



## TRENDS AND PATTERNS OF SEXUALLY TRANSMITTED INFECTIONS IN A TERTIARY CARE SETTINGS: ANALYSIS OF 9521 PATIENTS

### Dermatology

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### ABSTRACT

**Background:** Epidemiological profile of Sexually transmitted infections (STIs) varies from country to country and from one region to another within a country. STIs are responsible for significant proportion of infertility, psychosocial, economic morbidity and increased susceptibility to HIV infection. **Aim:** The study was conducted to determine the burden, clinico-demographic profile and changing trends in STIs in recent past years and association of STI with HIV infection. **Materials and Methods:** This was a retrospective study including the 9521 consecutive cases of STIs who had attended the STI clinic of a tertiary health care centre of South Rajasthan from 1st January 2016 to 31st December 2020. **Results:** Prevalence of STI patients was 1.36%. Males (59.6%) outnumbered females (40.4%) with M:F ratio of 1.47:1. Most common STIs were herpes genitalis (41.7%) and candidal balanoposthitis (28.6%) in males. Vaginal discharge (58%) and herpes genitalis (19.4%) were commonest STIs in females. Total 645 (6.8%) patients were positive for HIV serology. **Conclusion:** The present study concluded that viral STIs (herpes genitalis, molluscum contagiosum and viral warts), fungal STIs (candidal balanoposthitis and candidal vaginitis) and Syphilis cases are on rise and bacterial STIs (non herpetic genital ulcerative disease, urethral discharge) are declining. Conducting research at timely interval helps to detect changing trends and formulate strategies to optimize the control of STIs by various health programs.

### KEYWORDS

Herpes genitalis, Sexually transmitted infections, Syphilis

### INTRODUCTION

Sexually transmitted infections (STIs) are constellation of infections and syndromes that are epidemiologically heterogeneous, almost always transmitted sexually.<sup>1</sup> They are the most common among notifiable diseases and remain highly prevalent in 21<sup>st</sup> century.<sup>2</sup> More than 50% of new STI cases are found among adolescents and 80% of the infections are widespread in developing countries.<sup>3</sup> STIs are responsible for significant proportion of infertility, morbidity, increased susceptibility to HIV infection among affected individuals; further adding financial strain to the already over-burdened health care system of developing countries like India.<sup>4</sup> As a long term goal World health organization (WHO) has endorsed the global STI strategy that targets to eliminate the STIs by 2030.<sup>5</sup>

Epidemiological profile of STIs varies from country to country and from one region to another within a country and takes variable form as a consequence of interplay between the causative organisms, attributes, tendencies of the patients (cultural beliefs, sex education and behavior) and control measures being implemented in a given region.<sup>6</sup> Understanding the clinico- demographic profile of these diseases is necessary to know the present trend as well as for planning the disease control strategies. The present study was conducted to determine the burden, clinico- demographic profile and changing trends in STIs in recent past years and association of STI with HIV infection.

### MATERIALS AND METHODS

This was a retrospective study including the 9521 consecutive cases of STIs who had attended the STI clinic of a tertiary health care centre of South Rajasthan from 1<sup>st</sup> January 2016 to 31<sup>st</sup> December 2020. Data regarding demographic profile, clinical presentation, personal and sexual history and partner notification was retrieved from the records of the STI clinic. Data was transferred to an excel sheet and analyzed.

### RESULTS

Out of 701883 patients attending the skin outdoor from 1<sup>st</sup> January 2016 to 31<sup>st</sup> December 2020 total 9521 patients were diagnosed with STIs. Socio-demographic details of study population are depicted in Table 1.

Table 1: Sociodemographic profile of study population

| Characteristics  | Number n (%) |
|------------------|--------------|
| Age group        |              |
| <25              | 2769 (29.1%) |
| 25-44            | 5213 (54.8%) |
| >44              | 1539 (16.2%) |
| Education status |              |

|                                                           |              |
|-----------------------------------------------------------|--------------|
| Illiterate                                                | 934 (9.8%)   |
| Up to class 10th                                          | 4758 (50%)   |
| Up to class 12th                                          | 2612 (27.4%) |
| Graduation                                                | 1217 (12.8%) |
| Residence                                                 |              |
| Rural                                                     | 6715 (70.5%) |
| Urban                                                     | 2806 (29.5%) |
| Marital status                                            |              |
| Married                                                   | 7419 (77.9%) |
| Unmarried                                                 | 2007 (21.1%) |
| Divorced / widower                                        | 95 (1%)      |
| Nature of sexual contact                                  |              |
| Single partner                                            | 6650 (69.8%) |
| Multiple partner                                          | 2871 (30.2%) |
| Male with history of contact with female sex worker (FSW) | 3303 (34.7%) |
| Regular use of condom                                     | 2437 (25.6%) |

