

Reprinted from

International Journal
of
Health Research

Peer-reviewed Online Journal

<http://www.ijhr.org>

Abstracting/Indexing

African Index Medicus, Open-J-Gate, Directory of Open Access Journals (DOAJ), Socolar,
EBSCO, Index Corpenicus, Embase

PORACOM
Academic Publishers

International Journal of Health Research

The *International Journal of Health Research* is an online international journal allowing free unlimited access to abstract and full-text of published articles. The journal is devoted to the promotion of health sciences and related disciplines (including medicine, pharmacy, nursing, biotechnology, cell and molecular biology, and related engineering fields). It seeks particularly (but not exclusively) to encourage multidisciplinary research and collaboration among scientists, the industry and the healthcare professionals. It will also provide an international forum for the communication and evaluation of data, methods and findings in health sciences and related disciplines. The journal welcomes original research papers, reviews and case reports on current topics of special interest and relevance. All manuscripts will be subject to rapid peer review. Those of high quality (not previously published and not under consideration for publication) will be published without delay. The maximum length of manuscripts should normally be 10,000 words (20 single-spaced typewritten pages) for review, 6,000 words for research articles, 3,000 for technical notes, case reports, commentaries and short communications.

Submission of Manuscript: The *International Journal of Health Research* uses a journal management software to allow authors track the changes to their submission. All manuscripts must be in MS Word and in English and should be submitted online at <http://www.ijhr.org>. Authors who do not want to submit online or cannot submit online should send their manuscript by e-mail attachment (in single file) to the editorial office below. Submission of a manuscript is an indication that the content has not been published or under consideration for publication elsewhere. Authors may submit the names of expert reviewers or those they do not want to review their papers.

Enquiries:

The Editorial Office
International Journal of Health Research
Dean's Office, College of Medicine
Madonna University, Elele Campus, Rivers State
E-mail: editor_ijhr@yahoo.com or editor@ijhr.org

PORACOM
Academic Publishers

Original Research Article

Open Access

Online Journal

Prevalence and Awareness about Chlamydial Infection in Women Undergoing Infertility Evaluation in Lagos, Nigeria

Received: 20-Aug-08

Revised: 27-Apr-09

Accepted: 01-May-09

Abstract

Purpose: To determine the prevalence and level of awareness of genital *Chlamydia trachomatis* infection and possible correlative factors among women undergoing infertility evaluation.

Methods: The study involved analysis of demographics and results of chlamydia screening in 77 infertile women undergoing evaluation over a six month period in Lagos, Nigeria.

Results: The mean age was 32 ± 6.4 yr (range 20-39 yr). Chlamydia screening was positive in 14 (18.2%). Awareness about the existence, symptomatology, mode of infection and complications was poor. Statistically significant correlation existed between prevalence of chlamydia infection and age, previous history of sexual infection and minimum of one sexual partner in the last one year ($p < 0.05$). The prevalence also increased in secondarily infertile and married women.

Conclusion: Chlamydia prevalence was relatively high in women undergoing infertility evaluation in Lagos, with positive correlative factors being increasing age of women, previous sexual infection and one or more sexual partners.

Keywords: Prevalence; Awareness; Chlamydial infection screening; Infertility; Nigeria.

Oloyede OAO

Fakoya TA

Oloyede AA

Alayo AM

Dept of Obstetrics & Gynaecology,
Obafemi Awolowo College of
Health Sciences, Olabisi Onabanjo
University, PMB 2001, Sagamu,
Ogun State, Nigeria.

***For Correspondence:**

Dr OAO Oloyede, 38 Afariogun
Street, Oshodi, Lagos.

Tel: +234 8032343130

Email: oloyedeoao@yahoo.com

Introduction

Chlamydia is a non motile, obligate intracellular organism [1,2]. Its role in tubal infertility has been documented in many literatures [2,3]. Infertility in most developing countries results from tubal occlusion caused by pelvic infection particularly sexually transmitted infections. Chlamydia Trachomatis is one of the important pathogens responsible for tubal infection [2,3,4]. Unfortunately, the screening for this organism is difficult in many developing countries. There is also an apparent ignorance about the significance of chlamydia infection in infertility compared with that of other infections such as gonorrhoea among women.

