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Short communication

Pediatric TB detection in the era of COVID-19

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Abstract

The effect of COVID-19 and measures in response to it on human lives, including healthcare, was enormous. The necessary healthcare services including communicable diseases, such as Tuberculosis (TB) were badly affected. Here an attempt has been made to trace the number of notified Pediatric TB cases during and after COVID-19 lockdown and unlock period, and then compared with the same period of previous year. The epidemic data on notified pediatric TB cases for 2019 and 2020 were extracted from the Health Management Information System (HMIS) database. The absolute numbers of monthly pediatric TB notifications from January to September for the year 2020 were compared to 2019, and the percentage decrease was estimated. The HMIS data shows that there is a significant decrease in pediatric TB notifications during COVID-19 epidemic in India. Especially, when the lockdown and related restrictions in response to COVID-19 was imposed, notifications were significantly decreased compared to the same period during the previous year. Even, the reduction numbers of pediatric TB notifications during post-lockdown are still more worrying. Though, little improvements were observed suddenly after lockdown was removed, but then-after again consisted decrease was reported; and these numbers again substantially lower than the numbers of previous year. Adequate measures to diagnose, control, and prevent TB focusing young children, should be implemented simultaneously with response to COVID-19 pandemic. Further, effective steps should be taken to remove the fear arising due COVID-19 pandemic among masses, so that the healthcare seeking may be improved.

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1. Introduction

The first case of COVID-19 (CoronaVirus Disease 2019) – an infectious respiratory disease – was identified in Wuhan, China in December, 2019 and severely out broke across the globe including India (the first case of COVID-19 in India was identified on January 30, 2020 in Kerala). In India, like other countries, the effect of COVID-19 and measures in response to it on human lives was enormous, including healthcare. The necessary healthcare services including communicable diseases, such as Tuberculosis (TB) were badly affected. TB, a biggest infectious killer, is a major public health crisis across the world. India contributes more than one-fourth of new TB cases and around one-third of TB deaths globally. Though, roughly a million children (aged <15 years) TB cases estimated globally each year (11% of global TB cases), but the risk of death is much higher among children (14% of global TB
Early detection and quick treatment initiation as well as prevention of transmission from TB positive adult family members, since household source is most commonly implicated for young children, are crucial.

These important elements of cascade of care are affected because the entire focus of healthcare was diverted to COVID-19. Moreover, the impact of COVID-19 on overall TB notification is well documented; however, nothing is known about the specific impact of COVID-19 epidemic on detection of Pediatric TB cases in India, especially, during lockdown and unlock period. Here, an attempt has been made to analyze the real-time monthly service delivery data of 2020 and compared to that of 2019.

2. Data source and methods

The monthly notified childhood disease-TB cases and Child immunization-BCG for 2019 and 2020 were extracted from the Health Management Information System (HMIS), a web-based administrative database under the Ministry of Health and Family Welfare (MoHFW). The services on which the HMIS provides data range from Maternal and Child services, immunization and family planning to the treatment of disease. The absolute numbers from the January to September for the year 2020 were compared to that of 2019 figures. The percentage decrease during April to September in 2020 was estimated by comparing the previous year of 2019. The HMIS data is available in public domain at https://nrhm-mis.nic.in/SitePages/Home.aspx.

3. Results

Pediatric TB data illustrate that drastic drop was observed during April (−36%) in notified pediatric TB cases after COVID-19 forced lockdown was imposed. Though, little improvements were observed during May (−12% decrease) and June (−14%) months, but then-after consisted and drastic decrease was observed in next months. In August 2020, case notifications were down by more than half (−53%) compared with the same month in 2019 (Fig. 1). Similarly, the number of cases of pediatric TB registered in April 2020 fell to just half the February levels. Moreover, in August 2020 these numbers fell to more than 55% compared to the February levels (Fig. 1). During the overall lockdown period, a total 2953 Pediatric TB cases were reported compared to 3888 cases during the same period of 2019, a reduction of 24%. However, a more worrying reduction of 36% was observed during the post-lockdown period (June to September, 2020); a total of 6251 Pediatric TB cases were reported compared to 9821 cases in 2019, 3570 less cases in absolute numbers (Table 1).

