

A Qualitative Evidence Synthesis of Multi-Level Barriers to Tuberculosis Treatment Adherence in India: Implications for Health Systems Strengthening and Sustainable Development Goal Achievement

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ABSTRACT

India continues to bear the highest global burden of tuberculosis despite expanded services under the National Tuberculosis Elimination Programme. Treatment interruption remains a critical barrier to elimination goals. This perspective synthesizes qualitative evidence from Indian settings to examine multi-level determinants influencing tuberculosis treatment adherence. Barriers operate across individual, interpersonal, community, health-system, and structural domains. Stigma, gender norms, poverty, migration, adverse drug reactions, fragmented service delivery, and indirect financial costs interact to undermine sustained treatment completion. Non-adherence is therefore not merely an individual behavioural lapse but a predictable outcome of social vulnerability and systemic gaps. Addressing these determinants through person-centered care, social protection integration, and strengthened primary health care is essential for advancing national elimination targets and achieving Sustainable Development Goal commitments.

Keywords: Tuberculosis, Treatment adherence, Qualitative synthesis, Health systems strengthening, Social determinants, India

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INTRODUCTION

India accounts for nearly one fourth of the global tuberculosis burden, with persistent challenges in sustaining treatment completion despite free services under the National Tuberculosis Elimination Programme¹. Although treatment success rates have improved, loss to follow-up and interrupted therapy continue to threaten disease control and contribute to drug resistance². Quantitative monitoring describes adherence levels, but qualitative studies provide insight into lived experiences shaping patient decisions. This perspective synthesizes qualitative evidence to explore multi-level barriers to tuberculosis treatment adherence in India and outlines implications

for health systems strengthening and Sustainable Development Goal achievement.

CONCEPTUAL FRAMEWORK FOR UNDERSTANDING ADHERENCE

The World Health Organization identifies adherence as a multidimensional phenomenon influenced by socioeconomic, therapy-related, patient-related, condition-related, and health-system factors³. Indian qualitative research reinforces that treatment continuity is shaped by interacting layers rather than isolated individual choice⁴. A multi-level determinant model helps categorize barriers into individual, interpersonal, community, health-system, and structural domains.

Figure legend:

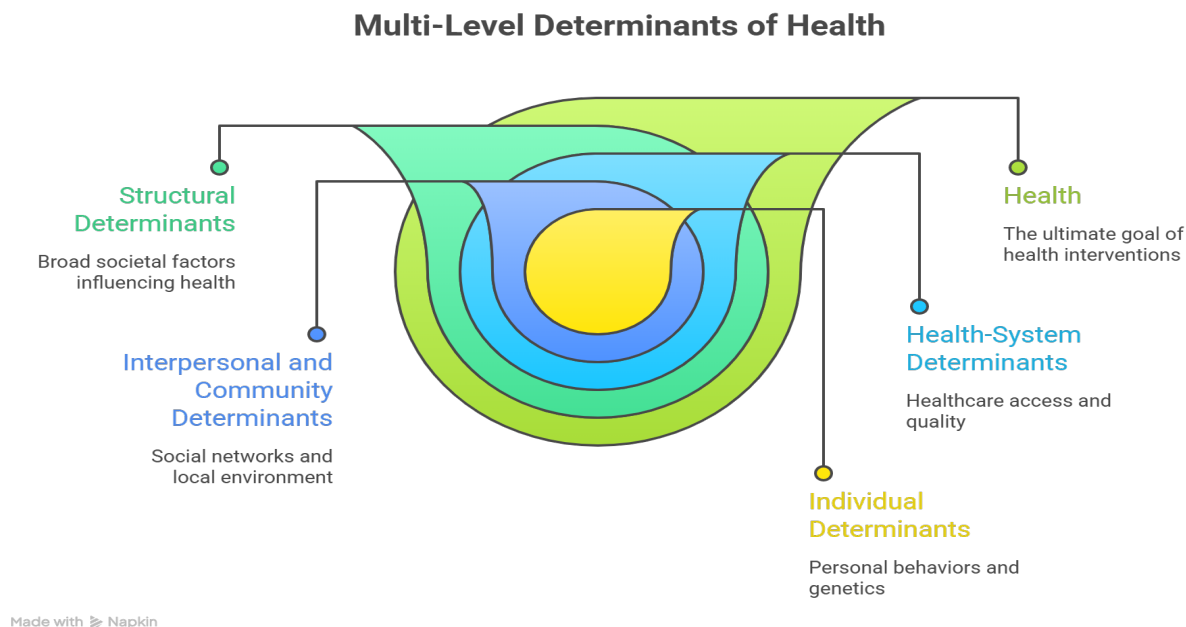


Figure 1. Ecological model demonstrating hierarchical and interacting structural, community, health-system, and individual determinants influencing health outcomes through multilevel causal pathways.

