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Anxiety and Sleep Quality Among Tuberculosis Patients: Evidence from Sitopeng Puskesmas, Cirebon City

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ABSTRACT

Background & Objective: Tuberculosis (TB) is an infectious disease with high prevalence in Indonesia, often accompanied by psychological problems such as anxiety that may affect sleep quality. This study aimed to analyze the relationship between anxiety and sleep quality among TB patients in the working area of Sitopeng Puskesmas, Cirebon City. **Method:** This study used a descriptive correlational design with a cross-sectional approach. The total population of 40 TB patients was sampled using total sampling, resulting in 32 respondents. Anxiety was measured using the Hamilton Rating Scale for Anxiety (HRS-A), and sleep quality was assessed through a validated questionnaire. Data were analyzed using Chi-Square test with significance level of α=0.05. **Result:** Of the respondents, 75.0% experienced no anxiety, 6.3% had mild anxiety, 6.3% moderate anxiety, and 6.3% severe anxiety. Regarding sleep quality, 68.8% of patients had good sleep quality, while 31.2% had poor sleep quality. The analysis showed a significant relationship between anxiety and sleep quality (p = 0.009). **Conclusion:** There is a significant relationship between anxiety and sleep quality among tuberculosis patients. It is suggested that nurses provide psychological support and sleep hygiene education for TB patients to improve their well-being.

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Introduction

Tuberculosis (TB) remains one of the most pressing global health challenges despite significant advances in prevention, diagnosis, and treatment. According to the World Health Organization (WHO), TB is still listed among the top ten causes of death worldwide, with millions falling ill each year and over a million lives lost annually (WHO, 2022b). Indonesia, in particular, is consistently ranked among the top three

countries with the highest TB incidence, alongside India and China (WHO, 2022a). This high burden underscores the ongoing struggle to control TB transmission and manage the complex challenges associated with the disease.

Tuberculosis is an infectious disease primarily caused by the bacterium Mycobacterium tuberculosis. It most commonly affects the lungs (pulmonary TB) but can also impact other organs (extrapulmonary TB) (Tobin & Tristram, 2024). Transmission occurs mainly through airborne droplets released when an infected individual coughs, sneezes, or speaks. Once inhaled, the bacteria can settle in the lungs and, if the host's immune system is unable to contain them, multiply and cause active disease (Bhargava & Bhargava, 2020). TB is not only physically debilitating but can also carry a significant psychological burden due to its chronic nature, the length of treatment, the stigma attached, and the social isolation that may result from diagnosis.

The physical symptoms of TB such as chronic cough, hemoptysis, chest pain, fever, night sweats, and weight loss are well known and frequently addressed through medical treatment programs (Ordi et al., 2019). However, the psychological dimension is often underrecognized and undertreated. Patients with TB frequently experience psychological distress, including anxiety and depression, due to various factors. The diagnosis itself can be frightening; patients may fear for their lives, worry about infecting loved ones, or struggle with feelings of shame and stigma (Lee et al., 2018). Long and demanding treatment regimens, potential medication side effects, and socioeconomic impacts such as inability to work or provide for family can further exacerbate psychological stress (Ruiz-Grosso et al., 2020).

One of the common psychological conditions experienced by TB patients is anxiety. Anxiety is defined as an unpleasant emotional state characterized by feelings of apprehension, nervousness, or worry (G & Sivashankar, 2025). It may manifest cognitively, emotionally, and physically, often leading to restlessness, irritability, difficulty concentrating, and disturbed sleep. For TB patients, anxiety can stem from fear of disease progression, fear of death, concerns about treatment success, uncertainty about the future, and worries about social rejection. In the context of chronic infectious diseases like TB, unmanaged anxiety can have significant implications for patients' overall well-being and recovery (Kootbodien et al., 2018).

One key aspect of health that is strongly influenced by anxiety is sleep quality. Good quality sleep is essential for physical and psychological recovery, immune function, and general quality of life (Alipanah et al., 2018). Sleep allows the body to restore energy, repair tissues, and consolidate memory and learning. Poor sleep quality, conversely, can weaken the immune response, hinder recovery, and exacerbate emotional distress. It is well established that psychological factors such as anxiety and stress can disrupt sleep patterns. People with high anxiety often have difficulty falling asleep, experience frequent awakenings, or wake up too early and are unable to return to sleep (Yu et al., 2019). Over time, these disturbances can lead to chronic sleep deprivation, further impairing physical health and complicating disease management.

