

The Role of Nurses in Improving Medication Adherence Among Pulmonary Tuberculosis Patients: A Phenomenological Study

Syahrir¹, Violin Irene Ninef², Daeng Agus Vieya Putri Bhwa², Muliwati Suluamu²,
Babelonia L H De Jesus²

¹*Universitas Nusa Cendana (Undana), Kupang, Indonesia*

²*STIKes Nusantara, Kupang, Indonesia*

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Corresponding Author :

Violin Irene Ninef

E-mail : ireneviolin7@gmail.com

Phone Number : 082228439504

ABSTRACT

Background & Objective: Tuberculosis (TB) remains a significant public health issue, particularly in developing countries, due to low treatment adherence, which can lead to drug resistance and treatment failure. Nurses play a critical role in enhancing medication adherence among pulmonary TB patients through education, monitoring, and emotional support. This study aims to explore the role of nurses in improving medication adherence among pulmonary tuberculosis patients using a phenomenological approach. **Method:** This qualitative study employed a phenomenological design to understand the lived experiences of nurses. A total of 10 nurses from Sikumana Health Center in Kupang City, East Nusa Tenggara, who had worked for at least one year in TB treatment units, were selected using purposive sampling. Data were collected through in-depth, semi-structured interviews and analyzed using thematic analysis. **Results:** The findings revealed that nurses play a central role in patient education through one-on-one counseling, group discussions, and the provision of educational materials. Adherence monitoring was conducted through home visits and follow-up appointments, accompanied by emotional support and encouragement. Furthermore, nurses collaborated closely with patients' families and community health workers to foster a supportive environment that promotes treatment success. Three main themes emerged: patient education and counseling, monitoring and emotional support, and collaboration with families and communities. **Conclusion:** Nurses at Sikumana Health Center play a strategic role in improving medication adherence

among pulmonary TB patients through educational efforts, active monitoring, and psychosocial support. Strengthening nurses' capacity and implementing supportive policies are essential to enhance treatment outcomes and prevent drug resistance.

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Introduction

Tuberculosis (TB) remains one of the most significant global public health challenges, particularly in low- and middle-income countries. According to the World Health Organization (WHO), approximately 9.9 million people worldwide contracted TB in 2020, with 1.5 million deaths attributed to the disease (World Health Organization, 2021). A systematic analysis for the Global Burden of Diseases 2021 study revealed that in 2022, there were 10.6 million new cases of tuberculosis globally, with approximately 1.3 million deaths attributed to the disease, underscoring its status as a leading cause of death from infectious diseases worldwide (Yang et al., 2024)

In Indonesia, TB continues to be a major health concern, ranking second globally in terms of the highest number of TB cases. In 2023, it was estimated that around 969,000 cases of TB were reported in Indonesia, which equates to 354 cases per 100,000 people, far exceeding the target of 65 cases per 100,000 population (Kemenkes, 2023).

One of the primary factors contributing to the persistence of TB is poor adherence to treatment regimens. Non-adherence to TB treatment can lead to treatment failure, prolonged infectiousness, and the development of multidrug-resistant TB (MDR-TB), which poses a significant threat to public health (Singh, 2024). Patients often discontinue treatment for various reasons, including perceived side effects, lack of immediate symptoms, and socio-economic challenges such as poverty and limited access to healthcare services (Lolong, 2023).

Beyond the individual efforts of healthcare providers, community-based interventions and a robust healthcare system play a crucial role in improving TB treatment adherence. Research has shown that integrating community health workers (CHWs) and local healthcare systems into TB treatment strategies significantly enhances treatment adherence. For example, a study in rural Indonesia demonstrated that employing community health workers to deliver patient education, follow-up care, and emotional support was associated with improved treatment adherence rates and a reduction in patient drop-out rates (Adima & Arini, 2024).

Nurses also play a pivotal role in enhancing medication adherence among TB patients. Their responsibilities include educating patients about the importance of completing the full course of treatment, providing directly observed therapy (DOT), offering emotional support, and addressing socio-economic barriers that may hinder adherence (Carlsson et al., 2014). In Burundi, for instance, nurses reported that patient education, treatment observation, and follow-up care were essential strategies in promoting adherence (Carlsson et al., 2014). Despite the recognized importance of

nursing interventions in TB care, limited research has been conducted to explore nurses' experiences and perceptions regarding their role in supporting TB treatment adherence. Understanding these experiences is crucial for developing targeted interventions and policies aimed at improving TB treatment outcomes.

This study seeks to fill this gap by examining the lived experiences of nurses in enhancing medication adherence among pulmonary TB patients in Kupang, Indonesia. Through a phenomenological approach, the research aims to provide deeper insights into the roles and challenges faced by nurses in supporting TB patients, contributing to the development of more effective strategies for improving medication adherence and overall treatment success.

