

18-02-2026

Nursing care management for active Pulmonary Tuberculosis patients in an inpatient ward a case study at Monompia GMIBM Hospital Kotamobagu

Gina F. Mongilong, Jikrun Jaata, Gita S. Patonengan

To cite this article: Aprinisa, Mongilong, G. F., Jaata, J., & Patonengan, G. S. (2026). Nursing care management for active Pulmonary Tuberculosis patients in an inpatient ward a case study at Monompia GMIBM Hospital Kotamobagu. *Priviet Social Sciences Journal*, 6(2), 392-401.
<https://doi.org/10.55942/pssj.v6i2.1632>

To link to this article: <https://doi.org/10.55942/pssj.v6i2.1632>



Follow this and additional works at: <https://journal.privietlab.org/index.php/PSSJ>
Priviet Social Sciences Journal is licensed under a Creative Commons Attribution 4.0 International License.

This PSSJ: Original Article is brought to you for free and open access by Privietlab. It has been accepted for inclusion in Priviet Social Sciences Journal by an authorized editor of Privietlab Journals

Full Terms & Conditions of access and use are available at: <https://journal.privietlab.org/index.php/PSSJ/about>



Nursing care management for active Pulmonary Tuberculosis patients in an inpatient ward a case study at Monompia GMIBM Hospital Kotamobagu

Gina F. Mongilong*, Jikrun Jaata, Gita S. Patonengan

Profesi Ners, Fakultas Ilmu Kesehatan, Institut Kesehatan Dan Teknologi Graha Medika, Kota Kotamobagu, North Sulawesi, Indonesia

*e-mail: ginafmongilong@gmail.com

Received 10 December 2025

Revised 5 January 2026

Accepted 18 February 2026

ABSTRACT

Pulmonary tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* that often manifests in the lungs. The symptoms of pulmonary tuberculosis include coughing up phlegm for 3-4 weeks or more, shortness of breath, weight loss, night sweats without activity, and fatigue. If not immediately provided with nursing care, the impact of pulmonary tuberculosis can result in severe hemoptysis, which can cause death due to hypovolemic shock and airway obstruction. This case study aimed to analyze the nursing care provided to patients with active pulmonary tuberculosis in the Bethesda Ward of Monompia GMIBM Hospital, Kotamobagu. This research method uses a descriptive analysis with a case study approach. The subject in this case was a patient with active pulmonary tuberculosis in the inpatient ward of the Bethesda Ward of Monompia GMIBM Hospital, Kotamobagu. The study results showed that the nursing care management for pulmonary TB patients with nursing problems carried out by the researcher included ineffective airway management for airway clearance, hypovolemia management for hypovolemia, sleep support for sleep disturbances, energy management for activity intolerance, and nutrition management for the risk of nutritional deficits. The interventions included observation, therapy, education, and collaboration with other departments.

Keywords: Pulmonary TB; Nursing Care, *Mycobacterium Tuberculosis*, Hospital.

1. INTRODUCTION

Tuberculosis (TB) is an infectious disease that has been known for centuries and remains a serious threat to global public health (Mardianto et al., 2025). Pulmonary tuberculosis (TB) is a contagious disease that directly affects the lungs (Listiana et al., 2020). Tuberculosis (TB) is an infectious disease that is a leading cause of death worldwide. This disease is caused by the bacterium *Mycobacterium tuberculosis*, which can spread through the air, especially when a patient with tuberculosis (Rahayu et al., 2024). Common symptoms in patients with pulmonary TB include coughing for 3-4 weeks or more, which can be followed by additional symptoms such as phlegm mixed with blood, coughing up blood, shortness of breath, weakness and decreased appetite, weight loss, malaise, night sweats without physical activity, and fever for more than a month. If not treated properly will cause complications. Complications Back pain joint damage, infection in the meninges (meningitis), and liver or kidney problems (Zikri et al., 2024).



The World Health Organization (WHO) reported that the estimated number of people diagnosed with TB in 2021 globally was 10.6 million, an increase of approximately 600,000 cases from the estimated 10 million cases in 2020. TB can affect anyone. Of the 10.6 million cases in 2021, at least 6 million were adult men, 3.4 million were adult women, and 1.2 million were children. Overall, TB mortality is also very high, with at least 1.6 million people dying from TB, an increase from the previous year's 1.3 million deaths, with 187,000 deaths. There are an estimated 969,000 cases of pulmonary tuberculosis in Indonesia (Aprihatin et al., 2021). In 2020, there was a 17% increase, with 824,000 cases. In 2021, there were 10.6 million cases in Indonesia, representing a 600,000-case increase from 2020. The death toll from pulmonary tuberculosis is extremely high, with at least 1.5 million deaths, an increase of 300 from the previous year (Zikri et al., 2024).

