

COMPARATIVE STUDY OF THE PREVALENCE OF SEXUALLY TRANSMITTED DISEASES BETWEEN PREGNANT AND NON-PREGNANT WOMEN IN IMO STATE, NIGERIA.

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ABSTRACT.

A total of 1,219 pregnant and 6,134 non – pregnant women were examined for sexually transmitted diseases (STDs) between March 2001 and April 2002, in Imo State, Nigeria. Urine samples, vaginal swabs and blood samples were collected from each respondent. A 20 – item questionnaire was administered to each respondent to elucidate vital information that will aid in the analysis of data obtained from laboratory examination of the specimens. Urine samples and urethral or vaginal swabs were analysed using direct wet smear, Gram - stained smear and culture technique, while blood samples were examined serologically using standard proprietary reagents for syphilis (VDRL), *Chlamydia trachomatis* infection and HIV - screening. Laboratory findings revealed that 205 (16.82%) pregnant and 2,380 (38.80%) non-pregnant women were infected with sexually transmitted diseases. The most prevalent - sexually transmitted disease among pregnant (5.82%) and non - pregnant (12.19%) women was gonorrhoea, while the least prevalent was genital chlamydia infection caused by *Chlamydia trachomatis* infection with prevalence of 0.25% for pregnant and 0.85% for non – pregnant women. Statistical analysis of the data showed there was a significant difference ($p < 0.05$) in the prevalence of STDs between pregnant and non – pregnant women in Imo State. The prevalence of STDs among pregnant women was found to be related to the stage of pregnancy; it was observed that those in the first trimester had the highest prevalence of STDs.

INTRODUCTION.

Gender – based studies on Sexually transmitted diseases (STDs) have observed that for several reasons, women are more susceptible to STDs than their male counterparts. Biologically, Paterson (1996) observed that women are more vulnerable than men to all STDs. She was of the opinion that while men have 25% chance of contracting gonorrhoea from unprotected sex with an infected woman, women have 50% chance of contracting it from an infected man. Kit and Safaids (1998) further opined that certain cultural practices such as female genital mutilation (circumcision), excessive rubbing of the genitals during fore – play and intercourse or rough sex, use of herbs and other substances in the vagina to effect muscular contraction and dryness, which will culminate to tightness, etc make women more susceptible to STDs than men. In both developed and developing countries of the world, sexual violence against women has been on the increase since the last decade of the 20th century. Doeden (2000) observed that women in distress are often forced to offer sex in exchange for food, shelter or protection. Female workers in industries and public offices are frequently abused sexually by their male bosses or colleagues. Soroptomists and SPC co-operate (1994) reported that in Fiji, 8 out of 10 domestic workers are sexually abused by their bosses. This sexual violence exposes more women to risks of STDs than men.

The risks of transmission of STDs via medical equipment such as examination instruments, surgical materials used for abortion and Caesarea section, child delivery equipment, etc have been reported by some authors (Acholonu, 1980; Jawetz *et al.*, 1982). In Nigeria, studies have reported higher prevalence of STDs among women than men (Osoba, 1974; Anosike *et al.* 1993; Njoku *et al.*, 2000a). Acholonu (1987) reported prevalence of 31.5% of trichomoniasis among pregnant women and 29.6% among non – pregnant women in Abeokuta, Western Nigeria. Ogbonna *et al.*, (1991) reported a prevalence of 37.6% among pregnant

women in Jos, Northern Nigeria, while Njoku *et al.*, (2000b) reported 20.14% prevalence among women in Owerri, Eastern Nigeria.

The public health implications of STDs among women include severe inflammation of the pelvic cavity, which make it difficult or impossible for a woman to become pregnant (Getchell, Pippin and Varnes, 1991). There might be abdominal pain from pelvic inflammatory disease (PID). The most serious of these diseases is infection of the uterine tubes (salpingitis), which causes infertility in 10 to 15% of women while 50 – 70% become infertile after 3 or more such infections (Dean *et al.*, 1993). Genital warts may become cancerous, while women who have herpes may face an increased risk of cervical cancer (Getchell, Pippin and Varnes, 1991). Reddening of the vulva, vaginitis, purulent discharge and severe itching may result from different types of STDs (McLareh *et al.*, 1983; Smyth, 1994; Obiajuru, 2000). Infections of the lower parts of the genital tract may spread to the higher structures including the cervix and fallopian tubes. Infections of the upper regions of the genital tract are particularly serious during pregnancy and can cause abortion.

