

Prevalence of Sexually Transmitted Infection in Pregnancy at a Tertiary Care Center of Central India: An Observational Study

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ABSTRACT

Background: Sexually transmitted infections (STIs) are one of the major health problems encountered during pregnancy having impact on both mother and child health.

Objective: To know the prevalence of STIs in pregnant females in our tertiary care center.

Methods: A retrospective observational study in which data of all the pregnant females diagnosed with STI over a period of 6 years (2016–2021) were studied.

Results: There were 508 females with pregnancy having sexually transmitted infections, which is 5.43% of total females with STIs with a mean age of 23 years. Majority of cases were from rural area (62.79%), illiterate (32.48%), diagnosed in first trimester (76.4%), and primigravida (65.7%) with heterosexual (100%) mode of sexual contact. Viral infections were the most common STIs in groups, but syphilis was the most common form of STI caused by a single organism encountered in females with pregnancy, 157 cases (30.9%), followed by condyloma acuminata, 94 cases (18.5%). Syphilis was the commonest STI seen with adverse fetal outcome (86.7%) among all causes of adverse fetal outcome.

Conclusion: Present study reported a low prevalence of sexually transmitted infections in pregnancy, and syphilis was the single most common cause of STIs in pregnancy.

Clinical significance: Sexually transmitted infections are quite common in pregnancy, which increases morbidity and mortality of both mother and child. Thus, antenatal clinic visits and checkup for STIs in pregnant female are advised.

Keywords: Pregnancy, Prevalence, Sexually transmitted infections.

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INTRODUCTION

Sexually transmitted infections are the major health problem encountered across the globe causing significant morbidity and mortality. Developing nations are burdened with STIs, and poverty is considered as a major contributing factor.¹ Sexually transmitted infections are also a major predisposing factor for HIV transmission. The World Health Organization (WHO) estimates around 340 million curable STIs each year throughout the world.² Sexually transmitted infections are extremely underdiagnosed due to lack of diagnostic facilities and underreporting due to stigma. Pregnant females are at high risk of acquiring STIs due to pregnancy-induced physiological changes in genitals like congestion of cervix, edema of vaginal mucosa, and alteration in vaginal flora.³ Sexually transmitted infections are associated with a significant adverse fetal outcomes including abortion, preterm delivery, stillbirth, postpartum sepsis, low birth weight, and neonatal infections. Syphilis and herpes genitalis can cause congenital malformations, ectopic pregnancy by chlamydial, and infantile laryngeal papilloma due to maternal condyloma acuminata (genital warts). In pregnancy, STIs should be managed with antimicrobial therapy, counseling, partner screening, and safe sex advice.⁴

MATERIALS AND METHODS

A retrospective observational study in which data of all the pregnant females diagnosed with STI over a period of 6 years (2016–2021) were studied in department of obstetrics and gynecology, department of

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dermatology, and STI clinic in a tertiary care center of central India. All the women with pregnancy who attended the STI clinic of our center and diagnosed as a case of sexuality transmitted disease clinically or by laboratory investigations within the study period were included, while known case of STI before pregnancy was excluded from the study.

The baseline and clinical data were obtained from the standard pre-formatted STI clinic register where all the data regarding STIs were registered. Investigation details and partner details were also elicited from the STI clinic register.

Laboratory Investigations

Syphilis was diagnosed by the VDRL and TPHA serological tests. Herpes genitalis was diagnosed by Tzanck smear and IgG and IgM ELISA for HSV-1 and HSV-2. Hepatitis B was diagnosed by antigen estimation. Gram stain and culture were used for diagnosis of chancroid and gonorrhoea. Trichomoniasis was diagnosed by normal saline wet smear examination and vaginal candidiasis by 10% KOH mount test. Chlamydial infection was diagnosed on presumptive grounds as no PCR facilities were available at our center. A finding of five or more pus cells in urine/vaginal discharge or urine sediment per oil immersion field without intracellular diplococci was indicative of chlamydial infection. Appropriate statistical methods were used wherever required.

