

Original Article

Knowledge and health beliefs associated with self-efficacy among patients with pulmonary tuberculosis: A cross-sectional study

Helza Risdianti^{1*}, Dzikra Fitria Amita¹, Tsania Ayu Zaharany¹, Aurellia Firstania¹, Suprayogi¹, Sartika Rajagukguk¹, Erni²

¹ Program Studi DIII Keperawatan, Politeknik Negeri Subang, Subang, Jawa Barat, Indonesia

² Puskesmas Kalijati, Politeknik Negeri Subang, Subang, Jawa Barat, Indonesia

***Corresponding Author:**

Helza Risdianti

Program Studi DIII Keperawatan,
Politeknik Negeri Subang, Subang, Jawa
Barat, Indonesia

Email:

helza.risdianti@polsub.ac.id

Keyword:

Health Belief Model; Knowledge;
Pulmonary Tuberculosis; Self-Efficacy

© The Author(s) 2026

DOI:

<https://doi.org/10.52235/lp.v7i4.1001>

Article Info:

Received : July 23, 2026

Revised: September 18, 2026

Accepted : October 08, 2026

Lentera Perawat

e-ISSN : 2830-1846

p-ISSN : 2722-2837



This is an Open Access article distributed
under the terms of the [Creative
Commons Attribution-NonCommercial
4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

Abstract

Background: Completing long-term antituberculosis treatment remains a challenge in Indonesia. Self-efficacy, a patient's confidence in his or her ability to complete treatment, is considered an important resource for adherence. Tuberculosis (TB) knowledge and the health beliefs described by the Health Belief Model (HBM) are theoretically related to self-efficacy, but evidence on how they are jointly associated with self-efficacy among patients treated in Indonesian primary care is limited.

Objective: To examine the associations of TB knowledge and health beliefs with self-efficacy among patients receiving pulmonary TB treatment.

Methods: This cross-sectional study included 72 patients with pulmonary TB recruited consecutively at the TB/DOTS clinic of Kalijati Community Health Center, Subang Regency, West Java, from June to August 2026. Knowledge, health beliefs, and self-efficacy were measured with a 13-item knowledge questionnaire, a 20-item HBM questionnaire, and the 25-item TB Self-Efficacy Scale (TBSE). Data were analyzed using Spearman's rank correlation and multivariable binary logistic regression.

Results: Most participants had moderate self-efficacy (75.0%), and none had low self-efficacy. Knowledge showed a weak inverse correlation with self-efficacy ($r_s = -0.275$; $p = 0.019$), whereas the total HBM score showed a positive correlation ($r_s = 0.394$; $p = 0.001$). In the multivariable model (outcome: high vs. moderate self-efficacy), each one-point increase in the HBM score was associated with higher odds of high self-efficacy (adjusted odds ratio [AOR] 4.00; 95% CI 1.69–9.50), each one-point increase in the knowledge score was associated with lower odds (AOR 0.32; 95% CI 0.15–0.66), and female participants had lower odds than male participants (AOR 0.19; 95% CI 0.04–0.92).

Conclusion: Stronger overall health beliefs were associated with higher self-efficacy, whereas higher knowledge was unexpectedly associated with lower self-efficacy. Because the design was cross-sectional and the HBM was analyzed as a total score, these findings do not establish causality or indicate which HBM components are most important. TB education may need to address patients' health beliefs, not only factual knowledge, and this approach should be tested in longitudinal and intervention studies.

Background

Pulmonary tuberculosis (TB) remains a major global public health problem. The World Health Organization (WHO) estimated 10.7 million new TB cases worldwide in 2024, corresponding to an incidence of 131 cases per 100,000 population (WHO, 2025). Indonesia has the second-highest TB burden after India, with an estimated 1.08–1.1 million new cases per year (382–388 per 100,000 population), or approximately 10% of the global burden (Kementerian Kesehatan RI, 2025; WHO, 2025). West Java, East Java, and Central Java together account for approximately 46% of national cases, and TB is more common among men, older adults, people with low education, manual workers, and low-income groups (Firmansyah et al., 2024; Kementerian Kesehatan RI, 2025).

