

What is the impact of covid-19 pandemic era on Pregnant Women sero-positivity for Syphilis among women attending antenatal care in India and number of babies diagnosed with Congenital Syphilis?

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Abstract

Sexually transmitted infections (STIs) continue to be a major public health problem globally, affecting the quality of life as well as causing serious morbidity and mortality. STIs have a direct and significant impact on reproductive and child health. They can directly cause infertility, cancers as well as pregnancy complications, and indirectly affects individual economies. The information on the number of PW found to be seropositive for Syphilis among women attending antenatal care in India and the number of babies diagnosed with Congenital Syphilis is collected from HMIS electronic records of MoHFW, Government of India with a key objective to know about the impact of covid-19 era i.e. 2020 and 2021 on the prevalence of syphilis by comparing it with the pre-pandemic era of 2018 and 2019. I collected seropositivity data for Syphilis among women attending antenatal care in India and the number of babies diagnosed with Congenital Syphilis across 36 states and union territories of India including all health facilities viz. public, private, rural, urban health facilities. The data is collected, observed, and analyzed with Microsoft office software. Among 254705.2 averages per month number of PW (pregnant women) tested using the POC test for Syphilis, 2144.4 averages per month were seropositive for Syphilis giving a seroprevalence of 0.84 % in 2021 (Jan to May). Of 175579.75 averages per month number of PW tested using the POC test for Syphilis, 855.58 averages per month were seropositive for Syphilis giving a seroprevalence of 0.49 % in 2020 (Jan to Dec). Of 53313.66 averages per month number of PW tested using the POC test for Syphilis, 419.33 averages per month were seropositive for Syphilis giving a seroprevalence of 0.79 % in 2019 (Jan to Dec). Of 11364.75 averages per month number of PW tested using the POC test for Syphilis, 339.08 averages per month were seropositive for Syphilis giving a seroprevalence of 2.98 % in 2018 (Jan to Dec).

Keywords: Syphilis, Covid-19, Sero-Prevalence, Pregnant Women, Antenatal Care, Newborn,

Introduction

Sexually transmitted infections (STIs) continue to be a major public health problem globally, affecting the quality of life as well as causing serious morbidity and mortality. STIs have a direct and significant impact on reproductive and child health. They can directly cause infertility, cancers as well as pregnancy complications, and indirectly affects individual economies. On daily basis, a million (10 lakh) STIs are acquired, in the year 2012, 357 million new cases of curable STIs including gonorrhoea, chlamydia, syphilis, and trichomoniasis occurred mainly among 15- to 49-year-olds individuals globally, out of which 5.6 million cases were of syphilis [1]. Syphilis is an STI caused by bacterial infection of *Treponema pallidum*. It is usually transmitted during sexual contact with infectious lesions present on the mucous membranes or abraded epidermis, via blood transfusion, or vertical-transplacentally during pregnancy to the fetus. Vertical transmission of syphi-

lis i.e. congenital syphilis is usually life-threatening to the fetus if the maternal infection is not detected on time and treated early in the pregnancy. The work from home and lockdowns for covid-19 control can increase the prevalence and incidence of STI (hypothesis) as the chances for sexual relation are quite possibly increased due to availability and opportunity but this will be decided by multiple factors related to the transmission of infection. Discussing all the aspects, pathophysiology as well as clinical features, etc. is not possible in this single article. Undertaking sero-sampling during the covid-19 pandemic is quite difficult when travel and household access are restricted by Covid control measures. Pregnant mothers and newborns continue to seek health services throughout the pandemic due to their special needs. Serological tests are simple to perform at ANC visits and POC tests for Syphilis can be done with the residual blood volumes of samples collected for routine ANC clinical screening for maternal infectious diseases and anemia.

Planning and provision of antenatal health care during pandemics like COVID-19 pose significant logistical and clinical challenges. In January 2020, the first covid-19 case was documented in India. Hence, the period from January 2020 onwards is counted as the pandemic era, which is still going on, and the period before January 2020 i.e. up to December 2019 is calculated as the pre-pandemic era for this research study.

