

# Current Program on TB Prevention and Reasons for Not Achieving Expected Results in India

Vikas Jain<sup>1</sup>, Dr. Anitha S Pillai<sup>2</sup>

<sup>1</sup>Public Health Expert and PhD Scholar - Social Work, Rabindranath Tagore University, Village Mendua, Bangrasiya Chouraha, Chiklod Road, District Raisen.

<sup>2</sup>PhD - Sociology - Rabindranath Tagore University, Village Mendua, Bangrasiya Chouraha, Chiklod Road. District Raisen

**Abstract:** *Tuberculosis (TB) remains a critical public health issue globally, with India bearing the highest burden. The National Tuberculosis Elimination Program (NTEP), formerly known as the Revised National Tuberculosis Control Program (RNTCP), has implemented various strategies aimed at eliminating TB (Central TB Division, Ministry of Health and Family Welfare, Government of India, 2021). Despite these efforts, the anticipated outcomes remain unachieved. This paper analyses the current TB prevention programs in India, examines the barriers hindering their success, and proposes potential solutions. The study utilizes data and literature from the past decade, including sources from NTEP, NHM, and WHO (World Health Organization, 2023).*

**Keywords:** Tuberculosis elimination, TB control programs, NTEP India, TB prevention strategies, public health challenges

## 1. Introduction

Tuberculosis (TB) is a significant public health challenge, particularly in countries like India, which has the highest TB burden globally (World Health Organization, 2022). India's National Tuberculosis Elimination Program (NTEP) seeks to eliminate TB by 2025. Despite implementing strategies like early detection, drug susceptibility testing, and patient-centric care, the outcomes remain unmet. The purpose of this narrative review is to evaluate the effectiveness of current TB prevention programs in India and to identify barriers and solutions for achieving the goal of TB elimination. "

This narrative review explores barriers such as socio-economic challenges, inadequate infrastructure, and public awareness deficits, proposing multifaceted solutions to accelerate TB elimination in India.

## 2. Background on TB and the NTEP

### Epidemiology of TB

According to the WHO Global TB Report 2022, India accounted for 27% of the world's TB cases, with an estimated 2.64 million cases in 2021 (World Health Organization, 2022). TB remains a leading cause of morbidity and mortality, particularly affecting vulnerable populations such as those with HIV, malnourished individuals, and people living in poverty (World Health Organization, 2020).

### National Tuberculosis Elimination Program (NTEP)

The NTEP, launched in 1997 as the RNTCP, is India's flagship program for TB control (Central TB Division, Ministry of Health and Family Welfare, Government of India, 2021). The program's main strategies include:

- Early Detection and Diagnosis: Enhancing diagnostic facilities and promoting active case finding.
- Universal Drug Susceptibility Testing: Ensuring all diagnosed cases undergo drug susceptibility testing.
- Patient - Centric Care: Providing free and accessible treatment to all TB patients.

- Preventive Treatment: Administering preventive therapy to high - risk groups.
- Strengthening Health Systems: Improving healthcare infrastructure and workforce capacity (Central TB Division, Ministry of Health and Family Welfare, Government of India, 2021).

Despite these comprehensive strategies, the program has not achieved its expected outcomes.

### Current TB Prevention Programs

#### 1) Diagnostic Facilities

- a) **GeneXpert Machines** - The NTEP has deployed GeneXpert machines across the country to facilitate rapid and accurate TB diagnosis. However, accessibility and utilization of these machines remain limited, especially in rural areas (Pai & Schito, 2015).
- b) **Sputum Smear Microscopy** - Sputum smear microscopy continues to be the primary diagnostic tool in many regions, despite its lower sensitivity compared to molecular methods (Pai et al., 2016).

#### 2) Treatment Facilities

- a) **Directly Observed Treatment, Short - Course (DOTS)** The DOTS strategy, a cornerstone of TB treatment under NTEP, ensures that patients adhere to their medication regimen through direct supervision by healthcare providers (Menon, Goswami, & Chandrasekaran, 2021).
- b) **Drug - Resistant TB Treatment** The program has also focused on addressing multidrug - resistant TB (MDR - TB) and extensively drug - resistant TB (XDR - TB) by introducing newer drugs and shorter treatment regimens (Global Fund, 2019).