In this study, we evaluated the prevalence and awareness of chlamydial infection and the demographic risk factors that correlates with the infection among women undergoing infertility evaluation in gynaecology clinics in Lagos, Nigeria.

Patients and Methods

The study was carried out among women undergoing infertility evaluation in a private specialist gynaecology clinic in Lagos, Nigeria. The centre offers comprehensive gynaecological evaluation and treatment of various gynaecological conditions. It also provides assisted reproductive options to appropriate women as part of its services and patients' management is coordinated by consultant gynaecologists.

The study period was between 1st July and 31st December 2007. One hundred and fifty five women were attended to at the clinic, of which 77 participated in the study. Only patients who attended the clinic for infertility evaluation were included in the study. The demographic characteristic of the women was derived from their case notes, while structured questionnaire was used to obtain information about the awareness of the women about chlamydial infection.

Chlamydia screening was done as part of the evaluation for infertility, after adequate counseling and informed consent obtained. The screening was performed using a commercial kit for the detection of enzyme specific for chlamydia. In the supine position, with legs abducted and flexed at the hip and knee joints, the swab was introduced into the vagina canal approximately 3 – 5 cm (about half of the vaginal canal) and rubbed firmly against the vaginal wall 5 times for adequate collection of sample. It was then returned into the containment tube after which the swab was allowed to mix with solution consisting of an enzyme substrate and allowed to stand for between 10 - 30 min. The result of the test was obtained by comparing the colour change of the swab with a standard chart. A positive result was indicated by a very strong vivid purple or vibrant blue and a negative result by a pale colour of swab.

All information obtained was collated on a data sheet, entered into the computer and analyzed using the Epi Info statistical software package version 6.1 (CDC, Atlanta, USA/WHO, Geneva). Data were presented using simple percentages and Spearman's rank correlation analysis was used where appropriate to determine the association between variables. Chi square test was used to compare proportional data. At 95% confidence interval, 2-tailed p values less than 0.05 were considered to be significant.

Results

Seventy seven women (46.7%) were studied out of the total clinic attendance during the study period. The majority (81.8%) were between 26 and 35 yr of age (age range: 20-39 yr; mean age: 32 ± 6.4 yr) (Table 1).

Sixty eight (88.3%) were married while nine (11.7%) cohabitate but not legally married. Secondary infertility (81.8%) was the common type of infertility among the women (Table 1). Sixty nine (89.6%) women had only 1 sexual partner within the last one year

Table 1: Characteristics of patients

Variable	Number screened n=77 (%)	Number Positive (%)	P value
Maternal Age (yr)			
20-25	5 (6.5)	7 (50.0)	<0.05
26 – 30	36 (46.7)	5 (35.7)	<0.05
31 – 35	27 (35.1)	2 (14.3)	>0.50
35 – 40	9 (11.7)	-	
	$\chi^2 = 1.42, df = 3, r=0.8, p < 0.05$		
Marital Status			
Single	9 (11.7)	1 (7.1)	>0.05
Married	68 (88.3)	13 (92.3)	<0.005
	$\chi^2 = 10.28, df = 1, r=1.0, p>0.05$		
Type of Infertility			
Primary	14 (18.3)	2 (14.3)	>0.05
Secondary	63 (81.8)	12 (85.7)	<0.005
	$\chi^2 = 7.14, df = 1, r=1.0, p>0.05$		
Number of previous sexual partners (last 1 year)			
1	69 (89.6)	12 (88.7)	>0.05
2	4 (5.2)	2 (14.3)	>0.05
3	4 (5.2)	-	-
Previous history of Sexual Infection			
Yes	45 (58.4)	10 (71.4)	>0.05
No	32 (41.6)	4 (28.6)	>0.05
	$\chi^2 = 3.56, df = 1, p < 0.05$		

and 4 (5.2%) each had 2 and 3 sexual partners within same period. (Table1).

