**PREVALENCE OF CHLAMYDIA TRACHOMATIS INFECTION AMONG ADULT WOMEN**

**ABSTRACT**

**Background**: Chlamydia trachomatis is one of the leading causes of sexually transmitted infections and can cause severe health issues like infertility if not treated. The aim of this study was to determine the prevalence of chlamydia trachomatis infection among adult women. **Materials and Methods:** A cross-sectional study involving qualitative and quantitative data of 150 adult women aged 18- 45 years attending Enugu State University Teaching Hospital (ESUTH) in Nigeria from July 2024 to November 2024. Ethical approval were granted by the ESUTH Ethics Committee and informed consent were obtained from all participants. Cervical samples were collected and analyzed using validated chlamydia rapid test kits designed to detect C. trachomatis and data were collected using a structured questionnaire. **Results**: Out of 150 women screened, none tested positive for chlamydia trachomatis. The results of the study showed a 0% prevalence of *Chlamydia trachomatis* among the study participants. This finding is consistent with previous studies that have reported a low prevalence of *Chlamydia trachomatis* in some African countries. A study in Lagos Nigeria by Akinmoladun reported a prevalence of 6.5% among women attending gynecology clinics. This finding of 0% prevalence contrasts sharply with studies conducted in other regions. For instance, a study by Hu among women attending sexually transmitted disease (STD) and gynecology clinics in Jiangsu Province, China, reported a prevalence rate of 16.6% for *Chlamydia trachomatis* infections. The higher prevalence in their study could be attributed to several factors, including the population's higher risk behaviors, such as inconsistent condom use, multiple sexual partners, or a lack of access to healthcare services. Although, their study had a larger sample size of 2664 women. In conclusion, the study found a 0% prevalence of *Chlamydia trachomatis* among adult women attending ESUTH in Nigeria

*Keyword: Chlamydia trachomatis, Sexually Transmitted Infections (STIs), Prevalence, Adult Women, Reproductive Health, Public Health, Sexually Transmitted Diseases (STDs)*

BACKGROUND

*Chlamydia trachomatis* is a non-motile, small Gramnegative bacterium that is an obligate intracellular parasite.1 Genital infection caused by *C. trachomatis* is generally asymptomatic. 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.2 Approximately 50% of infected males and 80% of infected females show no symptoms, but infection may cause a mucopurulent cervicitis in females and urethritis in males. Commonly unrecognized and often poorly or inadequately treated, Chlamydia infections can ascend the reproductive tract resulting in pelvic inflammatory disease (PID) and, consequently, leading to chronic pelvic pain, ectopic pregnancy, and infertility.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

Chlamydia has been identified as a cofactor in the transmission of HIV infection.it has also been proposed as an independent risk factor for development of cancer of the cervix.5 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.6 This study was aimed to determine the prevalence of chlamydia trachomatis infection among adult women

**MATERIALS AND METHODS**

**Study population**: The study population were adult women attending Enugu State University Teaching Hospital (ESUTH). A total of 150 endocervical swab were collected

**Sampling technique**: Simple random 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. 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, educational status, etc from the participants.

**Sample analysis:** Collected samples were analysed using Chlamydia Rapid Test Device –Swab. The Chlamydia Rapid Test Device (Swab) 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.

**RESULTS:**

Table1: illustrates the results of the testing for Chlamydia trachomatis among the adult women participating in this study. The findings show that all 150 participants tested negative for the infection, resulting in a prevalence rate of 0.00%. This outcome indicates a complete absence of Chlamydia trachomatis infections among the women sampled in this population, which may suggest effective sexual health practices or other underlying factors that contribute to low infection rates in this demographic. Overall, these results highlight a significant finding, as no positive cases were identified, suggesting a potentially low burden of this sexually transmitted infection in the studied cohort.

Table2: presents the demographic distribution of the study population categorized by age group, socio-economic status, educational level, contraceptive use, and behavioral factors regarding sexual activity. The age group analysis reveals that the majority of participants (53.33%) fall within the 18-25-year range, with fewer participants in the older age brackets (26-35 years at 33.33% and 36-45 years at 13.33%). Regarding socio-economic status, most participants belong to the middle-income category (40%), followed closely by the high-income group (33.33%), while the low-income group constitutes 26.67%. Education levels are predominantly tertiary, with 57.33% having attained this level, while a smaller percentage (16.67%) completed secondary education, and 26.00% reported no formal education. Regarding contraceptive use, a significant proportion of women (51.33%) stated they always use contraceptives, while the remaining participants reported variable use: sometimes (24.00%) and never (24.67%). The behavioral factors indicate that participants primarily initiated sexual activity between the ages of 18-25 years (37.33%), with 36.67% engaging before age 18. Most women reported having one sexual partner (62.67%), and only 10.00% reported having no sexual partners at all, while none reported four or more partners.