Aim and Objective

To assess and compare the trend in seroprevalence and number of cases of syphilis throughout the pandemic years i.e. 2020, 2021, and two previous years 2019, 2018 with a key objective to find out the trends of disease occurrence in pregnant women and new-born by analysing seropositivity for Syphilis among pregnant women attending ANC clinic at different (public-private-rural-urban) health facilities in India and number of babies diagnosed with Congenital Syphilis.

Methodology

This is a cross-sectional retrospective mixed study. The information on the number of PW found to be seropositive for Syphilis among women attending antenatal care in India and the number of babies diagnosed with Congenital Syphilis is collected from HMIS electronic records of MoHFW, Government of India. I collected sero positivity data for Syphilis among women attending antenatal care in India and the number of babies diagnosed with Congenital Syphilis across 36 states and union territories of India including all health facilities viz. public, private, rural, urban health facilities. The data is collected, observed, and analysed with Microsoft office software.

Data Availability

The data for study is obtained from electronic records of HMIS of MoHFW (Ministry of Health and Family Welfare), Government of India. The link for the source is given below <https://hmis.nhp.gov.in/#!/standardReports>

Results

Among 254705.2 averages per month number of PW tested using the POC test for Syphilis, 2144.4 averages per month were seropositive for Syphilis giving a seroprevalence of 0.84 % in 2021(Jan

to May) see figure-1, 2, 3. Of 175579.75 averages per month number of PW tested using the POC test for Syphilis, 855.58 averages per month were seropositive for Syphilis giving a seroprevalence of 0.49 % in 2020(Jan to Dec). Of 53313.66 averages per month number of PW tested using the POC test for Syphilis, 419.33 averages per month were seropositive for Syphilis giving a seroprevalence of 0.79 % in 2019 (Jan to Dec). Of 11364.75 averages per month number of PW tested using the POC test for Syphilis, 339.08 averages per month were seropositive for Syphilis giving a seroprevalence of 2.98 % in 2018 (Jan to Dec), see tables 1 and 2.

The total number of babies diagnosed with Congenital Syphilis was 3801, 3372, 4909, 2424 during the years 2018-2019-2020-2021- respectively which shows that number increased during the first pandemic year 2020, and data for the second pandemic year are only up to May-2021 hence the result is pending and will be updated in next version after availability of data. The total number of PW tested using the POC test for Syphilis from Jan-May 2021 was 1273526 whereas for the years 2020, 2019, 2018 it was 2106957, 639764, and 136377 respectively. Since the data for 2021 is not available up to Dec 2021 from an accredited source, the author has taken average numbers per month for various comparisons. This research study revealed that there is an increase in the average per month number of PW tested using the POC test for Syphilis and there is an increase in the number of women averages per month seropositive for Syphilis during the pandemic era using this test. The seroprevalence decreased in all years as compared to 2018. This research study revealed that in 2019 maximum average per month number of PW tested using another test for Syphilis whereas the maximum number of women averages per month seropositive were found in 2021 for Syphilis using another test. The seroprevalence of syphilis in PW tested using another test for Syphilis decreased in all years as compared to 2018 see figure-4, 5, and 6. Figure 7 shows that the Year-wise maximum number of syphilis-positive pregnant women treated for syphilis was reported in 2021. Figure-8 shows that the average number of babies per month diagnosed with congenital syphilis increased in the pandemic era whereas Figure-9 shows that the average number of babies per month treated with congenital syphilis decreased in the pandemic era.

