of trichomoniasis based on age group. On the occurrence of trichomoniasis based on year, ANOVA results showed that there was no significant difference among means of cases of trichomoniasis from year to year in the 12-year period. ANOVA results also revealed that there was significant difference in the incidence of trichomoniasis among the various hospitals, with statistically more significant cases in hospital A ($p<0.005$). On the nature of samples collected (swab or urine), there was no significant difference in the means of occurrence of trichomoniasis in various hospitals based on the methods employed in sample analyses. The prevalence of *Trichomonas vaginalis* in Hospitals Ato I were 2.44, 1.70, 2.94, 2.36, 4.36, 2.90, 2.36, 0.98 and 1.55%, respectively. It was concluded that there was a downward trend in the occurrence of trichomoniasis from 1991 - 2002. However, the prevalence rate observed in this study is of public health significance and is potent to attract government attention to proffer how the incidence rate can be combated.

Key words: Admissions · Adults · Incidence · Prevalence · Significance · Statistically · Trichomoniasis

INTRODUCTION

Trichomonas vaginalis is a flagellated protozoan that is considered to be sexually transmitted. The World Health Organization (WHO) estimated the worldwide prevalence of trichomoniasis to be 174 million and to account for 10 to 25% of vaginal infections [1]. It is an important complication in pregnancy, as it has been related with prematurity and low birth weight [2]. The infection accounted for almost half of all curable sexually transmitted infections worldwide [3]. The annual incidence of *Trichomonas vaginalis* infections in the United States has been estimated at five million cases. Epidemiologically, *T. vaginalis* infections are commonly associated with other STDs and may be a particularly sensitive marker of high risk sexual behaviour. Trichomoniasis is frequently seen concomitantly with other sexually transmitted diseases (STDs), particularly gonorrhea [4]. The majority of women with trichomoniasis also have bacterial vaginosis (BV) [5-7]. Unlike other STDs which have higher prevalence among adolescents and young adults, rates of trichomoniasis are more evenly distributed among sexually active women of all age groups [4].

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Trichomonas vaginalis is one of the oldest know parasitic protozoa of human that inhabits the urogenital tract of man. It is the causal agent of trichomoniasis, a common and worldwide infection [8]. The organism is frequently transmitted from a woman, serving as a reservoir of infection, a man serving as a carrier of infection and subsequently to another woman. More women than men are infected with *T. vaginalis*. In both sexes, most infections are asymptomatic or mild. Symptomatic infection is common in women and rare in men. The main signs of *T. vaginalis* infection in women are abdominal pain, itching and presence of a foul smelling discharge from the vagina with abundant leucocytes, while in men, infection is mostly asymptomatic, although it can sometimes lead to urethritis, prostatis and epidymitis [9, 7]. Infection with this organism is also associated with severe complications such as infertility, pre-term delivery, low birth weight and may facilitate the spread of human immunodeficiency virus (HIV) [10-11].

Other species of *Trichomonas* are *T. tenax* and *T. hominis*, which are associated with man. *T. Tenax* is a commensal in the mouth, while *T. hominis* is a commensal in the intestine. Of the three species only *T. vaginalis* is pathogenic and inhabits urogenital tract of human [12].

Although the incidence of *Trichomonas vaginalis* infections varies widely, trichomoniasis is one of the commonest of the STDs. Sexual intercourse is believed to be the usually means of transfer.

One study noted that 70% of men who had sex with an infected female two days previously were infected, with this percentage dropping to 47% by 14 days or longer (Adele, Unpublished). Thus transmission of the disease depends upon relatively frequent intercourse of men with different partners and/or occasionally long term infection in some men. *T. vaginalis* may be emerging as one of the most important co-factors of human immunodeficiency virus (HIV) transmission particularly in Africa-America communities of United States [13]. Acquisition of the human immunodeficiency virus (HIV) has been associated with trichomoniasis in several African studies, possibly as a result of local inflammation often caused by the parasite. Leroy *et al.* [14] found a significant difference between the prevalence of trichomoniasis among a cohort of HIV infected and non-infected pregnant women in Rwanda (20.2*vs.* 10.9%) [14]. In a prospective study by Laga *et al.* [15] incidence of trichomoniasis was significantly associated with HIV seroconversion (OR = 1.9) among a cohort of women in Zaire in multivariate analysis [15]. Buve *et al.* [16] reported significantly higher rates of vaginal trichomoniasis among women residing in high HIV prevalence cities than in low HIV prevalence cities and suggested that trichomoniasis may be an important factor in determining rates of HIV. The associations between HIV and trichomoniasis, as well as other STDs, may relate to (1) increased shedding of HIV as a result of the local inflammation produced by the STD, (2) increased susceptibility to HIV as a result of the macroscopic or microscopic breaks in mucosal barriers caused by the STD, (3) STDs may be more prevalent among HIV infected individuals as a result of common risk factors for both infections, or (4) the immunosuppression associated with HIV infection may lead to increased susceptibility to STDs. Given the higher prevalence and incidence of trichomoniasis than most other treatable STDs in most studies to date, the attributable fraction of HIV acquisitions due to trichomoniasis may eclipse the relative contribution of other STDs [17].