For patients with tuberculosis, poor sleep can be aggravated by the physical symptoms of the disease itself, such as persistent coughing, chest pain, or night sweats (Ottenhoff & Kaufmann, 2012). When combined with anxiety, the risk of sleep disturbance is even higher. Disrupted sleep in TB patients can lower treatment adherence, reduce the effectiveness of therapy, and increase the risk of complications. (Ruiz-Grosso et al., 2020). For example, inadequate sleep weakens the immune system,

making it more difficult for the body to fight the TB bacteria effectively. Patients who are sleep-deprived may also struggle with fatigue, reduced motivation, and lower levels of engagement with health care providers, all of which can hinder treatment outcomes.

Despite the clear interconnection between anxiety and sleep quality, this psychosocial aspect is often overlooked in TB control programs, which typically focus more on biomedical treatment and infection control (Kootbodien et al., 2018). While national programs in Indonesia have made substantial progress in increasing case detection and treatment success rates, addressing the mental health needs of TB patients remains a critical gap. Understanding the link between anxiety and sleep disturbance is important for developing holistic, patient-centered interventions that address not only the biomedical but also the psychosocial dimensions of TB care.

A preliminary observation at Sitopeng Puskesmas showed that many TB patients face sleep disturbances and anxiety, yet these issues are rarely addressed through counseling or psychological support because care still focuses mainly on medication and physical monitoring. Since anxiety and poor sleep can affect recovery, understanding this link is important for more holistic nursing care. By examining the relationship between anxiety and sleep quality, this study highlights the need to integrate mental health support into TB management so health providers can better support patients physically and emotionally to improve outcomes and help end the TB epidemic in Indonesia.

Objective

This study aims to examine the relationship between anxiety and sleep quality among tuberculosis patients at Sitopeng Puskesmas, Cirebon City, to provide evidence that supports better nursing care addressing both psychological and physical aspects.

Method

A descriptive correlational study with a cross-sectional approach was conducted among tuberculosis patients registered at Sitopeng Puskesmas, Cirebon City, in 2020. The inclusion criteria were patients diagnosed with TB, currently undergoing anti-tuberculosis treatment, aged 18 years and above, willing to participate, and able to communicate clearly. A total sampling technique was used to include all eligible patients, resulting in 32 respondents. Data were collected using structured questionnaires: anxiety levels were measured using the Hamilton Rating Scale for Anxiety (HRS-A), while sleep quality was assessed with a standardized sleep quality questionnaire. All instruments were tested for validity and reliability before use. Data collection was carried out through direct interviews and self-reported responses. The collected data were analyzed using descriptive statistics to present frequencies and percentages, and the Chi-Square test was applied to determine the relationship between anxiety and sleep quality at a significance level of $\alpha = 0.05$. Ethical approval was obtained from the local ethics committee, and written informed consent was secured from all respondents.

Results

TABLE 1. Distribution of Anxiety among TB Patients

Anxiety Level	Frequency (n)	Percentage (%)
No Anxiety	24	75.0%
Mild	2	6.3%
Moderate	2	6.3%
Severe	2	6.3%
Very Severe	2	6.3%
Total	32	100%

Most TB patients (75%) had no anxiety, but about 25% experienced mild to very severe anxiety, showing that some still need psychological attention.

TABLE 2. Distribution of Sleep Quality

Sleep Quality	Frequency (n)	Percentage (%)
Good	22	68.8%
Poor	10	31.2%
Total	32	100%

About 69% of patients had good sleep quality, while 31% reported poor sleep, indicating that sleep problems are present in a significant minority.

TABLE 3. Cross-tabulation of Anxiety and Sleep Quality

Anxiety Level	Good Sleep Quality	Poor Sleep Quality	P-value
No Anxiety	22	2	0.009
Mild	2	0	
Moderate	1	1	
Severe	1	1	
Very Severe	0	2	
Total	26	6	

Patients with no or mild anxiety mostly had good sleep, while moderate to very severe anxiety was linked to poorer sleep. The significant p-value (0.009) shows that higher anxiety relates to worse sleep quality.

Discussion

The findings of this study show that the majority of tuberculosis (TB) patients at Sitopeng Puskesmas, Cirebon City, did not experience anxiety (75%) and were able to maintain good sleep quality (68.8%). However, it is important to note that nearly one-third of respondents reported poor sleep quality (31.2%) and about one-fourth of patients experienced various degrees of anxiety, from mild to very severe. The cross-tabulation confirmed that patients with higher levels of anxiety tended to have poorer sleep quality, as evidenced by the significant Chi-Square test result ($p = 0.009$). This correlation demonstrates a clear psychosomatic link in TB management, reinforcing the fact that physical illness and psychological well-being are closely intertwined.