In Imo State, majority of women are petty traders, junior staff in private and public offices, housewives, etc. With the prevailing hard economic situation in the State and country generally, some of them are likely to resort to casual sex as a way of making ends meet. Previous workers have argued that increased sexual activity in a permissive society contributes immensely to the increasing rates of STDs in the society (C. D. C. 1998). There is therefore an urgent need in Imo State to carry out a survey of sexually transmitted diseases among pregnant and non – pregnant women.

MATERIALS AND METHODS.

Urine specimens, vaginal swabs and blood samples were collected from 1,219 pregnant and 6,134 non – pregnant women from three zones of Imo State: Owerri (Owerri urban, Mbaitoli, Ikeduru and Ngor Okpala L. G. A), Okigwe (Okigwe

town, Ehime Mbanu, and Onuimo L. G. A.) and Orlu (Orlu urban, Orsu, Oru East and Njaba L. G. A). The respondents were randomly selected from the various communities with the assistance of community women leaders, trade union leaders and community health officers in the various Local Government Areas. A 20 - item questionnaire, including pregnancy status and stage (trimester) of pregnancy, was administered to the respondents to obtain vital information that will be used to analyse the results. The urine samples, high vaginal swabs (HVS) and blood samples were transported to the Medical Parasitology Laboratory (Dept. of Zoology) Imo State University, Owerri for analysis.

Mid stream early morning urine (E. M. U) samples were collected in sterile glass universal bottles, sterilized by autoclaving (Cruickshank *et al.*, 1982). Each urine sample was cultured on chocolate agar, Thayer - Martin and Saboraud Dextrose agar media using streaking technique as described by Cheesbrough (1992). Chocolate agar and Thayer - Martin were incubated at 37°C in moist CO₂ enriched environment for 24 Hours, while 5% of Gentamycin was added to Saboraud Dextrose agar to inhibit bacterial growth and incubated at 37°C for 24 hours. A 1ml aliquot of each urine sample was poured into a clean test - tube and spun at 3500rpm for 5min as described by Njoku *et al.*, (2000c). The supernatant fluid was decanted and the deposit mixed with the last drop that drains back into the tube. A drop of the deposit of each sample was placed on clean grease - free slide, covered with coverslip and examined microscopically as described by Njoku *et al.*, (2000) with low power x10 and dry high power x40 objectives.

A sterile speculum was inserted into the vagina of each respondent to expose the vagina and the upper region of the vagina was swabbed directly by inserting a sterile Evepon swab stick through the speculum. Vaginal swabs were cultured on chocolate agar, Thayer - Martin and Saboraud Dextrose agar media as described above for the urine samples. A drop

of physiological saline was introduced into each sterile swab stick (Evepon) used to collect the samples and mixed by shaking vigorously. A drop of the mixture was taken to a clean glass slide, covered with coverslip and examined microscopically (Njoku *et al.*, 2000c).

Blood samples were collected by venepuncture and allowed to clot. The serum of each sample was separated into clean test tube and centrifuged at 3500rpm for 5minutes to remove traces of erythrocytes. Each sample was tested serologically for syphilis (VDRL), according to Cheesbrough (1992), *Chlamydia trachomatis* and Human Immune deficiency virus (HIV) using standard proprietary reagents (Biotec carbon antigen for syphilis, Immunocomb II manufactured by ORGENICS for *C. trachomatis* and Q - spot for HIV - screening). The procedures described in the manufacturers label for each proprietary reagent were strictly adhered to.

Statistical analysis.

The data obtained from the pregnant and non - pregnant women and the data on the rate of infection and the stage of pregnancy amongst pregnant women were subjected to Chi square statistical analysis as described by Philips (1973).

RESULTS.

