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# Incidence of *Chlamydia trachomatis* Infection in Infertile Urban Population

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***Abstract***

*Chlamydia trachomatis*
ELI
Urban Population

***Abstract***

*Chlamydia trachomatis* emerges as a most common sexually transmitted organism. It affects the young sexually active persons. It has been proved that genital infection with *Chlamydia trachomatis* markedly enhances the risk of reproductive sequelae in women leading to ectopic pregnancy and infertility. In males, it causes urethritis, prostitis, orchitis and epididymitis. The study was considered to rule out the incidence of *Chlamydia trachomatis* infection in various age groups of infertile men and women. A total of 446 infertile men and women were included in the study. Blood samples were collected and the IgM and IgG antibodies against *Chlamydia trachomatis* were studied by ELISA. The results showed *Chlamydia trachomatis* prevalence rate of 62% in women with a high incidence of infection in the age group of 26-30 years. In the infertile men, the prevalence rate was 37% with a high incidence in the age group of 31-35 years. The overall seroprevalence of *Chlamydia trachomatis* infection among the 446 infertile men and women tested showed 52% positivity. Thus, there is a need for investigation and treatment of *Chlamydia trachomatis* infection in infertile population.

## 1. Introduction

Clinically a couple is considered to be infertile after at least one year without contraception and without pregnancy (1). Primary infertility is used to describe couples who are experiencing difficulty in having a first child, while secondary infertility is the term used for couples who have had a child previously but are having problems in achieving a pregnancy again (2) (3). Infection is a common cause of infertility (4). *Chlamydia trachomatis* has currently emerged as the most common sexually transmitted infections with the annual detection of 92 million new cases worldwide, including 43 million from South-east Asia (5). *Chlamydia trachomatis* infections affect young, sexually active persons (6). Recent studies from India have revealed the prevalence of *Chlamydia trachomatis* in young females to be 43% in the gynecology outpatient department and 18.9% in the Sexually Transmitted Disease patients (7) (8). Genital infection with *Chlamydia trachomatis* markedly enhances the risk for reproductive tract sequelae in women, including tubal factor infertility and ectopic pregnancy (9). Current research, screening, and treatment are focused on females, with the burden of disease and infertility sequelae considered to be a predominantly female problem. Chlamydial infection, however, is similar in males and females. Furthermore, a role for this pathogen in the development of male urethritis, epididymitis, prostitis and orchitis is widely accepted (10). Data in men revealed *Chlamydia trachomatis* infections are related to male infertility (11). Infections with *Chlamydia trachomatis* is an important public health problem, especially in third world developing countries and more socio-economic studies linking prevention of chlamydial infections, infertility and adverse pregnancy outcome are needed to understand more of its aetiology.

## Objective of the Study

- To study the incidence of *Chlamydia trachomatis* infection in various age group of infertile men and women.
- To study the incidence of *Chlamydia trachomatis* in Primary and Secondary infertility.
- To compare the prevalence of *Chlamydia trachomatis* among the men and women.
- To study the incidence of *Chlamydia trachomatis* infection among infertile population

## 2. Materials and Methods

### Study population and duration

During the period from March 2005 until July 2009, men and women suspected for genitourinary infection were included in the study. The study subjects included were 446 infertility cases comprising of 168 men and 278 women.

### Material

Blood samples from 446 cases of infertile men and women were collected. Sera were separated to demonstrate the presence of IgM and IgG antibodies against *Chlamydia trachomatis*.

**Methodology**

IgM and IgG antibodies were detected in the serum of each individual by enzyme linked immune sorbent assay. The kit was intended for the detection of IgM and IgG antibodies to *Chlamydia trachomatis*. IgM antibodies were detected to find out ongoing infections whereas IgG antibodies were detected to diagnose the past infection. The samples were tested along with the positive and negative controls and the results were studied. IgG and IgM levels were recorded.

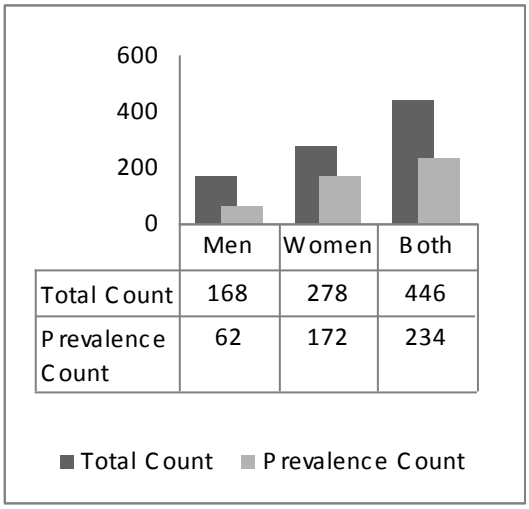
## 3. Results

*Chlamydia trachomatis* infection in the infertile population was diagnosed by detecting antibodies in the serum of infertile patients using ELISA technique.