Successful TB control depends on patients completing at least six months of antituberculosis treatment. Although standard regimens are widely available through the DOTS strategy, nonadherence, drug resistance, and post-TB sequelae continue to challenge treatment outcomes (Parwati et al., 2021; Wisesa et al., 2021). Indonesian studies have identified education, knowledge, gender, family support, comorbidities, and the motivation of treatment supervisors (Pengawas Menelan Obat, PMO) as factors associated with adherence (Hermiati & Yansyah, 2024; Ramayanti et al., 2024). Beyond these factors, self-efficacy, defined as a patient's confidence in his or her ability to carry out the actions required to complete treatment, is regarded as an important psychological resource for coping with a long and demanding regimen (Fadhilah & Yuliza, 2025; Jauhar et al., 2019).

Two groups of factors are theoretically relevant to self-efficacy. First, knowledge of the cause, transmission, treatment, and prevention of TB is expected to give patients the information they need to manage their treatment, and knowledge has been associated with TB occurrence, adherence, and treatment outcomes (Arisandi & Novitry, 2024; Wisesa et al., 2021). Second, the Health Belief Model (HBM) proposes that health behavior is shaped by several distinct beliefs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action (Hotip & Widati, 2024). HBM-based education and motivational interviewing have been reported to improve knowledge, adherence, and treatment success among patients with TB (Fitriyani et al., 2024; Parwati et al., 2021; Patricia et al., 2020).

However, evidence linking these factors to self-efficacy is limited and inconsistent. Some Indonesian studies have reported a positive association between knowledge and self-efficacy (Herawati & Purwanti, 2018; Safitri et al., 2022), whereas field observations suggest that patients' knowledge does not necessarily correspond to their health beliefs or to their confidence in completing treatment (Safitri et al., 2022). Most previous studies examined knowledge or HBM constructs separately, often in relation to adherence rather than self-efficacy, and few have analyzed knowledge, health beliefs, and patient characteristics simultaneously in primary care. It therefore remains unclear whether knowledge and health beliefs are independently associated with self-efficacy among patients receiving TB treatment at Indonesian community health centers (Puskesmas).

This study aimed to examine the associations of TB knowledge and health beliefs with self-efficacy among patients receiving pulmonary TB treatment and to identify factors independently associated with self-efficacy. We hypothesized that higher knowledge and higher HBM scores would each be associated with higher self-efficacy.

Methods

Study Design

This was an analytical cross-sectional study in which the exposures (knowledge and health beliefs) and the outcome (self-efficacy) were measured at the same point in time. This design allows associations to be examined but does not allow conclusions about temporal order or causality (Harland, 2026). The study is reported in

accordance with the STROBE guideline for cross-sectional studies.

Study Setting

The study was conducted at the TB clinic and DOTS service of UPTD Puskesmas Kalijati, a community health center in Kalijati District, Subang Regency, West Java Province, Indonesia. The clinic examines presumptive TB cases, conducts contact investigation, initiates antituberculosis treatment, and monitors medication adherence until treatment completion, with family members commonly acting as treatment supervisors. Registered patients visit the clinic to collect medication and for follow-up weekly during the intensive phase and every two to four weeks during the continuation phase. Data were collected from June 1 to 31 August, 2026.

Participants and Sampling

The study population comprised patients with pulmonary TB registered for treatment at the Puskesmas Kalijati TB clinic during the study period. Inclusion criteria were (1) bacteriologically or clinically confirmed pulmonary TB, (2) age ≥ 17 years, and (3) having received antituberculosis treatment for at least one month at the time of data collection, in either the intensive or the continuation phase, so that participants had sufficient treatment experience to rate their confidence. Exclusion criteria were TB with complications (pleural effusion, pneumothorax, or TB meningitis) and comorbid diabetes mellitus, hypertension, or HIV. These conditions were excluded because the additional treatment burden, polypharmacy, and symptoms they entail could independently lower self-efficacy and confound the associations of interest in a small sample (Ramayanti et al., 2024); however, this restriction limits the generalizability of the findings.