Indonesia faces significant challenges in controlling pulmonary tuberculosis (TB), a major health problem. This infectious disease is prevalent in low-income communities, where factors such as overcrowding, poor ventilation, and limited access to healthcare exacerbate its transmission (Maghfiroh et al., 2025). Furthermore, public awareness of the symptoms of pulmonary tuberculosis (TB) and the importance of complete treatment remains low, leading to many cases being undiagnosed or undertreated. This contributes to high transmission rates and the emergence of drug resistance, further complicating treatment (Kristanti & Sekarwati, 2020).

Efforts to control pulmonary tuberculosis (TB) in Indonesia are hampered by the uneven capacity of the health system across all regions. Health facilities in remote areas often lack trained medical personnel and adequate diagnostic equipment, delaying the early detection of diseases. Social stigma against people with pulmonary tuberculosis (TB) also poses a barrier, as many people are reluctant to seek medical examinations or receive treatment for fear of being ostracized. Collaboration between the government, health workers, and the community is needed to improve education, expand access to services, and reduce stigma so that pulmonary tuberculosis (TB) treatment can be more effective and comprehensive (Amran et al., 2021).

North Sulawesi Province, with a population of 2,382,941 people, ranks 8th out of 34 provinces in terms of the number of new cases of tuberculosis, with 5,783 cases of tuberculosis, including 3,555 cases (61.47 %) in men and 1,993 cases (38.53 %) in women (Tumiwa, et al., 2023). During the last three years, the total number of patients with tuberculosis in Bolaang Mongondow Regency has generally increased, although not significantly. In 2019, there were 247,811 people, with a total of 522 positive BTA patients. In 2020, there were 504 positive BTA cases, 529 in 2021, and 554 in 2022 (Rokot et al., 2023). The high number of TB cases. This indicates that this disease remains a serious problem that requires intensive attention and comprehensive treatment, not only from a medical perspective but also through ongoing care. Patients with active pulmonary TB generally experience various nursing problems, such as impaired breathing patterns, ineffective airway clearance, activity intolerance, nutritional imbalances, and risk of transmitting infection to others. Therefore, nursing care for patients with pulmonary TB focuses not only on the physical aspects but also includes psychological, social, and health education aspects to improve treatment compliance and prevent transmission (Irwanisyah et al., 2024).

In light of these conditions, nursing care was provided at Monompia General Hospital (RSU) GMIBM Kotamobagu, a hospital in North Sulawesi Province. RSU Monompia GMIBM Kotamobagu has several treatment rooms, both intensive care and general care. One of the internal medicine treatment rooms is the Bethesda Room, which treats various diseases, including patients diagnosed with pulmonary tuberculosis. These conditions make RSU Monompia GMIBM Kotamobagu a relevant location for implementing nursing care for patients with active pulmonary tuberculosis. Based on observations in the Bethesda Ward of Monompia General Hospital, GMIBM Kotamobagu, active pulmonary TB patients are still being identified and require optimal nursing care. The case study of Mr. HD, diagnosed with active pulmonary TB, is crucial for implementing a systematic nursing process, from assessment and diagnosis to planning, implementation, and evaluation. Provision of appropriate nursing care is expected to improve patient health, accelerate the healing process, and prevent complications and transmission of TB within the hospital and community. Based on the description, the journal of nursing care for active pulmonary TB patients in the Bethesda Ward of Monompia GMIBM Kotamobagu Hospital is relevant and important

as a scientific contribution to improving the quality of nursing services, especially for patients with infectious diseases.

2. LITERATURE REVIEW

2.1 Nursing Care for Patients with Active Pulmonary Tuberculosis

Pulmonary tuberculosis (TB) remains a major public health problem that requires comprehensive nursing care to ensure optimal treatment outcomes. Active pulmonary TB is caused by *Mycobacterium tuberculosis* and primarily affects the lungs, with clinical manifestations such as chronic productive cough, weight loss, fever, night sweats, and breathlessness. From a nursing perspective, patients with active pulmonary TB often present with complex physical, psychological, and social needs that require holistic and continuous care (WHO, 2023).