Available data show that *Trichomonas vaginalis* is highly prevalent among African-America in major urban centers of the United States and is often the most common sexually transmitted infection in black women [13, 18]. Studies suggests that *T. vaginalis* is one of the most common sexually transmitted infection in the United States with an estimation of 5 million new cases occurring annually [3]. Hardy *et al.* [19] observed trichomoniasis among 338 state schools adolescents in Oregon, United States and among 115 pregnant adolescents in Baltimore, United States and the prevalence of Gram stain and culture were 35 and 34%. A study conducted in Ibadan, Nigeria [20] to determine the prevalence of *T. vaginalis* among commercial sex workers observed the organism among the age range 20-29 years. Globally, trichomoniasis affects approximately 180 million women [21].

Klebanoff [11] reported that pregnant women infected with *T. vaginalis* are likely to give birth prematurely to children of low birth weight. In addition children born to mother with are more than twice as likely to be stillborn or die as newborns as are children to mothers who do not have disease.

Diagnosis of nonviral infectious diseases of the vagina has been largely contingent on the clinician's ability to do a sophisticated wet mount/potassium hydroxide (KOH) preparation examination [22] However, diagnosis relies on observing the presence of hyphae or pseudohyphae for candidiasis and the presence of the protozoan for trichomoniasis. Microscopic examination of the saline fresh mounts is somewhat subjective;

correct diagnosis can be elusive, complicating treatment and making it difficult to determine accurate prevalence rates [23-26]. Indeed, several studies using this method to establish the prevalence of the most common infectious agents for vaginitis have shown widely varying results, which may in part actually be due to inaccurate diagnoses [27-35]. Diagnosis of trichomoniasis in the female is usually accomplished via direct microscopic examination of the vaginal fluid; however, even with skilled diagnosticians the sensitivity of this test is only 60% overall and may be less in asymptomatic women [36]. Culture media are commercially available and are currently the gold standard for diagnosis [37]. Polymerase chain reaction (PCR) techniques are under development but have thus far shown variable results, especially in women [38-41]. Diagnosis in general is much more difficult for males with the best culture results yielded by combining urethral swabs and urine sediment [36]. A recent comparison study of culture versus PCR in men showed significantly greater sensitivity for the latter (Schwebke *et al.* unpublished data).

The objectives of this study was to investigate the prevalence of *Trichomonas vaginalis* among different female age groups based on medical records obtained from public and private hospitals. It is also intended to look at the statistical relationship between the distribution patterns of these pathogens and the present health implication of its incidence not only in Lagos State and Nigeria, but all over the world.

MATERIALS AND METHODS

Ethical consideration was given by the Lagos State Ministry of Health, Lagos, Nigeria. In the study, data collection on the prevalence of *Trichomonas vaginalis* among females of age-group in Lagos was carried out in nine (9) hospitals chosen at random from a list of all hospitals. Five (5) of these chosen hospitals were public governmental hospitals and four (4) were private hospitals. The hospitals from which data were collected were as listed below:

(a) Public Hospitals:

- Lagos Island General Hospital, Lagos Island, Lagos.
- Lagos State University Teaching Hospital, Ikeja, Lagos.
- Gbagada General Hospital, Gbagada, Lagos.
- Isolo General Hospital, Isolo, Lagos.
- National Orthopaedic Hospital, Igbobi, Lagos.

(b) Private Hospitals:

- R-Jolad Hospital, Gbagada, Lagos.
- Dolu Hospital, Gbagada, Lagos.
- The Eko Hospital, Lagos.
- St. Nicholas Hospital, Lagos Island, Lagos.

Method of Data Collection: Method of analysis of samples collected from patients Two methods were used by all the hospitals to obtain specimens from patients for subsequent analysis - the wet mount microscopy and the high vaginal swab. The medical records of patients with cases of trichomoniasis in the nine (9) selected hospitals were studied. The period of review spanned from 1991 - 2002. The sources of data were medicals records and laboratory results within the medical institutions. The body of information extracted from the record included age, sex, nature of sample, diagnostic method and date of admission.

From the available data, the annual and overall cases of trichomoniasis in various hospitals for the period of study and the annual and overall prevalence of trichomoniasis among females by age-groups in various hospitals were statistically determined using the pooled value of information received from the hospitals over a period of 12 years (1991 - 2002) (Table 1).

Age Specification: The age of females used in the study were defined as follows: children (1-11), adolescents (12-17) and adults (18 and above).

Statistical Analysis: Analysis of the data was done with the aid of the following statistical softwares.

- Statistical package for social Science (SPSS).
- Ms -Excel (Data analysis adding) and statistician.

Analysis of Results: The results of the data from medical records of patients with cases of trichomoniasis from various hospitals designated A, B, C, D, E, F, F, G, H, I were as shown in accompanying tables.