Laboratory findings (Table 1) revealed that 205 (16.8%) out of 1,219 pregnant women were infected with STDs while 2,380 (38.8%) out of 6,134 non - pregnant women were infected with sexually transmitted diseases in Imo State. The most prevalent infection among pregnant women (5.8%) and non - pregnant women (12.2%) was gonorrhoea. The overall prevalence of STDs (gonorrhoea, trichomoniasis, Syphilis, genital chlamydiasis, HIV and candidiasis) among the respondents (pregnant and non-pregnant) was 2,639 (35.3%) out of 7,474 respondents. Statistical analysis showed there

TABLE 1: PREVALENCE OF STDs AMONG PREGNANT AND NON-PREGNANT WOMEN

PLACE OF SURVEY	PREGNANT		NON - PREGNANT	
	NUMBER EXAM	NUMBER INFECTED (%)	NUMBER EXAM	NUMBER INFECTED (%)
URBAN	576	81 (14.1)	3,138	1,279 (40.8)
RURAL	643	124 (19.3)	2,996	1,101 (36.8)
TOTAL	1,219	205 (16.8)	6,134	2,380 (38.8)

TABLE 2: DISTRIBUTION OF STDs AMONG PREGNANT AND NON - PREGNANT WOMEN IN IMO STATE.

INFECTION	TOTAL NO. OF RESPONDENTS INFECTED	NUMBER OF PREGNANT WOMEN INFECTED (%)	NO. OF NON - PREGNANT WOMEN INFECTED (%)
<i>N. gonorrhoeae</i>	842	71 (5.8)	748 (12.2)
<i>T. vaginalis</i>	673	40 (3.3)	606 (9.9)
<i>C. albicans</i>	757	19 (1.7)	724 (11.8)
<i>C. trachomatis</i>	65	3 (0.3)	52 (0.9)
<i>N. gonorrhoeae</i> & <i>C. albicans</i>	85	11 (0.9)	53 (0.9)
<i>T. vaginalis</i> & <i>C. albicans</i>	72	10 (0.8)	52 (0.9)
<i>N. gonorrhoeae</i> & <i>T. vaginalis</i>	64	27 (2.2)	30 (0.5)
Syphilis	64	27 (2.2)	30 (0.5)
HIV - Positive	92	20 (1.6)	70 (1.1)
	56	4 (0.3)	45 (0.8)
TOTAL	2,706	205 (16.8)	2,380 (38.8)

TABLE 3: COMPARISON OF THE PREVALENCE OF STDs AMONG PREGNANT WOMEN IN THREE TRIMESTERS

PLACE OF SURVEY	1 ST TRIMESTER		2 ND TRIMESTER		3 RD TRIMESTER	
	NUMBER EXAMINED	NUMBER INFECTED	NUMBER EXAMINED	NUMBER INFECTED	NUMBER EXAMINED	NUMBER INFECTED
URBAN	270	44 (16.3)	208	27 (12.98)	98	10 (10.2)
RURAL	324	64 (19.8)	203	33 (16.3)	116	27 (23.3)
TOTAL	594	108 (18.2)	411	60 (14.6)	214	37 (17.3)

TABLE 4: OCCUPATIONAL - RELATED PREVALENCE OF STDs AMONG PREGNANT AND NON - PREGNANT WOMEN IN IMO STATE.

OCCUPATION	PREGNANT WOMEN		NON PREGNANT		TOTAL PREVALENCE (%)	
	NUMBER EXAM.	NUMBER INFECTED	NUMBER EXAM.	NUMBER INFECTED		
Civil Servants	151	17 (11.3)	1204	513 (42.6)	530	(39.1)
Private Business Employee	190	34 (17.9)	1084	432 (39.9)	466	(36.6)
Self -Employed	184	20 (10.9)	1410	501 (35.5)	521	(32.7)
Traders	492	91 (18.5)	1129	450 (39.9)	541	(33.4)
Housewives	202	43 (21.3)	1307	484 (37.0)	527	(34.9)
TOTAL	1,219	205 (16.8)	6,134	2,380 (38.8)	2,585	(35.2)

was a significant difference in the prevalence of STDs between pregnant and non-pregnant women in Imo State ($p < 0.05$).

The pregnancy status of 121 women in this study was not known because they did not supply adequate information in their questionnaires. Of this number, 54 (44.6%) were infected with STDs (gonorrhoea, trichomoniasis, Syphilis, genital chlamydiasis, HIV and candidiasis).