#### 3) Preventive Measures

- a) **Latent TB Infection (LTBI) Treatment** Preventive treatment for individuals with latent TB infection, particularly among high - risk populations, is a crucial component of the NTEP. However, the coverage of LTBI treatment remains low (Sharma & Mohan, 2019).

- b) **Vaccination** The Bacillus Calmette - Guérin (BCG) vaccine is administered to new - borns as part of the national immunization program. Although it provides limited protection against TB, particularly in adults, it remains a key preventive measure (World Health Organization, 2020).

### Barriers to Achieving Expected Results

#### 1) Socio - Economic Factors

- a) **Poverty and Malnutrition** - Poverty and malnutrition significantly contribute to the high TB burden in India. Malnutrition weakens the immune system, making individuals more susceptible to TB. According to the National Family Health Survey (NFHS - 5), 34% of children under five in India are stunted, and 17% are severely wasted. These factors hinder TB prevention efforts and exacerbate the disease burden (National Family Health Survey (NFHS - 5), India, 2020 - 21).
- b) **Literacy and Awareness** - Low literacy rates and lack of awareness about TB symptoms and treatment contribute to delays in diagnosis and treatment adherence. The NFHS - 5 reports that only 63% of women and 81% of men have heard of TB, indicating a need for more effective public health education campaigns (National Family Health Survey (NFHS - 5), India, 2020 - 21).

#### 2) Healthcare Infrastructure

- a) **Inadequate Diagnostic Facilities** - Despite the deployment of advanced diagnostic tools like GeneXpert, many regions, particularly rural areas, lack adequate facilities. A study by Pai et al. (2016) found that less than 30% of primary health centers (PHCs) had access to GeneXpert machines, limiting the ability to detect TB cases promptly (Pai et al., 2016).
- b) **Shortage of Healthcare Professionals** - There is a critical shortage of trained healthcare professionals in India. According to the NHM, the doctor - patient ratio is 1: 1456, far below the WHO recommended 1: 1000. This shortage is more pronounced in rural areas, where the majority of TB cases are found (National Health Mission (NHM), 2021).
- c) **Inconsistent Quality of Care** - The quality of TB care varies widely across the country. Many healthcare facilities struggle with inconsistent drug supply, inadequate staffing, and lack of patient follow - up. These issues lead to poor treatment adherence and outcomes (Central TB Division, Ministry of Health and Family Welfare, Government of India, 2023).

#### 3) Program Implementation Challenges

- a) **Funding Constraints** - Although the Government of India has increased funding for TB programs, financial constraints remain a significant barrier. The WHO reports that India faces a funding gap of approximately \$220 million for TB control activities. Insufficient funding affects program implementation and the ability to achieve desired outcomes (World Health Organization, 2023).
- b) **Bureaucratic Inefficiencies** - Effective program management is crucial for achieving TB elimination goals. However, the implementation of the NTEP has

been hampered by bureaucratic inefficiencies and poor coordination among various stakeholders. Delays in program rollout and monitoring have undermined the effectiveness of TB control efforts (Uplekar, Rangan, & Ogden, 2019).

#### 4) Stigma and Social Barriers

- a) **TB - Related Stigma** - TB - related stigma remains a significant barrier in India. Social stigma prevents individuals from seeking timely diagnosis and treatment, fearing social ostracism. A study by Das et al. (2018) found that TB patients often face discrimination in their communities, leading to delays in seeking care and poor treatment adherence (Das, Thakur, & Das, 2018).
- b) **Gender Disparities** - Gender disparities also play a role in TB prevention. Women in India often face greater barriers to accessing healthcare due to societal norms and responsibilities. Studies indicate that women are less likely to seek timely TB diagnosis and treatment compared to men, leading to higher morbidity and mortality rates among female TB patients (National Family Health Survey (NFHS - 5), India, 2020 - 21).

