



Original Research Article

A study to assess impact of COVID-19 on trends of TB prevalence in Tumkur district

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ABSTRACT

Background: Tuberculosis (TB) still continues to be endemic in various regions of the world, with 26% of the global TB cases are from India. In 2020, a total of 1.8 million cases reported as against 2.6 million in the previous year. The unprecedented COVID-19 pandemic derailed the momentum gained and the routine TB related services were adversely affected across the country due to COVID containment measures. The rapid and unexpected surge in demand for diagnosis, treatment, and care of COVID-19 patients has interfered with routine TB services. We assess the impact of Covid-19 on trends of TB prevalence in Tumkur district.

Methodology: By convenient sampling technique the secondary data was drawn from Nikshay portal in district TB centre Tumkur. All TB patients from last 3 years data was entered and analysis done in MS excel to compare testing rate, diagnostic tools, treatment groups, comorbid and treatment outcome.

Results: 3719 patients were enrolled for treatment during the year 2020-21 as against 6719 in the previous years. The co morbid percentage is similar across both groups and the rapid diagnostic test was used more during pandemic for microbiological confirmation of TB. Extra pulmonary tb made up to 30% of total cases during the pandemic with low contract tracing during the period.

Conclusion: The case notification and treatment outcome are drastically reduced during the pandemic. With limited resources, less infrastructure it's hard for middle income countries like India to cope up pandemic crisis.

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1. Introduction

Tuberculosis (TB) still continues to be endemic in various regions of the world and is the foremost cause of death from single infectious agent *Mycobacterium tuberculosis*.

About 10 million people worldwide were infected in 2019.¹ According to the World Health Organization, 26% of the global TB cases are from India. Besides, India also accounts for 27% of the worldwide burden of rifampicin-resistant TB.² The incidence of TB is highest in the 15–24year age group. The incidence rates in men, women,

and children were 60%, 34%, and 6%, respectively.³

For effective eradication of tuberculosis, a multi-pronged approach of surveillance, clinical assessment, testing, contact tracing, and confirmation of diagnosis with supervised or unsupervised treatment regimens is required.

India had been successfully inching its way towards bridging the gap between the WHO estimated number of incident TB cases and the number of incident TB cases notified by National TB Elimination Programme (NTEP).

In 2020, a total of 1.8 million cases reported as against 2.6 million in the previous year.⁴ 'Lockdown', self-isolation, quarantine, containment strategies introduced by Government of India to prevent the spread of novel

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coronavirus -SARS-CoV-2 has led to a 78% drop in the diagnosis of new TB cases in April 2020 compared to the same month in 2019 according to Central Tuberculosis Division Nikshay portal.⁵ The unprecedented COVID-19 pandemic derailed the momentum gained and the routine TB related services were adversely affected across the country due to COVID containment measures.

The rapid and unexpected surge in demand for diagnosis, treatment, and care of COVID-19 patients has interfered with routine health services around the world and in India. This study is intended to assess the impact of TB prevalence in the district of Tumkur, Karnataka.

2. Materials and Methods

A cross-sectional study to compare the prevalence of TB cases before and during the Pandemic using semi-structured questionnaire which contains sociodemographic variables and questions to compare diagnostic methods, treatment adherence and treatment outcome of the cases. Data was entered in MS excel and analysed using SPSS version 21 software.

2.1. Study settings

Tumkur District

2.2. Study design

Cross-sectional study

2.3. Inclusion criteria

All cases reported and tested in district TB centre.

2.4. Exclusion criteria

All cases with incomplete data.

2.5. Study period

3 months.

2.6. Sampling technique

Convenient sampling method.

2.7. Study tool

Data is collected using semi-structured questioner.

2.8. Source of data

Medical records from Nikashay portal.

3. Objectives

1. To compare the prevalence of TB cases before and during the Pandemic.

2. To compare the notification and testing rate of cases before and during the pandemic.
3. To compare treatment outcome before and during the pandemic.

4. Results

Obtained were 6719 samples before the pandemic and 3719 during the pandemic. The study found high prevalence in males. (Table 1). The sputum smear examination by direct microscopy was lower during the pandemic. The supportive tools like chest x-ray and rapid diagnostic test were utilized more during the pandemic. The CB NAAT which detects DNA sequence and RIF resistance was 20% during the pandemic and with use of True Nat which was started during the pandemic, accounted for 6% of total samples tested. 60 percentage of all samples were microbiologically confirmed.

Tuberculosis in HIV infected people was seen in 10% across both sample groups. (Table 2). Diabetes accounts for 20% of all tb cases during the pandemic. Extra pulmonary tb made up to 30% of total cases during the pandemic. When compared contact tracing was high during the pandemic.

In treatment outcome, cured and treatment complete percentages are low in pandemic.(Table 3) Death percentage and treatment groups like new cases and retreatment was similar across both sample groups.

5. Discussion

TB case notification through Nishay is a key to the NTEP. Case detection, treatment and compliance are the key factors in the End TB strategy. COVID-19 pandemic in India has adversely affected the TB case notification. In the present study, depicts the decline in case detection and notification.

