

DIAGNOSING THE MISSING MILLIONS: CONNECTING TB PATIENTS TO CARE

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Abstract:

Tuberculosis (TB) continues to be a major global health challenge, with approximately one-third of cases going undiagnosed despite significant efforts. This article explores the factors leading to missed diagnoses, including barriers to healthcare access, stigma, and underreporting from private healthcare providers. Additionally, the financial burden on TB patients, particularly in high-burden countries, is examined. Social protection programs and the involvement of private practitioners are highlighted as key components in addressing TB control. The article also underscores the importance of new diagnostic innovations and multisectoral approaches to combat the growing threat of multidrug-resistant TB (MDR-TB) and achieve TB elimination by 2025.

Introduction:

Despite global initiatives aimed at eliminating tuberculosis (TB), millions of cases remain undiagnosed, particularly in high-burden countries. In 2014, the World Health Organization (WHO) launched the "Reach the 3 Million" campaign to address the 3 million TB cases being missed annually. However, even with substantial efforts, the goal remains unfulfilled for many countries. By 2022, although 10.6 million people were diagnosed with TB globally, nearly one-third of cases continued to go undiagnosed [1, 2].

This article focuses on the various factors that contribute to undiagnosed TB cases, the financial burden on patients, and the role of private healthcare sectors. It also highlights the growing burden of multidrug-resistant TB (MDR-TB) and emphasizes the need for a comprehensive, multisectoral approach and innovative diagnostic technologies to achieve TB elimination by 2025.

Barriers to TB Diagnosis:**Missed Diagnoses and Contributing Factors**

Several factors contribute to the high number of missed TB diagnoses, especially in countries with a heavy TB burden. Key factors include:

- **Limited Access to Healthcare:** Many patients, particularly in rural areas, lack access to healthcare services for diagnosis and treatment.
- **Stigma:** The social stigma associated with TB often discourages individuals from seeking medical care.
- **Misdiagnosis:** Inaccurate diagnosis by healthcare providers can result in patients receiving inappropriate treatment.
- **Private Sector Underreporting:** In many high-burden countries, a significant portion of TB cases are managed outside the formal healthcare system. These cases, treated in private settings, are frequently not reported to national TB programs [3].

Approximately 75% of the missing TB cases are concentrated in 13 priority countries, including India, Indonesia, Bangladesh, South Africa, and Nigeria [3].

Impact of Delayed Diagnosis:

Delayed TB diagnosis has far-reaching consequences, including increased transmission rates, higher mortality, and the stagnation of TB case notifications. Furthermore, delays in diagnosis and treatment significantly contribute to the spread of multidrug-resistant TB (MDR-TB), which poses a severe challenge to global TB control efforts [3]. Many high-burden countries have failed to integrate traditional healers and private medical practitioners into national TB programs, thereby reducing the effectiveness of TB detection and treatment [2].

Financial Burden on TB Patients:

Despite free treatment being available under national TB programs, TB patients and their households face catastrophic financial costs in many countries. These costs include transportation, income loss, and diagnostic expenses. For example, TB patients in India incur an average cost of ₹50,000 INR (~\$600 USD), even with free treatment available. This financial burden is shared by patients in other countries, as detailed in Table 1 [4].

TABLE-1

Country	Catastrophic Costs per TB Patient	Key Drivers of Cost	Reference
India	₹50,000 INR (~\$600 USD)	Income loss, transportation, diagnostics	Chatterjee et al., 2024 [4]
Kenya	\$396 USD	Medical expenses, income loss	Barasa et al., 2021 [5]
Nigeria	\$285 USD	Income loss, transportation	Ukwaja et al., 2013 [6]
Peru	\$350 USD	Diagnostics, income loss	Rocha et al., 2016 [7]
Global Estimate	\$100–\$500 USD	Transportation, income loss, medical expenses	WHO Report, 2021 [8]

Social Protection Measures:

Social protection programs can significantly alleviate the financial burden on TB patients and improve treatment adherence. Notable examples include:

1. Brazil's Bolsa Família Program: This conditional cash transfer program has improved access to healthcare services, including TB care, by providing financial support to low-income families. It has been shown to increase TB cure rates and improve overall TB control (9).
2. India's Nikshay Poshan Yojana: Launched in 2018, this program provides financial support for nutritional needs to TB patients. It has been credited with enhancing treatment adherence and reducing the economic burden on TB patients in India (10).
3. South Africa's TB Care and Control Program: Social protection measures, including transportation subsidies and cash transfers, have helped to reduce catastrophic costs for TB patients, leading to improved treatment adherence (11).

Multidrug-Resistant TB (MDR-TB):

MDR-TB is a growing global concern, with some countries reporting MDR-TB rates exceeding 18%. In India, estimates indicate that between 1.8% and 2.8% of new TB cases are MDR-TB, while 15% to 20% of retreatment cases are MDR-TB (12).

Diagnosing MDR-TB requires advanced laboratory capacity, including culture and drug susceptibility testing (DST). However, many high-burden countries lack the necessary infrastructure to conduct these tests. Even when MDR-TB is diagnosed, second-line TB drugs are often expensive and difficult to procure, which poses a significant challenge to MDR-TB treatment (12).

The Role of Private Healthcare Providers:

Efforts to involve private healthcare providers in TB control have yielded positive outcomes in some countries. For example, in India, private practitioners have been incentivized to notify TB cases and provide free diagnostic services and treatment. This strategy has led to a significant increase in case notification rates, with some districts reporting that over 30% of TB cases are now being reported from the private sector. The 2023 India Tuberculosis Report recorded a notification of 2.42 million cases, a 13% increase compared to 2021 (13).

Innovations in TB Diagnostics:

To achieve TB elimination by 2025, it is critical to implement advanced diagnostic technologies. Rapid diagnostic tools, such as AI-based chest X-rays and PCR tests, have the potential to identify TB cases earlier, preventing delays in treatment. While these technologies are promising, their adoption remains limited due to high costs and the need for significant laboratory infrastructure in resource-poor settings (14).

Innovative diagnostic methods, combined with comprehensive public-private partnerships and social support systems, are essential to achieving the goal of TB elimination.

Conclusion:

The fight against TB, especially in high-burden countries, requires more than just medical interventions. A multisectoral approach that includes innovative diagnostics, integration of private healthcare providers, and strong social protection measures is essential. The rise of MDR-TB further complicates the global effort to eliminate TB by 2025. To overcome these challenges, we must focus on early detection, ensuring access to quality diagnostics and treatments, and reducing the financial burden on TB patients through expanded social support programs.

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