The study report revealed that 62% (172/278) of women had elevated levels of antichlamydial IgM and IgG antibodies. In men, the *Chlamydia trachomatis* seroprevalence was only 37% (62/168).

*Chlamydia trachomatis* infection was 234 (52%) among the 446 infertile population studied (Fig. 1).

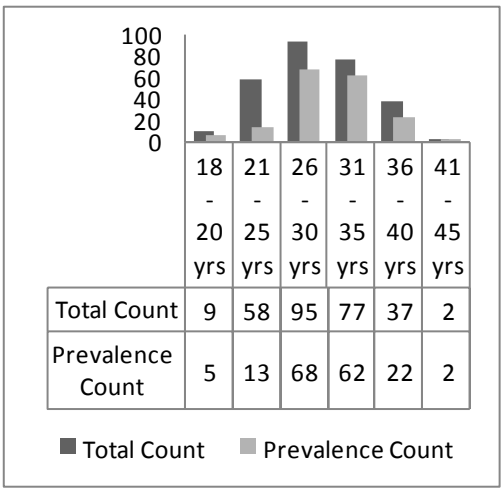
Fig. 1. *Chlamydia trachomatis* infection in infertile Men & Women




***Chlamydia trachomatis* infection in infertile women**

The incidence of *Chlamydia trachomatis* in various age groups of women is shown in Fig. 1. In women, higher incidence of *Chlamydia trachomatis* infection was observed in the age group of 26 – 30 years followed by 31 – 35 years. The prevalence rate in women was 172 out of 278 (62%).

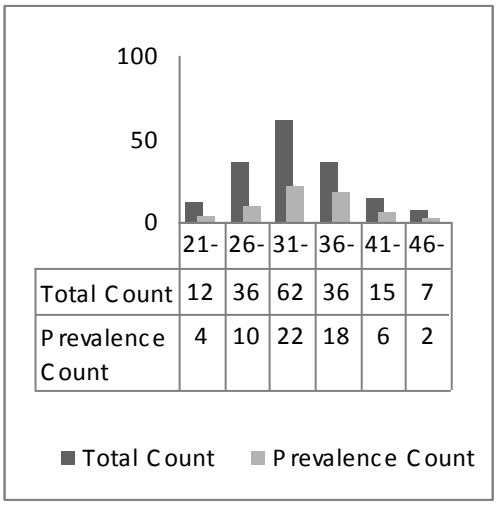
Fig. 2. *Chlamydia trachomatis* infection in Women by Age group




***Chlamydia trachomatis* infection in infertile men**

The incidence of *Chlamydia trachomatis* in various age groups of infertile men is shown in Fig. 2. In men, higher incidence of *Chlamydia trachomatis* was observed in the age group of 31 – 35 years followed by 36 – 40 years. In men, only 62 patients were positive among the 168 studied (37%).

Fig. 3. *Chlamydia trachomatis* infection in Men by Age group

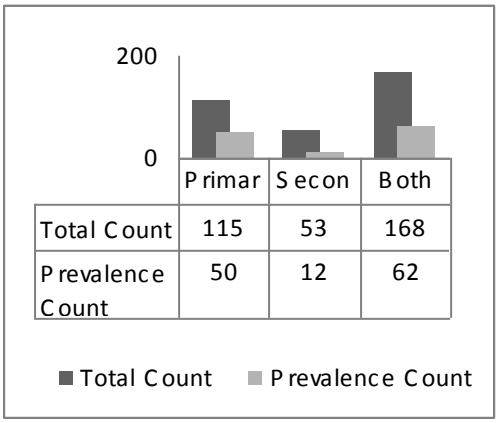



***Chlamydia trachomatis* infection and infertility type**

Questionnaire of 446 infertile patients showed that the majority of them suffered from primary infertility (68%) than secondary infertility (32%).