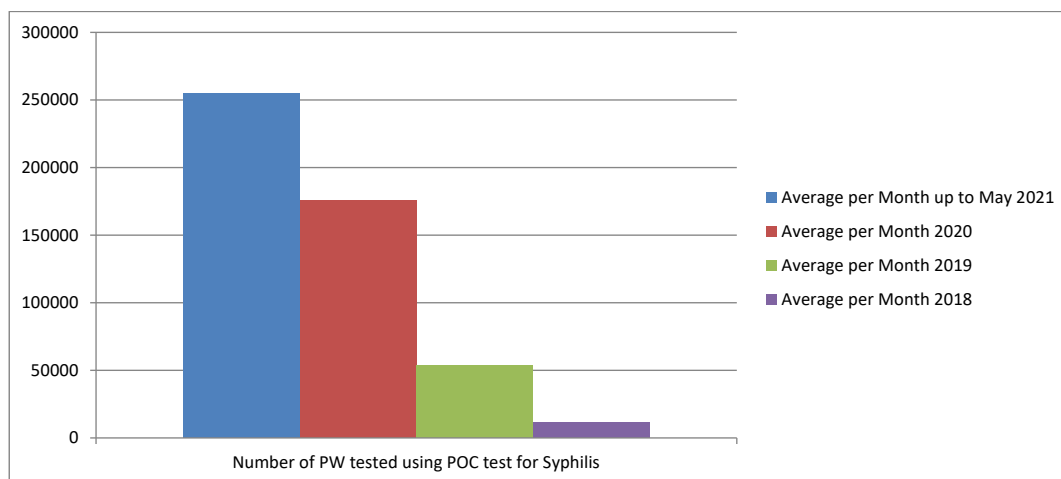


Figure 1: Average number of women per month tested for syphilis using POC test

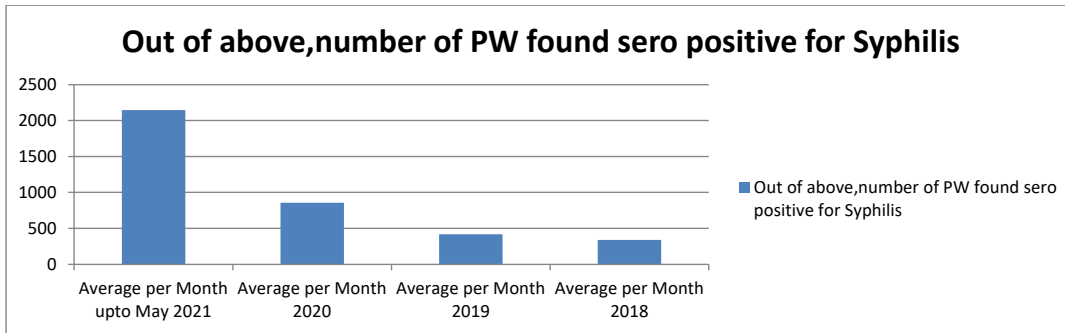


Figure 2: Average per month in different years- number of pregnant women (PW) found sero- positive for syphilis using POC test