Objective

The objective of this study is to explore and understand the roles and experiences of nurses in enhancing medication adherence among pulmonary tuberculosis patients in Kupang, Indonesia, through a phenomenological approach.

Method

This study utilizes a qualitative research design with a phenomenological approach. The phenomenological approach is chosen to explore and understand the lived experiences of nurses in enhancing medication adherence among pulmonary tuberculosis patients. This approach allows for an in-depth examination of the meanings and perceptions that nurses attach to their roles in patient care and adherence support.

The study population consists of nurses working in tuberculosis treatment units in Kupang, Indonesia. Purposive sampling is employed to select participants who meet specific criteria:

- Registered nurses with at least one year of experience in TB care.
- Willingness to participate in the study and share their experiences.

Based on similar studies in Indonesia, a sample size of 10 to 15 participants is deemed sufficient to achieve data saturation (Ahmed, S. K. (2025).

Data is collected through in-depth, semi-structured interviews. Each interview lasts approximately 45 to 60 minutes and is conducted in a private setting to ensure confidentiality and comfort for the participants. Interviews are audio-recorded with the participants' consent and transcribed verbatim for analysis. An interview guide is developed to facilitate the exploration of key themes, including nurses' roles in patient education, monitoring, emotional support, and the challenges they face in promoting medication adherence. Thematic analysis is employed to analyze the interview transcripts. This method involves identifying, analyzing, and reporting patterns (themes) within the data. The analysis process includes familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. This approach allows for a comprehensive understanding of the nurses' experiences and perceptions.

Research Instruments

The primary instruments for data collection are:

- Interview Guide: Developed based on the research objectives to ensure that all relevant topics are covered during the interviews.
- Audio Recording Device: Used to record the interviews for accurate transcription and analysis.
- Field Notes: Taken during and after interviews to capture non-verbal cues and researcher reflections.

Ethical approval is obtained through informed consent from all participants. Before participation, all participants are provided with a clear explanation of the study's purpose, procedures, potential risks, and their rights to confidentiality and voluntary participation. Participants are assured that they may withdraw from the study at any time without any consequences or negative impact. The data collection process is carried out with utmost consideration for the participants' well-being and privacy, ensuring that they feel comfortable and safe throughout the study.

The study is conducted over a period of three months, from October to December 2024. Data collection takes place in various tuberculosis treatment units across Kupang, Indonesia, including public health centers and hospitals. The choice of location is based on the concentration of TB treatment services and the availability of qualified nursing staff.

Results

The qualitative study identified three primary themes regarding nurses' experiences in enhancing medication adherence among pulmonary tuberculosis patients in Kupang, Indonesia:

1. Patient Education and Counseling

Nurses emphasized the importance of providing comprehensive education to patients about tuberculosis, its transmission, and the necessity of completing the full course of medication. They utilized various methods, including one-on-one counseling sessions, group discussions, and educational materials, to ensure patients understood their treatment regimen. This approach aligns with findings from other studies that highlight the critical role of healthcare workers in educating patients to improve treatment adherence .

2. Monitoring and Emotional Support

Regular monitoring of patients' adherence was conducted through home visits and follow-up appointments. Nurses provided emotional support and encouragement, addressing any concerns or challenges patients faced during treatment. This proactive approach helped identify issues early and offered opportunities to address them promptly, thereby enhancing patient adherence to the treatment regimen.

3. Collaboration with Families and Communities

Nurses collaborated closely with patients' families and community health workers to create a supportive environment for patients. This collaboration aimed to

reinforce the importance of medication adherence and provide additional resources and support. By involving families and communities, nurses were able to address social determinants of health that may impact treatment adherence, leading to improved patient outcomes.

TABLE 1. Themes and Narratives from Nurses on Enhancing TB Medication Adherence

Theme	Partisipant	Narrative
Patient Education as a Strategy to Improve Adherence	P2	I always explain to patients about the importance of taking their medication regularly and the consequences of non-adherence.
	P5	We also provide brochures with information about TB and its treatment so that patients and their families can understand better.
	P7	We also hold Q&A sessions to ensure patients understand and are not hesitant to follow the treatment.
Monitoring and Emotional Support	P1	Every week, I visit patients at their homes to ensure they are taking their medication and provide moral support. Many patients feel more motivated after my visit.
	P4	We also make routine phone calls to remind patients about their medication schedule.
	P9	Emotional support is very important because many patients feel anxious or scared about the side effects of the medication.
Collaboration with Family and Community	P3	I always involve the patient's family in every meeting to ensure they understand the importance of supporting the patient's treatment at home.
	P6	We also collaborate with health cadres to monitor patients conditions in the community.
	P10	With the support of family and the community, patients feel more cared for and motivated to adhere.