Table 1: Pooled values of Trichomoniasis cases in all hospitals between 1991 - 2002 in Lagos State Nigeria and their respective mean values

	Hospital										
Year	A	B	C	D	E	F	G	H	I	Total	Mean
1991	32.00	2.00	5.00	8.00	18.00	2.00	4.00	4.00	3.00	78	8.67
1992	119.00	9.00	4.00	13.00	4.00	4.00	1.00	2.00	6.00	162	18.00
1993	37.00	6.00	9.00	11.00	4.00	3.00	2.00	3.00	1.00	76	8.44
1994	33.00	19.00	6.00	14.00	13.00	2.00	5.00	2.00	3.00	97	10.78
1995	41.00	12.00	11.00	5.00	2.00	3.00	0.00	1.00	0.00	75	8.33
1996	31.00	5.00	9.00	10.00	4.00	7.00	9.00	1.00	2.00	78	8.67
1997	18.00	22.00	12.00	7.00	6.00	1.00	3.00	3.00	5.00	77	8.56
1998	11.00	15.00	7.00	12.00	3.00	4.00	4.00	1.00	0.00	57	6.33
1999	7.00	17.00	1.00	4.00	9.00	2.00	1.00	2.00	7.00	50	5.56
2000	9.00	11.00	2.00	2.00	12.00	5.00	0.00	2.00	1.00	44	4.89
2001	3.00	11.00	6.00	3.00	2.00	5.00	2.00	1.00	4.00	37	4.11
2002	5.00	7.00	2.00	4.00	2.00	7.00	3.00	3.00	2.00	35	3.89
Total	346.00	136.00	74.00	93.00	79.00	45.00	34.00	25.00	34.00	866	
Mean	28.83	11.33	6.17	7.75	6.58	3.75	2.83	2.08	2.83		

RESULTS

The statistical hypotheses applied in the analyses were as outlined below:

- Ho. The means of cases of patients diagnosed to have trichomoniasis over the years studied are not significant.
- Ho. The means of cases of patients diagnosed to have trichomoniasis in various hospitals are not significant.
- Ho. There is no significant difference between the means of cases of patients diagnosed to have trichomoniasis in public and private hospitals.
- Ho. The means of cases of patients diagnosed to have trichomoniasis based on age distribution are not significant.
- Ho. The means of cases of patients diagnosed to have trichomoniasis based on nature of samples used are not significant.

Where the statistical result does not support the null hypothesis, the alternative hypothesis was accepted.

Statistical Analysis of Findings
Test of Hypothesis

ANOVA Table

Analysis of variance

Hypothesis I: We determine, if there was any significant difference between means of cases of patients diagnosed to have trichomoniasis over the years studied. Using analysis of variance, we observed there was no significant difference among means of cases of patients diagnosed to have trichomoniasis over the years as F_{-cal} was less than F_{-tab} (F_{cal} 1.07479< F_{tab} 2.05). Meaning nearly the same numbers of people on the average were diagnosed to have trichomoniasis from year to year.

Hypothesis II: We also determined if there was significant difference between means of cases of patients diagnosed to have trichomoniasis in various hospitals.

H_0 : There is no significant difference;

H_1 : There is at least a significant difference. Analysis of variance showed there was a significant difference between the means of cases of patients diagnosed to have trichomoniasis in various hospitals with F_{cal} 6.87389 > F_{cal} 2.30. This means there is differential prevalence of admitted trichomoniasis patients from one hospital to another.

Hypothesis III:

H_0 : There is no significant difference among means of cases of patients diagnosed to have trichomoniasis in public hospitals and private hospitals.

H_1 : There is significant different among means of cases of patients diagnosed to have trichomoniasis in public hospitals and private hospitals.

t-test: After analysis, t-statistic was -1.907273954 and was far less than t-tabulated. From the student t-test we noted that t- calculated was less than t -tabulated (t_{cal} 1.907273954<t_{tab} 2.365). Hence we accept H_o that there is no significant difference between the means of cases of patients diagnosed to have trichomoniasis in public hospitals and private hospitals. This means there was an equal prevalence of patients suffering from trichomoniasis from one hospital to another throughout the years of study.

Hypothesis IV:

H_o : There is no significant difference between the means of cases of patients diagnosed to have trichomoniasis based on age distribution.

H_1 : There is significant difference between the means of cases of patients diagnosed to have trichomoniasis based on age distribution.

Age Distribution: Using analysis of variance we reject Ho and accept H1 since F-calculated was greater than F-tabulated ($F\text{-}_{cal}$ 6.192799 > $F\text{-}_{tab}$ 4.32). We conclude that there is significant difference between the means of cases of patients diagnosed to have trichomoniasis based on age distribution. Hence there is differential prevalence of patients suffering from trichomoniasis based on age groups.

To determine which group is more affected, we use the least significant difference (LSD) method.