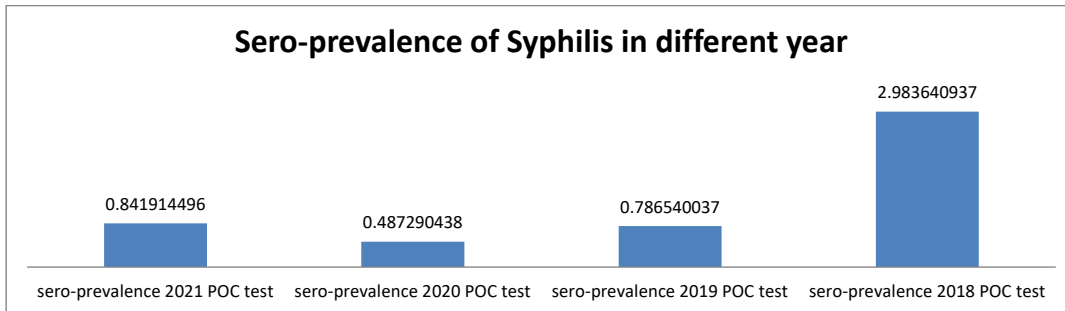


Figure 3: Sero-prevalence of syphilis in PW tested using POC test for Syphilis

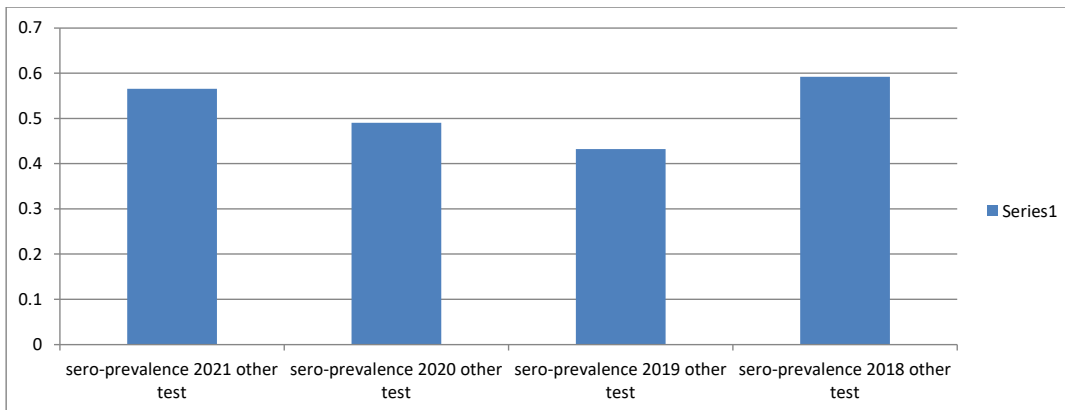


Figure 4: Sero-prevalence of syphilis in PW tested using other test for Syphilis

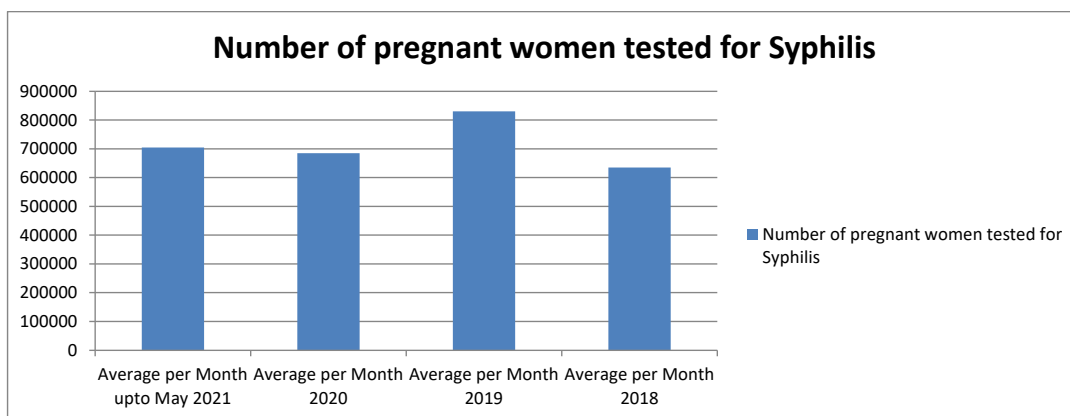


Figure 5: Number of PW tested using other test for Syphilis

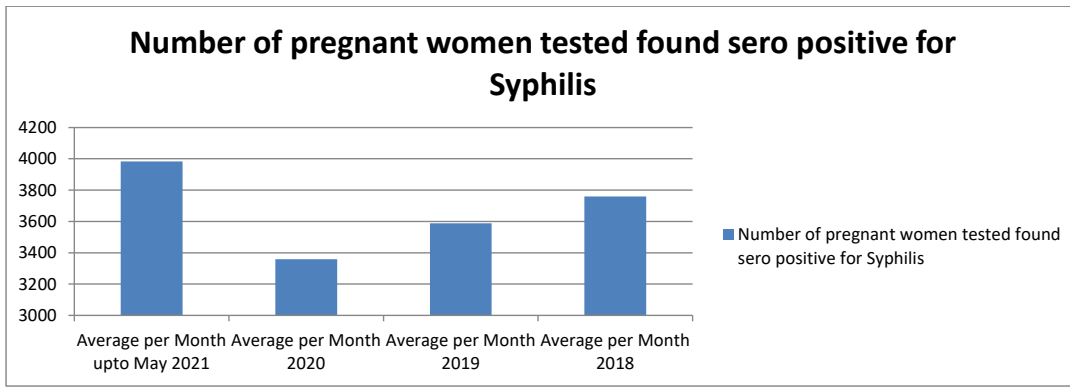


Figure 6: number of pregnant women tested by test other than POC and found sero-positive