The minimum sample size was calculated using Fisher's z formula for correlation studies. Assuming an expected correlation of $r = 0.35$, a two-sided α of 0.05, and 80% power, at least 62 participants were required; 72 participants were included. Participants were recruited by consecutive sampling: the researcher obtained the list of patients in the TB clinic and DOTS register, screened them against the eligibility criteria, informed eligible patients attending the clinic about the study, and obtained written informed

consent before data collection. Of registered patients, were screened, were eligible, were excluded (with complications and with comorbidities), declined to participate, and 72 completed the questionnaires and were included in the analysis.

Variables and Measurement

TB knowledge was defined as the participant's understanding of the cause, transmission, symptoms, treatment, prevention, and importance of adherence to TB treatment. It was measured with a 13-item questionnaire (Cahyanti et al., 2024). Each item was scored dichotomously (1 = correct; 0 = incorrect or do not know), and item scores were summed to give a total score of 0–13, with higher scores indicating better knowledge. Knowledge was analyzed as a continuous score.

Health beliefs were measured with the 20-item HBM questionnaire for patients with pulmonary TB (Cahyanti et al., 2024), which covers five constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action. Each item was scored 1 (agree) or 0 (disagree), with negatively worded items reverse-scored, giving a possible total score of 0–20 (subscale ranges), with higher scores indicating health beliefs more favorable to treatment. The HBM was analyzed as a total score; individual constructs were not analyzed separately. In the validation study, all knowledge items (corrected item–total correlation ≥ 0.361 ; Cronbach's $\alpha = 0.796$) and all HBM items (corrected item–total correlation ≥ 0.361 ; Cronbach's $\alpha = 0.817$) were valid and reliable (Cahyanti et al., 2024).

Self-efficacy was measured with the TB Self-Efficacy Scale (TBSE), which was administered separately and is not a dimension of the HBM questionnaire used in this study. The scale assesses three aspects: (1) self-competence, or confidence in one's ability to complete difficult and varied tasks; (2) self-confidence, or persistence and courage in facing challenges; and (3) expectation of success, or an optimistic attitude toward the outcome. The original scale contained 27 items. In its validation, item–total correlations ranged from 0.197 to 0.668 and Cronbach's α was 0.872; items 9 and 25, whose correlations were below the 0.25 threshold, were removed, leaving 25 items (Mulki, 2022; Sulaiman, 2009). Using the original numbering, favorable

self-competence items are 1–7 and 11 and unfavorable items are 8 and 10; favorable self-confidence items are 12, 13, 14, 16, and 19 and unfavorable items are 15, 17, and 18; favorable expectation-of-success items are 20–23 and unfavorable items are 24, 26, and 27. Favorable items are scored 4 (strongly agree) to 1 (strongly disagree), and unfavorable items are reverse-scored. The final 25-item version therefore yields a total score of 25–100, categorized as low (25–50), moderate (51–76), or high (77–100) (Mulki, 2022).

Age, gender, employment, education, marital status, PMO, treatment phase, distance to the health center, health insurance, drug side effects, receipt of TB information, and source of information were recorded with a structured form. PMO (Pengawas Menelan Obat) refers to a treatment supervisor, usually a family member, who observes the patient taking medication. Health insurance was categorized as BPJS (the National Health Insurance program, Jaminan Kesehatan Nasional) or "Mandiri" (self-paying patients without health insurance coverage). These characteristics were used descriptively; those associated with self-efficacy at $p < 0.25$ in bivariate analysis were considered candidate confounders for the multivariable model.