RESULTS

A total of 16,735 STIs patients were diagnosed in our institute out of which 9,358 were female in the study period (2016–2021). There were 508 females with pregnancy having sexually transmitted infections, which is 3.03% of total STIs cases and 5.43% cases of female STI.

Table 1 shows that 244 cases (48.03%) were in 20–25 years age-group, 193 cases (38%) were 26–30 years age-group, 6 cases were in 15–19 years age-group, and 2 cases were in >35 years age-group. The mean age is 23 years. The youngest was 17 years old, and the oldest 36-years-old. Commonest age-group affected was 20–25 years. Majority of cases belong to rural area, 319 (62.79%), compared to urban, 189 (37.21%). Majority of cases were illiterates (32.48%), seconded by education up to primary school (29.72%) and high school (21.45%), and least number of patients was above high school (16.34%). Out of 508 cases, majority (76.4%) were in their first trimester, followed by 21.4% patients who were in second trimester, and least in third trimester (2.2%). Maximum number of cases belong to lower socioeconomic category, followed by those belonging to middle class and upper class, respectively, as shown in Figure 1. All the cases enrolled in this study were married, and type of contact was heterosexual (100%). The prevalence of premarital or extramarital contact was 8.34%. The majority of the cases were primigravida (65.7%). Maximum number of STI cases was of viral etiology. In single STI, syphilis has highest prevalence 157 cases were positive for (VDRL) syphilis and 58 cases are of HIV-positive serology with STI.

The pattern and frequency of STIs are given in Table 2. After syphilis, the next most common STIs were condyloma acuminata (CA), vulvovaginal candidiasis, and herpes genitalis (HG). Syphilis was the main cause where 34 cases of the married partner (husband) had clinical evidence of STI at the time of presentation of the antenatal cases in the STI clinic.

DISCUSSION

The prevalence of various STI is different among different areas of the world, and the trend of sexually transmitted infections is rising

Table 1: Age-wise distribution of pregnant female

| Sl No. | Age-groups (in years) | Frequency | Percentage |
|--------|-----------------------|-----------|------------|
| 1 | 15–19 | 6 | 1.2% |
| 2 | 20–25 | 244 | 48.03% |
| 3 | 26–30 | 193 | 38% |
| 4 | 31–35 | 63 | 12.40% |
| 5 | >35 | 2 | 0.3% |
| 6 | Total | 508 | 3.1% |

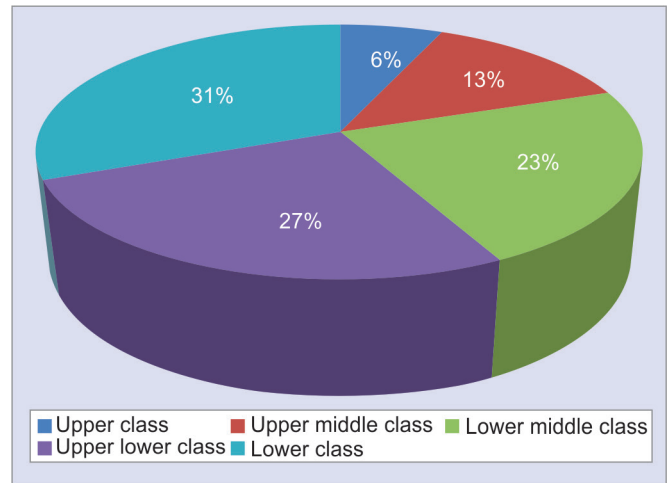


Fig. 1: Socioeconomic distribution of pregnant females

Table 2: Frequency and percentage-wise distribution of various sexually transmitted infections

| Sl No. | Sexually transmitted infections (STIs) | Frequency | Percentage |
|--------|--|-----------|------------|
| 1 | Syphilis | 157 | 30.9% |
| 2 | Condyloma acuminata | 94 | 18.5% |
| 3 | Vulvovaginal candidiasis | 91 | 17.9% |
| 4 | Herpes genitalis | 62 | 12.2% |
| 5 | Chancroid | 30 | 5.9% |
| 6 | LGV/inguinal bubo | 16 | 3.1% |
| 7 | HIV/AIDS | 58 | 11.4% |
| 8 | Total ANC cases with STI | 508 | |
| 9 | Total female cases with STI | 9,358 | |
| 10 | Total cases of STI | 16,735 | |