These results align with a substantial body of global and regional evidence highlighting the high prevalence of anxiety and other psychological problems among patients suffering from chronic infectious diseases, particularly TB (De Paus et al., 2013). Studies have long shown that TB is not merely a biomedical condition but a biopsychosocial phenomenon. TB patients frequently face multiple stressors, including prolonged treatment regimens, social stigma, economic difficulties due to loss of income, physical discomfort from symptoms and medication side effects, as well as fear of transmission and social isolation (WHO, 2024). A study in South Africa found that approximately 32% of TB patients experienced high psychological distress,

including anxiety and depression, which directly affected their treatment outcomes (Kootbodien et al., 2018).

In the context of sleep quality, TB patients are vulnerable to sleep disturbances due to several factors. The physical symptoms of TB, such as persistent coughing, chest pain, night sweats, and fever, can disrupt sleep patterns. Moreover, the use of certain anti-TB drugs, such as isoniazid, has been associated with insomnia and vivid dreams in some patients (Lee et al., 2018). When these physical factors are combined with psychological distress, the risk of poor sleep quality becomes even more pronounced.

Poor sleep quality has profound implications for TB treatment outcomes. Sleep plays an essential role in immune system regulation. A robust immune response is vital for fighting *Mycobacterium tuberculosis*, the bacteria responsible for TB. Sleep deprivation suppresses the production of cytokines, reduces the activity of natural killer cells, and impairs antibody responses, all of which are critical for the body's defense against infections (Ruiz-Grosso et al., 2020). Consequently, TB patients with poor sleep may experience delayed recovery, higher risk of relapse, or even drug resistance due to poor treatment adherence.

Beyond the individual level, untreated anxiety and poor sleep among TB patients can have broader public health implications. Anxiety and depression have been linked to poor treatment adherence, which is a key factor in the development of multidrug-resistant TB (MDR-TB). A systematic review by Ruiz-Grosso et al. (2020) found that depression was significantly associated with a higher risk of non-adherence to TB treatment protocols. Given the close relationship between anxiety and depression, it is reasonable to infer that anxiety may similarly contribute to non-adherence.

Addressing this problem requires an integrated approach that combines biomedical treatment with mental health support. Nurses and community health workers are at the frontline of TB care and are ideally positioned to identify and manage psychological distress. However, in many primary health care settings in Indonesia and other low-to-middle-income countries, psychological screening and intervention are not yet routine parts of TB programs. This gap must be bridged to improve patient outcomes and reduce the risk of treatment failure.

Practical interventions can include routine mental health screening using simple tools like the Hamilton Rating Scale for Anxiety (HRS-A) or the Patient Health Questionnaire (PHQ-9). Patients identified with mild-to-moderate anxiety can benefit from psychoeducation, relaxation techniques, cognitive-behavioral strategies, and sleep hygiene counseling. For those with severe anxiety, referrals to mental health specialists may be necessary (Ordi et al., 2019). Training nurses and community health workers in basic counseling skills can be an effective strategy, especially in resource-limited settings.

Another important consideration is family involvement. Research shows that family support can play a crucial role in helping TB patients cope with anxiety and maintain good sleep habits. Family members can remind patients to adhere to medication schedules, accompany them to follow-up visits, and provide emotional reassurance. Studies in Indonesia highlight how family-based health education significantly improves treatment adherence and psychological resilience among chronic illness patients, including those with TB (Masa'Deh, 2017).

It is also important to address the stigma associated with TB, which is a major source of anxiety for many patients. Community education campaigns, patient support groups, and peer counseling can help reduce misconceptions about TB and encourage patients to seek help without fear of discrimination (Bastos et al., 2016).

In Sitopeng Puskesmas, the relatively high percentage of patients with no anxiety and good sleep quality may be attributed to supportive community health workers and accessible treatment facilities. However, the presence of patients with moderate to severe anxiety and poor sleep shows that there is still room for improvement. Establishing structured programs for mental health screening and support would strengthen TB control efforts in this community.

Finally, future research should explore the cultural, social, and economic factors that influence anxiety and sleep quality among TB patients in Indonesia. Qualitative studies could provide deeper insights into patients' lived experiences and inform more culturally sensitive interventions. Longitudinal studies would also be valuable in tracking how anxiety and sleep quality evolve over the course of TB treatment and how these factors interact with treatment adherence and outcomes.

Conclusion

This study found a significant relationship between anxiety levels and sleep quality among tuberculosis patients at Sitopeng Puskesmas, Cirebon City. Patients with higher anxiety were more likely to experience poor sleep quality, which can negatively impact their treatment outcomes and overall well-being. These findings highlight the need for nurses and health workers to integrate psychological assessment and sleep health promotion into routine TB care. Providing counseling, family support, and education on stress management and sleep hygiene may help improve patients' psychological resilience and recovery process. Further research is recommended to develop and test targeted interventions that address both physical and psychological needs of TB patients in community settings.

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