INDIVIDUAL-LEVEL DETERMINANTS

Knowledge Gaps And Perceived Recovery

Several qualitative studies describe patients discontinuing medication once symptoms improve, believing they are cured⁴. Misunderstanding the required duration of therapy and fear of long-term toxicity further reduce adherence motivation.

Adverse Drug Reactions

Commonly reported adverse effects include nausea, weakness, neuropathy, and hepatotoxicity⁵. Inadequate counseling regarding expected side effects amplifies anxiety and increases the likelihood of treatment interruption.

Psychological Distress

Depression, alcohol dependence, and social withdrawal are frequently documented but insufficiently integrated into tuberculosis services⁶. Mental health vulnerability reduces sustained engagement with treatment programs.

INTERPERSONAL AND COMMUNITY DETERMINANTS

Stigma And Disclosure Concerns

Tuberculosis continues to be associated with social stigma, leading to concealment behaviors and delayed

care⁴. Women report fear of marital instability, while men express concern about workplace discrimination.

Gendered Constraints

Gender norms restrict women's mobility and decision-making autonomy, limiting regular clinic attendance⁷. Conversely, men engaged in daily wage labor prioritize income generation over follow-up visits.

HEALTH-SYSTEM DETERMINANTS

Fragmented Public And Private Care Pathways

Patients frequently transition between sectors because of perceived quality differences, resulting in treatment discontinuity and inconsistent regimens². Referral linkages remain suboptimal.

Provider–Patient Communication

Hierarchical communication styles and limited counseling time reduce trust and understanding⁶. Empathetic engagement is inconsistently practiced across facilities.

Indirect Financial Burden

Although anti-tuberculosis medications are provided free of cost, transportation expenses, nutritional requirements, and wage loss impose significant financial strain⁸. Social support schemes exist but are unevenly accessed.

STRUCTURAL DETERMINANTS

Poverty And Food Insecurity

Malnutrition increases susceptibility to infection and reduces tolerance to therapy⁹. Patients often avoid medication when food is unavailable because of gastric discomfort.

Migration And Informal Employment

Internal migrants experience treatment interruption during interstate movement due to weak transfer mechanisms⁷. Informal employment arrangements lack medical leave protections.

IMPLICATIONS FOR HEALTH SYSTEMS STRENGTHENING

- First, adherence interventions must shift toward person-centered care models integrating counseling, mental health screening, and stigma reduction.
- Second, tuberculosis programs should strengthen convergence with social protection schemes addressing nutrition and income vulnerability⁸.
- Third, decentralization of drug distribution and community-based follow-up can reduce logistical barriers.
- Fourth, migration-sensitive treatment portability systems are essential to ensure uninterrupted therapy across jurisdictions.

ALIGNMENT WITH SUSTAINABLE DEVELOPMENT GOALS

Ending tuberculosis is embedded within Sustainable Development Goal Three. The End Tuberculosis Strategy targets a ninety percent reduction in deaths by the year two thousand thirty³. However, biomedical expansion alone is insufficient. Tuberculosis intersects with poverty, gender inequality, and social exclusion. Addressing adherence barriers therefore contributes simultaneously to Sustainable Development Goals One, Five, and Ten.

REFRAMING NON-ADHERENCE

The term “defaulter” implies personal failure. Qualitative evidence demonstrates that treatment interruption often reflects structural vulnerability and systemic gaps rather than intentional neglect⁴. A determinant-based narrative reassigns responsibility toward health systems capable of mitigating these barriers through equity-oriented reforms.

CONCLUSION

Tuberculosis treatment adherence in India is shaped by interconnected individual, social, health-system, and structural determinants. Non-adherence should be understood as a predictable outcome of vulnerability rather than a moral lapse. Strengthening primary health care, integrating psychosocial support, addressing gender inequities, and expanding social protection linkages are essential for advancing elimination targets and Sustainable Development Goal commitments. Sustainable tuberculosis control requires structural responsiveness, not merely pharmaceutical provision.

Table 1. Multi-Level Barriers To Tuberculosis Treatment Adherence In India

Level	Major Barriers Identified
Individual	Adverse drug reactions; misconceptions; depression
Interpersonal	Stigma; gender norms
Health-System	Fragmented care; poor counseling; indirect costs
Structural	Poverty; food insecurity; migration

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The author declares no conflict of interest related to this manuscript.

Consent To Participate

Not applicable. This manuscript is based on previously published literature and does not involve human participants.

Patients' Consent

Not applicable.

Ethical Approval / Institutional Review Board Approval

Not required, as this manuscript is a qualitative evidence synthesis based solely on published literature.

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