Although the case detection was steadily increasing, the results of repeated lockdown due to COVID 19 pandemic, has drastically reduced to half. This drop was attributable to various factors like delay in data entry to nikshay portal, reduced attendance to health services, reassignment of health personal for COVID 19 services and a reduction in TB testing and detection.

The results also show that the prevalence of TB was higher among males. One of the major reasons could be that Indian men are more exposed to smoking and drinking. Further, men are expected to be in greater contact with people who suffer from active Tuberculosis (TB) than women.⁶

Laboratories have mostly been dedicated to the processing of samples of COVID-19 patients. The follow-up and response evaluation of pulmonary TB patients is chiefly done by sputum microscopy and culture growth. This assessment was lost during lockdown. Hence, those who had treatment failure, relapse, or who had developed drug resistance could not be timely identified. Several

Table 1:

		Frequency (2020-21)	Percentage (2021-21)	Frequency (2018-19)	Percentage (2018-19)
Gender	Male	2567	69.0	4515	67.2
	Female	1148	30.9	2202	32.8
	Transgender	4	.1	4	.1
Total		3719		6721	
Basis of diagnosis	Microscopy ZN and Fluorescent	1163	31.3	2953	43.9
	CBNAAT	720	19.4	1078	16.0
	Chest X-ray	582	15.6	47	.7
	F Line LPA	2	.1	842	12.5
	TRUNAT	252	6.8	1	.0
	TRUNAT	3	.1	1	.0
Microbiologically Confirmed	MTB-PIF				
	Yes	2382	64.0	4171	62.1
	No	1337	36.0	2550	37.9

Table 2:

		Frequency (2020-21)	Percentage (2021-21)	Frequency (2018-19)	Percentage (2018-19)
HIV Status	Reactive	387	10.4	684	10.2
	Non-reactive	3290	88.5	5648	84.0
Diabetic Status	Diabetic	689	18.5	912	13.6
	Non-diabetic	2968	79.8	5144	76.5
Site of Disease	Pulmonary	2544	68.4	4841	72.0
	Extra pulmonary	1083	29.1	1785	26.6
Contract tracing	Yes	3563	95.8	5642	83.9
	No	156	4.2	1079	16.1

strategies have been put in place, including the utilization of the outreach services to reach patients with TB and the postal delivery of TB medications.⁷ In cases of multi-drug resistant TB, a strategy recommended by the WHO includes the shortening of tuberculosis prevention regimens to 1-month daily regimen of Rifampicin and Isoniazid in the prevention of TB in those who are in close contact with active TB patients.⁸

The Government of India has issued advice regarding the provision of TB medications to patients in the outpatient setting, stating that these patients should be provided with TB medications to last 1 month, and in exceptional circumstances 2-month supplies, to reduce the need for patients to attend clinics and therefore reduce the risk of transmitting the disease.⁹

The strong association between Tb and HIV is well-established and, in our study, it is reflected in 10% of the Tb cases.

Diabetes accounts for 20% of all tb cases in the pandemic. People with weak immune system as in diabetes are at high risk of progressing from latent to active tb. Hence, bi-directional screening is suggested for Tb and diabetes.

Extrapulmonary Tb comprises of 30% during the pandemic which has been steadily increasing in the recent

years. Diagnosing EPTB remains challenging because clinical samples obtained from relatively inaccessible sites may be paucibacillary, thus decreasing the sensitivity of diagnostic tests. Whenever practical, every effort should be made to obtain appropriate specimens for both mycobacteriology and histopathologic examinations. The measurement of biochemical markers and molecular biology techniques such as polymerase chain reaction may be useful adjuncts in the diagnosis of EPTB.

In India, where drug treatments are dispersed under direct observation and the patient or caretaker must frequently collect the drugs from the DOTS centre, the drug supply was suddenly halted. There was no prior planning to ensure uninterrupted supply in case of an emergency. Thus, discontinuation of drugs might have possibly led to disease relapse and disease resistance which is evident in our study as the treatment outcome is drastically reduced during the pandemic. (Table 3)

There are concerning reports suggesting that COVID-19 may slow down the recent gains in TB control.¹⁰ Adewole, O points out the significant impact of COVID-19 pandemic on TB treatment. The study highlighted a marked reduction in the number of presumptive and confirmed TB case detection in 2020 during the pandemic compared to the same time in 2019 in Nigeria. COVID-19 prevention and

Table 3:

