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LOW PREVALENCE OF *CHLAMYDIA TRACHOMATIS* INFECTION IN WOMEN FROM SOUTHERN NIGERIA

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Abstract :

Chlamydia trachomatis infections are the most common bacterial cause of sexually transmitted diseases (STDs) in the world. However, most Nigeria health care facilities do not screen for *Chlamydia* antigen in gynaecological and general out-patient clinics. This study was to document the prevalence of *Chlamydia trachomatis* infection in patients attending Family Planning Clinics and Gynaecology clinics in Southern Nigeria. Endocervical swabs were collected from a hundred and forty patients and were screened using Chlamydia Rapid Test Device –Swab / Urine (Interchemical Ltd. China). Out of 140 patients screened, 1 (0.7%) was positive for *Chlamydia trachomatis* antigen. There seem to be an association between *Chlamydia* infection and abortion thus screening for *chlamydia* trachomatis infection in asymptomatic patients to prevent the adverse consequences. This study presents an update in Chlamydia trachomatis in the Southern part of Nigeria.

Keywords: Chlamydia trachomatis, prevalence, women, southern, Nigeria

Introduction :

Chlamydia trachomatis is the most prevalent sexually transmitted bacterial infection worldwide, with an estimated 4-5 million new cases each year. *Chlamydia trachomatis* is the most implicated organism in infertility.[1] Up to 40% of women with untreated Chlamydia develop symptomatic Pelvic Inflammatory Disease and are at high risk of severe complications including chronic pain, ectopic pregnancy and infertility. Chlamydia is also the cause of Trachoma blindness, affecting over 90% of the population in some developing countries.[2] Untreated cases of chlamydia can spread to the uterus causing pelvic inflammatory disease.[3] In the developing world, laboratory services for sexually transmitted infections (STIs) are either not available, or where limited services are available, patients may not be able to pay for or physically access those services.[4]

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When tests are performed in many areas, diagnosis of *C. trachomatis* genital infection is only performed in selected populations and is often based on the presence of clinical symptoms. Considering the high rate of asymptomatic chlamydial infection, particularly in women, a substantial "silent" or undetected epidemic of *C. trachomatis* infections could put this population at significant risk for HIV infection.[5]

In women with previous or invasive *Chlamydia* infection as indicated by the presence of 1gM antibody against *C. trachomatis*, increased rates of preterm delivery, premature rupture of membranes, low birth weight, and still birth have been observed. Infection with *C. trachomatis* is also implicated in post abortal, post Caesarean section, and post partum maternal infections.[6] Commonly unrecognized and often poorly or inadequately treated, *Chlamydia* infections can ascend the reproductive tract resulting in pelvic inflammatory disease (PID) and, consequently, lead to chronic pelvic pain, ectopic pregnancy, and infertility.[7] Premarital sexual intercourse

and intercourse with multiple partners have been shown to be significant risk factors for *C. trachomatis* as well as HIV infection and it is also associated with an increased risk of cervical cancer.[8]

In many developed countries, screening programmes for Chlamydia have been set up to reduce transmission and reproductive tract morbidity. In most parts of Nigeria, *C. trachomatis* are not routinely screened for, hence relative information about frequencies of the infection are gotten from individual laboratory reports and research projects of limited study areas.[9] A study of prevalence of Chlamydia infection in women attending family planning clinic and obstetrics and gynaecological clinic will provide valuable information on evidence for the need to include its screening as a routine antenatal care in our health care facilities. The aim of this study was to determine the prevalence of *C. trachomatis* in patients attending gynaecological and family planning clinics in Southern part of Nigeria.

Materials and Mathod :

Study population: The study population were patients attending Family Planning and Obstetrics and Gynaecology clinics from selected Hospitals in Southern part of Nigeria. They were patients who volunteered to participate in the study. A total of 140 endocervical swabs (ECS) samples were collected from Osogbo in Osun State, 62 samples were collected from the Family Planning clinics, 22 samples from Ladoke Akintola University of Technology Teaching Hospital (L.T.H) and 40 samples from Asubiaro state Hospital, 38 samples were collected from Obstetrics and Gynaecology clinic of Adeoyo Maternity Hospital (A.M.H) and 40 samples were collected from the Family Planning clinic of University of Benin Teaching Hospital (U.B.T.H).

Sampling technique: Convenience sampling techniques was used in which women who were willing, and met the inclusion criteria were recruited consecutively during the period of the study; a structured questionnaire was applied after which an informed consent was obtained.

Sample collection: Endocervical swabs were collected with the assistance of the medical personnel (The Nurses). Cusco Vaginal Speculum was inserted into the vagina for the visualization of the cervix. A swab stick was inserted through the speculum into the endocervical canal and rotated. This permitted acquisition of columnar or cuboidal epithelial cells which are the main reservoir of Chlamydia organism. It was withdrawn without contamination from exocervical or virginal cells. The swabs were transported promptly to the laboratory and processed within 30 minutes of collection. Structured questionnaire was used to obtained demographic details and other relevant information such as number of sex partner, use of contraceptives, past STDs, educational status, knowledge about the *C. trachomatis* infection, etc from the participants.

