

# Impact Of Covid-19 Pandemic On Tb Case Notifications In Aurangabad District: A Descriptive Study

Dr. Anu Suresh\*, Dr. Vishal Bendre\*, Dr. Vinod D Mundada\*\*, Dr. S.P  
Andurkar\*\*, Dr. Mohan K Doibale\*\*\*

\*PG RESIDENT, DEPARTMENT OF COMMUNITY MEDICINE, GMC AURANGABAD, \*\* ASSOCIATE  
PROFESSOR, DEPARTMENT OF COMMUNITY MEDICINE, GMC AURANGABAD

\*\*\* PROFESSOR AND HOD, DEPARTMENT OF COMMUNITY MEDICINE, GMC AURANGABAD

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## I. INTRODUCTION

First case of COVID-19 infection reported in India, on January 30, 2020, in Kerala. WHO declared the novel coronavirus outbreak a Public Health Emergency on January 30, 2020<sup>1</sup>. The first case of COVID-19 in Maharashtra was reported on 9 March 2020<sup>2</sup>. First positive Covid-19 case reported in Marathwada region in Aurangabad district on 16<sup>th</sup> March 2020<sup>3</sup>. On 25<sup>th</sup> March 2020, the Govt of India declared a country wide lockdown till 31<sup>st</sup> March, which was extended upto 14<sup>th</sup> April 2020. This lockdown was further extended to 3<sup>rd</sup> May, then upto 17<sup>th</sup> May 2020. This covers 4 phases of lockdown in the country. It was followed by gradual un-lockdown in the country, spread in 6 phases (one month each) up to 30<sup>th</sup> November 2020<sup>4</sup>. Provisional data compiled by the World Health Organization (WHO) from 84 countries indicates that an estimated 1.4 million fewer people received care for tuberculosis (TB) in 2020 than in 2019 - a reduction of 21% from 2019<sup>5</sup>. This study is done to assess the impact of COVID pandemic on TB case notifications in 9 rural TB units in Aurangabad district.

## II. OBJECTIVES

To compare the TB case notifications of rural Aurangabad in pre-COVID and COVID phases.

## III. METHODOLOGY

- Study design: descriptive design
- Study area: Rural blocks Aurangabad Districts.
- Sources of data: Routine national TB surveillance data obtained from NIKSHAY website.
- Timing of data: 2-year time period. Lockdown was declared on 31<sup>st</sup> March, taking 31<sup>st</sup> as reference the two-year period was divided into 2 phases, pre-COVID (April 2019 to March 2020) and COVID (April 2020 to March 2021)
- Study variables: study variables collected includes total number of month wise TB case notifications in different blocks of (Rural) Aurangabad District from April 2019 to March 2021, stratified by male and female, adults (15years and above) and children (<15 years), co-infected with HIV, history of Diabetes mellitus, history of tobacco usage.
- Data analysis: SPSS 26 version was used to analyse the data. Categorical data was presented as frequencies and percentages. Mean number of cases notified in two phases were calculated. Percentage decrease of cases in COVID phase compared to pre-COVID phase was calculated. Unpaired t test used to compare the TB case notifications in COVID phase and pre-COVID phase.

## IV. RESULTS

The total no of TB cases notified per month in Aurangabad district rural blocks were 1626 in the pre-COVID phase, among that 1070 (65.81%) were males, 555 (34.13%) were females and 1 (0.06%) transgender case. A total of 1242 TB cases were reported during the COVID phase, 793 (63.85%) were males, 448 (36.07%) were females and 1 transgender case (0.08%). In Pre-COVID phase 1595 (98.09%) were patients of 15 years and above and 31 (1.91%) were < 15 years were as 1202 (96.78%) were 15 and above and 40 (3.22%) were < 15 years in COVID phase. The The mean number of TB cases notified per month were 135.5 and 103.5 in the pre-COVID and COVID phases respectively.