Chlamydia screening was positive in 14 (18.2%) women. Only 2 (14.3%) of the positive cases had symptoms of genital infection. Twelve (85.7%) of the screen positive women were below 30 yr and 2 (14.7%) were above 30 yr. There was a statistical significant correlation between chlamydia infection and age of women within 20-30 yr of age ($\chi^2 = 1.42, df = 3, r=0.8, p<0.005$). Women with secondary infertility were more likely to be screened positive for chlamydia (85.7%, $\chi^2 = 42.5, df = 4, p<0.005$) and be married (92.9%, $\chi^2 = 52.5, df = 6, p<0.005$). Eleven women (85.7%) out of the total screen positive women had only 1 sexual partner within the last 1 year, and the

other 2 (14.3%) women had only 2 sexual partners. Some women (71.4%) had past history of sexual infection among those with positive screening.

Table 2 shows the awareness about chlamydia infection. The parameters assessed in the questionnaire were women's awareness of the existence, symptoms, mode of infection and complications. The findings in these parameters were negative in 60 (77.9%), 70 (90.9%), 56 (72.7%), and 63 (81.8%) women respectively. Also, among women that screened positive, the responses to these parameters were negative: 12 (85.7%), 13 (92.9%), 13(92.9%), and 12 (85.7%), respectively.

Table 2: Awareness about Chlamydial infection

Variable	Number screened (%) (n=77)	Number of positive (%) (n=14)
Existence of Chlamydia		
Yes	17 (22.1)	2 (14.3)
No	60 (77.9)	12 (85.7)
Symptoms of Chlamydia		
Yes	7 (9.1)	1 (7.1)
No	70 (90.9)	13 (92.9)
Mode of Infection		
Yes	21 (27.3)	1 (7.1)
No	56 (72.7)	13 (92.9)
Complications		
Yes	14 (18.2)	2 (14.3)
No	63 (81.8)	12 (85.7)

Discussions

The true incidence of Chlamydia infection in developing countries is difficult to establish because of several factors. 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 [10,11,12]. In spite of these limitations, it is still reported that there is a high prevalence of the chlamydia infection in most parts of Africa⁸.

The prevalence of chlamydia infection among women undergoing infertility evaluation from this study was 18.2%. This is significantly above the range of incidences from other studies that were between 9.33 and 12.0% [5,6,7]. The commonest cause of tubal disease in this environment is infection arising from either postarbotal, post partum or sexually transmitted infections [8,9]. However, infection from chlamydia is mainly sexually transmitted, with studies showing a relationship between chlamydia infection and secondary infertility [8,10].

A major risk factor for chlamydial infection is sexual activities and many studies have

shown that it is the commonest sexually transmitted organism throughout the world [4,13]. It is common in women with a higher number of sexual partners or a new sexual partner [1]. This is supported by the result of this study that shows that majority of the women had one sexual partner apart from the husband in the last one year. This value may however be higher than that obtained due to the fact that women do not usually disclose information that relates to previous sexual habits out of fear of stigmatization and cultural inhibitions. Men have been known to have large reservoir of chlamydia infection and could repeatedly re-infect their partners even without knowing [14]. Similarly, previous sexual infections, especially gonorrhoea increase the risk for chlamydia infection. The risk of infertility increases with each successive episode of infection^{7, 10}. Although the trend in the study supports this observation, the true incidence may however be more than this, if there is ready disclosure of sexual information by women.

Screening for chlamydia had always been difficult in many developing countries. This might be because of factors such as cost and awareness about infection. With appropriate enlightenment, the acceptance

and availability of screening programmes will be expected. While the culture method is traditionally accepted as the best method of detecting the organism, it is however considered invasive as the cervix must be exposed in order to obtain specimen and also because the steps in the analysis is cumbersome. This culture facility is not readily available in many developing countries and thus not used in this study for similar reasons. A method that does not require the exposure of the cervix and culture of specimen such as the commercially prepared kits that utilizes enzyme reactions was therefore considered a more acceptable method to the women. The bonus effect is that result could be obtained within few minutes. In spite of the controversies about the suitability of vaginal samples for screening, it is strongly advised that with appropriate vaginal samples collection and adherence to the procedural steps for each commercial kit, a reliable result can be achieved [10,15].

