

Evaluation of the Level of Knowledge Regarding Anti-Tuberculosis Drugs Among Tuberculosis Patients at Sukaraja Health Center in the Period of February to March 2025

Zeta Agustri Azzahra¹, Nurul Irna Windari^{1*}, Salma Fajar Puspita²

¹Pharmacy Study Program, Faculty of Science, Institut Teknologi Sumatera, Lampung Selatan 35365, Indonesia

²Pharmacy Study Program, Faculty of Mathematics and Science, Universitas Islam Indonesia, Sleman 55584, Indonesia

*Corresponding author: nurul.windari@fa.itera.ac.id

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ABSTRACT

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* and requires long-term and consistent treatment. Patient knowledge regarding the use of anti-tuberculosis medication is essential to support the success of treatment. This study aimed to evaluate the level of knowledge among patients regarding the use of anti-tuberculosis drugs at Puskesmas Sukaraja, Bandar Lampung. This research employed a descriptive observational design with a cross-sectional approach. A total of 50 TB patients were selected using a total sampling technique during the period of February to March 2025. The research instrument consisted of a knowledge questionnaire that had been previously tested for validity and reliability. Data were analyzed using univariate analysis to describe the distribution of patients' knowledge levels. The results showed that most respondents had a good level of knowledge, with 24 respondents (48%) categorized as good, 12 respondents (24%) as moderate, and 14 respondents (28%) as poor. The majority of TB patients at Puskesmas Sukaraja demonstrated a good level of knowledge regarding the use of anti-tuberculosis medication. Therefore, continuous education and support from healthcare workers are necessary to maintain and improve patient understanding.

Keywords: Tuberculosis; Knowledge; Evaluation; OAT; Descriptive.

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*, which most commonly affects the lungs. Transmission occurs through airborne droplets released by infected individuals when coughing or sneezing (1). Indonesia ranks as the second-highest contributor to global TB cases, with an estimated 1,060,000 new cases and 134,000 TB-related deaths annually (2). According to the Indonesian Ministry of Health, the treatment success rate in 2023 was reported at 86%, still below the global target of 90% (3).

In Lampung Province, particularly in the city of Bandar Lampung, TB remains a major public health burden, with 5,879 reported cases in 2024 (4,5). In addition, the number of multidrug-resistant TB (MDR-TB) cases has continued to rise, with over 12,000 cases reported nationwide (6). These data highlight the urgent need for strengthened TB control efforts, including improving treatment outcomes.

Patient adherence to treatment is a key factor in the success of TB therapy. Previous studies have shown that a higher level of patient knowledge is associated with better adherence to anti-tuberculosis medication (7–9).

Recent data from the Bandar Lampung City Statistics Agency in 2024 indicated that Puskesmas Sukaraja has the highest estimated number of TB cases (412 cases). However, no studies have been conducted to evaluate the level of knowledge among TB patients at this facility. Therefore, this study aims to describe the level of

knowledge regarding anti-tuberculosis medication among TB patients at Puskesmas Sukaraja, Bandar Lampung.

METHODS

Tool

This study utilized research instruments, including an informed consent form and a knowledge questionnaire. The informed consent form contained the respondent's agreement to participate after understanding the purpose of the study. The knowledge questionnaire employed a Guttman scale with True/False answers and was categorized into three levels of knowledge, including good, moderate, and poor. The questionnaire had previously been tested for validity and reliability (10).

Materials

Data were collected based on responses to a questionnaire. Patients were first asked to provide informed consent and fill out a personal information form. They were then instructed to complete a questionnaire designed to assess their level of knowledge regarding anti-tuberculosis medication. The total population of TB patients visiting Puskesmas Sukaraja during the period of February to March was 50 patients, and all were included in the study using total sampling, resulting in a sample size equal to the population (50 patients).

Detailed Procedure

This study was an observational study with a cross-sectional approach conducted at Puskesmas Sukaraja, Bandar Lampung, from February to March 2025. A total of 50 tuberculosis patients were selected using the total sampling method. The study obtained approval from the relevant authorities and received ethical clearance from the Health Research Ethics Committee of the A. Yani Regional General Hospital, Metro, under number 370/580/KEPK-LE/LL-02/2025. Primary data were collected through the administration of a knowledge questionnaire after respondents signed the informed consent form. The data were then analyzed using univariate analysis with IBM SPSS Statistics 30 to describe the characteristics of respondents and their level of knowledge regarding tuberculosis treatment.

