

Incidence of chlamydia infection among pregnant women attending antenatal clinic in a tertiary hospital in south-south Nigeria

Abstract

Chlamydia infection is common among sexually active people and most often asymptomatic with potential long term consequences for female reproductive health especially during pregnancy, the transmission is generally considered as a silent infection. This study investigated the incidence of Chlamydia infection among pregnant women attending antenatal care in a maternity hospital, in South-South Nigeria. The study aimed to determine the incidence of Chlamydia infection among pregnant women, ascertain the prevalence of Chlamydia based on their age, trimester of pregnancy and parity. The population of the study comprised all antenatal mothers who accessed care at a tertiary facilities in South-South Nigeria from January 2010 to December 2019 with a total number of 2,1738. Data collection was done using a structured checklist. Information was taken from the participants' hospital folder. Data collected was analyzed using descriptive and inferential statistics with Statistical Package for Social Sciences (SPSS) software version 22. Results revealed 7.3% new cases of Chlamydia from January 2010 – December 2019, within the age bracket of 30-39 years 41% the highest incidence; 51% occurring in 2nd trimester of Pregnancy; 53 % in parity 1-2. The study concluded that, age, trimester of pregnancy and parity are significantly associated with Chlamydia infection among pregnant women ($P < 0.05$). Based on the findings, it is recommended that pregnant women should be routinely screened for Chlamydia infection as a way of reducing the prevalence and associated obstetric and neonatal outcomes. Pregnant women should also be given standard hygiene practice and behavioral life style education regarding STDs especially Chlamydia infection.

Keywords: prevalence, chlamydia infection, pregnant women, antenatal clinic, tertiary hospital, south-south Nigeria

Volume 10 Issue 2 - 2021

Uchendu Chinemere, Diorgu Faith

African Centre of Excellence for Public Health and Toxicological Research, University of Port Harcourt, Nigeria

Correspondence: Diorgu Faith, African Centre of Excellence for Public Health and Toxicological Research, University of Port Harcourt, Nigeria, Email faith.diorgu@uniport.edu.ng

Received: December 18, 2020 | **Published:** April 30, 2021

Introduction

The World Health Organization¹ estimated that 106 million adults worldwide were newly infected with Chlamydia trachomatis, of which 9.1 million were seen in Africa. The prevalence of Chlamydia trachomatis in African women is 2.6% with a reported incidence of 22.3/1000 population.² Chlamydia infection is the most common bacterial sexually transmitted infection and is generally considered as a silent infection. It affects about 4.2% of women and 2.7% of men worldwide.¹ Chlamydia is a sexually transmitted disease of epidemic proportions, infecting an estimated 4 million people a year.¹ In 2016, there were about 127 million cases of Chlamydia infection among women. Chlamydia infection is common among sexually active people and most often asymptomatic with potential long term consequences for female reproductive health especially during pregnancy.

A prevalence of 1.7% was found in Europe.³ This low prevalence may be as a result of the increased awareness of chlamydial infection and easy access to laboratory diagnosis and treatment. In India, Malik et al.⁴, found a *C. trachomatis* prevalence of 55% among women with secondary infertility and 5.5% among healthy term pregnant women who were used as controls. Furthermore, 63.3% of those positive for *C. trachomatis* immunoglobulin G (IgG) had tubal occlusion and 77.2% of them were symptomatic.⁵ In Nigeria, Mawak et al.⁶, reported a prevalence of 56.10% among 164 women attending Gynaecology clinic in Jos, using rapid diagnostic test device. The high prevalence may be as a result of increase in sexual behavioral

attitudes in that society as reported by the authors. However, a small sample size of 164 may not be adequately representative. In Zaria, a prevalence of 38.3% was found following a case-controlled study that was conducted on 120 patients with tubal infertility and 120 control clients attending the family planning clinic using one-step diagnostic test kits (Clinpro International Co. LLC, CA, USA) on endocervical swab.⁷ 35.7% prevalence among pregnant and non-pregnant women and their spouses attending pre- and post-natal clinics in the College of Medicine of the University of Lagos.⁸ In this study, 245 patients were screened for the presence of complement-fixing antibody to *C. trachomatis*. A slightly higher cases of 40.7% was reported in Ekpoma, South-Eastern part of Nigeria.⁹ The study was carried out among patients attending Gynaecology clinic using chlamydial complement-fixing antibody. At two hospitals in Benin, a case-controlled study of 81 patients with tubal infertility and 81 age-matched fertile pregnant controls were compared following analysis of their sera with immunocomb *C. trachomatis* IgG kit. The prevalence of serum *C. trachomatis* was 64.2% among the infertile women, whereas it was 17.3% among the fertile women.¹⁰