Hypothesis V:

H_0 : There is no significant difference between the means of cases of patients diagnosed to have trichomoniasis based on nature of sample used.

H_1 : There is significant difference among means of cases of patients diagnosed with trichomoniasis based on nature of sample.

For nature of sample, analysis of variance is given by paired t-test.

Test Statistic: T-Calculated = 1.38: For nature of sample, analysis of variance is given by paired t-test. Analysis showed that t-calculated was less than t-tabulated (1.37<2.201). Hence we accept H_o and reject H_1 with the conclusion that there was no significant difference between the means of patients diagnosed to have trichomoniasis based on the nature of sample used for diagnosis.

Prior to this study no effort was made either by the Federal or Lagos State Ministry of Health to investigate the incidence of Trichomoniasis in Lagos State in particular or Nigeria in general. Table 1 shows the pooled values of cases of trichomoniasis in all hospitals between 1991 - 2002 in Lagos State, Nigeria and their respective mean values. Statistical analysis showed there was no significant difference in the means of cases of patients diagnosed to have trichomoniasis over the years (F-table<F-cal.) (1.07479<20.5). However, the patterns and trend of trichomoniasis during the 12-year period from 1991 -2002 shows that there has been a decrease during the period under consideration (Fig. 1). There were no admitted cases of trichomoniasis in age group 1 - 11 and 12 - 17 in the years 2001 and 2002 further confirming a downward fall in recorded cases of trichomoniasis (Fig. 2). This may be attributable to the use of safety sex measures to prevent sexually transmitted diseases as well as abstinence from sex. Added to this is awareness among women through sex education and maintenance of personal hygiene.

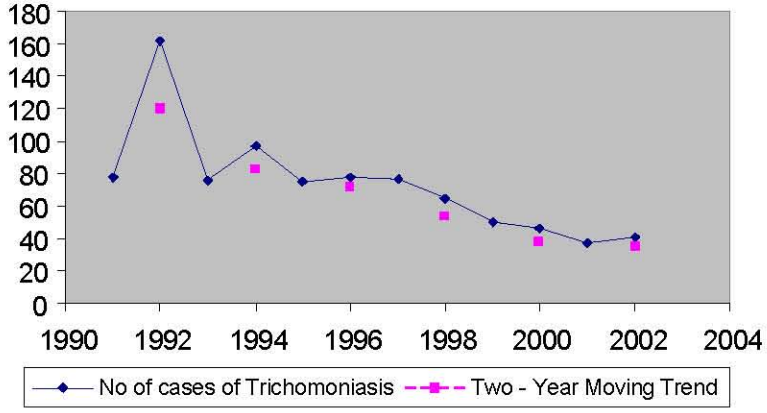

Fig. 1: The trend and cases of Trichomoniasis among females in Lagos State (1991-2002)

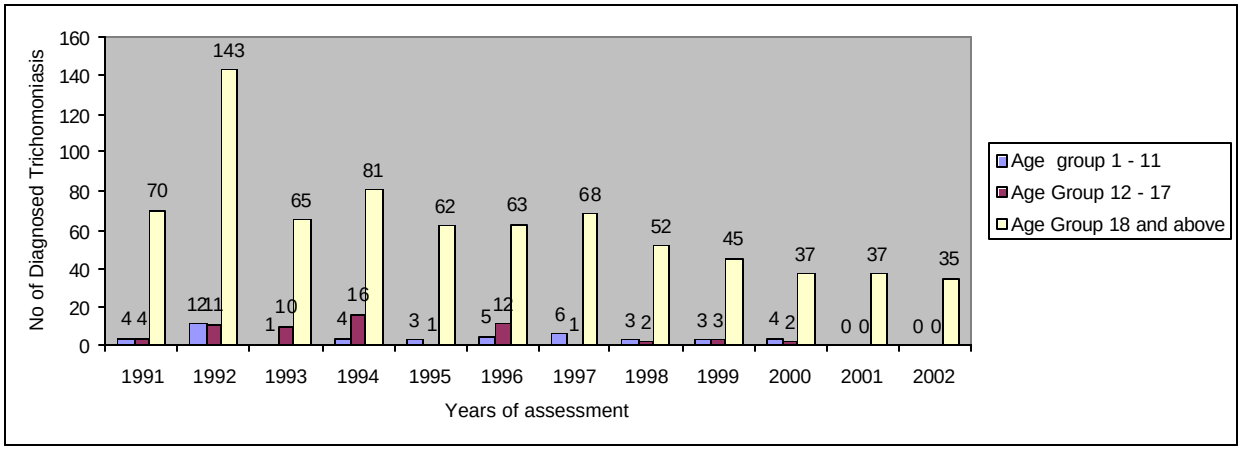

Fig. 2: Prevalence of Trichomoniasis according to Age groups among females in Lagos State, Nigeria in Public and Private Hospitals (1991 – 2002)