Sample analysis: Collected samples were analysed using Chlamydia Rapid Test Device -Swab/Urine (Interchemical Ltd. China). The Chlamydia Rapid Test Device (Swab/Urine) is a qualitative, lateral flow immunoassay for the detection of Chlamydia antigen from female cervical swab, male urethral swab and male urine specimens. In this test, antibody specific to the Chlamydia antigen is coated on the test line region of the test. During testing, the extracted antigen solution reacts with an antibody to Chlamydia that is coated onto particles. The mixture migrates up to react with the antibody to Chlamydia on the membrane and generates a coloured line in the test line region. The presence of this coloured line in the test line region indicates a positive result, while its absence indicates a negative result. To serve as a procedural control, a coloured line will always appear in the control line region indicating that proper volume of specimen has been added and membrane wicking has occurred (Chlamydia Antigen Rapid test). The test procedure was conducted according to the manufacturer's instruction manual described by Sanders *et al*.[10]

Results :

Of the one hundred and forty samples screened for *Chlamydia trachomatis* antigen only one from U.B.T.H was

Keywords : Chlamydia trachomatis, prevalence, women, southern, Nigeria - Adesiji Y O

positive (Table 1). Results as regards subject's sexual partner in Table 2 revealed that in L.T.H 22 subject had one sexual partner, in Asubiaro; 10 had no sexual partner while 30 had one sexual partner, in A.M.H 38 had one sexual partner and in UBTH 4 had no sexual partner while 36 had one sexual partner. In totality, the majority (127) subjects had one sexual partners while few (13) subjects had no sexual partners. Table 2 also showed the use of contraceptives among subjects. In L.T.H the entire 22 subjects were on contraceptives (18 IUCD and 4 Injectable), amongst subjects in Asubiaro, 30 were on IUCD and 10 with no use of contraceptive, A.M.H 38 of them were not on contraceptives and for U.B.T.H 30 were on IUCD while 10 use no contraceptive. Of all 140 patients, 82 were on contraceptive while 58 did not use. Table 2 further revealed that all (140) patients had no past incidence of STDs.

In term of educational status and knowledge about *Chlamydia trachomatis*, table 3 showed that 18 subjects had tertiary education, 1 with secondary school education, 1 with primary school education and 1 had none in L.T.H. Subjects from Asubiaro, 27 had tertiary education, 10 had secondary education and 2 had primary education. In A.M.H, 22 subjects had tertiary education, 12 had primary education, and 7 had primary education. Among U.B.T.H subjects, 36 had tertiary education and 3 had secondary education. Table 3 also revealed subjects knowledge about chlamydia trachomatis, few (10 subject in total) 3 LTH, 4 ASUBIARO and 3 U.B.T.H had knowledge about the infection.

From the data obtained, the age range with the highest frequency was 30 – 39years having 69 subjects followed by 35 – 39years having 41 subjects and then 25 – 29years having 16 subjects. The least value was obtained from age 45 years and above having 2 subjects, 1 from L.T.H and 1 from U.B.T.H (Table 4). Results of data collected on events in the study sites showed that 15 in totality subjects had dysuria, no cases of pre-matured birth, 6 had miscarriage, 10 were for abortion, 14 were experiencing change in menstrual cycle, and 25 subjects were also for abnormal vaginal discharge treatment. The highest number, subjects (37) were for lower abdominal pain treatment (Table 5).

Table 1 : Shows the number of sample collected from each sites, number of positive results and the incidence.

STUDY SITES	SAMPLE COLLECTION	POSITIVE RESULTS	PERCENTAGE (%)
L.T.H	22	0	0
ASUBIARO	40	0	0
A.M.H	38	0	0
U.B.T.H	40	1	2.5
TOTAL	140	1	0.7

Note: 0 = negative (negative results absence of coloured line)
1= positive (positive results presence of coloured line)

Table 2 : Frequency distribution of risk factors among female subject in the study sites

RISK FACTORS	L.T.H	Asubiaro	A.M.H	U.B.T.H	Total
Number of sex partner					
No sexual partner	-	9	-	4	
one sexual partner	22	31	38	36	13
one and above	-	-	-	-	127
Use of Contraceptives					
IUCD	18	30	-	30	78
Injectable	4	-	-	-	4
No IUCD	-	10	38	10	58
Past STDs					
Yes	-	-	-	-	-
No	22	40	38	40	140

Table 3 : Frequency distribution of Educational status and knowledge of Chlamydia trachomatis amongst female subjects

	L.T.H	Asubiaro	A.M.H	U.B.T.H	Total
Educational status					
Tertiary	18	27	19	34	98
Secondary	1	11	12	4	28
Primary	2	2	7	2	13
None	1	-	-	-	1
Knowledge					
Yes	3	4	-	3	10
No	19	37	38	38	130