#### 5) Public Awareness and Engagement

- a) **Inadequate Public Health Campaigns** - Despite efforts to increase public awareness, many people remain unaware of TB symptoms and the importance of early diagnosis and treatment. The NFHS - 5 data indicates that awareness campaigns have not adequately reached the most vulnerable populations. Innovative and culturally sensitive communication strategies are needed to improve public awareness (National Family Health Survey (NFHS - 5), India, 2020 - 21).
- b) **Private Sector Engagement** - The private healthcare sector plays a crucial role in TB diagnosis and treatment in India. However, integrating private practitioners into the national TB control program has been challenging. Many private providers do not follow standard treatment guidelines, leading to issues like drug resistance. The WHO emphasizes the need for better regulation and engagement of the private sector in TB control (World Health Organization, 2018).

### Case Studies and Regional Analysis

#### 1) Madhya Pradesh

- **Unique Challenges** Madhya Pradesh faces unique challenges that exacerbate the general barriers identified. These include geographical barriers, a significant rural population, and a large tribal population. The state's geography makes it difficult to deliver TB services uniformly, resulting in delays in diagnosis and treatment (Madhya Pradesh State Health Department, 2023).
- **Program Implementation** Despite efforts to strengthen healthcare infrastructure and improve TB care, Madhya Pradesh struggles with shortages of healthcare workers, diagnostic facilities, and treatment centres. The NHM reports that many PHCs in the state lack essential infrastructure and staff, hindering effective TB control (National Health Mission (NHM), 2021).

## 2) Uttar Pradesh

- **High Burden of TB** Uttar Pradesh, India's most populous state, also has a high burden of TB. The state's socio - economic conditions, including high levels of poverty and low literacy rates, contribute to the high TB incidence (National Family Health Survey (NFHS - 5), India, 2020 - 21).
- **Healthcare System Challenges** The healthcare system in Uttar Pradesh faces significant challenges, including inadequate diagnostic facilities, a shortage of healthcare professionals, and inconsistent quality of care. These issues hinder the state's ability to achieve TB control goals (National Health Mission (NHM), 2021).

### Strategies for Improvement

#### 1) Strengthening Healthcare Infrastructure

- a) **Investment in Rural Healthcare** Strengthening healthcare infrastructure in rural and underserved areas is crucial. This includes building and upgrading primary health centers, ensuring availability of diagnostic tools, and maintaining a steady supply of TB medications (Madhya Pradesh State Health Department, 2023).
- b) **Mobile Health Units** Deploying mobile health units equipped with diagnostic facilities can help reach remote populations and improve TB detection and treatment rates (Gupta, Singla, & Srivastava, 2020).

#### 2) Capacity Building

- a) **Training Healthcare Workers** Regular training programs for healthcare professionals on TB management, including diagnosis, treatment, and patient counseling, are essential. Capacity - building initiatives should focus on equipping healthcare workers with the skills and resources needed to manage TB effectively (National Health Mission (NHM), 2021).
- b) **Community Health Workers** Leveraging community health workers to conduct TB awareness campaigns and facilitate early diagnosis and treatment adherence can significantly impact TB control efforts (Achanta & Jaju, 2019).

#### 3) Enhancing Public Awareness

- a) **Comprehensive Awareness Campaigns** Implementing targeted awareness campaigns using various media platforms to educate the public about TB symptoms, prevention, and the importance of early diagnosis and treatment (Uplekar, Rangan, & Ogden, 2019).
- b) **School Programs** Integrating TB education into school curricula can help raise awareness from a young age and reduce stigma (Das, Thakur, & Das, 2018).

#### 4) Policy Reforms

- a) **Integrated Health Services** Integrating TB prevention and care with other health services, such as HIV programs and maternal and child health services, can improve program efficiency and reach (Ministry of Health and Family Welfare, Government of India, 2020).
- b) **Decentralized Management** Decentralizing TB program management to allow for more localized decision - making and resource allocation based on specific regional needs (Central TB Division, Ministry of Health and Family Welfare, Government of India, 2021).

## 5) Addressing Socio - Economic Determinants

- a) **Nutritional Support** - Providing nutritional support to TB patients, particularly those who are malnourished, can improve treatment outcomes and reduce TB incidence (National Family Health Survey (NFHS - 5), India, 2020 - 21).
- b) **Social Protection Measures** Implementing social protection measures, such as cash transfers and support for TB - affected families, can reduce the economic burden of TB and improve treatment adherence (Achanta & Jaju, 2019).

