



Psychosocial and Economic Determinants of Tuberculosis Preventive Treatment: Systematic Literature Review

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Abstract

Tuberculosis remains a pressing global public health challenge. Tuberculosis preventive treatment is central to tuberculosis elimination strategies, yet coverage and completion rates remain below international targets. The low success of the tuberculosis preventive treatment care cascade is shaped by complex social, economic, and psychological barriers among close contacts of tuberculosis patients. This study systematically reviews the literature to identify and synthesize factors influencing acceptance, adherence, and completion of tuberculosis preventive treatment. A systematic search was conducted in PubMed, Scopus, and Google Scholar, yielding 11 eligible studies based on predefined inclusion and exclusion criteria. Findings indicate that psychological determinants, including knowledge levels and risk perception, strongly predict treatment acceptance. Economic barriers, such as low household income and transportation costs, hinder treatment completion, while incentives and shorter regimens improve outcomes. Social factors, particularly family support and community-based management, enhance adherence compared with standard clinic-based care. Persistent barriers include disease-related stigma and fear of medication side effects. The review highlights that successful implementation of tuberculosis preventive treatment requires a multidimensional, person-centered approach integrating health education, economic support, and community engagement to overcome psychosocial barriers and accelerate global tuberculosis elimination.

INTRODUCTION

Tuberculosis (TB) remains one of the most significant public health threats worldwide, with an estimated 10.8 million cases and 1.3 million deaths each year (Parwitha et al., 2025; WHO, 2024). Managing latent tuberculosis infection (LTBI) is a major challenge because approximately 5–10% of infected individuals will develop active TB during their lifetime if no intervention is provided (Wang et al., 2025). Investigation and intervention efforts targeting both LTBI and active TB are crucial to meeting the targets of the World Health

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Organization (WHO) End TB strategy, which aims to reduce TB incidence by 90% by 2035 (Chen et al., 2024).

Tuberculosis preventive treatment (TPT) is widely recognized as a core component of prevention strategies to break the chain of disease transmission (Sandoval et al., 2023). Appropriate use of TPT can reduce the risk of TB reactivation by 60% to 90%, making it a promising approach in global TB elimination efforts (Parwitha et al., 2025). Nevertheless, TPT coverage remains very low worldwide: in 2023, only about 21% of close contacts initiated this treatment, far from the ambitious target of 90% set for 2027 (Meira et al., 2025; WHO, 2024).

The effectiveness of TPT depends heavily on initial acceptance and on patient adherence throughout the prescribed treatment duration (Chen et al., 2024; Ihesie et al., 2024). Various structural, personal, and health service barriers often cause individuals to stop treatment prematurely or to follow it irregularly (Chen et al., 2024; Meira et al., 2025; Van de Water et al., 2023). In-depth analyses of the TB care cascade show that significant gaps frequently occur at the identification, treatment initiation, and treatment completion stages (Malik et al., 2025; Marley et al., 2023).

Socially, community-based interventions have succeeded in increasing patient engagement and referrals for TPT services (Salazar-Austin et al., 2024; Santosa et al., 2025; Shenoi et al., 2022). The involvement of community health workers and the use of digital adherence technologies can help strengthen the relationship between service providers and patients (Meira et al., 2025; Mohamed et al., 2025). Social support from family members and the surrounding environment also plays a major role in providing the encouragement and supervision patients need during treatment (Susanti et al., 2025; Wongchana & Songthap, 2024).

Economic factors also play a crucial role in determining the successful completion of preventive treatment (Marley et al., 2023). Low household income is often identified as a major risk factor for non-adherence, particularly because of the transportation costs incurred for routine visits to health facilities (Portnoy et al., 2023; Sandoval et al., 2023). These economic barriers, combined with the busy work schedules of caregivers or adult patients, often disrupt medication pick-up schedules (Amuge et al., 2024).

From a psychological perspective, individuals' knowledge and perception of TB risk influence their decision to initiate TPT (Foppiano Palacios et al., 2025; Ren et al., 2026; Susanti et al., 2025; Yuan et al., 2023). Many individuals who feel physically healthy believe they do not need to take long-term medication, especially when they show no symptoms of active TB (Manoharan et al., 2023). In addition, the stigma attached to TB in the community often leads to fear of social exclusion, so individuals tend to conceal their health status and are reluctant to seek treatment (Machavariani et al., 2023; Parwitha et al., 2025).