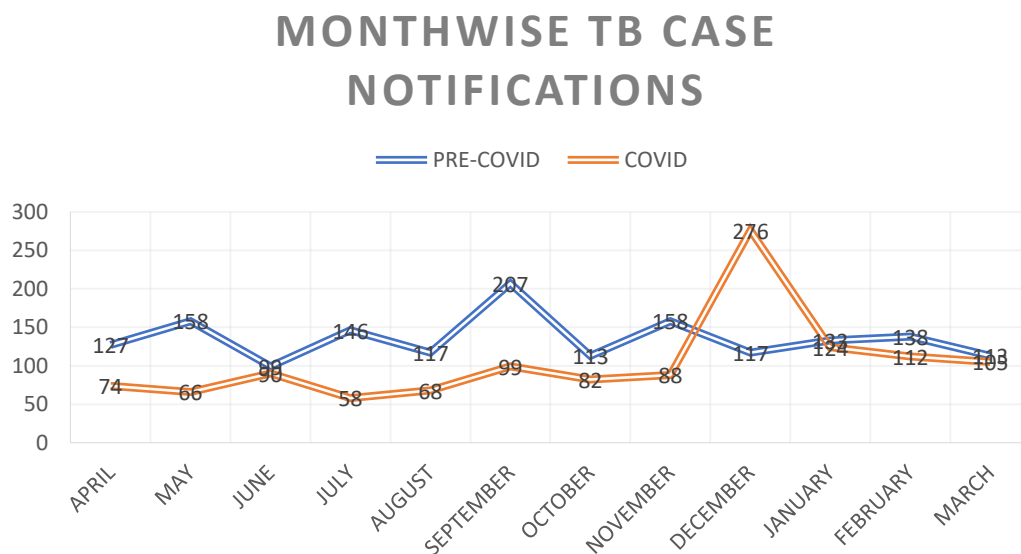
Unpaired t test was applied to compare the month wise TB case notifications in 2 phases, the t value calculated was 1.712 at 5% which is less than table value of t for 22 degrees of freedom (2.07) , so difference

between the 2 phases is not significant. The travel restrictions due to lockdown were prominent during the first 8 months. The t value calculated for the first 8 months at 5% was 4.764 which is greater than table value of t (2.15)<sup>6</sup> at 14 degrees of freedom. So the difference between the means of two phases in the first 8 months is significant

**Table 1. TB case notifications in Rural Aurangabad per month during pre-COVID and COVID periods.**

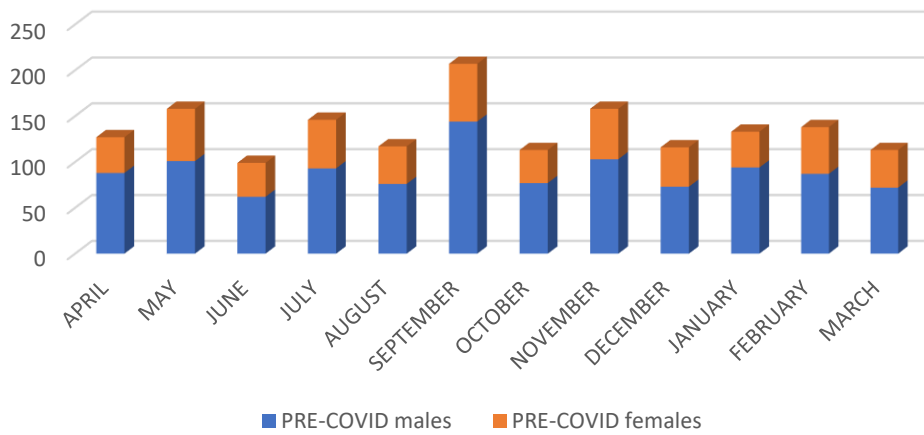
| Characteristics             | Pre-COVID phase April 2019- March 2020 | COVID phase April 2020- March 2021 | Difference between Pre-COVID and COVID phase in % |
|-----------------------------|--|------------------------------------|---|
| Total no. of TB cases       | 1626                                   | 1242                               | ↓23.61  |
| Male                        | 1070                                   | 793                                | ↓25.89  |
| Female                      | 555                                    | 448                                | ↓19.28  |
| Adults (15 years and above) | 1595                                   | 1202                               | ↓24.64  |
| Children (<15 years)        | 31                                     | 40                                 | ↑29.03  |
| Known HIV status            | 1530                                   | 1205                               | ↓21.24  |
| HIV positive                | 16                                     | 15                                 | ↓6.25   |
| Known DM status             | 1329                                   | 1156                               | ↓13.02  |
| History of DM               | 27                                     | 50                                 | ↑85.19  |
| Known tobacco usage status  | 1184                                   | 1115                               | ↓5.83   |
| History of tobacco status   | 40                                     | 34                                 | ↓15   |

**FIGURE 1: Cumulative no. of TB case notifications in pre-COVID and COVID phases.**



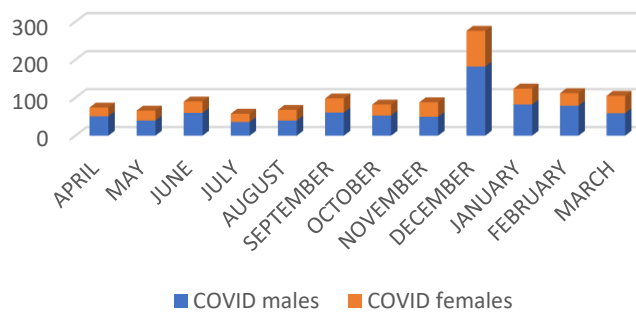
**CHART 1 : Total male case notifications in two phases**