## 6) Monitoring and Evaluation

- a) **Robust Monitoring Systems** - Developing robust monitoring and evaluation systems to track progress, identify gaps, and ensure accountability in TB control efforts. Regular program evaluations and data - driven decision - making can help ensure that strategies remain effective and responsive to emerging challenges (Pai & Schito, 2015).
- b) **Research and Innovation** Promoting research and innovation in TB diagnostics, treatment, and prevention strategies. Encouraging public - private partnerships and collaborations with academic institutions can drive innovation and improve TB control efforts (Pai & Schito, 2015).

## 3. Conclusion

The ambitious goal of a TB - free India by 2025 faces significant barriers. Socio - economic challenges, healthcare infrastructure gaps, policy implementation issues, and public awareness deficits hinder progress towards TB elimination. Addressing these barriers requires a multi - faceted approach, including strengthening healthcare infrastructure, building capacity, and enhancing public awareness, implementing policy reforms, and addressing socio - economic determinants. By tackling these challenges head - on, India can make significant strides towards reducing the TB burden and achieving its goal of TB elimination (World Health Organization, 2023). Achieving a TB - free India by 2025 necessitates addressing multi - dimensional challenges with urgency and innovation. Collaborative efforts, robust infrastructure, and sustained public awareness are critical to reducing the TB burden. "

## References

- [1] Central TB Division, Ministry of Health and Family Welfare, Government of India. (2023). India TB Report 2023.
- [2] Das, S., Thakur, D., & Das, M. (2018). Tuberculosis - related stigma: A cross - sectional study among patients attending tertiary care hospitals in Delhi. *Indian Journal of Public Health*, 62 (1), 38 - 42.
- [3] Global Fund. (2019). TB Program Review Report.
- [4] Gupta, A., Singla, R., & Srivastava, S. (2020). Socio - economic determinants of tuberculosis in rural Madhya Pradesh. *Indian Journal of Medical Research*, 151 (4), 354 - 361
- [5] Madhya Pradesh State Health Department. (2023). Annual Health Report.

- [6] National Family Health Survey (NFHS - 5), India. (2020 - 21). State Fact Sheet: Madhya Pradesh.
- [7] National Health Mission (NHM). (2021). Health Workforce in India
- [8] Pai, M., Behr, M. A., Dowdy, D., Dheda, K., Divangahi, M., Boehme, C. C., & Raviglione, M. C. (2016). Tuberculosis. *Nature Reviews Disease Primers*, 2, 16076.
- [9] Sharma, S. K., & Mohan, A. (2019). Latent tuberculosis infection in India: Evolving perspectives. *Lung India: Official Organ of Indian Chest Society*, 36 (4), 293 - 299.
- [10] World Health Organization. (2020). Global Tuberculosis Report 2020.
- [11] World Health Organization. (2022). Global Tuberculosis Report 2022
- [12] World Health Organization. (2023). TB Burden and Response in India: An Overview.
- [13] National Tuberculosis Elimination Program (NTEP). (2022). NTEP Annual Report.
- [14] Pai, M., & Schito, M. (2015). Tuberculosis diagnostics in 2015: Landscape, priorities, needs, and prospects. *Journal of Infectious Diseases*, 211 (Suppl 2), S21 - S28.
- [15] Central TB Division, Ministry of Health and Family Welfare, Government of India. (2021).
- [16] National Strategic Plan for Tuberculosis Elimination 2017 - 2025.
- [17] Menon, S., Goswami, T., & Chandrasekaran, V. (2021). Barriers and facilitators to adherence to tuberculosis treatment in patients on directly observed treatment short - course (DOTS): A qualitative study. *BMC Public Health*, 21 (1), 166.
- [18] Uplekar, M., Rangan, S., & Ogden, J. (2019). Private practitioners and tuberculosis control in India: Challenges and opportunities. *Bulletin of the World Health Organization*, 79 (1), 58 - 70.
- [19] Achanta, S., & Jaju, J. (2019). Addressing the social determinants of health in TB control: A call to action. *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*, 14, 13 - 17.
- [20] WHO Regional Office for South - East Asia. (2018). Engaging private health care providers in TB care and prevention: A landscape analysis.
- [21] Ministry of Health and Family Welfare, Government of India. (2020). National Framework for Joint TB - HIV Collaborative Activities