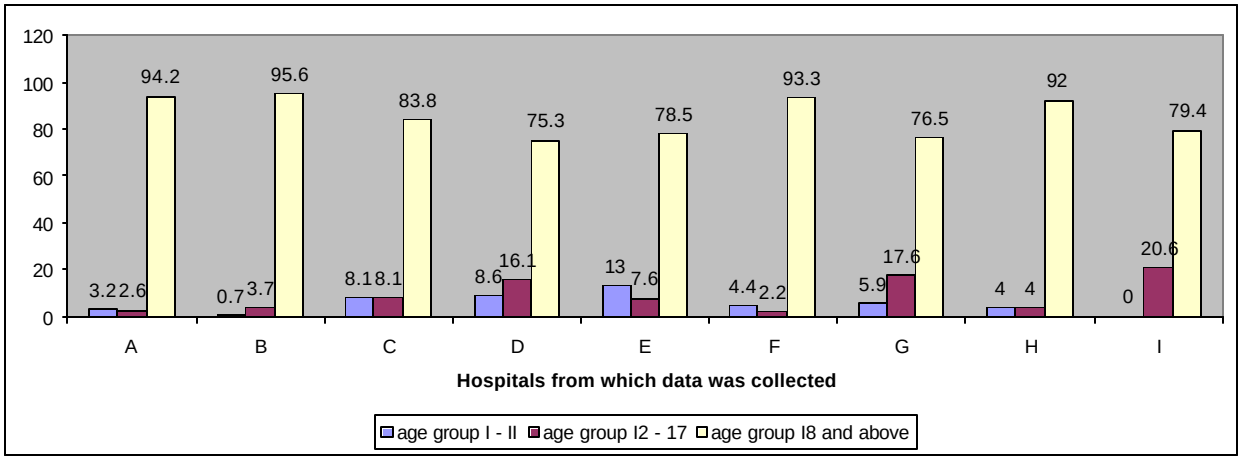

Fig. 3: Percentage prevalence of trichomoniasis among female age groups in each hospital in Lagos State, Nigeria (1991 – 2002)

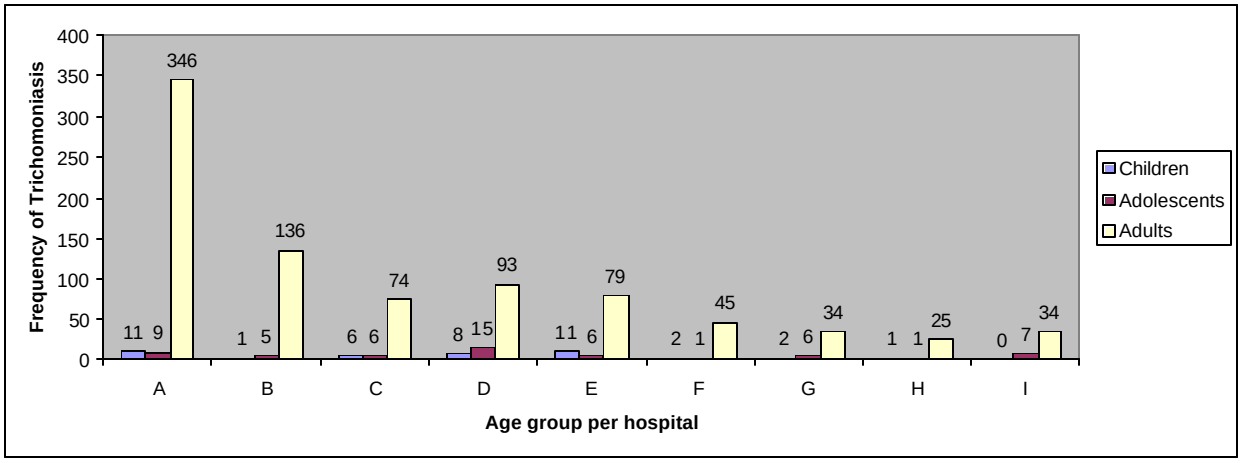

Fig. 4: Prevalence and distribution of Trichomoniasis among females according to age group in Public and Private Hospitals in Lagos State, Nigeria (1991-2002)