		Frequency (2020-21)	Percentage (2021-21)	Frequency (2018-19)	Percentage (2018-19)
Type of Case	New	3093	83.2	5631	83.8
	PMDT	66	1.8	104	1.5
	Retreatment: Others	245	6.6	355	5.3
	Retreatment: recurrent	253	6.8	482	7.2
	Retreatment: treatment after failure	23	.6	43	.6
	Retreatment: treatment after lost to follow up	39	1.0	101	1.5
	Abdominal	215	5.8	263	3.9
	Bone (excluding spine)	22	.6	22	.3
	Genitourinary	4	.1	9	.1
	Lymph node	252	6.8	392	5.8
EP Site	Pleural	271	7.3	542	8.1
	Spinal	109	2.9	101	1.5
	TBM	74	2.0	92	1.4
	Others	127	3.4	330	4.9
	Miliary	4	.1	11	.2
	Pericardial	5	.1	4	.1
	Untraceable	16	.4	17	.3
	Cured	1358	36.5	2995	44.6
	Died	360	9.7	624	9.3
	Lost to follow up	122	3.3	373	5.5
Treatment Outcome	Not evaluated	3	.1	71	1.1
	Treatment complete	924	24.8	2381	35.4
	Treatment failure	27	.7	68	1.0
	Treatment regimen changed	99	2.7	143	2.1
	Duplicate record	5	.1	22	.3
	Patient refused	19	.5	17	.3
	Wrongly diagnosed	24	.6	8	.1

lockdown strategies have restricted diagnosis, access to test and treatment centres in Nigeria. Similar dramatic drop since the lockdown according to the Central TB Nikshay portal of Government of India.² As population in some regions are latently infected, it is anticipated that SARS-CoV-2 infection might initiate the development of active TB in the coming months.¹¹ Non-COVID-19 health services like TB surveillance has been hampered with focus on the emergency planning for the pandemic. Response to COVID-19 pandemic should be run simultaneously and not affect the continuity of essential TB national program.

6. Conclusion

3719 patients were enrolled for treatment during the year 2020-21 as against 6719 in the previous years. The case notification and treatment outcome are drastically reduced during the pandemic. With limited resources, less infrastructure it's hard for middle income countries like India to cope up pandemic crisis. Although India aims to

End TB by 2025, the present COVID-19 crisis and its direct and indirect effects on TB have derailed the efforts and therefore, there may be a need in a shift in priority.

7. Recommendation

Gaps in contact tracing and data collection under RNTCP needs to be filled and addressed. If the NTEP does not take remedial measures, the country may have to revise its End TB target of 2025 because many people with TB is not diagnosed during pandemic. Hence continuing the use of facemask, sanitation habits need to be promoted by the Government.

8. Source of Funding

None.

9. Conflict of Interest

None.

References

1. TB Statistics India. [Accessed 21 July 2021]. Available from: <https://tbfacts.org/tb-statistics-india/>.
2. Global tuberculosis report 2020. Geneva, Switzerland: WHO. Available from: <https://www.who.int/publications/i/item/9789240013131>.
3. World Health Organization (2021) Geneva, Switzerland: WHO; 2020. Global tuberculosis report; 2021.
4. Government of India. Central Tuberculosis Division. India TB report 2021. [Accessed 21 July 2021]. Available from: <https://tbcindia.gov.in/>.
5. Government of India. Central Tuberculosis Division. India TB report 2020. [Accessed 21 July 2021]. Available from: <https://tbcindia.gov.in/>.
6. Mishra VK, Retherford RD, Smith KR. Biomass cooking fuels and prevalence of tuberculosis in India. *Int J Infect Dis.* 1999;3(3):119–29.
7. Government of India. Ministry of Health and Family Welfare (MOHFW). Accredited Social Health Activist (ASHA). [Accessed 21 July 2021]. Available from: [https://nhm.gov.in/index1.php?lang\protect\relax\protect{\begingroup\endgroup\@@over4}\\$1&level\protect\relax\protect{\begingroup\endgroup\@@over4}\\$1&sublinkid\protect\relax\protect{\begingroup\endgroup\@@over4}\\$150&lid\protect\relax\protect{\begingroup\endgroup\@@over4}\\$226](https://nhm.gov.in/index1.php?lang\protect\relax\protect{\begingroup\endgroup\@@over4}$1&level\protect\relax\protect{\begingroup\endgroup\@@over4}$1&sublinkid\protect\relax\protect{\begingroup\endgroup\@@over4}$150&lid\protect\relax\protect{\begingroup\endgroup\@@over4}$226).
8. World Health Organisation (WHO). Tuberculosis and COVID-19. [Accessed 21 May 2021]. Available from: <https://www.who.int/docs/default-source/documents/tuberculosis/infonote-tb-covid-19.pdf>.
9. Ghosh A, Gupta R, Misra A. Telemedicine for diabetes care in India during COVID19 pandemic and national lockdown period: guidelines for physicians. *Diabetes Metab Syndr.* 2020;14(4):273–6.
10. Adewole O. Impact of COVID-19 on TB Care: Experiences of a Treatment Centre in Nigeria. [Accessed 22 July 2021]. Available from: <https://www.theunion.org/news-centre/news/impact-of-covid-19-on-tb-care-experiences-of-a-treatment-centre-in-nigeria>.
11. Chen Y, Wang Y, Fleming J, Yu Y, Gu Y, Liu C, et al. Active or latent tuberculosis increases susceptibility to COVID-19 and disease severity. *medRxiv.* 2020; Available from: <https://doi.org/10.1101/2020.03.03.doi:10.1101/2020.03.10.20033795>.

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