



## TB Profile of Jharkhand: An Insight and Analysis

Authors

**Dr Smiti Narain<sup>1\*</sup>, Dr Anupama T<sup>2</sup>, Dr Anindya Mitra<sup>3</sup>, Dr Megha Priyadarshini<sup>4</sup>**

<sup>1</sup>Medical Officer State TB Cell

<sup>2</sup>Medical Consultant – WHO NTEP Technical Support Network

<sup>3</sup>STDC Director

<sup>4</sup>Medical Officer STDC; State TB Cell, Jharkhand

\*Corresponding Author

**Dr Smiti Narain**

### Abstract

**Introduction:** TB is one of the major public health problems in India, with the largest reported epidemics according to WHO. India is ranked at number 38 at a global level in terms of the TB incidence rate. However, being the second most populous country in the world, it has 26% of global burden of TB and has the highest number of TB cases occurring annually.

**Objectives:** The aim of this study was to assess the profile of the different categories of TB patients in Jharkhand for the year 2019 who are registered in the NIKSHAY web-based online portal.

**Methodology:** Data was obtained from the NIKSHAY portal of State TB Cell, Jharkhand. The secondary data of the Nikshay portal under NTEP was analysed to enumerate all the variables in the web-based portal. Data from the state of Jharkhand from January 1 to December 31, 2019 was obtained.

**Results:** A total of 57,504 TB patients were notified. Most of patients were in the 15-44 years age group with males being 69%, most belonged to Drug sensitive category(98%) and Pulmonary TB(86%) being most common. Among extra pulmonary the most common site was Abdominal TB(34%). Treatment success rate was 83%.

**Discussion:** The working age group is mostly affected as shown by Ali SIFI et al. 2.23 M:F ratio was comparable to a study by Horton et al.

**Conclusion:** We need to train our data entry officials and monitor their work at state and district level. Low UDST may result in missing drug resistant cases.

**Keywords:** TB profile, outcome, UDST, NIKSHAY.

### Introduction

TB is one of the major public health problems in India, with the largest reported epidemics according to WHO<sup>1</sup>. The total number of cases reported for the year 2019 was 2,640,000 with an incidence rate of 177 per one lakh population. India ranked at number 38 at a in TB incidence rate globally. As India is the second most populous country in the world with 26% of global

burden of TB, it has the highest number of TB cases occurring annually<sup>2</sup>. Tuberculosis (TB) is one of the top 10 major causes of death worldwide with over 1.4 million deaths in 2019 and is the leading cause of death due to a single agent.<sup>3</sup> Tuberculosis (TB) has been prevalent in humans causing suffering to the mankind since ancient times. Despite various efforts being carried out continuously at all levels to eliminate this disease

globally, we have been far from successful. There are still a large number of undiagnosed or untreated and underreported cases in a significant section/proportion of the population all over the globe<sup>4</sup>. The goal of the End TB strategy devised by the World Health Organization (WHO) is to end the global TB epidemic by the year 2035.<sup>5</sup> An effective step in this direction is prompt diagnosis so that the treatment may be initiated before that person transmits infection to others in the society. To accomplish this goal, WHO proposed early diagnosis of TB and systematic screening of contacts and high-risk groups, and calls for achieving zero catastrophic cost for TB-affected families by the year 2035<sup>5</sup>. India is a high TB burden country and efforts are continuously being made to eliminate this disease. In the Indian National Strategic Plan (NSP) for TB elimination 2017-2025, it was announced that the national goal was to work towards elimination of TB in India by the year 2025 and achieve a zero catastrophic cost for affected families due to TB by the year 2020<sup>6</sup>.

Goal of National Strategic plan, 2020-2025 is to achieve a rapid decline in burden of TB, morbidity and mortality to achieve the Sustainable Development Goals of 80% reduction in incidence and 90% reduction in deaths by 2025; five years earlier of the global targets, the base line year of comparison being 2015<sup>7</sup>.

The National TB Control Programme of India, Revised National TB Control Programme launched a web-based case-based TB notification portal-NIKSHAY in May 2012 to improve TB surveillance from an Epi-Info based aggregated quarterly reporting to a real time web based case based notification system<sup>8</sup>. This system has given an opportunity to look into patient wise details for better understanding and analysing the profile of TB patients.

### **Aim and Objectives**

The aim of this study was to assess the profile of the different categories of TB patients in Jharkhand for the year 2019 who are registered in

the NIKSHAY web-based online portal. A comparison to outline the various statistical values for their analysis and evaluation so as to interpret the newer trends in TB care were the objectives of this study.