Nursing care for patients with active pulmonary TB focuses on meeting their basic needs, improving respiratory function, preventing complications, and supporting adherence to anti-tuberculosis therapy. Nurses play a key role in monitoring respiratory status, including respiratory rate, oxygen saturation, breath sounds, and sputum characteristics, and in identifying early signs of respiratory distress. Effective airway clearance interventions, such as positioning, breathing exercises, and sputum management, are essential for improving ventilation and oxygenation (Potter et al., 2021). In addition to physical care, nursing interventions emphasize infection prevention and control. Patients with active pulmonary TB are potential sources of transmission, making the implementation of standard and airborne precautionary measures crucial. Nurses are responsible for educating patients and families about cough etiquette, proper use of masks, medication adherence, and the importance of completing the full course of treatment to prevent drug resistance (Smeltzer et al., 2020). Comprehensive nursing care contributes to individual recovery and broader public health protection.

2.2 Nursing Management of Active Pulmonary Tuberculosis in Hospitalized Patients

Hospitalized patients with active pulmonary TB often experience increased vulnerability due to disease severity, comorbid conditions, and psychosocial stressors related to isolation and prolonged treatment periods. Nursing management in the inpatient setting requires systematic assessment, accurate nursing diagnoses, and individualized interventions tailored to the patient's condition. Common nursing problems in patients with active pulmonary TB include ineffective airway clearance, impaired gas exchange, imbalanced nutrition, activity intolerance and anxiety (Doenges et al., 2022).

Nutritional management is a critical component of nursing care for patients with TB, as weight loss and poor appetite are common consequences of chronic infection. Nurses are responsible for assessing nutritional status, encouraging adequate caloric and protein intake, and collaborating with other healthcare professionals to support nutritional rehabilitation of patients. Adequate nutrition has been shown to enhance the immune response and improve treatment outcomes in patients with TB (Kementerian Kesehatan RI, 2022). Psychosocial support is equally important in the nursing management of patients with TB. Feelings of fear, stigma, and social isolation may negatively affect patients' mental well-being and treatment adherence. Through therapeutic communication, emotional support, and patient education, nurses help patients cope with their illness and foster motivation to adhere to treatment. Therefore, effective nursing management of hospitalized patients with TB integrates physical care with psychological and educational interventions to promote recovery and prevent relapse.

3. RESEARCH METHOD

This research used a descriptive analytical approach with a case study approach. The subject in this case was an active pulmonary TB patient in the Bethesda inpatient ward of Monompia General Hospital, GMIBM Kotamobagu. Data collection methods included interviews and observations. The author presents the data in this study textually, namely, presenting research data in the form of sentence descriptions and also in tables.

4. RESULTS AND DISCUSSION

4.1. Research Results on Active Pulmonary Tuberculosis Patients

The results of this study represent empirical findings from the implementation of nursing care in patients with active pulmonary tuberculosis, which were analyzed based on assessment data, physical and supporting examination results, determination of nursing diagnoses, implementation of interventions, and evaluation of the nursing outcomes. The results are presented descriptively and analytically, emphasizing the relationship between clinical manifestations, patient responses to nursing interventions, and changes in the condition that occur during the treatment period. Based on the assessment results, it was found that the main disturbance dominating the patient's condition was respiratory dysfunction characterized by coughing up phlegm that was difficult to expel, an increased respiratory rate, and sleep disturbances due to coughing at night. These manifestations indicate that the inflammatory process in the lungs not only impacts physiological aspects but also causes functional disorders that affect the patient's activities and their quality of life. A history of previous OAT therapy that was not accompanied by adequate understanding and monitoring is an important contextual factor that can critically explain the persistence of symptoms and delayed recovery, considering that tuberculosis is a chronic disease that is highly dependent on therapy adherence and the continuity of care.