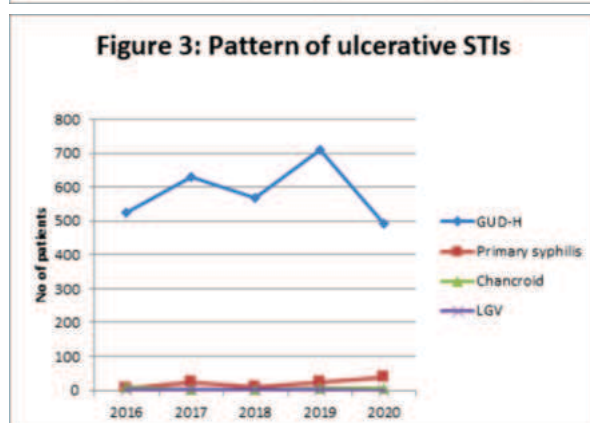
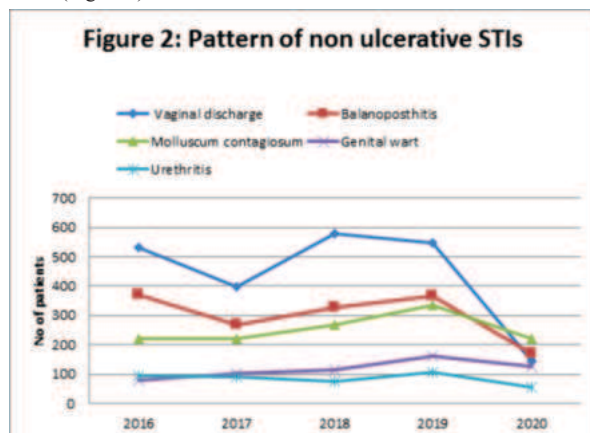
Males (59.6%) outnumbered females (40.4%) with M:F ratio of 1.47:1. Study participants were also classified based on their occupation into three groups including; high risk group (commercial sex workers, CSWs ;43; 0.45%), bridge population (migrant workers, staying away from home, truck drivers ;1828; 19.2%) and low risk group (7650;80.3%). The predominant mode of contact was heterosexual (87.6%) followed by bisexual (7.9%) and homosexual (4.5%).

Overall, the most common STI observed was genital ulcerative disease (GUD) (33.9%) followed by vaginal discharge (24.3%). Other STIs in decreasing order of frequency were candidal balanoposthitis (16.6%), molluscum contagiosum (14%), genital wart (6.5%) and urethral discharge (4.7%). Among males, most common STI was GUD-H (41.7%) followed by candidal balanoposthitis (who had history of sexual contact preceding the lesions and were non-diabetic; 28.6%). Vaginal discharge (58%) and GUD-H (19.4%) were commonest STI in females. Candidal vaginitis was the most common (95.6%) cause of vaginal discharge.

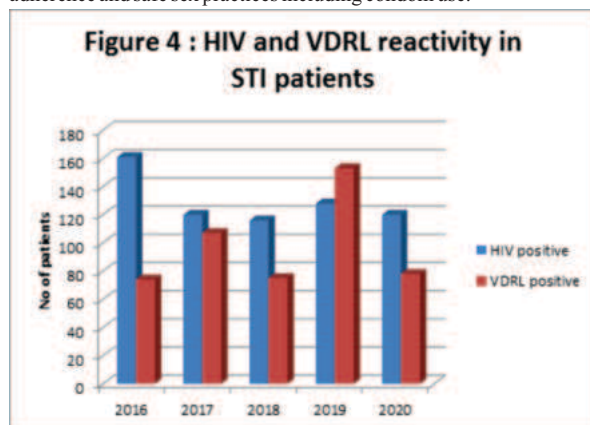
The STIs were further categorized according to causative agent. The proportion of viral STIs (52.8%; GUD-H, molluscum contagiosum, genital wart) and fungal STIs (39.9%; candidal balanoposthitis and candidal vaginal discharge) was significantly higher as compared to bacterial STI (7%; GUD-NH, urethral discharge, bacterial vaginosis).

Among viral STDs, there was rapid rise in cases of herpes genitalis, genital warts and molluscum contagiosum from year 2016 to 2019

followed by slight decrease through the year of 2020. Similar rising trends were observed in cases of candidal balanoposthitis and vaginal discharge from year 2017 to 2019 and then decrement in year of 2020. In contrast, urethritis cases showed gradual decrease from year 2016 to 2018 followed by increase in year of 2019. Year wise trend of non ulcerative STIs is illustrated in figure 2. Surprisingly, syphilis cases showed increasing trend from year 2016 to 2019 except in the year of 2018. (Figure 3)



In this study, a total of 645 (6.8%) patients were positive for HIV serology. 174 (30%) patients were newly diagnosed and the remaining (70% ; 471) were already on antiretroviral treatment and were referred to STI clinic for genital lesion from ART centre. HIV and VDRL reactivity in STI patients is depicted in figure 4. Average partner notification (PN) reported in our study was 24.3% .All the patients and their partners were treated and counseled regarding treatment adherence and safe sex practices including condom use.