Data Collection and Data Quality

Questionnaires were [self-administered / administered by a trained interviewer] in Bahasa Indonesia in a private room at the clinic after the participant's routine visit and took approximately [20–30] minutes to complete. For participants with limited literacy, items were read aloud without explanation or prompting. The researcher checked each questionnaire for completeness immediately after it was returned and asked participants to complete any missed items. No missing data occurred in the analyzed dataset.

Potential Sources of Bias

Consecutive recruitment at a single clinic may have introduced selection bias; for example, patients who attended regularly, and who might have higher self-efficacy, may have been more likely to be recruited. To reduce this, all eligible patients attending during the study period were approached. Because all main variables were self-reported, social-desirability bias was possible; participants were therefore told that their

answers would not affect their care, and questionnaires were completed without clinic staff present. Recall bias was considered minimal because the questionnaires asked about current knowledge, beliefs, and confidence rather than past events.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 30. Categorical variables were summarized as frequencies and percentages, and continuous variables as mean $\pm$ standard deviation (SD) or median [interquartile range, IQR] according to their distribution, assessed with the Kolmogorov-Smirnov test. Associations of knowledge and HBM scores with the self-efficacy score were assessed with Spearman's rank correlation (rs); 95% confidence intervals (CIs) for the coefficients were estimated using Fisher's z transformation. Binary logistic regression was used to identify factors independently associated with high self-efficacy. Variables with $p < 0.25$ in bivariate analysis were entered into the model using the [enter/backward Wald] method. Knowledge and HBM were entered as continuous scores, so their odds ratios represent the change in odds per one-point increase, and gender was entered with male as the reference category. Results are reported as adjusted odds ratios (AORs) with 95% CIs. Model fit was assessed with the Hosmer-Lemeshow test, explained variance with Nagelkerke R^2 , discrimination with overall classification accuracy, and multicollinearity with variance inflation factors (VIFs). Statistical significance was set at $p < 0.05$ (two-sided).

Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the Health Research Ethics

Committee of Universitas Muhammadiyah Purwokerto (KEPK-UMP), approval number KEPK/UMP/365/V/2026. All participants received verbal and written information about the study and provided written informed consent before data collection; participation was voluntary, and refusal did not affect their care. Questionnaires were labeled with code numbers instead of names, completed forms were stored in a locked cabinet, and electronic data were kept in a password-protected file accessible only to the research team.

Results

The mean age of participants was 2.36 ± 0.954 , and nearly half were aged 26–35 years ($n = 34$, 47.2%). Slightly more than half were female ($n = 38$, 52.8%), and the most common occupation was housewife ($n = 20$, 27.8%). Half had completed senior high school ($n = 36$, 50.0%), and three-quarters were married ($n = 54$, 75.0%). Most had a family or household member as their PMO ($n = 56$, 77.8%).

All participants were new cases; 44 (61.1%) were in the continuation phase and 28 (38.9%) in the intensive phase. Most lived less than 5 km or 15 minutes from the health center ($n = 54$, 75.0%), were covered by BPJS ($n = 56$, 77.8%), and had received information about TB ($n = 66$, 91.7%), mainly from health professionals ($n = 46$, 63.9%). Nearly half ($n = 34$, 47.2%) reported drug side effects, which were mostly mild. The mean knowledge score was 10.35 ± 1.46 (possible range 0–13) and the mean HBM score was 17.47 ± 1.49 (possible range 0–20). Most participants had moderate self-efficacy ($n = 54$, 75.0%), 18 (25.0%) had high self-efficacy, and none had low self-efficacy. The distribution of characteristics of respondents is shown in Table 2.