Fear of medication side effects is also a dominant psychological reason behind the refusal of TPT (Wang et al., 2025; Zewdu et al., 2026). Symptoms such as nausea and dizziness, as well as concerns about organ damage, often trigger excessive anxiety in patients (Manoharan et al., 2023). A lack of accurate and empathetic explanations from health workers about the safety profile of the drugs often worsens these negative perceptions, thereby reducing patients' motivation to complete the treatment regimen (Amuge et al., 2024).

The current literature shows a gap: although many studies have examined single factors influencing TPT, few systematic reviews have comprehensively integrated social, economic, and psychological factors within

a single analytical framework (Parwitha et al., 2025). Most studies still focus on specific populations, such as people living with HIV or particular age groups, so a broader understanding of these factors among close contacts across ages and geographic contexts is needed (Manoharan et al., 2023). Furthermore, the effectiveness of culturally tailored communication strategies still requires further evaluation to optimize overall care cascade outcomes (Meira et al., 2025).

Based on the above, this systematic literature review aims to identify and synthesize evidence on the multidimensional factors that influence the course of preventive treatment among close contacts. This study is expected to answer several key questions, including:

1. What social, economic, and psychological factors influence individuals' acceptance of TPT?
2. How do these factors contribute to the level of adherence and the successful completion of treatment among close contacts?
3. Which intervention strategies are most effective in mitigating these barriers across different regional settings?

Through a deeper understanding of the interaction among social, economic, and psychological aspects, this study is expected to provide strategic recommendations for national TB control programs (Susanti et al., 2025). A more person-centered approach and health service integration that is responsive to patients' needs are essential to bridge the gap between clinical knowledge and field implementation (Felisia et al., 2023; Pradipta et al., 2021). This step is crucial to accelerating the achievement of global tuberculosis elimination in the future.

METHODS

This study used the Systematic Literature Review (SLR) method to identify, evaluate, and synthesize in depth the relevant literature on the social, economic, and psychological factors that influence the tuberculosis preventive treatment (TPT) care cascade. The research protocol was systematically designed to capture recent implementation trends and contemporary data on the barriers to and facilitators of TPT among close contacts at both global and national levels. The main focus of this review is to understand the dynamics of initial acceptance, adherence during treatment, and successful treatment completion in populations at high risk of developing active TB. The literature search strategy is presented in detail in Table 1.

Table 1. Literature Search Strategy

No	Database	Search Keywords
1	PubMed	("tuberculosis preventive treatment" OR "TPT" OR "latent TB treatment") AND ("adherence" OR "compliance" OR "completion") AND ("social factors" OR "economic factors" OR "psychological factors")
2	Scopus	("tuberculosis preventive treatment" OR "TPT" OR "latent TB treatment") AND ("adherence" OR "compliance" OR "completion") AND ("social factors" OR "economic factors" OR "psychological factors")
3	Google Scholar	("tuberculosis preventive treatment" OR "TPT" OR "latent TB treatment") AND ("adherence" OR "compliance" OR "completion") AND ("social factors" OR "economic factors" OR "psychological factors")

The search covered a specific range of years to ensure that the data collected reflect the latest advances in TB prevention protocols and the use of shorter, safer drug regimens. This review paid particular attention to the interaction among psychosocial support, household economic conditions, and individual perceptions of disease risk that influence the decision to initiate TPT. The analysis considered various service models, including community-based management and the use of digital technology to support patient adherence. Article selection was carried out in four main phases. In the identification phase, a comprehensive search was conducted in the main databases, namely PubMed, Scopus, and Google Scholar, to collect all potential articles discussing the multidimensional factors that influence TPT initiation and completion. In the screening phase, titles and abstracts were reviewed to remove duplicate documents and eliminate articles not aligned with the main research theme, such as articles focusing solely on the treatment of active TB without a preventive component. In the eligibility phase, a full-text assessment of the remaining articles was carried out to ensure that the studies reported relevant outcomes on TPT acceptance, adherence, or completion and included an analysis of social, economic, or psychological factors. Finally, in the inclusion phase, articles meeting all requirements were selected for analysis, and data from the selected studies were synthesized to provide a comprehensive picture of systemic and personal barriers and of the effectiveness of the intervention strategies used to improve the success of the TPT cascade.