in the recent years. In the WHO report on STI in year 2018, almost 1 million pregnant female were infected by syphilis in 2016, resulting in 350,000 adverse birth outcomes worldwide. In India, there were 15,995 new cases of syphilis were reported where female are more than male which is similarly reported in our study.⁵

In the present study, most of the cases belonged to 20–25 years age-group (48.03%), followed by 26–30 years of age-group (38%), and least in age-groups of more than 35 years (0.3%). A study from tertiary care hospital of north India reported that majority of cases of STI in pregnancy belongs to age-group 20–25 years (57.6%) and least from more than 35 years age-group (1.5%).⁶ Another study from Navi Mumbai showed that majority of pregnant females belonged to age-group 20–25 years (41.7%). This is also comparable with the study by Shah et al. also which reported that the prevalence of STIs reduced with advanced age.⁷ The findings of present study are comparable to these studies, and this is due to the marriage at early age in India and inadequate use of contraceptives leading to increasing the number of pregnancy and STIs in this age-group.

In the present study, majority of cases were from rural area, 319 (62.79%), compared to urban, 189 (37.21%), and the findings of present study were comparable to study from tertiary care hospital of north India where majority of cases were from rural areas (69.7%) compared to urban (30.3%).⁵ In contrast to this, a study conducted in Ethiopia showed that majority of participating females with pregnancy belonged to urban areas (60.5%)

compared to rural areas (39.5%).⁸ The difference may be due to the location and vicinity of the healthcare system or urbanization of the country.

Present study reported that maximum number of cases was illiterates (32.48%), followed by those who had education up to primary school (29.72%) and high school (21.45%), and least number of patients was above high school (16.34%), which is in contrast to the study conducted in a tertiary care hospital of north India where majority of pregnant females were illiterates (69.7%), followed by education up to primary school (13.6%), high school (6.1%), and graduate and above (3.8%).⁶

In the present study, maximum number of cases (74.4%) with STIs was in first trimester, followed by second trimester (21.4%) and third trimester (2.2%), which is comparable to a study conducted in a tertiary care hospital of north India which showed that majority of pregnant females with STIs were in first trimester (80.3%), followed by second trimester 18.9%, and least number of patients was in their third trimester (0.8%).⁶ Another study from Ethiopia reported that maximum number of pregnant females was in their first trimester (64.3%), followed by second trimester (22.9%) and least in third trimester (12.9%).⁸ Also contrary to this, in the study done in western India, the risk of STI was high in those presented in third trimester.⁷

In the present study, maximum number of cases belonged to lower socioeconomic class (30.9%), seconded by upper lower class (26.8%), lower middle class (22.6%), upper middle class (13.5%), and least from upper class (6.3%); the findings were comparable to a study conducted in a tertiary care hospital of north India which reported that the majority of cases belonged to lower socioeconomic class (78.8%), followed by middle class (12.9%) and least from upper class (8.3%).⁶ In contrast to this a study from Ethiopia reported that maximum number of pregnant females belonged to upper class (45.3%) and least in lower class (22.1%).⁸

All the cases were married; marital partner was the commonest source of STI (93.63%) and type of contact was heterosexual (100%). The prevalence of premarital/extramarital contact in this study was only 8.34%, which is comparable to a study conducted by Sheena Ann Simon et al. which reported that the majority of the cases STIs in pregnancy were married (99.09%), marital partner was the commonest source of STI (93.63%), and the type of contact was heterosexual (100%). The prevalence of premarital/extramarital contact (PMC/EMC) in this study was only 6.36%.⁹ Social norms and cultural taboos in Indian women refrain themselves from PMC/EMC unlike their western counterparts. According to a study done in an African country among females, the prevalence of sexually transmitted infections was significantly lower in married females (11.2%) compared to single women (26.4%).¹⁰