Table 1. Characteristics of respondents with pulmonary tuberculosis (N = 72)

Variable	Category	n / mean $\pm$ SD	%
Age (years), mean $\pm$ SD		2.36 $\pm$ 0.954	
Age group	Late adolescence (17–25)	10	13.9
	Early adulthood (26–35)	34	47.2
	Late adulthood (36–45)	24	33.3
	Early old age (46–55)	2	2.8
	Late old age (56–65)	2	2.8
Gender	Male	34	47.2
	Female	38	52.8

Variable	Category	n / mean ± SD	%
Employment	Unemployed	6	8.3
	Housewife	20	27.8
	Student	2	2.8
	Private employee	14	19.4
	Entrepreneur	14	19.4
	Laborer	16	22.2
Education	Elementary school	8	11.1
	Junior high school	20	27.8
	Senior high school	36	50.0
	College/university	8	11.1
Marital status	Single	18	25.0
	Married	54	75.0
Treatment supervisor (PMO)	Family or household member	56	77.8
	None (self-supervised)	16	22.2
Treatment phase	Intensive (months 1–2)	28	38.9
	Continuation (months 3–6 or longer)	44	61.1
Distance to health center	Near (< 5 km or < 15 min)	54	75.0
	Far (≥ 5 km or ≥ 15 min)	18	25.0
Health insurance	BPJS (National Health Insurance)	56	77.8
	Mandiri (self-paying)	16	22.2
Drug side effects	None	38	52.8
	Mild (nausea, dizziness, red urine, weakness)	24	33.3
	Severe (joint pain, generalized itching, blurred vision, jaundice)	10	13.9
Received information about TB	Yes	66	91.7
	No	6	8.3
Source of information	Health professionals	46	63.9
	Electronic media	20	27.8
	None	6	8.3
Knowledge score (0–13), mean ± SD		10.35 ± 1.46	
HBM score (0–20), mean ± SD		17.47 ± 1.49	
Self-efficacy category	High (77–100)	18	25.0
	Moderate (51–76)	54	75.0
	Low (25–50)	0	0.0

Knowledge showed a weak inverse correlation with self-efficacy ($r_s = -0.275$; 95% CI -0.476 to -0.046 ; $p = 0.019$), indicating that participants with higher knowledge scores tended to have lower self-efficacy. The total HBM score showed a

weak-to-moderate positive correlation with self-efficacy ($r_s = 0.394$; 95% CI 0.179 to 0.573 ; $p = 0.001$) (Table 2). These correlations are modest in magnitude and do not imply causation.

Table 2. Correlations of tuberculosis knowledge and health beliefs with self-efficacy (N = 72)

Variable pair	Spearman's r_s	95% CI	p-value
TB knowledge – self-efficacy	-0.275	-0.476 to -0.046	0.019
HBM score – self-efficacy	0.394	0.179 to 0.573	0.001

In the multivariable model, gender, knowledge, and HBM score were independently associated with high self-efficacy (Table 3). Each one-point increase in the HBM score was associated with approximately four-fold higher odds of high self-efficacy (AOR 4.00; 95% CI 1.69–9.50; $p = 0.002$). In contrast, each one-point increase in the knowledge score was associated with 68% lower odds of high self-efficacy (AOR 0.32; 95% CI 0.15–

0.66; $p = 0.002$). Female participants had 81% lower odds of high self-efficacy than male participants (AOR 0.19; 95% CI 0.04–0.92; $p = 0.038$).

The model showed adequate fit (Hosmer-Lemeshow $p = 0.001$), explained 56% of the variance (Nagelkerke $R^2 = 0.565$), and correctly classified 88.9% of participants.

Table 3. Factors associated with high self-efficacy: multivariable binary logistic regression (N = 72)

Variable	AOR	95% CI	p-value
Gender: female (ref: male)	0.19	0.04–0.92	0.038
Knowledge score (per 1-point increase)	0.32	0.15–0.66	0.002
HBM score (per 1-point increase)	4.00	1.69–9.50	0.002

Discussion

This study examined the associations of TB knowledge and health beliefs with self-efficacy among patients receiving pulmonary TB treatment at a community health center in Subang. Three findings emerged: a higher total HBM score was associated with higher odds of high self-efficacy; a higher knowledge score was, unexpectedly, associated with lower odds; and self-efficacy differed by gender. Because of the cross-sectional design, these findings describe associations rather than causal effects.