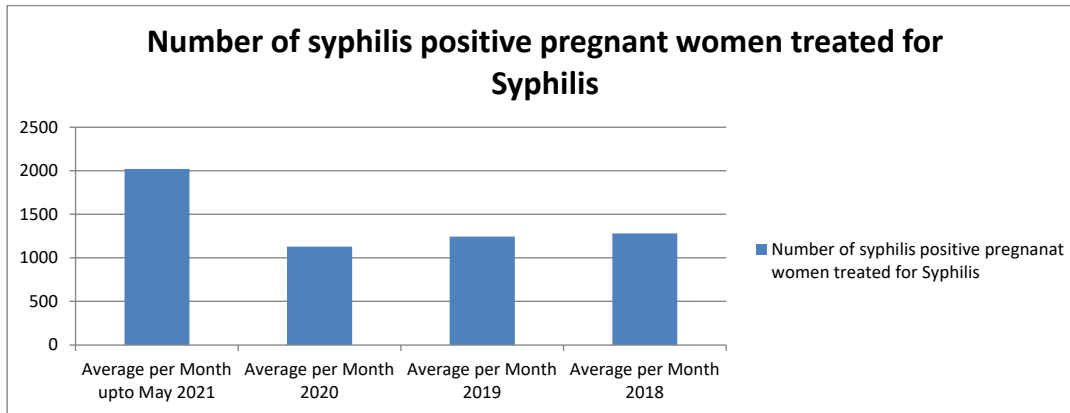


Figure 7: Year-wise number of syphilis positive pregnant women treated for syphilis

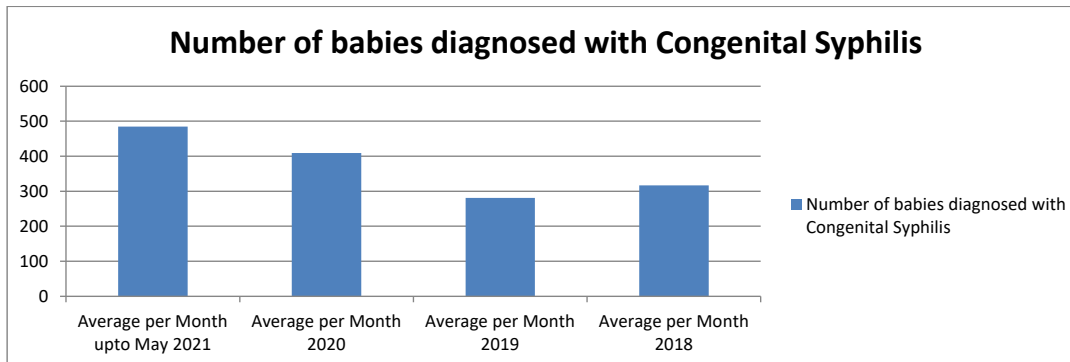


Figure 8: average number of babies per month diagnosed with congenital syphilis.

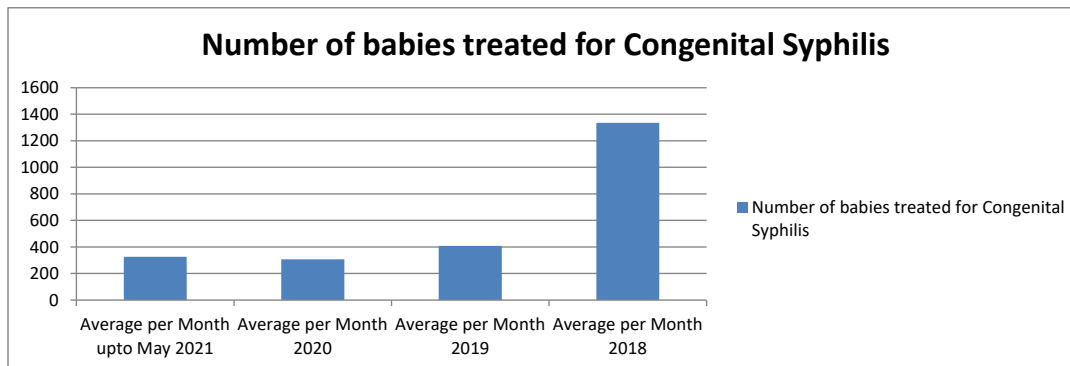


Figure 9: average number of babies per month treated with congenital syphilis.