### **Methodology**

Present study was a descriptive retrospective study. Data was obtained from the NIKSHAY portal of State TB Cell, Jharkhand. The secondary data of the Nikshay portal under NTEP was analysed to enumerate all the variables in the web-based portal. Data from the state of Jharkhand for the year 2019 i.e from January 1, 2019 to December 31, 2019 was obtained. The data of all the four quarters was obtained, evaluated and summed up to represent the annual statistics.

Notification for TB has been defined as reporting about information on diagnosis and/or treatment of TB cases to the nodal Public Health Authority (for this purpose) or officials designated by them for this purpose. Every health-care provider and clinical establishments run or managed by the government (including local authorities), private, or NGO sectors and/or individual practitioners have to notify the cases of TB encountered<sup>9</sup>. This study was done after taking permission from State TB Training and Demonstration Centre (STDC) Director. The study was a review of reports obtained from the "Nikshay" database and did not involve patient interaction; therefore, individual patient consent was deemed unnecessary. Data was retrieved electronically in Microsoft-Excel and the analysis was done using SPSS Software. The data was expressed in frequency and proportions.

The data which is used, is from the year 2019 Nikshay web portal, is selected as this represents the pre-COVID data. Thus, the results and data were not affected by the COVID pandemic, which has resulted in lack of reporting the cases and difficulty in management of the disease.

**Results**

A total of 57504 patients were registered in the web based Nikshay portal in the state of Jharkhand in 2019.

1. **Age:** Table 1 represents the data of the age-based distribution of TB in the state of Jharkhand.

Among the patients registered, about 58.67% were from the age group of 15-44 years, representing the prevalence of the disease in the young and working age group. The mean age of the diseased population, being 37 years. The median age being 35 years. The standard deviation was calculated to be 16.78 years. The notified patients were in the age range 1 to 90 years.

**Table 1:** Age distribution of patients

Age	Percentage	Frequency		
≤ 14	5.61%	3226	Mean	37.22
15-24	20.31%	11678	Median	35
25-34	20.36%	11706	Mode	60
35-44	18.00%	10350	Standard Deviation	16.78
45-54	15.92%	9155		
55-64	12.87%	7399		
≥ 65	6.94%	3990		
Total		57504		

2. **Gender:** Table 2 represents the gender distribution of the TB cases in Jharkhand: Most of the patients were male (68.96%), followed by females (30.94%) and about 0.1% were trans genders.

**Table 2:** Gender based distribution of the TB patients in Jharkhand:

Gender	Frequency	Percentage
Female	17793	30.94%
Male	39655	68.96%
Transgender	56	0.10%
Total	57504	

The ratio of male to female cases is 2.23

3. **Type of case:** Table 3 represents the type of cases in TB in the state of Jharkhand, outlining the DSTB(Drug Sensitive TB) which is further categorized to new and retreatment cases and DRTB(Drug Resistant cases) also known as PMDT (Programmatic management of drug resistant TB) cases. 98.23% cases were Drug sensitive and remaining 1.77% were Drug resistant.

In DSTB, the maximum cases seen were new cases (93.62%). Under the retreatment category (6.3%), 1.53 % had recurrent TB, 0.25 % belonged to treatment after failure group and 0.22% fell in treatment after lost to follow up.

**Table 3:** Type of TB cases in Jharkhand state:

Type of case	Total	Subcategory	Cases	Percentage
DSTB	98.23%	New	52887	93.62%
		Retreatment: Treatment after lost to follow up	129	0.22%
		Retreatment: Treatment after failure	141	0.25%
		Retreatment: Recurrent	880	1.53%
		Retreatment: Others	2451	4.26%
DRTB	1.77%	PMDT	1016	
	100%	Total	57504	

4. **Basis of diagnosis:** Table 4 outlines the TB patients on the basis of diagnosis:

The diagnosis was made by the chest radiograph in 41.96% of the cases followed by microscopy (34.03%) and CBNAAT (12.97%), these among the maximum utilised investigations for the diagnosis. The blank row refers to unfilled data.

**Table 4:** Basis of Diagnosis

Basis of Diagnosis	Frequency	Percentage
CBNAAT	7456	12.97%
Chest X Ray	24129	41.96%
Culture	38	0.07%
DST	12	0.02%
F Line LPA	67	0.12%
Microscopy ZN and Fluorescent	19569	34.03%
Other	5640	9.81%
S Line LPA	84	0.15%
Trunat	48	0.09%
(blank)	461	0.80%
Total	57504	

5. **Microbiological diagnosis:** Table 5 represents the microbiological diagnosis in TB patients in Jharkhand. About 51% of the patients were diagnosed microbiologically i.e by Sputum microscopy, rapid diagnostics tests like CBNAAT or culture.