In addition to Pediatric TB detection, the HMIS data shows serious disruption in providing BCG vaccine - which provides protection against childhood TB. At the national level a decline of 15 and 37% were observed during March and April 2020 compared to the same period of 2019. There-after also on an average around 15% decrease was observed in every month. In April 2020, over 6 lakh fewer BCGs were provided to the children than in April 2019. In subsequent months, there was some evidence of an improvement, but these numbers are also significantly fewer than the previous year of 2019 (Fig. 2). When compared to the January 2020 figure, the number of children receiving BCG vaccine was over 2.6 lakh fewer in March 2020. The decline in April was even sharper – the number of children received the BCG in April 2020 fell to just half to the January 2020 levels (Fig. 2). In particular, a total of 213,983 (−4%; 5,732,168 vs. 5,946,151), 820,680 (−23%; 2,683,552 vs. 3,504,232) and 1,058,784 (−13%; 7,114,513 vs. 8,173,297) fewer BCG immunizations were done during overall period of pre-lockdown, lockdown and post-lockdown (June–September) compared to 2019, respectively (Table 1). Overall, at the national level around 2.1 Crore children were vaccinated for BCG during January–December 2020 compared to more than 2.4 Crore in 2019, more than three million fewer children.

Fig. 1 – Trends in registered Pediatric TB notifications for January to September 2020 in comparison to 2019 and percentage decrease during COVID-19 epidemic, India, HMIS, 2019–20. Note: Nationwide COVID-19 forced lockdown was imposed during March 25, 2020 to May 31, 2020; COVID-19, coronavirus disease 2019; HMIS, Health Management Information System; TB, tuberculosis. Source: Author’s calculations based on pediatric TB notifications data extracted from the HMIS database.
4. Discussion

While, almost similar symptoms are being seen both in COVID-19 and TB,\textsuperscript{11–14} and as COVID-19 does not appear generally to have similar affect among children compared to adults, hence, it is assumed that children will cope better and do not need similar attention from healthcare services for COVID-19.\textsuperscript{15} Additionally, during the era of COVID-19, where the entire focus of healthcare is diverted to tackle COVID-19 epidemic and other healthcare services are neglected,\textsuperscript{16} the disruptions in access to the prevention, monitoring and timely treatment of TB is expected, particularly among young children. Moreover, everyone is discouraged from using healthcare services, unless severely unwell, due to fear of getting infected and labeled as COVID-19 positive.\textsuperscript{17} Hence, families are reluctant to bring unwell children to the healthcare facilities for investigation.

Usually, pediatric TB is relatively neglected and the all emphasis has been on adult disease.\textsuperscript{18} Apart from this, TB rarely presents as an acute, severe illness in children but progresses silently. If not regularly reviewed for timely diagnosis and early initiation of treatment then TB can be more fatal among young children compared to adults. However, the data shows severe disruptions in the detection of pediatric TB during COVID-19 epidemic. Though, Stop TB Partnership advocates that a 10% decrease in TB case notification may be attributed to maintaining physical distancing in high TB burden countries,\textsuperscript{19} but it may not be true in case of children. Because, as most TB in young children is acquired in their own household, hence, social distancing measures that keep a family together for a long period of time are likely to result in more exposure of children to infectious TB cases.

5. Conclusion

In order to protect young children from the risk of getting TB infection, it is being suggested that the COVID-19 screening
should gather information about TB in the household. However, to effectively tackle the TB during COVID-19, the health ministry has issued guidance for bi-directional TB-COVID screening, TB screening for ILL and SARI cases,\(^{20}\) this should be strictly implemented for COVID-19 screening. Lastly, it must be noted that TB is the oldest and more killer than the other communicable disease; and hamper in measures to diagnose, control, and prevent TB during this pandemic may dampen the government of India’s aim to eradicate TB by 2025, which also consequently lead to great loss in achieving global committed targets to end TB in general. Hence, the situation warrants continuity of essential TB interventions through the national TB program should be implemented simultaneously with response to COVID-19 pandemic. Further, effective steps should be taken to remove the fear arising due COVID-19 pandemic among masses, so that the healthcare seeking may be improved.

### Disclosures and declaration

#### Availability of data and materials

The data used for the study is obtained from the India’s Health Management Information System (HMIS) web-portal under union health ministry which is available in public domain. No separate ethics statement and consent for publication was required for this study.

#### Informed consent

Not applicable.

#### Author’s contributions

Sole author.

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#### Conflicts of interest

The author has none to declare.

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