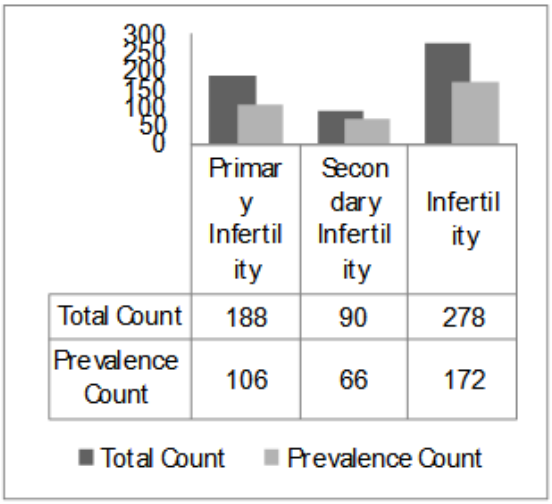
In men, infections were seen in 44% (50/115) of primary infertility patients and 23% (12/53) of secondary infertility patients (Fig. 4).

Fig. 4. *Chlamydia trachomatis* infection by Infertility Type in Men




In women, *Chlamydia trachomatis* infection was seen in 56% (106/188) of primary infertility patients and 73% (66/90) of secondary infertility patients (Fig. 5)

Fig. 5. *Chlamydia trachomatis* infection by Infertility Type in Women




## 4. Discussion

The population in this study consists of 168 infertile men and 278 infertile women.

The women in this study were aged between 18 and 45 years. The highest number of infertile women was found in the age group of 26-30 years (95/278), followed by the age group of 31-35 years (77/278). The mean age of the infertile women in the present study was 29.4. This is comparable to the study report of El-Shazly AM et al. (12) wherein the mean age of infertile women was 25.7 years.

In men, 21 to 50 year old infertile patients were studied. The results showed the highest number of cases in the age group of 31-35 years (62/168) and the least number of cases was seen in the age group of 46-50 years (7/168). The mean age of infertile men in the study was 33.6 years which is similar to M. Becker's (13) study where the mean age was 31.4 years.

Present study report found that among the men and women attending clinic for infertility problems, presence of chlamydial infection was common in the sexually active group. This is similar to Makhija et al., (14) study, where the highest rate of chlamydial infections was found to be in the 20-30 years age group. This age group is the sexually active group which is at a higher risk of being behaviorally more vulnerable to STI acquisition, as they generally have a higher number of sexual partners and more concurrent partnerships and change partners more often than older age groups.

Abida Malik, et al. (15) reported *Chlamydial* positivity in 27% (20/74) of the women with primary infertility and in 30.6% (11/36) women with secondary infertility. But in the present study, the *Chlamydial* infection was higher in both primary and in secondary infertility. *Chlamydial* infection was found in 56% (106/188) of the primary infertility cases and 73% (66/90) of secondary infertility cases. However, in both the studies it was observed that the *Chlamydial* seroprevalence was higher in the secondary infertile group than the primary infertile group.

The present the study found *Chlamydial* infection in 43.5% (50/115) of primary infertile men and in 22.6% (12/53) men with secondary infertility whereas Momoh et.al (16) study on primary infertile men found *Chlamydial* infection in 88% of men.

In women, higher incidence of *Chlamydial* infection was seen in secondary infertility whereas higher incidence of *Chlamydial* infection was observed in men with primary infertility.

The overall seroprevalence of *Chlamydia trachomatis* in the present study was 52% which correlates with the study of Mazara M et al. (17) wherein he found *C. trachomatis* antibodies in 50.2% of infertile patients suggesting that serological tests may be more useful than the direct test in demonstrating the active *C. trachomatis* infection.

The present study observed 62% of infertile women had antibodies to *Chlamydia trachomatis* which correlates with the report of Sharma K. et al. (18) wherein he observed antichlamydial antibodies in 68% of women with infertility. The present study observed *Chlamydia trachomatis* infection in 37% of infertile men which is lesser than the report of Mania – Pramanik J. et al., (19) where *Chlamydia trachomatis* antibody was found in 46.7% of infertile men.

## 5. Conclusion

Genital infection with *Chlamydia trachomatis* markedly enhances the risk for reproductive tract sequelae in men and women leading to infertility. The results of the study indicate possible criteria for effective screening and diagnosis of chlamydial infection in infertile population.

- Sexually active age groups of infertile men and women were at increased risk for Chlamydial infection.
- Higher incidence of *Chlamydia trachomatis* infection was seen in men with primary infertility and in women with secondary infertility.
- Comparison of men & women for chlamydial infection showed a higher prevalence among women than men.

Hence there is a strong need for correct, quick and cost effective diagnosis of genital chlamydial infection in infertile population. Antibody detection is an effective and non invasive tool for diagnosing chlamydial infection in developing countries like India. Because of the high success rate of treatments (95%), pregnancy can be achieved by proper treatment of *Chlamydia trachomatis* in the affected population.

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