Table 1: Average per month Comparison of various indicators for Syphilis

Indicator	Average per Month up to May 2021	Average per Month 2020	Average per Month 2019	Average per Month 2018
Number of PW tested using POC test for Syphilis	254705.2	175579.8	53313.67	11364.75
Out of above, number of PW found sero positive for Syphilis	2144.4	855.5833	419.3333	339.0833
Number of pregnant women tested for Syphilis	704464.8	685118.3	830475.1	634827.8
Number of pregnant women tested found sero positive for Syphilis	3983.2	3358.583	3588.167	3758.917
Number of syphilis positive pregnant women treated for Syphilis	2019.6	1127.5	1242.583	1280.167
Number of babies diagnosed with Congenital Syphilis	484.8	409.0833	281	316.75
Number of babies treated for Congenital Syphilis	325.2	306.1667	408.3333	1335.75

Table 2: Grand Total of various indicators for syphilis for comparing different years

Indicator	Grand Total Jan-May 2021	Grand Total Jan-Dec 2020	Grand Total Jan-Dec 2019	Grand Total Jan-Dec 2018	Total number in four years
Number of PW tested using POC test for Syphilis	1273526	2106957	639764	136377	4156624
Out of above, number of PW found sero positive for Syphilis	10722	10267	5032	4069	30090
Number of pregnant women tested for Syphilis	3522324	8221419	9965701	7617933	29327377
Number of pregnant women tested found sero positive for Syphilis	19916	40303	43058	45107	148384
Number of syphilis positive pregnant women treated for Syphilis	10098	13530	14911	15362	53901
Number of babies diagnosed with Congenital Syphilis	2424	4909	3372	3801	14506
Number of babies treated for Congenital Syphilis	1626	3674	4900	16029	26229

Discussion

The average number of PW tested per month using the POC test for Syphilis increased gradually from the year 2018 continuously see figure 1 and table 1. There is also an increase in the average number of PW found sero positive for Syphilis, which indicates, that an increasing number of tests have detected more syphilis cases, as well as less number of testing, which may have left several cases. It is frequently asked which test is diagnostic for syphilis. The direct fluorescent antibody test for *T pallidum* is considered the most specific test for the diagnosis of syphilis when lesions are present. This test utilizes fluorescein isothiocyanate-labeled antibody, which is specific to pathogenic *Treponema* [2]. Very simple rapid tests for the detection of syphilis are also commercially available. These are popularly known as point of care (POC) tests, which can be performed without a laboratory setting and with min-

imal training as well as no special equipment is required. POC is done using a small amount of whole blood collected by a finger prick [3].

Study Strength and Limitation

This is a cross-sectional retrospective research study based on secondary data, which was one of the main limitations of this research study. Another limitation is the availability of data from any other accredited and established source recognized worldwide is not available. The main strength is that the whole study is based on real-time based accredited government data sources and this kind of research study is unique and not available for the context of India as found by the researcher of this novel study.

Conclusion and Recommendation

The WHO recommends screening all pregnant women for syphilis at the first antenatal care visit [1]. In pregnant women with early syphilis, the WHO STI guideline recommends benzathine penicillin G 2.4 million units once intramuscularly over no treatment.

Availability of Data and Materials

Electronic records from HMIS (health management information system) of MoHFW (ministry of health and family welfare), Government of India.

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Authors' contributions

The Author - Dr Piyush Kumar, M.B.B.S., E.M.O.C., P.G.D.P.H.M., -Senior General Medical Officer- Bihar Health Services- Health Department- Government of Bihar, India, does the whole work.

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References

1. WHO guideline on syphilis screening and treatment for pregnant women <https://www.who.int/reproductivehealth/publications/rtis/syphilis-ANC-screenandtreat-guidelines/en/>
2. Ratnam S. (2005). The laboratory diagnosis of syphilis. The Canadian journal of infectious diseases & medical microbiology = Journal canadien des maladies infectieuses et de la microbiologie medicale, 16(1), 45–51. <https://doi.org/10.1155/2005/597580> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2095002>
3. WHO - Sexual and reproductive health - The use of rapid syphilis tests- WHO reference number: WHO/TDR/SDI/06.1 https://www.who.int/reproductivehealth/publications/rtis/TDR_SDI_06_1/en/

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