

# Effectiveness of Discharge Planning Interventions on Hospital Readmission Among Patients with Pulmonary Tuberculosis: A Scoping Review

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## Abstract

Pulmonary tuberculosis remains a major cause of morbidity and health-system burden, particularly in low- and middle-income countries. Despite advances in antituberculosis therapy, the transition from hospital to community is often fragmented, increasing the risk of complications, treatment interruption, and hospital readmission. Discharge planning is increasingly recognized as a peri-discharge intervention that may reduce readmission by supporting treatment continuity, complication monitoring, patient understanding, family involvement, and post-discharge follow-up. This literature review was conducted as part of a scoping review framework following the PRISMA extension for Scoping Reviews (PRISMA-ScR) and Joanna Briggs Institute methodological guidance. Literature searches were performed in PubMed, Scopus, Web of Science, and CINAHL. Out of 500 identified articles, 11 studies were included after screening and eligibility assessment. Discharge planning for pulmonary tuberculosis is implemented through nurse-led education, counseling, medication guidance, readiness assessment, family engagement, and continuity of care arrangements. Available evidence indicates that structured nursing interventions are associated with improved knowledge, self-care, adherence, discharge readiness, and lower short-term readmission risk. Five thematic domains were identified: nurse-led interventions, core components, discharge readiness, continuity of care, and socioeconomic/psychosocial barriers. Discharge planning may contribute to lowering readmission among pulmonary tuberculosis patients, but current evidence remains indirect and heterogeneous. Rigorous TB-specific studies with readmission as the primary outcome are urgently needed.

Keywords: Pulmonary Tuberculosis, Discharge Planning, Hospital Readmission, Transitional Care, Scoping Review

## 1. INTRODUCTION

Pulmonary tuberculosis (TB) remains one of the most significant causes of morbidity and mortality worldwide, continuing to burden health systems especially in low- and middle-income countries including Indonesia. Although antituberculosis regimens have improved substantially, many patients still experience an unsafe and poorly coordinated transition from hospital to home, which increases the risk of complications, poor adherence, and unplanned readmission after discharge.

Discharge planning is increasingly recognized as a key nursing and transitional-care strategy. It encompasses early assessment of patient needs, health education, medication guidance, referral planning, follow-up arrangements, and family involvement. In tuberculosis care, these elements are particularly important because treatment is prolonged, adverse drug effects may occur, and continuity of care after discharge is essential to prevent treatment interruption and relapse.

Despite the conceptual importance of discharge planning in TB management, evidence on its direct impact on hospital readmission remains limited and fragmented. Most available studies address intermediate outcomes such as knowledge, adherence, or discharge readiness rather than readmission as a primary endpoint. This scoping review therefore aims to

systematically map and synthesize available evidence on discharge planning interventions for pulmonary TB and their association with hospital readmission outcomes.

#### **a. Research Questions**

- 1). What discharge planning interventions have been used for patients with pulmonary tuberculosis?
- 2). What evidence is available regarding their effectiveness in reducing hospital readmission?
- 3). What contextual factors influence the effectiveness of discharge planning in TB care?

#### **b. Research Objectives**

- 1). To map and synthesize evidence on discharge planning interventions implemented for hospitalized patients with pulmonary tuberculosis;
- 2). To evaluate the association between discharge planning and hospital readmission outcomes;
- 3). To identify gaps in the current evidence base and propose directions for future research.

## **2. RESEARCH METHOD**

This study was designed as a scoping review to map available evidence on discharge planning interventions and hospital readmission among patients with pulmonary tuberculosis. The review followed the Joanna Briggs Institute (JBI) methodological guidance for scoping reviews and was reported in accordance with the PRISMA extension for Scoping Reviews (PRISMA-ScR) checklist.

Eligibility criteria were developed using the Population, Concept, and Context (PCC) framework. The population included hospitalized or recently discharged patients with confirmed pulmonary tuberculosis of any age. The concept of interest was discharge planning intervention, broadly defined to include discharge education, counseling, medication instruction, readiness assessment, referral planning, follow-up, family-centered support, and nurse-led transitional care. The context included hospitals, pulmonary wards, infectious disease units, TB referral facilities, and linked post-discharge care settings.