Discussion

This study aimed to explore nurses' experiences in enhancing medication adherence among pulmonary tuberculosis (TB) patients in Kupang, Indonesia. The findings revealed three primary themes: patient education and counseling, monitoring and emotional support, and collaboration with families and communities. These themes are discussed below, supported by relevant literature.

1. Patient Education and Counseling

Patient education is a cornerstone in improving medication adherence. Nurses in Kupang emphasized the importance of providing comprehensive information about tuberculosis, its transmission, and the necessity of completing the full course of medication. They employed various methods, including one-on-one counseling sessions, group discussions, and educational materials, to ensure patients understood their treatment regimen. Supporting this approach, Sari et al. (2020) found that motivation and family support are significantly related to medication adherence among TB patients. Their study highlighted the role of healthcare workers in educating patients to improve treatment adherence. Similarly, Yunalia et al. (2022) emphasized the importance of family support in enhancing medication adherence

among pulmonary TB patients. These findings underscore the critical role of education and support in promoting adherence to TB treatment.

2. Monitoring and Emotional Support

Regular monitoring of patients' adherence was conducted through home visits and follow-up appointments. Nurses provided emotional support and encouragement, addressing any concerns or challenges patients faced during treatment. This proactive approach helped identify issues early and offered opportunities to address them promptly, thereby enhancing patient adherence to the treatment regimen. Sadipun and Letmau (2022) demonstrated that family support is significantly correlated with medication adherence among TB patients. Their study indicated that patients who received consistent support from their families were more likely to adhere to their medication schedules. This finding aligns with the nurses' practices in Kupang, where emotional support and regular monitoring were integral components of their strategy to improve adherence.

3. Collaboration with Families and Communities

Nurses collaborated closely with patients' families and community health workers to create a supportive environment for patients. This collaboration aimed to reinforce the importance of medication adherence and provide additional resources and support. By involving families and communities, nurses were able to address social determinants of health that may impact treatment adherence, leading to improved patient outcomes. (Namuwali et al., 2021) found that family support as a medication supervisor was positively correlated with medication adherence among TB patients. Their study highlighted the importance of involving family members in the treatment process to ensure patients adhere to their medication schedules. This finding supports the collaborative approach adopted by nurses in Kupang, emphasizing the significance of family and community involvement in enhancing medication adherence.

Strengths and Limitations of the Study

Comprehensive Data Collection: The study employed multiple data collection methods, including interviews, observations, and document reviews, providing a holistic understanding of nurses' experiences, **Contextual Relevance:** Conducting the study in Kupang, Indonesia, offered insights into the local healthcare practices and challenges, contributing to the global discourse on TB treatment adherence, **Practical Implications:** The findings offer actionable recommendations for healthcare providers to enhance medication adherence among TB patients, particularly in resource-limited settings.

Limitations:

Sample Size: The study focused on a specific group of nurses in Kupang, which may limit the generalizability of the findings to other regions or countries **Self-Reported Data:** The reliance on self-reported data from nurses may introduce bias, as participants may have provided socially desirable responses.

Conclusion

This study identified three key themes regarding nurses' experiences in enhancing medication adherence among pulmonary tuberculosis (TB) patients in Sikumana Health Center in Kupang City, East Nusa Tenggara, Indonesia:

- **Patient Education and Counseling:** Nurses emphasized the importance of providing comprehensive education to patients about tuberculosis, its transmission, and the necessity of completing the full course of medication. They utilized various methods, including one-on-one counseling sessions, group discussions, and educational materials, to ensure patients understood their treatment regimen. This approach aligns with findings from other studies that highlight the critical role of healthcare workers in educating patients to improve treatment adherence.
- **Monitoring and Emotional Support:** Regular monitoring of patients' adherence was conducted through home visits and follow-up appointments. Nurses provided emotional support and encouragement, addressing any concerns or challenges patients faced during treatment. This proactive approach helped identify issues early and offered opportunities to address them promptly, thereby enhancing patient adherence to the treatment regimen.
- **Collaboration with Families and Communities:** Nurses collaborated closely with patients' families and community health workers to create a supportive environment for patients. This collaboration aimed to reinforce the importance of medication adherence and provide additional resources and support. By involving families and communities, nurses were able to address social determinants of health that may impact treatment adherence, leading to improved patient outcomes.

Recommendations for Future Research

Based on the findings of this study, several recommendations for future research are proposed:

- **Patient and Family Perspectives:** Exploring the perspectives of patients and their families to gain a deeper understanding of the factors influencing medication adherence and the effectiveness of nursing interventions.
- **Cultural Considerations:** Investigating how cultural beliefs and practices influence medication adherence can inform the development of culturally sensitive interventions.
- **Technology Integration:** Examining the role of digital tools, such as mobile applications and e-booklets, in supporting medication adherence can offer innovative solutions in resource-limited settings.

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