Table 1. Nutrition and metabolic patterns (food & drink)

Information	Before getting sick	When sick
Frequency	Eat 3x/day, drink	Eat 3x/day
Type	Rice, fish, vegetables, mineral water	Porridge, fish, vegetables, mineral water
Portion	1 portion	1 portion
Complaint	There isn't any	There isn't any
Taboo foods	There isn't any	There isn't any

Table 2. Urine Elimination Patterns

Information	Before getting sick	When sick
Frequency	4-5 times	4-5 times
Radiance	Normal	Normal
Amount	< 2 liters	< 2 liters
Smell	Typical	Typical
Color	Clear	Clear
Feelings after urinating	Relieved	Relieved
Total urine production	1,200	1,200

Table 3. Alvi's Elimination

Information	Before getting sick	When sick
Frequency	1x a day	1x a day
Consistency	Congested	Congested
Smell	Typical feces	Typical feces
Color	Yellow	Yellow

The results of the basic needs assessment indicate differences in the level of impairment across the domains of health function. Based on [Table 1](#), the patient's nutritional and metabolic patterns were relatively stable before and during the illness, as indicated by the unchanged meal frequency and portion sizes. This stability indicates that respiratory impairment did not directly affect nutritional intake. However, in the context of pulmonary tuberculosis, this condition still requires critical attention because chronic infectious diseases have the potential to increase metabolic needs and accelerate nutritional deficits if they are not continuously monitored. Furthermore, [Tables 2](#) and [3](#) show that the urinary and fecal elimination

patterns were within normal limits, without significant changes. These findings indicate that the patient's excretory function was still adequate and not directly affected by the disease process or the interventions provided. Therefore, the elimination system was not a focus of nursing care in this case.

Table 4. Activity patterns and personal hygiene

Activity	Before getting sick	When sick
Routine mobility	Independent	Partially assisted
Leisure time	After work	The client is just lying in bed
Bathe	Independent	Independent
Get dressed	Independent	Assisted
Decorated	Independent	Independent
Toileting	Independent	Independent
Meaning/drinking	Independent	Partially assisted
Dependency level	Independent	Some activities are assisted

In contrast, the impact of the disease was clearly evident on the patients' ability to perform activities and rest. Based on [Table 4](#), there was a decline in the patient's level of independence in performing daily activities, from being independent to requiring partial assistance with basic activities. This decline reflects reduced activity tolerance, which is pathophysiologically related to increased work of breathing, fatigue, and higher oxygen requirements due to respiratory impairment. These findings indicate that respiratory impairment in tuberculosis cannot be viewed as a purely local lung problem but rather has a systemic impact on the patient's functional capacity. The patient was in a relatively stable clinical condition with a *compos mentis* level of consciousness, reflecting a normal neurological function.

The hemodynamic parameters showed a blood pressure of 120/80 mmHg and a pulse rate of 89 beats/min, indicating circulatory stability. However, an increase in the respiratory rate to 24 breaths per minute, accompanied by an oxygen saturation of 95%, indicates an increase in the work of breathing as a compensatory response to impaired pulmonary ventilation. This condition indicates that although cardiovascular stability is maintained, the respiratory system experiences significant functional impairment. The patient's weight before and during the illness remained at 80 kg with a height of 169 cm and an ideal body weight of 72 kg, indicating no weight loss during the illness period. These findings indicate that the impact of the disease has not significantly affected nutritional status, although in the context of pulmonary tuberculosis, this condition still requires close monitoring due to the potential for increased metabolic demands in chronic infectious disease.

Physical examination of the head revealed a normocephalic appearance with normal movement and no motor function limitations. The hair and scalp were clean, although the hair texture was rough. The facial expression was flat, reflecting the patient's adaptive response to chronic and debilitating conditions. No masses, lumps, or tenderness were observed upon palpation. Ocular examination revealed clear and symmetrical external structures with pale conjunctivae and white sclerae. A positive light reflex and normal eye movements indicated an adequate cranial nerve function. Pale conjunctivae indicated a possible association with the patient's hematologic condition, which was further supported by laboratory examination results.

Examination of the nose and ears revealed symmetrical anatomy without polyps, discharge, or tenderness, and a normal sense of smell and hearing. These findings indicate no significant involvement of the upper respiratory tract or hearing organs in the disease. Examination of the mouth and pharynx revealed brownish-pink lips, pale gums, pale and moist oral mucosa, and a clean tongue. The absence of painful swallowing indicates that the infectious process has not affected the swallowing function, although the pallor of the mucosa suggests the possibility of a hematological disorder accompanying the disease. Skin examination revealed normal skin color, moist and warm skin with a turgor loss of less than two seconds, indicating adequate hydration. No skin lesions or other abnormalities were observed. However, the nails appeared pale, which could reflect changes in peripheral perfusion or specific hematological

conditions. The sensory status was within normal limits. Neck examination revealed normal movement without enlargement of the thyroid gland or lymph nodes, and no jugular venous distention or neck stiffness was observed. These findings indicate the absence of systemic complications involving the lymphatic or nervous systems.