#### **a. Eligibility Criteria**

Primary empirical studies with quantitative, qualitative, or mixed-methods designs were eligible if they addressed discharge planning, readiness for discharge, continuity of care, or readmission in pulmonary tuberculosis. Editorials, opinion papers, conference abstracts without sufficient methods, and studies not focused on pulmonary tuberculosis were excluded. No restriction on year of publication or language was applied, though articles in English and Indonesian were prioritized.

#### **b. Article Sources**

A comprehensive search was conducted in major bibliographic databases, including PubMed, Scopus, Web of Science, and CINAHL, in January 2026. Reference lists of relevant studies were screened manually. Search terms combined the concepts of pulmonary tuberculosis, discharge planning, transitional care, readiness for discharge, and hospital readmission using the Boolean operator “AND”.

#### **c. Article Search**

The search strategy was as follows: [1. pulmonary tuberculosis\*, 2. discharge planning\*] AND [1. hospital readmission\*, 2. transitional care\*, 3. discharge readiness\*, 4. nursing intervention OR continuity of care\*]. Both MeSH terms and free-text keywords were used for each database.

#### d. Article Selection

Both authors independently assessed titles and abstracts of all identified studies using the Rayyan systematic review management tool. Articles meeting inclusion criteria but lacking adequate abstract details were retrieved for full-text screening. Disagreements on article selection were resolved through discussion until consensus was reached.

#### e. Data Extraction and Management

The first author extracted data on study characteristics including author, year, country, study design, population, intervention, and key findings. The second author verified all extracted data. Disagreements on extracted data were resolved through discussion. Because this was a scoping review, no meta-analysis was planned; instead, evidence was synthesized descriptively and thematically.

#### f. Article Source Selection

The initial article search yielded 500 articles. After duplicates were removed ( $n = 13$ ), the titles and abstracts of the remaining 487 articles were screened against the inclusion criteria. This resulted in the exclusion of 471 articles. After a full-text review of 16 articles, five additional articles were excluded, resulting in 11 articles being selected for the final synthesis (Fig. 1).

Table 1. PRISMA-ScR flowchart of the scoping review ( $n = 11$  studies included)

<b>Identification</b>	Records identified through database searching (PubMed, Scopus, Web of Science, CINAHL) and manual reference screening ( $n = 500$ )
<b>Duplicates</b>	Duplicates removed ( $n = 13$ ); records remaining ( $n = 487$ )
<b>Screening</b>	Titles and abstracts screened ( $n = 487$ ); records excluded after screening ( $n = 471$ )
<b>Eligibility</b>	Full-text articles assessed for eligibility ( $n = 16$ ); excluded After a full-text review ( $n = 5$ )
<b>Included</b>	Studies included in narrative and thematic synthesis ( $n = 11$ )

### 3. RESULTS AND DISCUSSION

Eleven studies published between 2019 and 2026 were reviewed. All studies investigated discharge planning-related interventions or transitional care strategies for patients with pulmonary tuberculosis. Study designs included quasi-experimental ( $n = 1$ ), scoping review ( $n = 1$ ), phenomenological qualitative ( $n = 1$ ), literature review ( $n = 1$ ), and systematic review and meta-analysis ( $n = 1$ ), with additional studies addressing readmission, continuity of care, and psychosocial factors. Three major themes were consistently identified: nurse-led discharge planning and readmission, core intervention components, and readiness for discharge.

As presented in Table 1, the largest synthesis was the systematic review and meta-analysis by Fly et al. (2025) involving the broadest international sample, followed by the phenomenological study by Wang et al. (2024,  $n = 20$ ), the quasi-experimental study by Sunpapo et al. (2023,  $n = 105$ ), and the scoping review by Yulanda et al. (2026). The clinimetric qualities of the identified interventions are summarized in Table 2.

Table 2. Characteristics of Included Studies.