Inclusion criteria

This review included original research articles and systematic reviews published between 2018 and 2026 that involved close contacts of pulmonary TB patients or high-risk groups, such as people living with HIV/AIDS, diagnosed with latent TB infection. Eligible studies examined, through interventions or observations, social factors (family support, stigma), economic factors (income, transportation costs), or psychological factors (knowledge, risk perception, fear of side effects); reported data on the uptake, adherence, and/or completion of preventive treatment; and were available in full text in Indonesian or English.

Exclusion criteria

Studies were excluded if they were letters to the editor, commentaries, or brief case reports without a clear methodology; focused only on the clinical diagnosis of active tuberculosis without addressing preventive treatment among close contacts; did not include social, economic, or psychological factors as main variables in the analysis of treatment adherence or acceptance; or were available only as abstracts without complete research data or analysis results. The article selection flow, based on the PRISMA 2020 guidelines ([Aryasutha et al., 2025](#); [Engkizar et al., 2025; 2026](#); [Muhlasin et al., 2026](#); [Page et al., 2021](#)), is presented in Figure 1.

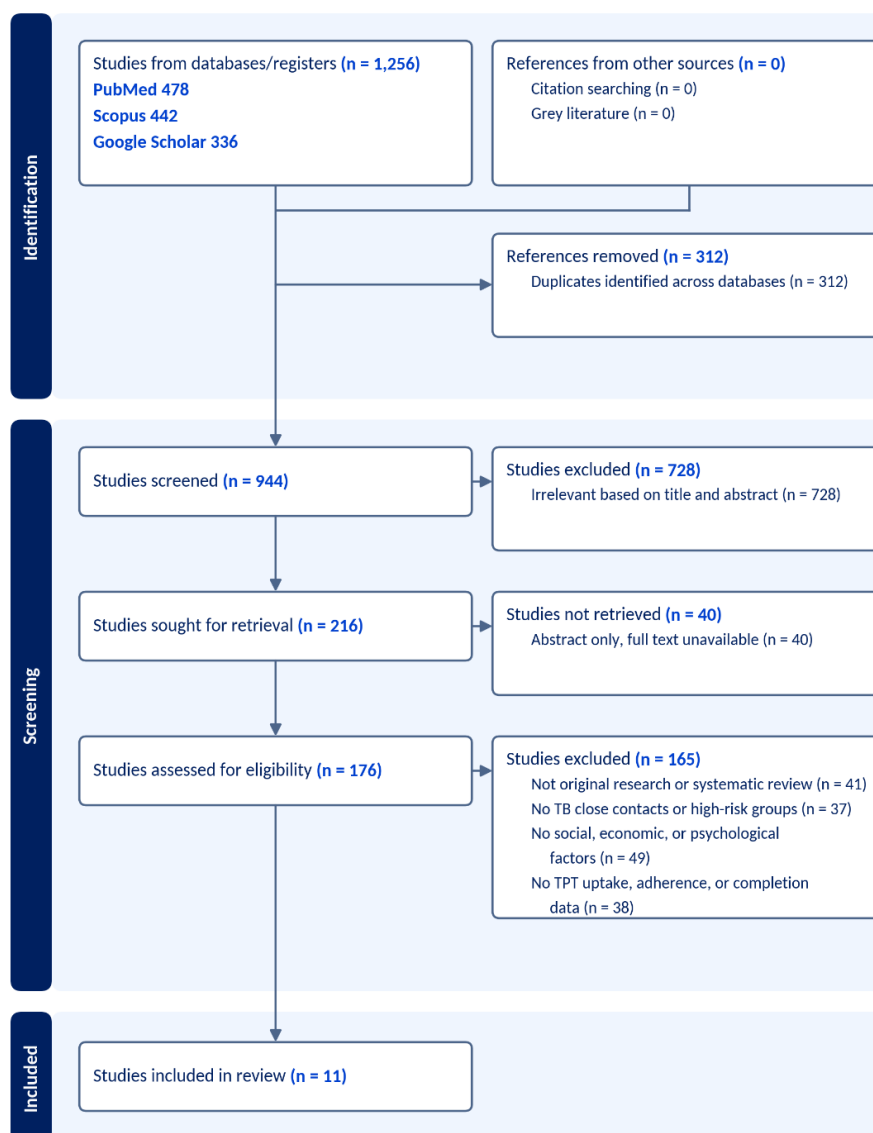


Fig 1. PRISMA Diagram of the Literature Selection Process

RESULT AND DISCUSSION

The data mapping of the 11 articles that met the inclusion criteria is presented in Table 2.

Table 2. Data Mapping of the Review

No	Author & Year	Article Title	Method / Design	Main Findings
1	(Chen et al., 2024)	Adherence to preventive treatment for latent tuberculosis infection in close contacts of pulmonary tuberculosis patients: A cluster-randomized controlled trial in China	Cluster-randomized controlled trial of 2,434 close contacts in 34 counties in China.	The TPT completion rate reached 87.1%. Adherence was higher in the short-regimen group (3H2P2), with supervision by health workers, and with incentives for clinicians.

No	Author & Year	Article Title	Method / Design	Main Findings
2	(Susanti et al., 2025)	The Relationship Between the Level of Knowledge Among TB Household Contacts and Their Acceptance of and Adherence to Tuberculosis Preventive Therapy [The relationship between the knowledge level of TB household contacts and the acceptance of and adherence to tuberculosis preventive therapy]	Quantitative analytical observational study with a cross-sectional design of 49 respondents in Klego, Indonesia.	There was a significant positive relationship between knowledge level and TPT acceptance and adherence ($p = 0.003$). The better the knowledge, the higher the adherence.