Primigravida are the majority of cases (65.7%) in the present study, which is comparable to study done by Sheena Ann Simon et al. in which 82.72% cases of STIs in pregnancy were of primigravida.⁹ In contrast, another study done by Apparao et al. reported more prevalence of STIs in multigravida compared to primigravida.³

In the present study, 2.95% of cases have history of abortion and stillbirth in total STIs out of which syphilis is the most common (86.7%) STI to cause abortion and stillbirth. This is lower than that reported in a study done by Sheena Ann Simon et al., which reported abortion in 13.6% cases of STIs;⁹ this difference may be

attributed to the improved management of STIs present time compared to their study.

In the present study, in case of syphilis, 8.3% cases have history of abortion or stillbirth and 20.3% cases positive for syphilis have newborn reactive to VDRL. The results are comparable to previous studies done by Torres et al., where out of 268 pregnant women with syphilis, 1.5% cases had abortion and 3.4% had history of fetal losses.¹¹

In the present study, the single most common cause of STIs was syphilis (30.9%), followed by condyloma acuminata (18.5%) and vulvovaginal candidiasis (17.9%); herpes genitalis was accounted for 12.2% case of STIs. The results were comparable to those of study done by Sheena Ann Simon et al., which reported that the commonest STI as a single group was syphilis (38.19%), followed by condyloma acuminata (30.04%).⁹ Contrary to this study, most other Indian studies and Western studies indicate either herpes genitalis or condyloma acuminata as the single most common STI in pregnant women. The prevalence of syphilis in other studies ranges from 2.4 to 17%.¹²

In the present study, condyloma acuminata was present in 18.5% cases of pregnant female with STI, which is lower than that reported by Sheena Ann Simon et al. where the prevalence of condyloma acuminata was 30.04%.⁹ Condyloma acuminata has two times more risk in pregnancy. It is a well-known fact that the even small CA not evident clinically enlarges during pregnancy due to increased vascular flow and hormonal changes, and this prompts the patient to seek medical care.¹³

In the present study, 17.9% cases have vulvovaginal candidiasis which is higher compared to the study by Sheena Ann Simon et al., which reported only four cases (1.72%) of vulvovaginal candidiasis,⁹ and lower compared to a study done in Nigeria, where prevalence of genital candida accounted for 60.8% among pregnant women.¹⁴ However, caution should be exercised in labeling VC as a STI in pregnant women, as VC is very common in pregnancy due to relative immunosuppression, increased humidity, moisture, and hormonal imbalance.⁹

The prevalence of HG in this study was 12.2%. This is lower when compared with most other studies where the prevalence ranged from 25 to 36%.^{4,15} Chancroid was present in 5.9% cases, and LGV and inguinal bubo were seen in 16 cases (3.1%).

CONCLUSION

The present study reported a low prevalence of sexually transmitted infections in pregnancy, and marital contact was the commonest source of acquiring STI. Age less than 25 years, primigravidae, and early gestational age were the commonest affected. History of adverse outcome of pregnancy was most common in the cases that have syphilis as current STI. Syphilis was the most common STI caused by single organism, while viral STIs were the maximum in group. Marital partner was the most common source of STI. Significant number of cases of vaginal candidiasis was present, but not all cases were sexually transmitted, and other mode and risk factors for transmission should be rule before labeling it as a STI.

Clinical Significance

Sexually transmitted infections are quite common in pregnant females which increase morbidity and mortality for both mother

and child. Thus, antenatal clinic visits and checkup for STIs during pregnancy are highly recommended.

Limitations of the Study

Retrospective studies have inherent weakness. It is possible that the prevalence of STI in pregnancy in this study could not be the general trend in this state as this study was done in a tertiary care center where probably more cases were referred. It is possible that subclinical chlamydial cases were missed as there were no advanced equipments like PCR and serological tests to diagnose this STI in our institute.

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