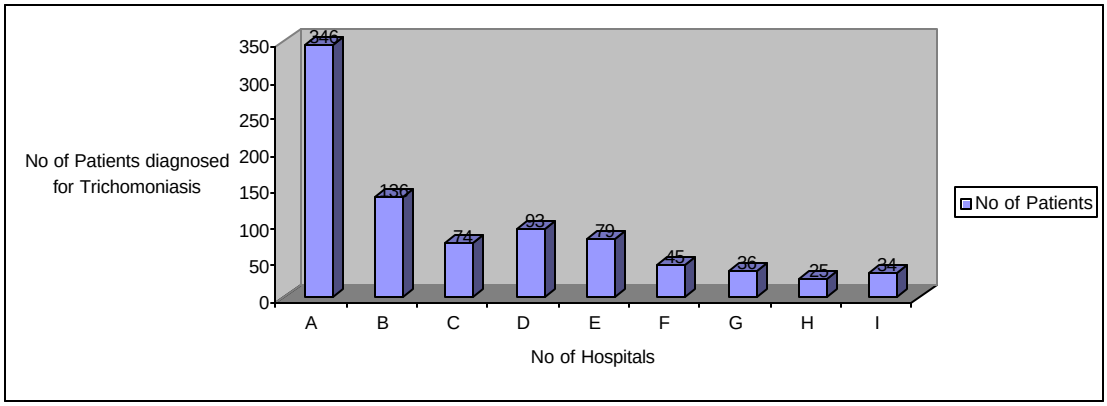

Fig. 5: Diagnosed cases of Trichomoniasis in Public and Private Hospitals in Lagos State, Nigeria over a 12-year period

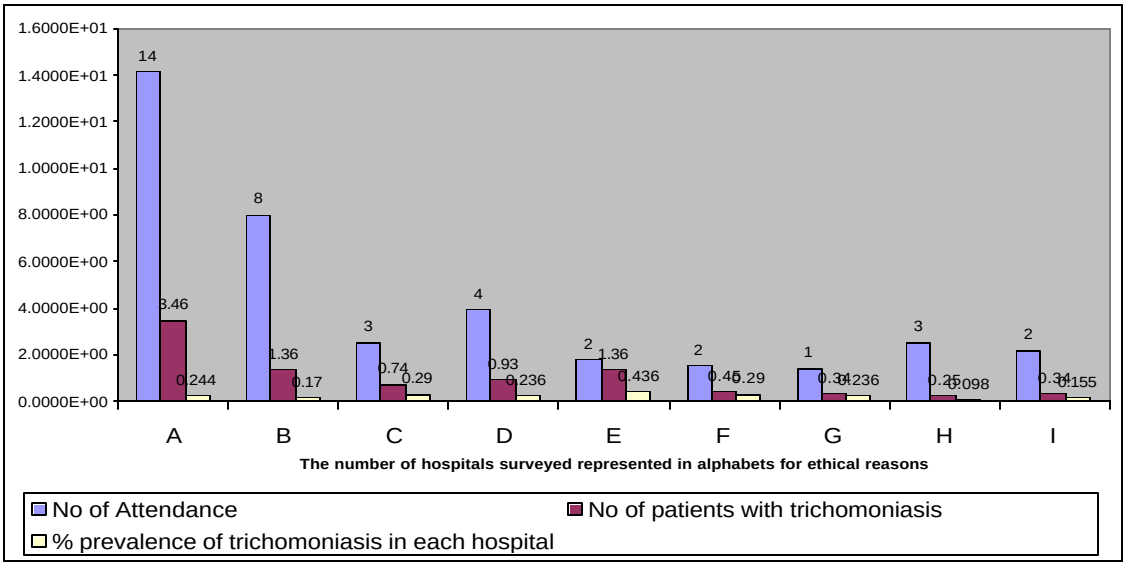

Fig. 6: Number of attendance and prevalence of trichomoniasis among female patients admitted in public and private hospitals in Lagos State, Nigeria (1991 – 2002)

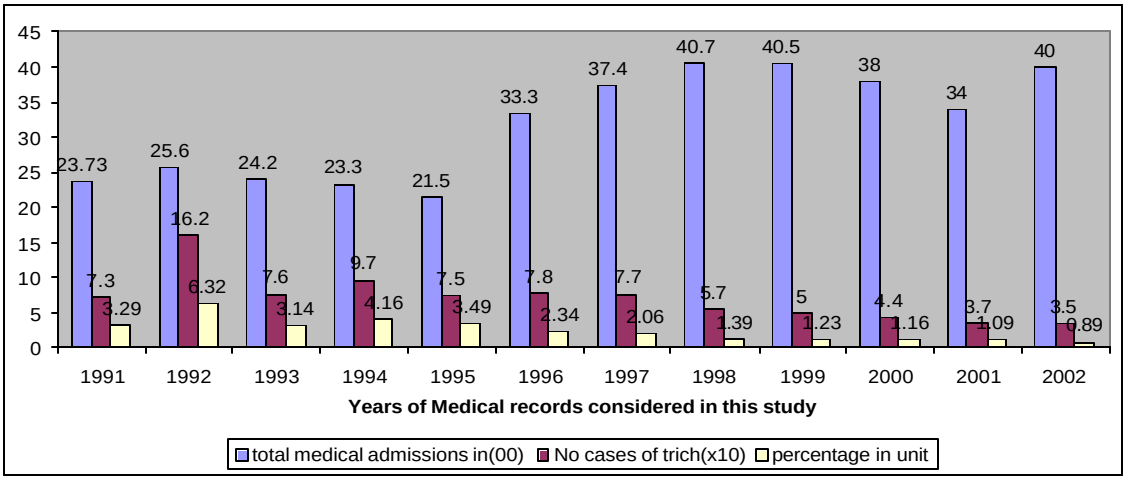

Fig. 7: Number of medical admissions and patients with cases of trichomoniasis and their percentage (1991 – 2002)

From this study, trichomoniasis was more prevalent among the age group 18 and above in hospitals B, A, F and H with prevalence values of 95.6, 94.2, 93.3 and 92.0%, respectively. In the case of age group 12 - 17, incidence rate was higher in hospitals I, G and D with values of 20.6, 17.6and 16.1%, respectively. Among the age group 1 - 11; no incidence of trichomoniasis was recorded in hospital I in this age group. The highest incidence among the group was in hospital E and C where values of 13.0 and 8.1% were recorded (Fig. 2, 3).