3	(Meira et al., 2025)	Effects of communication strategies on treatment adherence and success in tuberculosis: A systematic review and meta-analysis	Systematic review and meta-analysis of 17 global studies on communication strategies for TB adherence.	The most effective strategies for improving adherence were community education and video-observed therapy (VDOT). Combining electronic devices and SMS also showed positive results.
4	(Shenoi et al., 2022)	Community-based referral for tuberculosis preventive therapy is effective for treatment completion	Evaluation study of community-based referral (CBR) compared with standard clinical care among people living with HIV in South Africa.	The CBR group had a completion rate of 90.0%, higher than the clinic-based group (79.2%). Female sex and the community referral system predicted success.
5	(Sandoval et al., 2023)	Community-based tuberculosis contact management: Caregiver experience and factors promoting adherence to preventive therapy	Mixed-methods study of child contact management in Eswatini, involving 278 children and qualitative interviews with caregivers.	96% of children completed TPT. Risk factors for non-adherence included low income, female sex of the child, and urban residence.

No	Author & Year	Article Title	Method / Design	Main Findings
6	(Marley et al., 2023)	Improving cascade outcomes for active TB: A global systematic review and meta-analysis of TB interventions	Global systematic review and meta-analysis of 144 studies on TB care cascade interventions.	Counseling and education significantly improved testing, treatment completion, and treatment success. Incentives and community interventions were also effective in low- and middle-income countries.
7	(Manoharan et al., 2023)	Facilitators and barriers for tuberculosis preventive treatment among patients with latent tuberculosis infection: A qualitative study	Qualitative study of 26 in-depth interviews in Selangor, Malaysia, based on the self-regulation model.	Facilitators of TPT were knowledge of active TB and trust in health workers. Barriers included feeling healthy (asymptomatic) and fear of medication side effects.
8	(Wang et al., 2025)	Willingness of receiving preventive treatment and its determinants among individuals with latent tuberculosis infection in Shenzhen, China	Cross-sectional survey of 317 internal migrants with latent TB infection in Shenzhen, China.	80.13% of respondents were willing to receive TPT. The main predictors were female sex, higher education, and good TB knowledge.
9	(De Groot et al., 2024)	Health care providers acceptance of default prescribing of TB preventive treatment for people living with HIV in Malawi: A qualitative study	Qualitative study with 28 interviews of health workers on an automatic prescribing system (choice architecture) in Malawi.	Health workers accepted automatic prescribing because it served as a reminder and made TPT routine. Concerns included reduced clinical autonomy and potential over-prescription.