Thoracic examination revealed a symmetrical chest without retraction, but the breathing pattern appeared irregular. The absence of nasal flaring indicated that, despite the increased work of breathing, the patient had not yet reached a state of severe respiratory distress. Palpable fremitus was within the normal limits, and percussion produced a clear sonorous sound. However, auscultation revealed persistent rhonchi and a heart murmur in the patient. Rhonchi indicate the accumulation of secretions in the airways, which is clinically correlated with a cough with phlegm that is difficult to expectorate. These findings confirm that impaired airway clearance is closely related to the inflammatory process caused by active pulmonary tuberculosis. Abdominal examination revealed a normal abdomen without distention or lumps, tan skin, and a clear umbilicus. No scarring, lesions, or tenderness were observed on palpation. Tympanic percussion and bowel sounds at 15 breaths per minute indicated normal gastrointestinal function. Extremity examination revealed no edema or lesions in the upper or lower extremities, despite the IVFD line in the right extremity. These findings indicate that the primary disturbance in the patient was focused on the respiratory system and had not yet caused significant peripheral manifestations.

A chest radiograph revealed active pulmonary tuberculosis, providing an objective diagnostic basis for the patient's clinical symptoms. Hematological examination revealed several deviations from the normal reference values, including a mild decrease in erythrocyte and hematocrit counts, an increase in neutrophil counts, and a decrease in lymphocyte counts. These patterns reflect the inflammatory response of the body to chronic infections. Furthermore, increases in erythrocyte indices, such as MCH, MCHC, RDW-CV, and RDW-SD, indicate variations in red blood cell size and hemoglobin content, which may contribute to fatigue and decreased activity tolerance. The integration of subjective data, physical examination findings, and ancillary test results led to the identification of three primary nursing problems. Ineffective airway clearance is a priority because it is directly related to the stability of respiratory function and is characterized by persistent cough with phlegm, shortness of breath, increased respiratory rate, and the presence of rhonchi on auscultation. Sleep disturbances emerge as a functional consequence of uncontrolled respiratory symptoms, impacting the patient's quality of rest and fatigue levels. Knowledge deficits related to disease and therapy are contextual issues that can prolong the recovery process, given that previous treatment history is not accompanied by adequate understanding and monitoring.

The implementation of nursing interventions focused on airway management, optimizing body position, improving hydration, educating patients about effective coughing, and managing the environment and sleep schedule showed a gradual and positive clinical response. Continuous health education, along with opportunities for questions and clarifications, contributed to improving patients' understanding of the disease and the importance of adherence to therapy.

The final evaluation showed significant improvement in the patient's condition, characterized by a reduction in phlegmy cough, disappearance of shortness of breath, normalization of respiratory rate and oxygen saturation, and improved sleep quality. The patient was also able to explain her illness and treatment, indicating increased cognitive capacity and readiness to continue with independent care. Therefore, all identified nursing issues were resolved, and the patient was advised to continue home care and undergo regular anti-tuberculosis drug therapy at the East Bolaang Mongondow Community Health Center as part of ongoing care and relapse prevention efforts.

4.2. Discussion

The findings of this study indicate that respiratory distress is a dominant problem in patients with active pulmonary tuberculosis, which theoretically aligns with the pathophysiological concept of tuberculosis as a chronic infectious disease that causes progressive inflammation of lung tissue. According to the pathophysiological theory of tuberculosis, *Mycobacterium tuberculosis* invasion triggers a cellular inflammatory response that leads to increased secretion, airway narrowing, and impaired alveolar ventilation. This condition explains why ineffective airway clearance appears as a priority nursing diagnosis,

as classified in the Indonesian Nursing Diagnosis Standards (IDHS), because it directly threatens the effectiveness of oxygen exchange and the stability of the patient's respiration. The increased respiratory rate observed in patients can be understood as a physiological compensatory mechanism of the body to maintain adequate tissue oxygenation. Within the framework of the theory of basic human needs, particularly the need for oxygenation according to Maslow, respiratory distress is the highest priority because it is directly related to survival. Therefore, the focus of nursing interventions on airway management and ventilation optimization is in line with the principle of nursing priorities, which prioritizes basic physiological needs as the primary goal.