With respect to yearly occurrence of trichomoniasis among age groups, we observed the highest prevalence among age 18 and above in 1992 with a value of 143, followed by 1994(81) and 1991 (70) (Fig. 2). The prevalence of trichomoniasis decreases as we move from 1991 down to 2002. Among the age group 12 - 17, incidence appeared higher in 1994(16), followed by 1996(12), 1992(11) and 1993(10). There were no incidence of trichomonal infection recorded among the age group in 2001 and 2002. Among the age group 1 - 11, incidence was higher in 1992(12) than any other year. However, no incidence was recorded for this age group in the year 2001 and 2002.

Children (1 - 11) appear to have lower infection rate than adolescents (12 - 17) than adults (18 and above). Hospital A had the highest number of patients diagnosed for trichomoniasis with a value of 346. This was followed by B, D, E and C, respectively. These are all public hospitals. The lowest prevalence was recorded in private hospitals F (45), G (34), H (25) and I (34) (Fig. 2, 3, 4). The prevalence rate seemed skewed to public hospitals. This is expected in view of the fact that the poor with their poor socioeconomic status cannot afford the exorbitant fee charged in private hospitals, as a result they tend to patronize public hospitals. Fig. 5 shows the number of diagnosed cases of trichomoniasis in all hospitals with concomitant downward trend in the prevalence of trichomonal infection.

On the basis of hospitals, analysis of variance (ANOVA) showed that F-calculated was greater than F-table (6.873895>2.30), implying that there is significant difference between the means of cases of patients diagnosed to have trichomoniasis in various hospitals. t-test analysis showed there was no significant difference between the means of patients diagnosed with trichomoniasis in public and private hospitals. However, in all analysis Hospital A had the highest cases of patients admitted with trichomoniasis. While the incidence of trichomoniasis appear more pronounced in public hospitals than private hospitals (Figs. 2-5).

On the basis of Age we observed that F-calculated was greater than F-table (6.192799>4.32), indicating that there was significant difference between the age-groups with respect to the means of cases of patients diagnosed to have trichomoniasis. Furthermore, using least square difference (LSD), we observed a significant difference between age-group 1 - 11 (children) and 12 -17 (adolescents) but there was a high significant difference between age-group 18 and above (adults) and other age-groups. Inference was therefore made that individuals above 17 had the highest cases of trichomoniasis (Fig. 2-4).

On the nature of sample, t-test analysis showed that t-calculated was less than the t-critical value (1.38<2.201), implying that there was no significant difference between the means of cases of patients diagnosed to have trichomoniasis based on the nature of sample used for diagnosis. It was also noted that the incidence of trichomoniasis was highest in the year 1992 among all age groups with the disease more pronounced among the 18 and above age group (Fig. 2). Hospital A recorded the highest prevalence cases in the 18 and above (346) age group, while it was least in Hospital I. Fig. 2, 4 shows the age distribution of trichomoniasis among the various hospitals. Fig. 6 shows the various attendances, the number of patients with trichomonas infections and the percentage prevalence of trichomoniasis from hospital to hospital, while Fig. 7 shows the percentage total medical admissions, percentage cases of trichomoniasis for the 12-year period.

DISCUSSION

Trichomonas vaginalis is a protozoan parasite of man that is responsible for human trichomoniasis with an incidence of 10 to 50% in sexually transmitted diseases. The organism has a worldwide distribution and causes approximately 180 million infections annually, making it the most prevalent non-viral sexually transmitted disease (STD) agent [39, 42, 43]. In the recent past, the problem of vaginitis has all too often been ignored by the medical community or regarded merely as minor annoyance to females. But succinctly, vaginitis must have cause more unhappiness on earth than any other gynecologic disease.

In this study we observed a high prevalence of trichomoniasis among patients attending some defined hospitals in Lagos State and we believe that the trend will be the same throughout the major cities in Nigeria. The high prevalence rate as observed in this survey may be

due to the fact that trichomoniasis is one of the commonest of the sexually transmitted diseases. Sorvillo. [13] reported that *T. vaginalis* is highly prevalent among African-American in major urban centres of the United States and often the most common sexually transmitted infection in black women. Cates [3] in their study observed that *T. vaginalis* is one of the most common sexually transmitted infections in the United States with an estimated 5 million new cases occurring annually.