No	Author & Year	Article Title	Method / Design	Main Findings
10	(Amuge et al., 2024)	Facilitators and barriers to initiating and completing tuberculosis preventive treatment among children and adolescents living with HIV in Uganda: A qualitative study	Qualitative study involving 50 interviews with adolescents, caregivers, and health workers in Uganda.	The main barriers were TB/HIV stigma, high pill burden, and caregivers' busy work schedules. Facilitators were combining TPT visits with ART and continuous education.
11	(Parwitha et al., 2025)	Psychosocial interventions to improve tuberculosis preventive treatment uptake and psychosocial outcomes: A systematic review	Systematic review of 9 psychosocial intervention studies (14,428 participants) in upper-middle-income countries.	Psychosocial interventions (education, emotional support, survivor testimonials) increased TPT initiation by 10–52%. Community-based and multidisciplinary approaches were crucial.

Psychological Factors and Knowledge in TPT Acceptance (RQ1)

Initial acceptance of tuberculosis preventive treatment (TPT) is strongly influenced by individuals' perceptions of its risks and benefits. Adequate knowledge of TB and of the benefits of prevention has been shown to be a strong predictor of the decision to initiate treatment (Susanti et al., 2025). Many individuals with latent tuberculosis infection (LTBI) are reluctant to start treatment because they do not experience disturbing physical symptoms or feel healthy enough, and therefore see no urgency in taking long-term medication (Manoharan et al., 2023). A poor understanding of the concept of “latent infection” as opposed to “active disease” often creates skepticism, as patients feel that treatment is only needed by those who show symptoms such as coughing or weight loss (Wang et al., 2025).

In addition, fear of medication side effects plays a dominant psychological role in the refusal to initiate treatment. Concerns about nausea, dizziness, and potential liver damage often discourage individuals from committing to a TPT regimen (Manoharan et al., 2023). The social stigma attached to TB also triggers psychological anxiety, as individuals fear that taking preventive medication will lead others to label them as having active TB (Amuge et al., 2024). However, a strong psychological motivation to protect vulnerable family members, such as children or older adults, can be a highly effective facilitator in increasing willingness to accept TPT (Wang et al., 2025).

The interaction between patients and health workers is also a determining factor in the psychological aspects of acceptance. High trust in physicians' recommendations can often mitigate fear of side effects and doubts about drug effectiveness (Manoharan et al., 2023). Empathetic and personalized education about the care cascade can help patients internalize the risk of progressing to active TB in the future (Parwitha et al., 2025). By

improving health literacy through structured counseling sessions, the psychological barrier of low perceived risk can be transformed into proactive motivation to complete preventive treatment (Susanti et al., 2025).

Socioeconomic Status and Demographic Characteristics in Treatment Initiation (RQ1)

Household economic conditions are among the main determinants of access to TPT services. Low family income often correlates with an inability to bear indirect costs, such as transportation to health facilities (Sandoval et al., 2023). Although TPT drugs are generally provided free of charge by national programs, the financial burden of routine visits remains a significant reason for failure to initiate treatment among low-income communities (Shenoi et al., 2022). Economic instability also forces many heads of household or breadwinners to prioritize work over the administrative procedures of preventive treatment (Amuge et al., 2024).

Demographic characteristics such as education level and sex also show varying effects in the literature. Individuals with higher education tend to have better access to information and are more willing to accept TPT because they understand the long-term consequences of latent infection (Wang et al., 2025). Regarding sex, several studies show that women tend to have higher TPT acceptance than men, possibly because of their greater concern for family health (Shenoi et al., 2022). However, in certain populations such as refugees or internal migrants, language barriers and unstable residency status add socioeconomic complexity to accessing preventive services (Wang et al., 2025).