**Table 5:** Microbiological diagnosis

Microbiological diagnosis	Percentage
No	49%
Yes	51%
Total	

6. **Site:** Table 6 represents the anatomical site of TB in the cases:

Most of the patients were found to have pulmonary disease (86.39%). Extra pulmonary disease was seen in 11.79% of the cases.

**Table 6:** Site of Disease

Site of disease	Frequency	Percentage
Extra Pulmonary	6779	11.79%
Pulmonary	49676	86.39%
(blank)	1049	1.82%
	57504	

7. **Site of extrapulmonary TB:** Table 7 represents the different sites that were seen in extrapulmonary disease in TB patients:

Most of the patients had abdominal Koch's (33.46%), followed by pleural disease and lymph node disease. Sites other than mentioned in the table, accounted for 19.68% cases.

**Table 7:** Site of Extrapulmonary TB

Extrapulmonary TB	Frequency	Percent
Abdominal	2268	33.46%
Bone (Excluding Spine)	222	3.27%
Genitourinary	153	2.26%
Lymph Node	1153	17.01%
Miliary	52	0.77%
Other	1334	19.68%
Pericardial	34	0.50%
Pleural	1218	17.97%
Spinal	190	2.80%
TBM	155	2.29%
Total	6779	100.00%

8. **UDST (Universal Drug Susceptibility Testing):** Table 8 represents UDST in TB patients in Jharkhand.

About 48% cases had UDST done. Total number of patients eligible for UDST are those who are microbiologically positive (29411 patients) out of which 27472 patients underwent UDST making the UDST uptake percentage as 93.4%.

**Table 8:** UDST

UDST done	Frequency	Percentage
No	30032	52%
Yes	27472	48%
Total	57504	100%

9. **Treatment outcome:** Table 9 represents treatment outcome. Around 54.47% of notified patients completed their treatment and 28.29% were assigned cure status at the end of treatment making Treatment Success Rate (= {Cured + treatment completed}/total cases notified)<sup>10</sup> as 82.76%. Around 9% of patients were not evaluated and 2.6% died.

**Table 9:** Treatment Outcome

Treatment outcome	Frequency	Percentage
Cured	16266	28.29%
Died	1498	2.61%
Duplicate Record	57	0.10%
Lost To Follow Up	2094	3.64%
Not Evaluated	5278	9.18%
Patient Refused	26	0.05%
Treatment Complete	31320	54.47%
Treatment Failure	328	0.57%
Treatment Regimen Changed	354	0.62%
Untraceable Incorrect Address	89	0.15%
Untraceable/Migrated	21	0.04%
Wrongly Diagnosed	22	0.04%
(blank)	151	0.26%
	57504	

### Discussion

As per Ali S.I.F.I.<sup>8</sup> et al about 66.9% patients of TB belonged to the age group of 15-44 years which was comparable to our study which showed 58.67% patients in the same age group. A study by Babu DS et al<sup>11</sup> showed 50.6% patients affected with TB in that similar age group.

A study by Horton KC et al<sup>12</sup> had shown as a comparison of studies conducted in 1953 and 1997 as per regional variations the M:F ratios in their study was similar to those that were previously reported for South-East Asia (3.8 versus 3.2), where the sex differences were maximum, and in the Western Pacific (1.9 versus 2.0). In our study it was 2.23.

DR TB was present in 1.77% of notified TB patients. The results were lower than studies done by Sachdeva et al<sup>13</sup> (2-3%) and Shivekar S S et al<sup>14</sup> which stated Indian government survey data (2014 to 2016) estimates as incidence of MDR-TB as 2.84% in new cases and 11.6% among previously treated patients. Possible reason of lower reported values can be lower LPA uptake in the state.

Babu DS et al<sup>11</sup> reported similar results for proportion of TB based on anatomical site as our study.

Izudi J et al<sup>15</sup> mentions WHO recommendation of at least 90% treatment success rate as a criterion for good performing tuberculosis program. Our state reports a success rate of 83%.

### Conclusion

Low notification rate of females as compared to males, points to poor health seeking behaviour, contributory factors may be stigma, neglect, lack of education, poverty etc. Special focus to create awareness in community regarding symptoms of TB, early diagnosis, facilities provided in the programme and the complications which can happen due to neglecting one's symptoms. Since TB affects the working age group, more so males, who are the bread earners of the family, the disease burdens the family economically and consequently the state economy.