Author (s)	Country	Design	Aim	Intervention	Key Finding
Sunpapoa et al. (2023)	Thailand	Quasi-experimental	Evaluate structured nursing care on 28-day readmission and self-care outcomes	Nurse-led structured discharge program with education, medication, and follow-up	Reduced 28-day readmission; improved knowledge and self-care behavior
Yulanda et al. (2026)	Indonesia	Scoping review	Map nurse-led interventions in TB care	Scoping synthesis of nurse-led care models	Identified six core components of nurse-led discharge care
Wang et al. (2024)	China	Phenomenological qualitative	Explore discharge readiness factors in TB patients	Semi-structured interviews on readiness experience	Readiness shaped by capability, opportunity, and motivation
Siswanto et al. (2023)	Indonesia	Literature review	Examine caring-based discharge planning in pulmonary TB	Caring-based discharge planning model	Improved patient motivation and supported lower readmission risk
Fly et al. (2025)	International	Systematic review & meta-analysis	Evaluate nursing care interventions in pulmonary TB	Systematic appraisal of nursing care bundles	Improved adherence and reduced drug-related adverse reactions

Table 3. Evidence quality evaluation of included intervention studies.

Intervention	Content Validity	Internal Consistency	Criterion Validity	Construct Validity	Reliability	Responsiveness	Interpretability
Sunpapoa et al.	+	0	+	+	+	+	?
Yulanda et al.	+	0	0	+	0	0	0

Intervention	Content Validity	Internal Consistency	Criterion Validity	Construct Validity	Reliability	Responsiveness	Interpretability
Wang et al.	+	+	0	+	?	0	?
Siswanto et al.	+	0	+	0	+	+	0
Fly et al.	+	+	+	+	+	+	?

Evidence rating: + = positive/adequate; ? = intermediate; - = poor; 0 = no information available

### a. Discussion

This scoping review identified 11 studies that examined discharge planning interventions and related transitional care strategies in patients with pulmonary tuberculosis. To the best of our knowledge, this is the first scoping review specifically mapping discharge planning for TB with readmission as a key outcome of interest.

The evidence indicates that nurse-led discharge planning is a multi-component intervention rather than a single action. The most effective models combine health education, medication guidance, psychological support, family engagement, and structured follow-up coordination. Sunpapoa et al. (2023) demonstrated that structured nursing interventions significantly reduced 28-day hospital readmission and improved self-care behaviors in Thai TB patients. These findings align with evidence from other respiratory conditions, where bundled discharge interventions have consistently reduced readmission.

Discharge readiness emerges as a key mediating mechanism in the relationship between discharge planning and readmission. Wang et al. (2024) showed that readiness is shaped by patient capability, opportunity, and motivation—a model consistent with the COM-B framework. Patients who feel prepared, understand their treatment regimen, and have family support are less likely to experience early unplanned readmission.

Socioeconomic and psychosocial barriers remain significant challenges. Financial constraints, social stigma, poor family support, and emotional distress may undermine even well-designed discharge planning programs. Effective interventions must therefore address the broader social determinants of health alongside biomedical needs.

Methodological limitations are evident across the included studies. Sample sizes ranged from small qualitative samples ( $n = 20$ ) to larger syntheses, and few studies used readmission as a primary endpoint. As in the wound care scoping review literature, there is consensus that reliability and validity of intervention studies should exceed ICC or  $\kappa \geq 0.75$ – $0.80$  in clinical research. Future studies should adopt larger sample sizes, multi-site designs, and rigorous outcome measurement to enable robust conclusions about the effectiveness of discharge planning for TB readmission.

### b. Study Limitations

Several limitations should be acknowledged. First, as linguistic searches were predominantly restricted to English and Indonesian, studies published in other languages may have been missed. Second, the heterogeneity of study designs and outcome measures precluded formal meta-analysis. Third, several included studies assessed intermediate outcomes (knowledge, readiness, adherence) rather than readmission directly. Future reviews should establish minimum reporting standards for TB discharge planning studies.

## 4. CONCLUSION

Eleven studies addressing discharge planning interventions for pulmonary tuberculosis were identified. Structured discharge planning—encompassing education, medication guidance,

family involvement, readiness assessment, and continuity-of-care arrangements-shows promise in reducing short-term hospital readmission and improving patient outcomes. There is moderate-quality evidence to support nurse-led discharge planning for TB, particularly for models that integrate behavioral readiness and post-discharge follow-up. However, TB-specific studies with readmission as a primary endpoint remain limited. Better-designed, rigorously conducted, and comprehensively reported studies are urgently needed.

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