Residential environment, such as living in densely populated urban areas versus rural areas, also affects the availability of social support and access to health services. People in remote areas often face severe geographic challenges in reaching the nearest health center, which reduces their interest in initiating treatment (Sandoval et al., 2023). On the other hand, community stigma in more anonymous yet competitive urban environments sometimes leads patients to conceal their health status to keep their jobs (Amuge et al., 2024). Therefore, approaches that take specific socioeconomic and demographic backgrounds into account are needed to ensure inclusive treatment initiation (Marley et al., 2023).

Adherence Dynamics and Psychosocial Barriers during Treatment (RQ2)

Sustained adherence to TPT is a dynamic process that often declines as treatment progresses. Analysis shows that adherence tends to be highest in the first month but gradually decreases because of boredom or loss of motivation (Chen et al., 2024). Pill fatigue is a real psychosocial barrier, especially for patients who must also take medication for other chronic conditions such as HIV (Amuge et al., 2024). When patients feel healthy and have no symptoms, they tend to assume that missing a few doses will do no harm, which ultimately leads to irregular treatment (Manoharan et al., 2023).

Emotional support from family and the social environment plays a major role in maintaining adherence. The presence of a family member acting as a treatment supporter who provides consistent daily reminders has been shown to significantly increase adherence scores (Susanti et al., 2025). Conversely, a lack of psychosocial support and exclusion by the community can make patients feel distressed and eventually stop treatment prematurely (Parwitha et al., 2025). The double stigma of TB and HIV is often a heavy barrier for adolescents, whose fear of discrimination by peers makes them reluctant to take medication in public (Amuge et al., 2024).

Technology and communication interventions are also emerging as effective supports for adherence. Digital devices such as electronic pillboxes or SMS reminders help patients build more disciplined medication routines (Meira et al., 2025). In addition, testimonials from patients who have successfully completed treatment can provide psychological reinforcement and confidence that the challenges of treatment can be overcome (Parwitha et al., 2025). By strengthening the bond between providers and patients through continuous communication, psychosocial challenges during treatment can be better mitigated (Chen et al., 2024).

Impact of Structural and Economic Factors on Treatment Completion (RQ2)

Completing preventive treatment through the final dose depends heavily on systemic support and the continuous availability of resources. Structural problems such as unstable drug stocks at health facilities can discourage patients from continuing treatment (De Groot et al., 2024). When patients come to the clinic and find that preventive drugs are out of stock, they often lose trust in the health system and tend not to return (Amuge et al., 2024). In addition, long waiting times at health facilities are an exhausting practical barrier for patients, especially those who have to work (Shenoi et al., 2022).

Economic incentives have been evaluated in various studies as a strategy to ensure treatment completion among at-risk groups. Providing nutritional support or direct reimbursement of transportation costs can ease patients' economic burden and significantly increase treatment completion rates (Marley et al., 2023). In pediatric populations, adequate household income is a key factor because caregivers have sufficient resources to bring children to follow-up visits (Sandoval et al., 2023). Without adequate economic support, the risk of drop-out in the final phases of treatment remains very high, even when patients have gone through the initial phase well (Chen et al., 2024).

Integrated care cascade management between TB programs and other services also affects final success. Integrating TPT with antiretroviral therapy (ART) for people living with HIV has been shown to facilitate monitoring and increase completion rates because patients do not need to make separate visits (Shenoi et al., 2022). However, health workers' clinical autonomy in prescribing must also be supported by systems that facilitate reporting and follow-up (De Groot et al., 2024). By minimizing economic and structural barriers, the global TB elimination target through prevention is expected to be achieved more effectively (Marley et al., 2023).

Effectiveness of Community-Based Interventions and Digital Technology (RQ3)

The most effective intervention strategies for improving TPT completion involve approaches that bring services closer to patients. Community-based management, in which health workers or volunteers conduct home visits, has been shown to achieve higher success rates than standard clinic-based care (Rahman et al., 2024; Shenoi et al., 2022). This model allows more flexible directly observed therapy that fits the local cultural context (Sandoval et al., 2023). In addition, the active involvement of community leaders and local organizations in providing education can help break down the wall of stigma that often hinders treatment initiation (Parwitha et al., 2025).