Low UDST uptake may result in missing drug resistant cases which may be extremely detrimental to the society. Measures should be taken to improve availability of concerned investigations so as to diagnose TB on basis of drug resistance correctly. We need to train our data entry operators so that no data is unfilled in Nikshay and this should be monitored by district and state level officers.

### References

1. WHO. Global tuberculosis control. WHO report. WHO/HTM/TB/2006.362. Geneva: World Health Organization, 2006.
2. WHO Global TB Report 2021, India. Last accessed on 08/02/2022 (<https://www.who.int/teams/global-tuberculosis-programme/tb-reports>)
3. Sulis, G., Roggi, A., Matteelli, A. and Raviglione, M. Tuberculosis: Epidemiology and Control. *Mediterr J Hematol Infect Dis* 2014, 6(1):e2014070.
4. Garg T, Gupta V, Sen D, et al. Prediagnostic loss to follow-up in an active case finding tuberculosis programme: a mixed methods study from rural Bihar, India. *BMJ Open*. 2020;10, e033706.
5. Factsheet: End TB Strategy and targets. Available from: [https://www.who.int/tb/post2015\\_TBstrate](https://www.who.int/tb/post2015_TBstrate)

- gy.pdf?ua¼1 Last accessed on 21 July 2020.
6. National Strategic Plan for Tuberculosis Elimination 2017- 2025. Available from: <https://tbcindia.gov.in/WriteReadData/NSP%20Draft%2020.02.2017%201.pdf> Last accessed on 21 July 2020..
  7. National Strategic Plan To End Tuberculosis In India2020–25. Accelerating The National Response For Expanded Coverage And Sustained Impact At Scale To End Tb In India.Available from: <https://tbcindia.gov.in/showfile.php?lid=3577>, Last accessed on 7 Feb 2022
  8. Ali, S. I. F. I., Shinde, J., Khetarpal, M., & Pawar, M. H. A descriptive analysis of TB patients registered for treatment using the Web based Case based Portal (NIKSHAY), in the district Byculla of Mumbai, India. *South American Journal of Public Health*. Special Edition May 2016. Available at [https://www.texilajournal.com/thumbs/article/Public%20Health\\_SE\\_May2016\\_Article\\_8.pdf](https://www.texilajournal.com/thumbs/article/Public%20Health_SE_May2016_Article_8.pdf). Accessed on 4/2/2022.
  9. Uplekar M, Pathania V, Raviglione M. Private practitioners and public health: Weak links in tuberculosis control. *Lancet* 2001;358:912-6.
  10. Toolkit for analysis and use of routine health facility data, Guidance for tuberculosis programme managers, Working document, December,2019. Page 14. Available from , accessed on 9<sup>th</sup> Feb 2022
  11. Babu DS, John KR, Babu R. Profile of the tuberculosis patients enrolled in nikshay portal (a web-based online portal) from Chittoor district: A monitoring tool for tuberculosis in India. *Med J DY Patil Vidyapeeth* 2020;13:460-4
  12. Horton KC, MacPherson P, Houben RM, White RG, Corbett EL. Sex Differences in Tuberculosis Burden and Notifications in Low- and Middle-Income Countries: A Systematic Review and Meta-analysis. *PLoS Med*. 2016;13(9): e1002119. Published 2016 Sep 6. doi:10.1371/journal.pmed.1002119
  13. Institute of Medicine (US). Facing the Reality of Drug-Resistant Tuberculosis in India: Challenges and Potential Solutions: Summary of a Joint Workshop by the Institute of Medicine, the Indian National Science Academy, and the Indian Council of Medical Research. Washington (DC): National Academies Press (US); 2012. 2, Drug-Resistant TB in India. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK100386/>. Accessed ON 9<sup>TH</sup> Feb 2022.
  14. Shivekar, S.S., Kaliaperumal, V., Brammachary, U. *et al*. Prevalence and factors associated with multidrug-resistant tuberculosis in South India. *Sci Rep* 10, 17552 (2020). <https://doi.org/10.1038/s41598-020-74432-y>. Accessed on 10<sup>th</sup> Feb, 2022.
  15. Izudi, J., Tamwesigire, I.K. & Bajunirwe, F. Treatment success and mortality among adults with tuberculosis in rural eastern Uganda: a retrospective cohort study. *BMC Public Health* 20, 501 (2020). <https://doi.org/10.1186/s12889-020-08646-0>, Accessed on 10<sup>th</sup> Feb 2022.