## DISCUSSION

STIs rank among the top five conditions for which sexually active adults seek health care in the developing countries.<sup>7</sup> Cases of STIs are often misdiagnosed due to lack of health facilities, testing resources and trained health professionals. Also, STIs are often underreported to health facilities owing to lack of awareness and associated social stigma among the general population. Uninterrupted surveillance of

ever changing patterns and prevalence of already existing and newly emerging STIs form the basis of planning and implementation of various health programs and interventions.

In our study prevalence of STI patients was 1.36%. Lesser prevalence (1.02%) of STI patients in year 2020 could be due to the lockdown imposed by the government to contain the spread of novel SARS-CoV-2 virus. In study, males outnumbered the females with a M:F ratio of 1.47:1. Similar observation has also been made by Anirudh et al.<sup>6</sup> Rath et al<sup>8</sup>, Goel et al<sup>9</sup> and Mehta et al.<sup>10</sup> Male predominance has been reported with M:F ratio ranging from 1.7:1<sup>8</sup> to 2.6:1.<sup>9</sup> In contrary to our observation few studies have shown more females diagnosed with STIs.<sup>4,11</sup> Although women are biologically more prone to acquire STIs,<sup>12</sup> males have outnumbered females in majority of the published literature. This could be attributed to the generalized norm of social restrictions on discussion of female sex health problems in Indian culture especially in rural population. Moreover, dependency on parents or spouse for health consultations could have lead to lesser number of females in our study. Our 70.5% patients belonged to rural background which is in accordance with study by Anirudh et al<sup>6</sup> (62.21%). Reason for this could be belonging to tribal and hilly areas of majority of our study population. However, few studies have reported the urban predominance in their study.<sup>8,11</sup> In our study, as the level of education obtained by the patients increased the prevalence of STIs decreased. Half of our patients obtained the metric level education followed by higher senior secondary (27.4%) and graduation level (12.8%). Similar trends have been widely reported in the past.<sup>5,6,8-11,13</sup>

'Multiple sex partners' is a known risk factor in acquisition of STIs. In our study, around one third (30.2%) patients had history of sexual contact with more than one individual in their life time. In studies by Rath et al<sup>8</sup> and Nyati et al<sup>11</sup> history of multiple partners was noted in 23.9% and 25% patients, respectively. Findings such as male predominance and more number of males with multiple sex partners could be suggestive of the fact that STIs patterns have conformed to cultural patterns of gender expression in Indian society such as culturally imposed silence about discussing sex, unequal norms about sexual morality, rights, power and educational opportunities between the sexes.<sup>12</sup> Not surprisingly, STIs are still seen as a taboo in many parts of our country.

Among the 9521 patients examined, genital ulcerative disease (GUD) was the most common STI noted in 33.9% cases followed by vaginal discharge (24.3%). Nyati et al<sup>11</sup> have also reported vaginal discharge (38%) and GUD (33.8%) the most common STI. In another study GUD (73.5%) was the most common STI.<sup>14</sup> Primary syphilis (17.14%) was the commonest STI in the study by Talukdar et al<sup>15</sup> and Rath et al<sup>8</sup> respectively. A study from the southeast coast of India has reported HIV as the most common STI with an alarming number of patients (34.5%).<sup>16</sup>

The proportion of viral and fungal STI was more as compared to bacterial STI. Decrease in bacterial STIs could be due to syndromic treatment of STIs at peripheral health centers and private practitioners along with widespread use of broad spectrum antibiotics for other illnesses<sup>10</sup>. Eventually, marked decline in bacterial STIs and the tendency to persist or recurrence in viral STIs may reflect as an apparent increase in viral STIs. Apart from rising trend of viral STIs steady increase in fungal STIs has also been observed. This could be due to excessive use of antibiotics and rise in non communicable diseases like diabetes. Surprisingly syphilis cases (primary, secondary and latent) showed upward trend from year 2016 to 2019 except in the year 2018. Solaimali et al<sup>17</sup> also observed a steady increase in syphilis positivity over 6 year period (year 2015 to 2020; 0.52 to 2.1%). The resurgence of syphilis could be attributed to sexual behavior, HIV coinfection, having multiple sexual partners, practicing unsafe sex, and illicit drug use. This finding mandates the need for constant surveillance among STI patients especially high-risk groups.

Partner notification was 24.3% of total index cases which is lower as compared to study of Goel et al<sup>9</sup> (42.48%) and Agarwal et al<sup>1</sup> (29%). Stigmatization and discrimination against people with STI undermine their willingness to seek care and notify their spouses.<sup>18</sup>

## CONCLUSION

STIs constitute a major public health problem. Numbers of STI patients are rising with a shift in the type of STIs. The present study concluded that viral STIs ( herpes genitalis, molluscum contagiosum

and viral warts), fungal STIs (candidal balanoposthitis and candidal vaginitis) and Syphilis cases are on rise and bacterial STIs (GUD-NH, urethral discharge) are declining. Conducting research at timely interval helps to detect changing trends and formulate strategies to optimize the control of STIs by various health programs. Since STIs and HIV perpetuate each other, prompt diagnosis and adequate treatment of all cases of STIs is necessary to prevent HIV transmission.

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