Table 4 : Frequency distribution of age female subjects

AGE RANGE (YEARS)	L.T.H	Asubiaro	A.M.H	U.B.T.H	Total
20 - 24	-	2	4	-	6
25 – 29	10	3	10	3	16
30 - 34	8	19	20	20	69
35 - 39	3	15	4	14	41
40 - 44	1	1	-	2	6
Over 45	1	-	-	1	2

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Table 5 : Frequency distribution of various events in the study sites of female subjects

Events	L.T.H	Asubiaro	A.M.H	U.B.T.H	Total
Dysuria	3	5	1	9	18
Miscarriage	2	1	1	2	6
Premature Birth	-	-	-	-	-
Abortion	4	4	1	1	10
Change in menstrual cycle	2	8	-	4	14
Abnormal vaginal discharge	8	9	5	3	25
Lower abdominal pain	2	9	14	12	37
Others	1	4	16	9	30

Discussion :

This study reports a low prevalence of 0.1% (1/140) in the population sampled across three Western States of Nigeria. Previous report has shown a high prevalence of the *chlamydia* infection in most parts of Africa.[11] In most parts of Nigeria, *C. trachomatis* are not routinely screened for, hence relative information about frequencies of the infection are based on laboratory reports and research based findings. Despite the fact that women are at a high risk of infection, earlier report by Harry *et al.*[12] stated that there is a sociocultural inhibition that prevents women from reporting sexual symptoms, non-availability of facility to detect the organism in many health units and the largely asymptomatic nature of the disease. The positive result was from University of Benin Teaching Hospital (U.B.T.H), where earlier reports of similar studies in the same location were higher.[9] In north east Nigeria, the report of Amin *et al.*[13] on the outcome of opportunistic screening for *Chlamydia trachomatis* in women seen in the antenatal and gynaecology clinics revealed 9% prevalence. In Eastern part of Nigeria, a report by Ikeme *et al*[14] in a study to determine seroprevalence of *C. trachomatis* among population comprised of 136 female undergraduate students and 150 non-student women, reported an overall prevalence of 29.4%. In Lagos Nigeria, Oloyede *et al*[15] reported that *Chlamydia* screening was positive in 14 (18.2%) among 77 women undergoing infertility. In Port Harcourt, Kennedy *et al*[16] reported 11% rate of prevalence of Chlamydia trachomatis infection among female undergraduate of University of Port- Harcourt, Mawak *et al*[17] reported 56.1% of total of 164 total samples from women tested positive for *C. trachomatis* in Jos (North Central, Nigeria). Only Brabin and colleagues[18] reported a comparable prevalence of 0.5% in 204 girls aged 12±17 years and 8.2% in 206 girls aged 17±19 years in a rural population in South-eastern Nigeria, using cervical specimens.[18] Possible explanation for lower prevalence obtained from this study could be attributed to several factors such as the lower sample size enrolled in the study, and the detection technique employed, with[19] haven stated that molecular detection methods are often more reliable that other methods. Several studies have shown that the major risk factor for chlamydial infection is sexual activities and it is the commonest sexually transmitted organism throughout the world.[(20,21)] In this study, low rate of *Chlamydia trachomatis* among subjects may be due to the fact that majority (127) of 140 screened had on one sexual partner (Table 2). This means that subjects in this category are probably married and no subjects with more than one sexual partner. Also, majority (69) of the subjects were within the range of 30 – 34 years of age. This is in agreement with the previously reported association of *C. trachomatis* infection that it is common in women with a higher number of sexual partners or a new sexual partner[22] that age and marital status were considered as factors for variation of incidence of *Chlamydia trachomatis* and Ikeme, *et al*[14] indicated that age <30 years were independently significant risk factors for cervical antigen positivity. Other factor observed for low prevalence was high use of IUCD among subjects.[23] The results indicate low sexual activities and high use of contraceptives, no subject indicated any past experience of STDs. However, from personal observation and evidence from literature, women in this part of the world may not disclose information that relates to previous sexual habits and infections out of fear of stigmatization and cultural inhibitions, hence so, observation in this study might not indicate the true occurrence of *Chlamydia* infection.

The positive result from this study was obtained from 32 years woman who has had a previous history of abortion. Thus, there seems to be an association between *Chlamydia* infection and abortion. Although, it is not usually scientifically valid to conclude based on one individual

data, it was also observed from the study that the knowledge about *Chlamydial* infection is poor among the women attending Family Planning and Obstetrics and Gynaecology clinic in the study sites despite the fact that majority had attained their tertiary educational status (Table 3). This may be because infections are asymptomatic and among the symptomatic cases, it is seldom severe.[24] It was observed that the low level of knowledge about the infection among women could be a contributing factor for acceleration of the spread of Chlamydia infection in other parts of Nigeria.

This study present an update in Chlamydia trachomatis in the Southern part of Nigeria.

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