The positive association between health beliefs and self-efficacy is consistent with the HBM, in which beliefs about susceptibility, severity, benefits, barriers, and cues to action shape readiness for health behavior (Hotip & Widati, 2024). It is also consistent with intervention studies showing that HBM-based education and motivational interviewing improve knowledge, motivation, and adherence among patients with TB (Firmanda et al., 2025; Fitriyani et al., 2024; Parwati et al., 2021; Patricia et al., 2020). One plausible interpretation is that patients who perceive treatment as beneficial and its barriers as manageable feel more capable of completing it. However, the HBM was analyzed as a single total score, so this study cannot determine which constructs account for the association; analyses of individual constructs are needed.

The inverse association between knowledge and self-efficacy contrasts with our hypothesis and with earlier Indonesian studies that reported

positive correlations (Herawati & Purwanti, 2018; Safitri et al., 2022). Several explanations can be proposed as hypotheses, none of which was tested in this study. First, greater knowledge of the seriousness of TB, the length of treatment, and possible side effects may heighten awareness of the difficulties ahead and thereby reduce confidence. Second, patients in the continuation phase (61.1%) may have accumulated knowledge through treatment experience while also experiencing treatment fatigue. Third, the questionnaire assesses factual knowledge and may not capture the practical, skills-based knowledge that supports confidence. Fourth, knowledge scores were concentrated near the upper end of the scale (mean 10.35 of 13), and the limited variability may have made the estimate unstable. Finally, the small number of participants with high self-efficacy may have produced an imprecise or chance finding. Replication in larger, longitudinal samples is required before practical conclusions are drawn.

Self-efficacy also differed by gender. Previous studies have suggested that women with TB may face greater stigma, more limited decision-making autonomy, and heavier domestic responsibilities (Muhlisi & Wilopo, 2004; Rokhmah, 2013), and gender has been associated with treatment adherence and completion among patients with TB in Indonesia (Hermiati & Yansyah, 2024; Lestari et al., 2022). These factors may help explain the difference observed here, but stigma, autonomy, and domestic roles were not measured in this study, so this interpretation remains

speculative. The estimate was also imprecise (95% CI 0.04–0.92).

Self-efficacy is considered an important internal resource for completing long TB treatment (Fadhilah & Yuliza, 2025; Jauhar et al., 2019). Taken together, the findings suggest that TB education in primary care may be more useful if it addresses patients' beliefs about the benefits of and barriers to treatment, for example through counseling, involvement of PMOs and family members, and practical problem-solving, rather than focusing only on transmitting factual information (Herawati & Purwanti, 2018; Ramayanti et al., 2024). Whether such approaches increase self-efficacy, adherence, or treatment success must be tested in intervention studies.

This study has several limitations. First, the cross-sectional design precludes conclusions about temporality or causality; for example, self-efficacy may influence how patients acquire knowledge rather than the reverse. Second, participants were recruited consecutively from a single community health center, which may limit generalizability and introduce selection bias. Third, the sample was small ($n = 72$) and only 18 participants had high self-efficacy, giving approximately six outcome events per predictor in the multivariable model; this raises the possibility of model overfitting and explains the wide confidence intervals. Fourth, all measures were self-reported and may be affected by social-desirability bias. Fifth, patients with diabetes mellitus, hypertension, HIV, or TB complications were excluded, so the findings may not apply to these common patient groups. Sixth, the HBM was analyzed as a total score, which prevents conclusions about individual constructs. Finally, residual confounding by unmeasured factors such as stigma, depression, family support, and socioeconomic status cannot be excluded.

Conclusion and Recommendation

Among patients receiving pulmonary TB treatment at a community health center in Subang, a higher overall HBM score was associated with higher self-efficacy, whereas a higher knowledge score was unexpectedly associated with lower self-efficacy, and self-efficacy differed by gender. These findings suggest that factual knowledge alone may not be sufficient to strengthen patients' confidence in completing treatment and that health beliefs deserve attention in TB education and counseling. Because the study was cross-sectional, analyzed the HBM as a total score, and

did not measure adherence or treatment outcomes, it cannot show that HBM-based interventions improve self-efficacy, adherence, or treatment success.