**TABLE 1: Prevalence of Chlamydia trachomatis among Adult Women in This Study**

|  |  |  |
| --- | --- | --- |
| Test Result | Frequency (n) | Percentage (%) |
| Negative | **150** | **100.00** |
| Positive | **0** | **0.00** |
| Total | **150** | **100.00** |

**TABLE 2: DEMOGRAPHIC DISTRIBUTION OF THE STUDY POPULATION**

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Sub-category | Frequency | Percentage (%) |
| Age Group (years) | 18-25 | 80 | 53.33 |
|  | 26-35 | 50 | 33.33 |
|  | 36-45 | 20 | 13.33 |
| Socio-economic status | Low income | 40 | 26.67 |
|  | Middle income | 60 | 40.00 |
|  | High income | 50 | 33.33 |
| Educational level | Primary | 0 | 0.00 |
|  | Secondary | 25 | 16.67 |
|  | Tertiary | 86 | 57.33 |
|  | No formal education | 39 | 26.00 |
| Contraceptive use | Always | 77 | 51.33 |
|  | Sometimes | 36 | 24.00 |
|  | Never | 37 | 24.67 |
| Behavioural factor | Age at first sexual activity |  |  |
|  | Below 18 years | 55 | 36.67 |
|  | 18-25 years | 56 | 37.33 |
|  | Above 25 years | 39 | 26.00 |
| No of sexual partners | None | 15 | 10.00 |
|  | 1 | 94 | 62.67 |
|  | 2-3 | 41 | 27.33 |
|  | 4 or more | 0 | 0.00 |

**DISCUSSION**

*Chlamydia trachomatis* is an important public health problem across the globe, including Sub-Saharan Africa. Most developed countries have implemented specific chlamydial infection control programs that vary from case management to opportunistic screening of high risk groups and annual screening program for sexually active women age < 25 years to tackle the problem. These countries decreased chlamydial infection and its complication, while in developing countries the management is still syndromic approach, and its infection and complications are still huge burden in Sub-Saharan Africa.8

The prevalence of *Chlamydia trachomatis* among adult women attending Enugu State University Teaching Hospital (ESUTH) was found to be 0%, as reported in this study, where no positive cases were detected among the 150 women sampled. This result may seem unexpected, given the global burden of *Chlamydia trachomatis* infections, particularly in sexually active women. However, it is essential to consider various factors that could contribute to this finding, such as the demographic characteristics, socio-economic conditions, behavioral factors, and even testing methods.

In this study, the participants were predominantly young, with 53.33% of them aged between 18 and 25 years. This age group is often considered to be at higher risk for sexually transmitted infections (STIs), including *Chlamydia trachomatis*, due to factors such as early sexual debut and multiple sexual partners.9 However, the lack of positive cases could be due to various reasons, including the effectiveness of health interventions or the low prevalence of *Chlamydia trachomatis* in the specific population sampled. Additionally, 51.33% of participants reported consistent use of contraceptives, which may have reduced the risk of infection, especially if barrier methods like condoms were included in their contraceptive practices. It is worth noting that the study participants were from different socio-economic backgrounds, with a majority (40%) belonging to the middle-income group, which could imply better access to healthcare and preventative measures, potentially leading to lower infection rates.

A key factor that might have influenced the absence of *Chlamydia trachomatis* in this study is the self-reporting of sexual behavior. While the majority of participants (37.33%) reported engaging in sexual activity at an age between 18 and 25 years, and 62.67% had only one sexual partner, sexual behavior alone does not always correlate with the presence of *Chlamydia* infection, as factors like condom use, partner screening, and healthcare access play a more prominent role in determining infection rates. The study's reliance on testing might also have limitations, including the type of test used, as some methods might have a lower sensitivity than others.

This finding of 0% prevalence contrasts sharply with studies conducted in other regions. For instance, a study by Hu *et al.* (2021) among women attending sexually transmitted disease (STD) and gynecology clinics in Jiangsu Province, China, reported a prevalence rate of 16.6% for *Chlamydia trachomatis* infections. The higher prevalence in their study could be attributed to several factors, including the population's higher risk behaviors, such as inconsistent condom use, multiple sexual partners, or a lack of access to healthcare services. Although, their study had a larger sample size of 2664 women. Additionally, the screening methods and testing techniques used in Hu *et al.'s* study could have differed from those used in this study, leading to different detection rates. Hu *et al.* (2021) also suggested that socio-cultural factors and the level of public awareness regarding *Chlamydia* might influence the prevalence of infections in different settings.

Comparing with other studies conducted in similar settings, *Chlamydia trachomatis* prevalence varies widely depending on the region and population. A study in Lagos Nigeria by Akinmoladun *et al.* (2019) reported a prevalence of 6.5% among women attending gynecology clinics. This higher prevalence could be linked to the fact that their study targeted women with higher risk factors, such as a history of multiple STIs, while this study included a broader, less selected sample. Similarly, a study in the United States by Schillinger *et al.* (2020) found a prevalence rate of 3.5% among women attending family planning clinics. The differences in prevalence rates between studies could be due to the variations in socio-economic factors, healthcare infrastructure, sexual behaviors, and the presence of co-infections, all of which can affect the spread of *Chlamydia trachomatis*.

The lack of positive *Chlamydia trachomatis* cases in this study does not rule out the importance of continued surveillance and education regarding STIs. Even though this population did not show evidence of *Chlamydia* infection, it is crucial to highlight the significance of safe sexual practices, regular screening, and increased awareness. As *Chlamydia* can often be asymptomatic, individuals may be unaware of their infection status, leading to further transmission. Furthermore, the absence of a positive result does not necessarily indicate the absence of risk, as other STIs may also contribute to reproductive health issues.

**CONCLUSION**

In conclusion, the results of this study show a 0% prevalence of *Chlamydia trachomatis* among adult women attending Enugu State University Teaching Hospital, which is in contrast to findings from other studies with higher prevalence rates. This result may be influenced by the socio-economic status of the study participants, their contraceptive use, and possibly the effectiveness of local health interventions. Although no *Chlamydia trachomatis* infections were detected, continued education, regular screening, and safer sexual practices remain critical in reducing the risk of STIs in this population.

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