Incidence of trichomoniasis was higher in year 1992 among 18 and above age group than other years and higher in public compared to private hospitals, with Hospital A leading in terms of prevalence among admitted patients in all hospitals. In a study conducted in two island population of Vanuatu, Fotinatos [44] observed that the prevalence rate of *T. vaginalis* in Efate and Ambae were 14.7 and 43.4%, respectively. They noted that infection rate was less in the capital city (Efate) than rural city of Ambae. The prevalence rate of 2.27% in Lagos State Nigeria noted in this survey might be higher were the study conducted in rural areas in Nigeria. Fotinatos [44] asserted that cultural and educational differences in the rural setting might also contribute to higher sexually transmitted disease rates among women.

With respect to the occurrence and prevalence of trichomoniasis among different female age groups, we observed a high level of incidence among the age group 18 and above. Of the 876 patients diagnosed for trichomoniasis 768 (87.7%) were of the age group 18 and above over the 12-year period. This result demonstrated that trichomoniasis is mainly a disease of sexually active women. Hardy [19] observed trichomoniasis among 338 state schools adolescents in Oregon, United States and among 115 pregnant adolescents in Baltimore, United States and the prevalence of Gram stain and culture were 35 and 34%, respectively. Although we did not ascertain if there were pregnant adolescents women among the patients attending these hospitals it is likely they form a considerable proportions of the attendance more so as this group fall within sexually matured women. Segundo [45] working in Peru, found a moderately high prevalence of trichomonal infections among women and also noted that infection was associated with unprotected sex and multiple sex partners. In another study conducted in India by Kaur [46] using different female cohorts with different disease conditions they noted asymptomatic state, mild, moderate and severe trichomoniasis depending on the disease conditions considered in the female cohorts. Conclusively, they averred that trichomoniasis was significantly associated with being a housewife, belonging to middle socioeconomic status and nonuse of contraceptives. A study conducted in Ibadan, Nigeria [20] to determine the prevalence of *T. vaginalis* among commercial sex workers, they observed the organism among the age range 20 - 29 years, which corroborate our finding in this study showing that trichomonal infection is of the sexually active female in the age group 18 and above.

The prevalence of trichomoniasis among the age groups 1 - 11(children) and 12 - 17(adolescents) was quite low with the prevalence rate being 52 (5.9%) and 56 (6.4%), respectively over the 12-year period. This low prevalent rate explains that these age groups have not been involved actively in sexual activities except few of them who had either been defiled or were lured into the act by peer group. It is also positive that they may have contacted it from the toilet basin used by female adults. It is also important to stress here the role peer groups could play in the spread of sexually transmitted infections, including trichomoniasis. The difference between the prevalence of trichomoniasis among the age group 1 - 11 and 12 - 17 is not statistically significant. Lossick [4] asserted that rates of trichomoniasis are more evenly distributed among sexually active women of all age groups. This may have been responsible for the low rate of occurrence observed among age groups 1 -11 and 12 - 17 in this survey. Peer group influence has been responsible for early involvement in immoral and criminal acts among young children. It has been very difficult to address this behavior in several societies, the act being more pronounced in developed than developing nations. The differences we observe in the prevalence of trichomoniasis by age group agree with findings in other studies [47, 48]. It speaks to the fact that age is a risk factor for this infection in pregnant women < 20 years, perhaps due to poorly developed resistance among the very young. Together our data suggested a possible increase in vaginal immunity with age. The reports on incidence of trichomoniasis in other studies have mainly been on pregnant women where higher incidence has been reported. For example, in a study done in Havana City, Cuba the prevalence rate for trichomoniasis was between 7.5and 12.1% [49].

From this study we observed a gradual decline in the incidence of trichomoniasis in Lagos State. This is in line with some of the published literature which reported that there has been a consistent decline globally [22, 47,50]. However, results vary very widely from 0 to 34% [24, 26, 28, 29].

Keeping in mind that this infection can be a cause of premature childbirth and indirectly a cause of newborn deaths, our findings confirm the necessity to increase measures against this infection during gestation, including correct diagnosis and appropriate treatment as well as educating our population about these infections [51]. As *T. vaginalis* depends on several factors such as age, sexual activity and the number of sex partners, a better understanding of the epidemiology of this infection in women becomes crucial to foster disease control programmes in populations at risk for reproductive health complications. Efforts to control spread of trichomonal infection are necessary and the prevalence rate observed in this study is of public health concern.

In conclusion, despite the continued high numbers of cases and the potential complications of infection, trichomoniasis remains ignored as a public health issue. The only settings in which this infection is routinely screened is in public health STD clinics and the screening test used is the vaginal wet preparation which has limited sensitivity. Successful control of STDs is greatly aided by the use of a sensitive screening test, treatment of infected partners and the availability of effective single dose medication. To date, only the latter is widely available for trichomoniasis. The prevalence observed in this study is public health concerned and effort must be jeered towards screening those who are mostly at risk, especially the commercial sex workers.

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