Future research should include (1) longitudinal studies to establish the temporal order of knowledge, health beliefs, and self-efficacy; (2) analyses of individual HBM constructs; (3) qualitative studies exploring why higher knowledge was associated with lower self-efficacy; (4) studies measuring stigma, family support, and other potential moderators, particularly in relation to gender; and (5) trials evaluating the effect of HBM-based counseling on self-efficacy and adherence in primary care.

Acknowledgement

The author would like to express their gratitude to all patients who participated in this study, to the Poli TB (Tuberkulosis)/Pelayanan DOTS UPTD Puskesmas Kalijati Subang, and Politeknik Negeri Subang for their support in facilitating the research process.

Funding Source

This research was partially funded by Politeknik Negeri Subang in 2026 (No.1141/DST/PL41.R1/TU.00.01/2026).

Declaration of conflict of interest

The authors declare no competing interests.

Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

Data Availability Statement

Data sharing is not applicable to this article.

References

- Arisandi, M., & Novitry, F. (2024). Faktor yang berhubungan dengan kejadian tuberkulosis di rumah sakit umum daerah. *Lentera Perawat*, 5(1), 123–133. <https://doi.org/10.52235/lp.v5i1.284>
- Cahyanti, P., Rizki, G., Farizi, A., & Arini, Y. D. (2024). Validity and reliability of knowledge and Health Belief Model (HBM) in pulmonary tuberculosis patients at Kedungmundu and Tlogosari Wetan Community Health Centers in Semarang City. *Science and Community Pharmacy Journal*, 3(1), 164–170. <https://doi.org/10.63520/scpj.v3i1.550>
- Fadhilah, N., & Yuliza, H. (2025). Self-efficacy pasien tuberkulosis dalam menjalankan pengobatan. *Nuansa Fajar Cemerlang*.

