

# Syphilis and COVID-19: Changing trends

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## Abstract

**Background:** There is a change in the pattern and prevalence of acquired syphilis due to better awareness, surveillance, laboratory diagnosis, and treatment in India in recent years. However, restrictive measures for COVID-19 may produce different effects on incidence. **Aims and Objectives:** We aimed to study the changing trend of acquired syphilis in relation to COVID-19 outbreak in a tertiary care hospital in North India. **Materials and Methods:** A retrospective analysis of all the cases of sexually transmitted infections (STIs) was done from January 2016 to June 2022. Demographic, clinical, and laboratory data of acquired syphilis were recorded and analyzed for changing trends in prevalence, clinical presentations, association with HIV and other sexually transmitted diseases (STDs), and its relation to COVID-19. Statistical analysis was done using SPSS software. **Results:** A total of 1105 patients attended STD clinic from January 2016 to June 2022, of which 216 patients were venereal disease research laboratory and *Treponema pallidum* hemagglutination assay positive (19.5%). Before COVID-19, there was an increasing trend of acquired syphilis (late latent). Patients diagnosed with syphilis pre- and postlockdown did not differ significantly in their mean age, median age, male/female ratio, and HIV status. However, there is an increase in number of cases of primary and secondary syphilis postlockdown which was statistically significant. **Conclusion:** Restrictive measures for COVID-19 during the lockdown produced a declining trend of syphilis. It is unclear whether the observed decrease in number of STI cases was due to true decline, inadequate testing, underreporting, or avoidance of high-risk sexual activities. The upsurge in the number of cases of acquired syphilis after lockdown suggests the possibility that lockdowns did not completely disrupt STI transmission.

**Key words:** COVID-19, epidemiology, lockdown, syphilis

## Introduction

Syphilis is a sexually transmitted disease (STD) caused by the spirochete bacterium *Treponema pallidum*. The prevalence and clinical patterns of syphilis are showing a changing trend in India recently. Despite the availability of good laboratory facilities, treatment, and increased health awareness, it still remains a major health problem.<sup>[1,2]</sup>

The World Health Organization declared COVID-19 as a pandemic on March 11, 2020.<sup>[3]</sup> On the evening of March 24, 2020, the Government of India ordered a nationwide lockdown for 21 days, limiting movement of the entire 1.38 billion population of India as a preventive measure against the COVID-19 pandemic in India.<sup>[4]</sup> A visible change in clinical presentation and prevalence of acquired syphilis was noticed post-COVID in sexually transmitted infection (STI) clinic of our tertiary care hospital. Restrictive measures for COVID-19 might have produced different effects on incidence of syphilis. However, the epidemiology of syphilis could actually

reflect the consequences of whether people are avoiding high-risk sexual behaviors or not.

## Materials and Methods

A retrospective analysis of all the cases of STIs was done in the department of dermatology, venerology, and leprosy of our tertiary care hospital from January 2016 to June 2022 (including COVID-19 pandemic and lockdown). Detailed epidemiological data, complete history and examination, and laboratory investigations were recorded and were analyzed for changing trends in prevalence, clinical presentations, association with HIV and other STDs and its relation to COVID-19. The data were divided into two: prelockdown and postlockdown.

Epidemiological data included age, sex, marital status, occupation, and residence. Patients were asked about history of sexual contact, history of promiscuity, homosexuality,

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history of present illness, treatment history, past history, obstetrical history. A thorough examination of skin lesions, mucous membranes, and lymph nodes was done. Venereal disease research laboratory (VDRL), HIV1 and HIV2, HBsAg, and anti-HCV were performed on all patients. VDRL-positive patients were subjected to VDRL in dilution and *T. pallidum* hemagglutination assay (TPHA) testing. In cases of primary syphilis and moist lesions of secondary syphilis, dark-ground microscopy was performed. Latent syphilis cases were either referred by the gynecology or blood bank department on routine serology or were contacts of other syphilis patients. Statistical analysis was performed by applying SPSS IBM (Statistical Package of social sciences) IBM manufacturer, (Chicago USA), ver 25.0 using paired *t*-test.

**Results**

The study was carried out in STD clinic of a tertiary care hospital in North India. A total of 1105 patients attended STD clinic from January 2016 to July 2022, of which 216 patients were VDRL and TPHA positive (19.5%).

The male-to-female ratio was 1.54:1. The mean age was 35.59 years, and the median age was 33.50 years. Primary syphilis was diagnosed in 7 patients, secondary syphilis in 10 patients, early latent syphilis in 8 patients, and late latent syphilis in 191 patients. Twenty-seven syphilis patients were HIV positive. Sixteen syphilis patients were pregnant at the time of diagnosis. Annual distribution and year-wise breakup are shown in Table 1. Patients diagnosed with syphilis pre- and postlockdown did not differ significantly in their mean age, median age, male/female ratio, and HIV status.