This study shows a correlation between the age of the women and risk for chlamydia infection – a finding supported by the study which showed that young women below 20 years more exposed in [1]. It is observed from the study that the awareness about chlamydial and its role in infertility is poor among the women undergoing infertility evaluation. Contributory to this observation might be the fact that many cases of infection are asymptomatic and among the symptomatic cases, it is mild in severity [2,4]. This observation is supported by the findings in the study. In addition to this, majority of laboratories do not have the diagnostic facility to detect the organism. Hence, it is not routinely screened for in women. The significance of poor awareness is that the prevalence of infection and its sequelae may continue to rise.

Conclusion

There is high incidence of chlamydia infection among the infertile women in this study. This is a justification for a routine

screening of all infertile women undergoing evaluation especially in African countries where prevalence sexually transmitted diseases is still high.

References

1. Black C. M. Current Methods of laboratory diagnosis of Chlamydia. *trachomatis infecton*. 1997; 1: 160-184.
2. Opaneye A.A Pelvic Infections. In: Okonofua F, Odunsi K. (Eds). *Contemporary Obstetrics and Gyneacology for Developing Countries*, ed 1, Woman's Health and Action Research Center. Benin City, Edo State, Nigeria. 2003; pp.54–65.
3. Cooke I.D. Infertility. In: Edmonds K.D (ed). *Dewhurst's Textbook of Obstetrics and Gyneacology for post graduates*, ed 6, Blackwell Sciences Ltd, London. 1999; 36: 432 - 440.
4. MacLean A.B. Pelvic Infection. In: Edmonds K.D.(ed). *Dewhurst's Textbook of Obstetrics and Gyneacology for post graduates*, ed 6, Blackwell Sciences Ltd, London. 1999; pp: 393 - 409.
5. Sobocinski Z, Szymanski W, Adamczak R, Ludwikowski G, Przeperski M, Gruszka M. Evaluation of incidence of Chlamydia trachomatis among the group of infertile women diagnosed by laparoscopy, and based on properties of Chlamydia trachomatis in the cervical canal, peritoneal fluid and ovarian cyst puncture. *Ginekol Pol*. 2001;72 (4): 224 – 7.
6. Thander Y, Talwar A, Nagendra A, Praharai A.K, Sharma R.K, Obri V.C. To study incidence of chlamydia using enzyme immuno assay and cell culture methods. *Medical J Armed Forces India*. 2001; 57 (3): 197 – 202.
7. Geisler, Williams M, James, Adelbert B. Chlamydia and gonococcal infections in women seeking pregnancy testing at family - planning clinics. *Amer J Obstet Gynaecol*. 2008; 198 (5): 502e1-502e4.
8. Okonofua FE. Infertility in Sub Saharan Africa. In: Okonofua F, Odunsi K. (eds). *Contemporary Obstetrics and Gyneacology for Developing Countries*. Ed 1, Woman's Health and Action Research Center. Benin City, Edo State, Nigeria.2003; pp 129 -156.
9. Oloyede O.A.O, Osagie O.F. The New Techniques of Assisted Reproduction. *Trop J Obstet Gynaecol*. 2003; 20 (1): 67-73.
10. Okonofua F.E, Ako-Nai K.A, Dishitoghi M.D. Lower genital tract infection in infertile Nigerian women compared with controls. *Genitourinary Medicine*. 1995; 71:163 – 8.
11. Harry T.C, Saravanamuttu K.M, Rasid S, Shrestha T.L Audit evaluating the value of routine screening of Chlamydia trachomatis urethra infection in men. *Int J. STD AIDS*. 1994; 5:374 – 375.

12. Westrom L, Joesoef R, Reynolds G et al. Pelvic Inflammatory disease and infertility. *Sex Transmit Dis.* 1992; 19: 185-192.
13. Jones GE, Low JC, Machell J, Amstrong K. Compararison of five tests for the detectýon of antýbodýes against chlamydýal (enzootic) abortion of ewes. *Vet Rec* 1997; 141(7):164-8.
14. Sule Odu AO, Fakoya TA, Odusoga OL, Olatunji A.O, Olusanya AO. Asymptomatic Endocervical Infection of Infertile Women in Sagamu, Nigeria. *The Niger Med Practitioner.* 1997; 34(3/4): 51-53.
15. Max A Chernesky. The Laboratory diagnosis of Chlamydia trachomatis infection. *Can. J Infect Dis Med Microbiol* 2005; 16 (1): 39-44.