In pregnancy, Chlamydia infection is associated with increased risk for preterm delivery, spontaneous abortions, low birth weight, preterm rupture of membranes, perinatal mortality and postpartum endometritis.¹¹ It is also associated with an increased risk of pelvic inflammatory disease resulting in ectopic pregnancy, tubal factor infertility and chronic pelvic pains.¹ Chlamydia infections

have been closely associated with adverse pregnancy outcomes such as prematurity, premature rupture of membranes (PROM), chorioamnionitis, low birth weight, postpartum endometritis, spontaneous abortions, perinatal and neonatal morbidity and mortality.¹² It results not only in infertility and ectopic pregnancy but also in infant morbidity and mortality. Ectopic pregnancy is responsible for 11 percent of maternal deaths.¹² About 60 percent of infected women can transmit the bacteria at birth to their infants. Women infected with Chlamydia are up to five times more likely to become infected with HIV, if exposed. Chlamydia infection in pregnancy can cause maternal disease, adverse pregnancy outcomes and neonatal disease.

In most parts of Africa including Nigeria, *C. trachomatis* is not routinely screened for, and hence relative information about the frequencies of the organism is sparse. Screening programmes for Chlamydia have been established in some developed countries like Sweden which is known to have the best screening program in the world. The United States Centers for Disease Control and prevention recommend annual screening of all sexually active women aged 25 years or less. Unfortunately, the screening for this organism is difficult in many developing countries where there is an apparent ignorance about the significance of Chlamydia infection in infertility compared with other infections such as gonorrhoea among women. Early detection and treatment of Chlamydia in both men and women, especially prenatal women, is critical. In most parts of Africa including Nigeria, *C. trachomatis* is not routinely screened for, and hence relative information about frequencies of the organism is sparse.¹³ Given the fore going, this study is set to investigate the occurrence of Chlamydia infection among pregnant women attending antenatal care in a hospital in South –South Nigeria from January 2010 to December 2019.

Materials and method

This study adopted descriptive retrospective design. It was conducted in a tertiary hospital. The study population included all antenatal mothers who accessed care in the hospital within 10 years with a total of 2,1738 based on existing medical records of the hospitals. The entire case folders for each year was sorted to identify cases of Chlamydia infection and maternal socio-demographic information. Ethical clearance for the study was obtained from the Ethics Committee of the hospital. Data on the study variables were retrieved from the Medical Record of the hospital using a structured checklist titled “Prevalence of Chlamydia Infection among Pregnant Women Checklists (PCIPWC)”. The checklist contained information on the socio-demographic characteristics of the antenatal mothers: clinical diagnosis of Chlamydia infection, the age of the mother, trimester of the pregnancy and parity. Data collected was analyzed using descriptive statistics of frequency count and percentages and inferential statistics chi-square for association between the prevalence and socio-demography. The Statistical Package for Social Sciences (SPSS) software version 22 was used to assist in the analysis.

Results

Table 1 Shows N= 1579 (7.3%) cases of Chlamydia infection among pregnant women from January 2010 to December, 2019. Table 2 Shows the highest number of cases of Chlamydia infection among pregnant women based on age was within the age bracket of 30-39 years, N=647 (41%). Table 3 Shows that the cases of Chlamydia infection among pregnant women based on trimester of pregnancy was highest in second trimester of pregnancy. N=805 (51%). Table 4 Shows that the cases of Chlamydia infection among pregnant women based on parity, was relatively highest with women of , 1-2 children. N -837 (53%).

Table 1 Cases of Chlamydia Infection among Pregnant Women in the Tertiary Hospital from January 2010 to December 2019

Year	Total antenatal clinic attendance	Total cases of chlamydia infection	Prevalence (%)
2010	2743	192	7
2011	3672	110	3
2012	4138	170	4.1
2013	3024	269	9
2014	691	83	12
2015	1478	236	16
2016	1332	147	11
2017	1485	115	7.7
2018	1532	109	7.1
2019	1643	148	9
Total	21,738	1579	7.3

Table 2 Cases of Chlamydia Infection among Pregnant Women based on their Age (n=1579)

Age /Year	<19 years	20-29 years	30-39	40 and above	Total
2010	5	45	79	63	192
2011	2	24	49	35	110
2012	5	42	63	60	170
2013	6	67	100	96	269

Table continued...