Overall, there is an increasing trend of acquired syphilis, as shown in Figure 1, with maximum number of cases of late latent syphilis. During the start of COVID-19 pandemic (in 2020) and lockdown, there was a decline in number of syphilis patients, but afterward, there has been an increasing trend, thus overall an increasing trend.

However, a statistically significant increase in number of cases of primary and secondary syphilis pre- and postlockdown is also seen (*P* = 0.016), as shown in Figure 2.

**Discussion**

The epidemiological trends of syphilis have seen a definite change over the years. A change in clinical presentation and prevalence of syphilis is noticed post-COVID in STI clinic of our tertiary care hospital. Overall, an increasing trend of acquired syphilis is seen with maximum number of cases of late latent syphilis, which is similar to the other Indian studies.<sup>[2,5,6]</sup> It may be attributed to increased reporting due to blood screening protocols, antenatal checkups in pregnancy, and passport documentation.

However, during the COVID-19 pandemic and lockdown, there was a decrease in number of cases of

acquired syphilis. It may be due to inadequate testing, underreporting, and avoidance of high-risk sexual behavior following restrictive measures for COVID-19, which is in line with data from Bologna<sup>[7]</sup> and from Belgrade.<sup>[8]</sup>

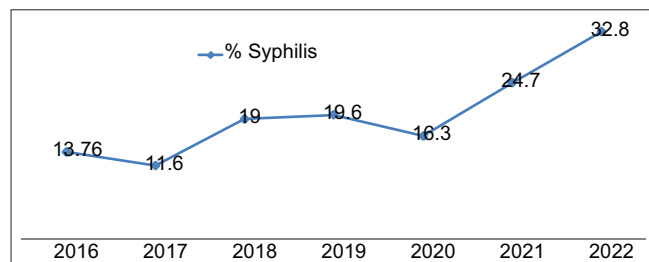
Furthermore, there is an increase in number of cases of primary and secondary syphilis post-COVID-19 as compared to pre-COVID times (statistically significant) which may be attributed to increased awareness among the people after deadly pandemic of COVID-19. This change in behavior can be explained by increased caution exercised by patients regarding any systemic symptom or skin complaint and increased specialist office visits leading to increased rates of diagnosis and reporting of cases in earlier stages. The other plausible cause for increase in the number of cases of early syphilis post-COVID might be visits to the doctor’s office in the early stages of symptoms of the disease rather than first trying over-the-counter antibiotics without a proper prescription that might mask the disease for detection in early stages.

**Conclusion**

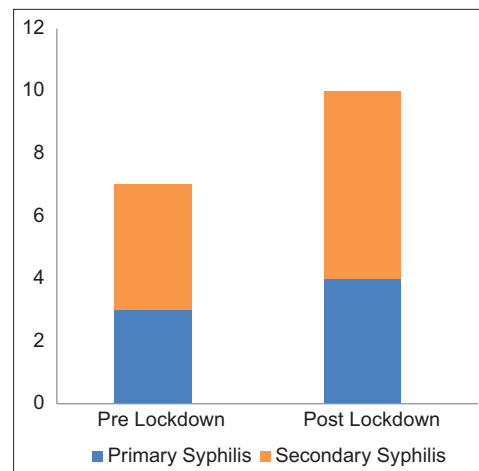
It is unclear whether the observed decrease in number of STI cases during the lockdown was due to true decline, inadequate testing, underreporting, or avoidance of high-risk activities. More research is needed in that. The upsurge in the number of cases of primary and secondary syphilis after lockdown suggests the possibility that lockdowns did not completely disrupt STI transmission. Furthermore, there is an urgent need to strengthen STI diagnostic programs and treatment services, as the pandemic could be concealing the true picture.

**Table 1: Annual distribution and year-wise breakup of syphilis cases**

Year	Total syphilis cases (%)	Primary syphilis	Secondary syphilis	Early latent syphilis	Late latent syphilis
2016	15 (13.76)	1	1	0	13
2017	21 (11.6)	0	1	0	20
2018	46 (19)	0	2	0	44
2019	54 (19.6)	2	0	3	49
2020	8 (16.3)	0	0	0	8
2021	30 (24.7)	2	3	0	25
2022 (up to June)	42 (32.8)	2	3	5	32



**Figure 1: Frequency polygon showing trend of syphilis**



**Figure 2: Bar diagram showing primary and secondary syphilis pre- and postlockdown**

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**Conflicts of interest**

There are no conflicts of interest.

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