- Firmanda, G. I., Pratiwi, W. N., Sunarno, R. D., & Wahyuningsih, A. (2025). Pengaruh edukasi terhadap pengetahuan dan kepatuhan obat pada penderita TB di Karanganyar. *Jurnal Keperawatan Klinis dan Komunitas (Clinical and Community Nursing Journal)*, 9(1), 28–36. <https://doi.org/10.22146/jkkk.104297>
- Firmansyah. (2024). Tuberkulosis paru: Tinjauan komprehensif dari patogenesis hingga tatalaksana terkini. *Preventive Medicine Journal*, 3(2), 45–62.
- Fitriyani, L., Dwijayanti, F., Ruswandi, U., Afriansyah, E., & Purwadi, H. (2024). Efektivitas edukasi Health Belief Model dalam perubahan pengetahuan dan perilaku pasien tuberkulosis. *Indonesian Journal on Medical Science*, 11(2). <https://doi.org/10.70050/ijms.v11i2.486>
- Harland, T.A., & Heller, R.S. (2026). Cross-sectional study: Design, measures, classic example. In *Translational neurosurgery* (pp. 139–142). Elsevier.
- Herawati, E., & Purwanti, O. S. (2018). Hubungan antara pengetahuan dengan efikasi diri penderita tuberkulosis paru. *Jurnal Berita Ilmu Keperawatan*, 11(1), 1–9. <https://doi.org/10.23917/bik.v11i1.10585>
- Hermiati, & Yansyah, E. J. (2024). Faktor kepatuhan minum obat pasien dengan tuberkulosis. *Lentera Perawat*, 5(1), 44–50. <https://doi.org/10.52235/lp.v5i1.282>
- Hotip, M. A., & Widati, S. (2024). Perilaku pengobatan pasien TBC berdasarkan teori Health Belief Model: Literatur review. *Jurnal Kesmas Asclepius*, 6(2), 289–296. <https://doi.org/10.31539/jka.v6i2.11388>
- Jauhar, M., et al. (2019). Evaluation of impact self-management counseling on health-seeking behavior's self-efficacy pulmonary tuberculosis outpatients. *Enfermeria Clinica*, 29, 482–487. <https://doi.org/10.1016/j.enfcli.2019.04.072>
- Kementerian Kesehatan Republik Indonesia. (2025). Indonesia's movement to end TB: Strategi eliminasi tuberkulosis 2025–2030. Direktorat Pencegahan dan Pengendalian Penyakit, Kementerian Kesehatan RI.
- Lestari, N. P. W. A., Dedy, M. A. E., Artawan, I. M., & Buntoro, I. F. (2022). Perbedaan usia dan jenis kelamin terhadap ketuntasan pengobatan TB paru di puskesmas di Kota Kupang. *Cendana Medical Journal*, 10(1), 24–31. <https://doi.org/10.35508/cmj.v10i1.6802>
- Muhlisi, L. O., & Wilopo, S. A. (2004). Pengaruh gender terhadap kepatuhan minum obat penderita tuberkulosis dengan menggunakan program directly observed treatment short-course (DOTS) di Kabupaten Purworejo [Master's thesis, Universitas Gadjah Mada].
- Mulki, M. M. (2022). Efikasi diri dengan kepatuhan minum obat pasien TB paru di wilayah kerja Puskesmas Biromaru. *Jurnal Keperawatan Mandira Cendikia*, 2(1), 17–23. <https://doi.org/10.70570/jkmc.v1i2.203>
- Parwati, N. M., Bakta, I. M., Januraga, P. P., & Wirawan, I. M. A. (2021). A Health Belief Model-based motivational interviewing for medication adherence and treatment success in pulmonary tuberculosis patients. *International Journal of Environmental Research and Public Health*, 18(24), 13238. <https://doi.org/10.3390/ijerph182413238>
- Patricia, N. B., Darjati, & Suprijandani. (2020). Efek pemberian edukasi Health Belief Model pada penderita tuberkulosis paru terhadap pengetahuan dan persepsi kepatuhan pengobatan. *Gema Lingkungan Kesehatan*, 18(1), 58–64. <https://doi.org/10.36568/kesling.v18i1.1214>
- Ramayanti, F., Marita, Y., Yansyah, E. J., & Varge, V. (2024). Faktor-faktor yang berhubungan dengan kepatuhan berobat penderita tuberkulosis di Poli DOTS. *Lentera Perawat*, 5(1), 26–32. <https://doi.org/10.52235/lp.v5i1.281>
- Rokhmah, D. (2013). Gender dan penyakit tuberkulosis: Implikasinya terhadap akses layanan kesehatan masyarakat miskin yang rendah. *Kesmas: National Public Health Journal*, 7(10), 447–452. <https://doi.org/10.21109/kesmas.v7i10.3>
- Safitri, E. R., Rachmawati, K., & Rahmayanti, D. (2022). Hubungan pengetahuan dengan efikasi diri penderita tuberkulosis paru di wilayah kerja Puskesmas Mabu'un. *NERSPEDIA*, 4 (1), 106–113. eISSN: 2722-6573; pISSN:2721-1444
- Sulaiman. (2009). Hubungan antara efikasi diri dan dukungan sosial dengan kualitas hidup penderita tuberkulosis paru di RSUD Cut Meutia Aceh Utara [Master's thesis, Universitas Gadjah Mada].
- Wisesa, W., Pebriyani, U., Sudiadnyani, N. P., Maria, S., & Lestari, P. (2021). Hubungan tingkat pengetahuan tentang penyakit tuberkulosis dengan kesembuhan penderita tuberkulosis paru di Puskesmas Panjang tahun 2021. *Medula*, 11, 383–390.
- World Health Organization. (2025). Global tuberculosis report 2025. World Health Organization. <https://www.who.int/publications/i/item/9789240101531>