Age /Year	<19 years	20-29 years	30-39	40 and above	Total
2014	3	26	24	30	83
2015	4	62	83	87	236
2016	2	39	55	51	147
2017	1	33	40	41	115
2018	1	29	38	41	109
2019	12	4	116	16	148
Total	41	371	647	520	1579

Table 3 Cases of Chlamydia Infection among the women based on Trimester of Pregnancy (n=1579)

Trimester/Year	1 st	2 nd	3 rd	Total
2010	65	96	31	192
2011	37	56	17	110
2012	58	87	25	170
2013	101	137	31	269
2014	30	38	15	83
2015	81	130	25	236
2016	50	75	22	147
2017	39	71	5	115
2018	36	73	-	109
2019	40	42	66	148
Total	537	805	237	1579

Table 4 Cases of Chlamydia Infection among Pregnant Women based on Parity (N=1579)

Parity Year	1-2	3-4	>4	Total
2010	102	76	14	192
2011	58	43	9	110
2012	90	68	12	170
2013	143	107	19	269
2014	44	33	6	83
2015	125	94	17	236
2016	78	59	10	147
2017	61	46	8	115
2018	57	43	9	109
2019	79	60	9	148
Total	837	629	113	1579

Discussions

The study noted significant incidence of Chlamydia infection among pregnant women who attended care in University of Port Harcourt Teaching Hospital from January 2010 to December, 2019. Most especially between the year 2014 to 2016. This could be as a result of the category of the population that attended antenatal during the year. The study noted that the majority of the women were young and in their early parity. This indicates that there is an increasing

occurrence of Chlamydia infection during pregnancy. This agrees with, Ambinder, Ramin and Decherney (2017) who reported increase of Chlamydia infection among pregnant women in their studies. Tukur et al.¹⁴ found high occurrence of Chlamydia infections, most of them were asymptomatic and nearly could go undetected. The findings further noted women with infection were relatively younger, and in their early parity. Chlamydia infection during prenatal period has been associated with many adverse pregnancy outcomes, such as premature rupture of membranes, premature delivery and still-birth (Mardh et al 2002). Chlamydia infection has been implicated with causing spontaneous abortion, preterm labour and low birth. However, a study of 1365 pregnant women with culture and serologies for Chlamydia infection, Chlamydia cervical infection itself did not predict poor outcomes such as abortion, prematurity or low birth weight.¹⁵ A critical review suggests that all pregnant women are at high risk of chlamydia infection and should be screened and treated at the point of first hospital contact. This will help reduce chlamydia infections in infants and poor pregnancy out comes.

The study findings showed that there was a significant association between age and occurrence of Chlamydia infection among pregnant women. Categorically, pregnant woman within the age bracket of 30-39 years had higher prevalence of Chlamydia infection. These results are in consonance with the findings of a study conducted by Kose et al.¹⁶ which revealed a higher prevalence of *Chlamydia* infections among older pregnant women. Similar report of a higher representation of women over thirty (30) years of age and 30-35 years with Chlamydia infection.¹⁷ Findings from the study also noted a higher prevalence of Chlamydia infection among women in their 2nd trimester of Pregnancy and early parity of about 1-2. These results are in line with Rours et al.¹⁸, Angelova et al.¹⁹, Rastogi, Das, Salhan and Mittal (2013) and Paul et al.²⁰. This result is notable as many studies have associated chlamydia infections to women of younger age, low socioeconomic status, and women in the early stage of pregnancy and are in lower parity, as this group are relatively sexually active at this time. The group characteristics reflect the population of the study.

In addition, majority of the routine screening for STD and Chlamydia infection was not part of the hospital care protocol, hence majority of the women were living with the infection over time unknown to them. Our results demonstrate a true local reality, where there is lack of information regarding Chlamydia infection and awareness of the possible poor pregnancy, perinatal and neonatal out-come that exist. Most of the time, pregnant women from less privilege settings are left with insufficient medical assistance regarding relatively common STDs during childbirth. It is important to emphasize the need for full STDs screening protocols. Therefore, the implementation of routine antenatal screening program for detecting Chlamydia infection in this high risk group is recommended.

Conclusions

Tendencies in the reporting rate of Chlamydia infection are influenced by diagnostic screening and reporting practices. As Chlamydial infections are usually asymptomatic, the number of infection identified and reported can increase as more mothers are screened and reported. Decreases in Chlamydia cases among pregnant women may suggest decrease in screening coverage. Health systems should consider additional focus on Chlamydia infection especially in pregnant women.^{21–24}

Acknowledgments

None.

Funding

None.

Conflicts of interest

The authors declare that there is no conflict of interest.