The research also shows that respiratory disorders do not exist in isolation but have a systemic impact on the patient's activity and rest. Theoretically, increased work of breathing in pulmonary tuberculosis increases energy consumption and oxygen demand, thereby accelerating fatigue and reducing activity tolerance. This is consistent with the activity intolerance theory, which states that an imbalance between oxygen supply and demand limits an individual's ability to perform daily activities. The patient's decreased independence in performing basic activities reflects the need to understand pulmonary tuberculosis as a systemic disease and not simply a localized lung disorder. The patient's sleep pattern disturbances can be explained by the theory of physiological homeostasis, in which persistent coughing and shortness of breath disrupt the normal sleep cycle. From a nursing perspective, sleep disturbances are viewed as secondary problems that exacerbate the primary condition because sleep plays a crucial role in energy recovery, immune regulation and psychological stability. In this context, sleep disturbances are not only a direct consequence of respiratory symptoms but also have the potential to slow the healing process if not addressed comprehensively.

The finding that the patient's nutritional and elimination status was relatively stable despite having pulmonary tuberculosis can be explained by the disease phase that has not yet caused severe catabolism. However, as a chronic infectious disease, tuberculosis carries the risk of increasing metabolic demands and triggering malnutrition if nutritional intake is not continuously monitored. Therefore, although not identified as an actual problem in this study, nutritional monitoring remains part of a preventive nursing approach based on the theory of metabolic demand in chronic diseases. The knowledge deficit identified in the patient has important implications from the perspective of Orem's *self-care theory*. According to this theory, an individual's ability to care for themselves is greatly influenced by their knowledge and understanding of their health condition. A history of previous anti-TB drug treatment without adequate understanding indicates a *self-care deficit*, which could theoretically explain low adherence to therapy and the persistence of symptoms. Therefore, health education serves not only as a supportive intervention but also as a key component in increasing patient independence and long-term therapy success.

The patient's positive response to nursing interventions, including airway management, positioning, increased hydration, and effective cough education, supports the effectiveness of the SIKI-based nursing approach. Theoretically, these interventions improve airway patency, reduce secretion viscosity, and optimize mucociliary clearance mechanisms. Improved respiratory conditions followed by improved sleep quality suggest a causal relationship between respiratory stabilization and the recovery of other physiological functions.

The improvement in patient understanding after receiving health education demonstrates that education-based nursing interventions play a strategic role in the management of pulmonary tuberculosis. This aligns with the theory of health behavior change, which states that knowledge is a prerequisite for developing healthy attitudes and behaviors. In the context of tuberculosis, a good understanding of the disease and OAT is a key factor in preventing drug withdrawal, relapse, and drug resistance. Overall, this discussion emphasizes that nursing care for patients with active pulmonary tuberculosis must be holistic and integrative, combining physiological, functional, and educational approaches. The results of this study reinforce the theory that successful tuberculosis management is not solely determined by pharmacological therapy but also depends heavily on the quality of nursing care that can stabilize respiratory function, restore activity capacity, improve sleep patterns, and enhance the patient's ability to care for themselves independently.

5. CONCLUSION

The results of this study confirm that nursing care for patients with pulmonary tuberculosis cannot be viewed as a mere partial or symptomatic intervention but must be implemented comprehensively, systematically, and sustainably. The nursing problems that arise, particularly ineffective airway clearance, disturbed sleep patterns, activity intolerance, and risk of nutritional deficits, reflect the complexity of the impact of pulmonary tuberculosis as a chronic infectious disease that simultaneously affects physiological function, functional capacity, and quality of life. Therefore, establishing nursing priorities that focus on stabilizing respiratory function is the main foundation of the nursing care process. The implementation of structured nursing interventions, including airway management, sleep support, energy management, nutritional management, and fluid balance monitoring, through stages of observation, therapeutic interventions, and education, has been shown to support gradual improvement in the patient's clinical condition. These findings strengthen the theoretical framework of nursing, which emphasizes that nursing interventions play a role not only in reducing physical symptoms but also in restoring the patient's adaptive function to the disease and the therapy being undertaken.