Comparatively, the prevalence of STDs was higher among non-pregnant women (38.8%) than pregnant women (16.8%) as shown in Table 1 above. As shown, the prevalence of STDs was higher among rural pregnant women (19.3%) than urban pregnant women (14.1) while among non-pregnant women, prevalence of STD was higher among urban (40.8%) than rural (36.8%) respondents. Table 2 shows the prevalence of different sexually transmitted infections among pregnant and non-pregnant women in Imo State. In Table 3, the prevalence of STDs among pregnant women was highest in the 1st trimester (18.2%), followed by those in the 3rd trimester (17.3%) and those in their 2nd trimester (14.6%), although there was a remarkable imbalance in the population size of respondents in the 1st and 3rd trimesters. Table 4, shows occupation - related prevalence of STDs among pregnant and non-pregnant women in Imo State. Among pregnant women, prevalence of STDs was highest among housewives (21.3%) and least among self-employed women (10.9%). However, among non-pregnant women, prevalence of STDs was found to be highest among civil servants (42.6%) and least among self-employed women (35.5%). Analysis of the data using chi-square showed there was significant difference in distribution of STDs among pregnant and non-pregnant women of different occupational background ($p < 0.05$).

DISCUSSION

Sexually transmitted diseases have obvious public health significance, which calls for urgent attention by Government and public health workers. The prevalence of STDs not only reflects contemporary sexual behavioural

patterns, but may in part reflect changes in reporting and recording cases of these diseases. The social implications inherent in the transmission of these diseases often overshadow the fact that they are infectious diseases and must be treated as medical problems with emphasis on curing the patient and reducing the incidence of the disease by preventing the spread of the infectious agents.

The present study has indicated a high prevalence of STDs among pregnant and non-pregnant women in Imo State. Ogbonna *et al.* (1991) reported 37.6% of *Trichomonas vaginalis* infection among pregnant women in Jos Plateau State, which is higher than that observed among pregnant women (16.82%) in the present study, but corroborates the prevalence of STDs among pregnant and non-pregnant women (35.16%) in the present study (Table 4). The most prevalent STD among pregnant and non-pregnant women in the present study is gonorrhoea. This corroborates the report of Wasserheit (1989) that gonorrhoea is the most prevalent STD among women in Africa. Although the precise cause of increase in the prevalence of gonorrhoea among women and the society generally is unknown, some workers have blamed increased sexual activity and moral laxity in the society. Others were of the opinion that the use of oral contraceptives, which alter the vaginal pH, plays a major role in the increased ability of *Neisseria gonorrhoeae* to survive, leading to increase in transmission rates of the infection (Ogbonna, *et al.*, 1991, Njoku *et al.*, 2000b; C. D. C. 1989). The observation, that the use of oral contraceptives increases the risks of STDs may explain why STDs were more prevalent among non-pregnant women (38.8%) than pregnant women (16.8%) in the present study.

The higher prevalence of STDs among urban women than rural women (Fig 1) may be blamed on increased moral laxity in urban centers. The problem of unemployment, meager salaries of female workers, late or non-payment of salaries and increased hardship in the urban centres compel women to indulge in commercial sex business full or part-time to make ends meet. Previous workers have reported that in different parts of the world, sexual intercourse with a woman may be her means of paying for food, services or favours shown to her

(Doeden, 2000, Paterson, 1996). Besides, increased violence against women and sexual abuse are commonplace in urban centers than rural communities where such acts are regarded as taboo. Distressed women in urban areas may offer sex for shelter and protection without knowing the health status of the host. Kit and Safaids (1998) observed that physical and sexual violence against women are commonplace in urban areas. In an earlier report, Kit and Safaids, (1998) reported that an estimated 370,000 women are raped every year in South Africa, while in the United States of America, a woman is raped every 6 hours.

These are aspects of urban life that expose women to the risks of STDs.

Sexually transmitted diseases are more prevalent among pregnant women in their first trimester probably because there are more sexual activities during this stage than later stages when the woman is more gravid and rarely indulges in sexual intercourse. The close prevalence rate between pregnant women in their first trimester and those in their third trimester may be attributed to the in-balance in the population size of the two groups.

Occupation - related prevalence of STDs showed that civil servants had the highest prevalence (39.1%) while self-employed women had the least prevalence. This may be due partly to the meager salaries of civil servants and late payment of salaries. To make ends meet, women in civil service may indulge in paid-sexual intercourse with their boss, office colleague or boy friend. This speculation is further buttressed by the observation of low prevalence of STDs among pregnant civil servants (11.3%) compared to 42.6% prevalence among non-pregnant civil servants. The pregnant civil servants spend more time at home. They often get tired with office work and try to leave for home even before closing hours. Shortly after, they embark on maternity leave, confined to their homes. Above all during pregnancy women take absolute care of themselves medically and nutritionally.

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