References

1. World Health Organization. Global incidence and prevalence of selected curable sexually transmitted infections. 2015.
2. World Health Organization. *Trachomatis* infection in fertile and infertile women; a molecular serological study. *J Reprod Infertil*. 2015;10:32–41.
3. Rastogi S, Das B, Salhan S, et al. Effect of treatment for chlamydia trachomatis during pregnancy. *Int J Gynaecol Obstet*. 2013;80(2):129–137.
4. Malik A, Jain S, Rizvi M, et al. *Chlamydia trachomatis* infection in women with secondary infertility. *Fertil Steril*. 2019;91(5):91–95.
5. Leili CT, Batool R, Fedyeh H, et al. Prevalence of *Chlamydia trachomatis* infection in fertile and infertile women; a molecular serological study. *J Reprod Infertil*. 2019;10(1):32–34.
6. Mawak JD, Dashe W, Agabi YA, et al. Prevalence of genital chlamydia among gynaecologic clinic attendees in Jos, Nigeria. *Shiraz E Med J*. 2011;12(2):100–103.
7. Amin JD, Zaria LT, El Nafaty, et al. Genital *Chlamydia trachomatis* infection in women in a Nigerian hospital. *Genitourin Med*. 2017;73(4):146–147.
8. Okoror LE, Omilabu SA, Orue PO, et al. Seroepidemiological survey of chlamydia in patients attending pre and post natal clinic at the college of Medicine of the University of Lagos, Nigeria. *Open Trop Med J*. 2018;1:83–86.
9. Okoror LE, Agbonlahor DE, Esumeh FI, et al. Prevalence of chlamydia in patients attending gynecological clinics in South Eastern Nigeria. *Afr Health Sci*. 2017;7(1):18–24.
10. Isibor JO, Ugbomoiko D, Nwobu GO. Detection of chlamydia antigen in cervical specimens from antenatal clinic attendees in Benin city, Nigeria. *Afr J Clin Exp Microbiol*. 2005;6(3):208–211.
11. Centre for Disease Control. Chlamydia prevention: challenges and strategies for reducing disease burden and sequelae. *MMWR Morb Mortal Wkly Rep*. 2011;60(12):370–373.
12. Ikeme AC, Ezegwui HU, IkeakO LC, et al. Seroprevalence of *Chlamydia trachomatis* in Enugu, Nigeria. *Niger J Clin Pract*. 2011;14(2):176–180.
13. Abubakir A. Prevalence of Chlamydia infection among asymptomatic female commercial sex workers in the Kumasi Metropolis. 2015.
14. Tukur J, Shittu SO, Abdul AM. A case control study of active genital *Chlamydia trachomatis* infection among patients with tubal infertility in Northern Nigeria. *Trop Doct*. 2016;36(1):14–16.
15. de Borborema –Alfaia, Norma Suely de Lima Freitas, Spartaco Astolfi Filho, Cristina Maria Borborema–Santos: The Brazilian journal of Infectious Disease. 2013;17(5) 545–550
16. Kose S, Ersan G, Sender SS, et al. A prevalence study of *Chlamydia* infections in Turkish population. *Braz J Infect Dis*. 2013;17(1):114–115.
17. Patel AL, Sachdev D, Nagpal P, et al. Prevalence of Chlamydia infection among women visiting a gynaecology outpatient department: evaluation of an in-house PCR assay for detection of *Chlamydia trachomatis*. *Annals of Clinical Microbiology and Antimicrobials*. 2010;9:24.
18. Rours G, Duijts L, Moll HA, et al. Chlamydia trachomatis infection during pregnancy associated with preterm delivery: a population-based prospective cohort study. *Eur J Epidemiol*. 2011;26(6):493–502.
19. Angelova M, Kovachev E, TsanKova V, et al. Role and Importance of Chlamydia Trachomatis in Pregnant Patients. *Open Access Macedonian Journal of Medical Sciences*. 2016;4(3):410–412.
20. Paul VK, Singh M, Gupta U, et al. Chlamydia trachomatis infection among pregnant women: prevalence and prenatal importance. *Natl Med J India*. 2019;12(1):11–14.
21. Alfaia AB, Freitas ND, Filho S, et al. *Chlamydia trachomatis* infection in a sample of northern Brazilian pregnant women: prevalence and prenatal importance. *Braz J Infect Dis*. 2013;17(5):545–550.
22. Jeremiah I, Okike O, Akani C. The prevalence of serum immunoglobulin G antibody to *Chlamydia trachomatis* in subfertile women presenting at the university of Port Harcourt teaching hospital, Nigeria. *Int J Biomed Sci*. 2011;7(2):120–124.
23. Kuo CC, Stephens RS, Bavoil PM, et al. Chlamydia. In Whitman WB (ed.). *Bergey's Manual of Systematics of Archaea and Bacteria*. John Wiley & Sons. 2015:1–28.
24. US Department of Health and Human Services. Sexually transmitted disease surveillance 2013. Atlanta. CDC. 2013.