Furthermore, this study demonstrates that nursing education plays a strategic role in improving patient understanding of pulmonary tuberculosis and the importance of adherence to OAT. Unaddressed knowledge deficits can hinder treatment success, increase the risk of discontinuation, and prolong the recovery process. Therefore, educational interventions should be positioned as an integral component of nursing care, rather than as complementary measures. Critically, the findings of this study underscore that the success of pulmonary tuberculosis management is not solely determined by pharmacological therapy but is strongly influenced by the quality of standards-based nursing care, oriented to the patient's individual needs, and supported by continuity of care. Therefore, nurses play a central role in bridging the clinical, educational, and preventive aspects to support long-term therapy success and prevent relapse. Consequently, the results of this study recommend strengthening the implementation of nursing care based on the SDKI-SLKI-SIKI in clinical practice, along with increasing the capacity of nurses to provide health education and monitor adherence to therapy in patients with pulmonary tuberculosis. This approach is expected to sustainably improve nursing outcomes and contribute to tuberculosis control efforts at both primary and secondary healthcare levels.

Ethical Approval

This study did not require formal ethical approval, as it constituted normative legal research and did not involve medical experimentation or vulnerable populations. The research was conducted in accordance with the generally accepted ethical standards in social science and legal research. Data collection relied on document analysis of legislation, legal doctrines, and regulations of international sports organizations, as well as publicly accessible institutional documents of the IOC.

Informed Consent Statement

Not applicable. This study did not involve direct interactions with human participants. All materials analyzed were obtained from publicly available sources and institutional documents.

Confidentiality Statement

Not applicable. This study did not collect any personal or sensitive data. All legal materials and documents used are publicly accessible and were used solely for academic and research purposes.

Authors' Contributions

Gina F. Mongilong, Jikrun Jaata, and Gita S. Patonengan contributed to the conceptualization of the study, research design, data collection, data analysis, interpretation of findings, and preparation of the original draft of the manuscript. All authors have read and approved the final version of the manuscript.

Disclosure Statement

The authors declare no conflicts of interest related to this study.

Data Availability Statement

All data supporting the findings of this study were derived from publicly available legal materials, including legislation, academic publications, and official regulations of international and national sports organizations. No additional datasets were generated or analyzed.

Funding

This research received no external funding.

Notes on Contributors

Gina F. Mongilong

Her research interests include nursing, public health, and psychosocial aspects of healthcare and family-based caregiving.

Jikrun Jaata

His research interests include nursing, public health, and psychosocial aspects of healthcare and family-based caregiving.

Gita S. Patonengan

Her research interests include nursing, public health, and psychosocial aspects of healthcare and family-based caregiving.

REFERENCES

- Amran, R., Abdulkadir, W., Farmasi, J., Olahraga dan Kesehatan, F., & Amwan Jurusan Farmasi Fakultas Olahraga dan Kesehatan, R. (2021). Tingkat Kepatuhan Penggunaan Obat Anti Tuberkulosis Pada Pasien Di Puskesmas Tombulilato Kabupaten Bone Bolango. *Indonesian Journal of Pharmaceutical Education (e-Journal)*, 1(1), 2775–3670. <https://doi.org/10.22487/.ijpe.v1i1.101223>
- Aprihatin, Y., Yanti, E., & Happy Anggia, D. (n.d.). *The Effect of Sanitation, Infectious Diseases, and Nutrition Information on Stunting Events in Children in Pariaman City Program of Diploma III Nursing, Universitas Negeri Padang*. <http://www.centralasianstudies.org>.
- Doenges, M. E., Moorhouse, M. F., & Murr, A. C. (2022). *Nursing care plans: Guidelines for individualizing client care across the life span*. F.A. Davis.
- Irwanisyah, L., Hafiz, N., Sitorus, N. S., Assifani, R. S., Sitorus, R. P., Khumas, A., Rahmat, R., & Tanjung, R. (n.d.). *Analisis Strategi Peningkatan Kepatuhan Pengobatan Pada Pasien Tuberkulosis Resisten Obat (TBC-RO) DI INDONESIA*. <https://doi.org/10.572349/husada.v1i1.363>
- Kementerian Kesehatan Republik Indonesia. (2022). *Pedoman nasional penanggulangan tuberkulosis*. Kemenkes RI.
- Kristanti, H., & Sekarwati, N. (2020). Dukungan Keluarga Dan Motivasi Diri Tentang Tingkat Kepatuhan Minum Obat Anti Tuberculosis Di Wilayah Puskesmas Jetis 1, Bantul. *Jurnal Kesehatan Masyarakat*, 13(1). <https://doi.org/10.47317/jkm.v13i1.234>