Total male cases notified month wise



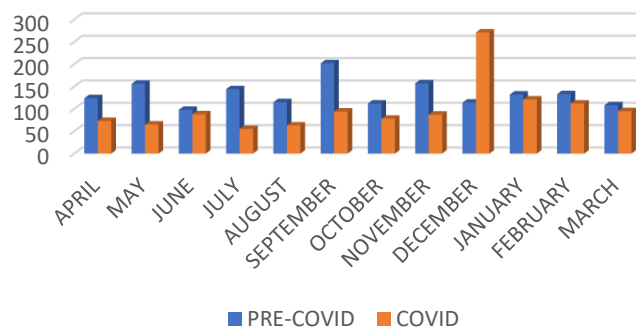
**CHART 2: Total female cases in two phases**

Total female cases notified month wise

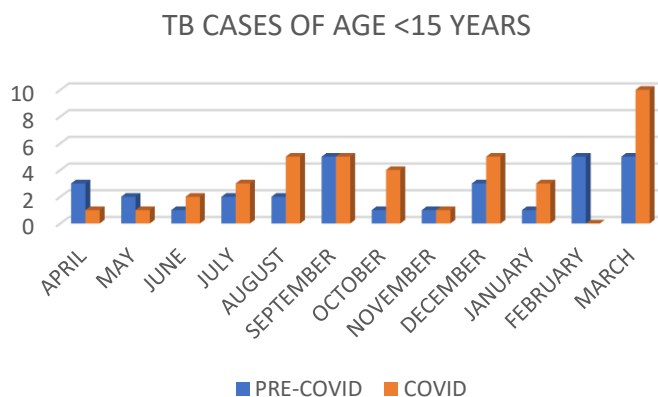


**CHART 3: Total adult case notifications in two phases**

TB CASES OF AGE 15 YEARS AND ABOVE



**CHART 4: Total child case notifications in two phases**



## V. DISCUSSION

The findings of this study demonstrate the substantial impact of the COVID-19 pandemic on TB case notifications in Aurangabad District. 23% decrease in TB case notifications suggests a potential underdiagnosis or underreporting of TB cases during the pandemic. This situation may lead to increased transmission within the community and hinder the progress made in TB control efforts.

The observed decline in treatment initiation rates highlights the challenges faced by individuals in accessing healthcare services during the pandemic. Limited availability of transportation, reduced healthcare workforce, and fear of visiting healthcare facilities could be significant contributing factors. Efforts must be directed toward strengthening the healthcare system to ensure uninterrupted access to TB diagnostic services and treatment.

In their study Aggarwal AN et al<sup>12</sup>, they studied impact of COVID 19 on impact of TB notifications in India and they reported that after strict nationwide lockdown, monthly tuberculosis notification rates decreased to below 84,000. In Shrinivasan R et al<sup>13</sup> study, they reported a large number of “missed” patients and it might be due to disruptions in tuberculosis-related health services. They reported that it might have resulted in a widespread tuberculosis in the community.

It is crucial to address the underlying barriers to diagnosis and treatment initiation to prevent long-term consequences on individual health and public health outcomes.

## VI. CONCLUSION

Using the routine TB surveillance data from 9 rural TB units from Aurangabad district, we found that there was 23% reduction in total TB case notifications during COVID phase (from April 2020 to March 2021) compared to pre- COVID phase (April 2019 to March 2020).

In Male case notifications there was 25.89% decrease, and 19.28% reduction in female case notifications. Adult cases decreased by 24.64% while child cases increased by 29.03%.

Among the total TB cases reported 1530 (94.09%) and 1205 (97.02%) had known HIV status, while 16 (1.05%) and 16 (1.24%) cases were HIV positive in pre-COVID and COVID phases respectively.

While 1329 (81.73%) and 1156 (93.08%) cases with known DM status were in pre-COVID and COVID phases respectively, total no. of cases with DM were 27 (2.03%) and 50 (4.33%) respectively.

While comparing the month wise TB case notifications in both phases with unpaired t test, it was found to be insignificant. By analyzing the data we can conclude that there were reduction in cases in the first 8 months in COVID phase (from April 2020 to November 2020), where the lockdown was strict and unlocking was gradually executed all over India.

While comparing the TB case notifications in the first 8 months of COVID phase with pre-COVID using unpaired t test, the difference was significant at 5% (t value 2.15 at 14 degrees of freedom, S.E 13.119).

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