In the modern era, the integration of digital technology has shown great potential to support the TB care cascade. Video-observed therapy (VDOT) allows health workers to monitor medication intake remotely, which not only saves patients' time but also reduces program operating costs (Meira et al.,

2025). The use of electronic devices combined with short message service (SMS) reminders consistently has a positive impact on patients' daily adherence (Chen et al., 2024). Nevertheless, these digital interventions must be adapted to the technological literacy and device accessibility of the target population so as not to create new access gaps (Meira et al., 2025).

The combination of psychosocial interventions and material support is also considered a comprehensive approach. Programs that provide conditional cash transfers together with psychological counseling have been shown to dramatically increase TPT initiation and completion rates (Parwitha et al., 2025). Testimonials from TB survivors who have successfully completed TPT are also effective in motivating new patients and increasing public acceptance of prevention programs (Susanti et al., 2025). Through synergy between humanistic community approaches and the efficiency of digital technology, the multidimensional barriers to TPT can be overcome more optimally (Marley et al., 2023).

Role of Health Workers and Psychosocial Strategies in Strengthening the Care Cascade (RQ3)

The quality of interaction between health workers and patients is a major determinant of successful preventive treatment. Health workers with in-depth knowledge and good communication skills can help patients understand the benefits of TPT and manage expectations regarding side effects (Manoharan et al., 2023). The use of automatic prescribing strategies (choice architecture) in electronic medical record systems has proven effective in reminding clinicians to provide TPT to eligible groups (De Groot et al., 2024). In addition, incentives for clinicians who manage the TPT cascade well have been shown to increase their attention to patient adherence (Chen et al., 2024).

Psychosocial interventions targeting caregivers and families are crucial, especially in pediatric and adolescent populations. Training caregivers to support medication intake without excessive psychological pressure can create a home environment conducive to recovery (Sandoval et al., 2023). Counseling strategies focused on patient empowerment also help patients feel in control of their own health, which in turn increases their long-term commitment to treatment (Parwitha et al., 2025). Combining routine education sessions with primary health care services ensures that information about TB prevention stays fresh in patients' minds (Susanti et al., 2025).

Overall, strengthening the care cascade requires cross-sectoral coordination and policies that support patients' psychosocial well-being. Periodic evaluation of barriers in the field and adaptation of communication strategies that are sensitive to local culture are necessary to maintain program effectiveness (Marley et al., 2023). Psychological support for health workers themselves is also important so that they remain motivated to provide the best service amid limited resources (De Groot et al., 2024). Through a person-centered approach supported by a strong system, the success of TPT as a main pillar of TB elimination can be realized (Chen et al., 2024).

CONCLUSION

This review concludes that the TPT care cascade among close contacts of tuberculosis patients succeeds or fails at different stages for different reasons. Regarding the first research question, acceptance of TPT is determined mainly by psychological factors: adequate knowledge and perceived risk encourage initiation, whereas the belief that feeling healthy makes medication unnecessary, fear of side effects, and anticipated stigma discourage it. Regarding the second research question, adherence and

completion depend more on social and economic conditions: family treatment supporters sustain adherence, while indirect costs, lost working time, and pill fatigue drive discontinuation in the later phases of treatment. Regarding the third research question, the most effective strategies are those that bring services closer to contacts and reduce their burden, namely community-based management, shorter regimens, integration of TPT with existing services such as ART, digital adherence support, and economic incentives. In practice, national TB programs should embed structured counseling on latent infection and side-effect management into contact investigation, provide transportation or nutritional support for low-income households, and assign a family or community treatment supporter to every contact who starts TPT. Future research should test combinations of these interventions and culturally tailored communication strategies among close contacts of all ages in diverse settings, including Indonesia.

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DECLARATIONS

Author contribution

Ratna Prabawati Nopiutami: data curation, writing-original draft preparation and editing, conceptualization, **Elviera Gamelia:** methodology, validation, visualization, **Suratman:** supervision, software.

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The authors declare that this research was conducted without any conflict of interest in the research.

Ethical clearance

The research company has agreed to carry out the research and is willing if the results of this research are published.

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