- Listiana, D., Keraman, B., Yanto, A., Stikes, K., Mandiri, T., & Bengkulu, S. (2020). Pengaruh Batuk Efektif Terhadap Pengeluaran Sputum Pada Pasien Tbc Di Wilayah Kerja Puskesmas Tes Kabupaten Lebong. In *Chmk Nursing Scientific Journal* (Vol. 4).
- Maghfiroh, A., Firmaniar, R., & Asyim, R. B. (2025). Hubungan Dukungan Keluarga Dengan Kepatuhan Pengobatan Anti Tuberkulosis Di Wilayah Kerja Puskesmas Pandian Kabupaten Sumenep. *Pengembangan Ilmu Dan Praktik Kesehatan*, 4(4), 232–242. <https://doi.org/10.56586/pipk.v4i4.502>
- Mardianto, Rudy, Erika Sastya Intan, & Ratih Tyas Widara. (2025). Kualitas Kesehatan Pasien Tuberkulosis di Rumah Sakit Wawa Husada Malang. *Jurnal Riset Rumpun Ilmu Kedokteran*, 4(3), 578–592. <https://doi.org/10.55606/jurrike.v4i3.7050>
- Potter, P. A., Perry, A. G., Stockert, P. A., & Hall, A. M. (2021). *Fundamentals of nursing* (10th ed.). Elsevier.
- Rahayu, E. N., & Rahmadhani, M. (2024). Hubungan Tingkat Pengetahuan Keluarga Dengan Upaya Pencegahan Penularan Tuberkulosis Paru Di Puskesmas Teladan Medan. *Tahun*, 23(1), 37–42.
- Riyanto, S. (2022). Transformation of lex sportiva into the legal system of Indonesian sports. *Jurnal Rechtsvinding*, 11(2), 257–272. <https://doi.org/10.33331/rechtsvinding.v11i2.372>
- Rokot, A., Mokoginta, H., Kabuhung, A., Katiandagho, D., & Kawatu, Y. (2023). Variations In The Physical Condition Of Houses With The Risk Of Tuberculosis In The Working Area Of The Bilalang Health Center Bolaang Mongondow North Sulawesi. *Jurnal Locus Penelitian Dan Pengabdian*, 2(11), 1043–1057. <https://doi.org/10.58344/locus.v2i11.1857>
- Smeltzer, S. C., Bare, B. G., Hinkle, J. L., & Cheever, K. H. (2020). *Brunner & Suddarth's textbook of medical-surgical nursing*. Wolters Kluwer.
- Soekanto, S. (2014). *Faktor-faktor yang mempengaruhi penegakan hukum*. RajaGrafindo Persada.
- Tumiwa, Finni, Pondaa, Angelia, & Langingi, Ake Royke Calvin. (2023). Faktor-Faktor Determinan yang Berhubungan dengan Kejadian Ulang (Relaps) Pada Penderita TB Paru di RSUD X. *Aksara: Jurnal Ilmu Pendidikan Nonformal*, 9(1), 791–802.
- Undang-Undang Dasar Negara Republik Indonesia Tahun 1945.
- Undang-Undang Nomor 11 Tahun 2022 tentang Keolahragaan, *Lembaran Negara Republik Indonesia Tahun 2022 Nomor 223*.
- Undang-Undang Nomor 39 Tahun 1999 tentang Hak Asasi Manusia, *Lembaran Negara Republik Indonesia Tahun 1999 Nomor 165*.
- World Aquatics. (2023). *World Aquatics competition regulations*. <https://www.worldaquatics.com>
- World Health Organization. (2023). *Global tuberculosis report 2023*. WHO
- Zikri, A. B., Trisna Ajani, A., Marni, L., Yessi, H., Kartika Sari, D., Keperawatan, D., Psikologi dan Kesehatan, F., Negeri Padang, U., Anestesiologi, K., Vokasi, F., & Bairurrahmah, U. (2024). Implementasi Asuhan Keperawatan Dengan Teknik Postural Drainage Dan Pursed Lips Breathing Pada Pasien TB Paru. In *Jurnal Keperawatan Medika* (Vol. 3, Number 1).