RESULT AND DISCUSSION

Validity and Reliability Test

The validity and reliability tests in this study were conducted using SPSS version 30. Validity was assessed using the Pearson correlation method on 30 respondents from the total sample of 50. The results showed that all 18 items in the knowledge questionnaire had correlation coefficient values (r count) greater than the critical value (r table = 0.361), indicating that all items were valid. Reliability was tested using Cronbach's alpha, yielding a value of 0.912 for the knowledge questionnaire. Since this value is greater than 0.80, the instrument is considered highly reliable and appropriate for use in this study.

Respondent Characteristics

The respondent characteristics in this study were obtained from 50 tuberculosis patients at Puskesmas Sukaraja, Bandar Lampung. The distribution of respondent characteristics at Puskesmas Sukaraja is presented in Table 1.

Table 1. Characteristics of Tuberculosis Patients at Puskesmas Sukaraja, Bandar Lampung (February – March 2025)

Characteristic	Category	Number (n)	Percentage (%)
Gender	Male	26	52
	Female	24	48
	Total	50	100
Age	10–18 (Adolescent)	2	4
	19–59 (Adult)	43	86
	≥ 60 (Elderly)	5	10
	Total	50	100
Educational Level	Elementary School	1	2
	Junior High School	17	34
	Senior High School	22	44
	Higher Education	10	20
	Total	50	100
Occupation	Unemployed	10	20
	Trader/Entrepreneur	15	30
	Laborer	13	26
	Civil Servant	8	16
	Student	4	8
	Total	50	100
History of TB	Yes	2	4
	No	48	96
	Total	50	100
Treatment Duration	< 6 months	41	82
	≥ 6 months	9	18
	Total	50	100
Comorbidities	Present	9	18
	Absent	41	82
	Total	50	100

Respondent characteristics based on gender showed that male patients were slightly more dominant (52%) compared to females (48%). This finding is consistent with previous studies conducted in Medan, Puskesmas Pasar Minggu, and Puskesmas Garuda, which also reported a predominance of male TB patients (11–13). Although men generally have a higher risk of contracting TB due to smoking habits, alcohol consumption, and high mobility, this difference was not significant in the Sukaraja Health Center area, where many women are employed in informal sectors (traders and laborers), is characterized by high levels of mobility and social interaction, which consequently increases the potential for *Mycobacterium tuberculosis* exposure (14).

The majority of respondents were within the productive age group of 19–59 years (86%), consistent with data from RS Paru Sumatera Selatan, Puskesmas Senapelan, and Yogyakarta (15–17). This age group is at higher risk

of TB due to increased mobility and social interaction (18). Additionally, individuals in this age group generally possess stronger cognitive abilities, which support better knowledge and adherence to TB treatment (19). In terms of education, most respondents were high school graduates (44%), aligning with studies in Sikumana, RS Paru Sumatera Selatan, and RSUP Surakarta (15,20,21). Higher education levels are associated with better understanding of health information, including knowledge of anti-tuberculosis medication and the importance of completing the full course of treatment (22). Nevertheless, the higher risk of TB in respondents with a high school education background in this study is not because they have less knowledge, but because of the socio-economic and lifestyle characteristics generally associated with TB such as dense living conditions or high social interaction, which were not examined further in this study. Regarding occupation, 80% of respondents were employed, primarily as traders (30%) and laborers (26%). This is in line with findings from RSUD Talang Ubi, Puskesmas Kaluku, and Puskesmas Bantul (17,23,24). These types of occupations are considered high-risk due to crowded work environments, poor ventilation, and physically demanding conditions with limited nutritional intake, all of which can weaken the immune system and increase vulnerability to TB (25).

A total of 96% of respondents were newly diagnosed TB cases, consistent with findings from RSUD Pasar Minggu and Puskesmas Sikumana (12,20). According to WHO, approximately 85–90% of global TB cases are new, largely due to low public awareness regarding TB transmission and symptoms (2,26). Most respondents (82%) were also in the intensive phase of treatment (<6 months), which focuses on bacterial elimination and the prevention of drug resistance (27–29), indicating alignment between new case status and the current phase of treatment (30).

Lastly, 82% of respondents reported having no comorbidities, while 18% had accompanying conditions such as diabetes, hypertension, and others. This aligns with previous studies in Pasar Minggu and Bantul (12,17). Although diabetes known to increase the risk of TB and prolong treatment duration due to impaired immune response (31–33), most TB cases in this setting occurred among individuals without comorbidities, likely due to continuous exposure in high-risk environments (2). In diabetes, the host's immune response is disrupted due to mechanisms such as insulin deficiency and hyperglycemia, which compromises both natural barriers (via neuropathy risk) and cellular immunity, leading to defects in phagocytosis, suppressed cytokine production, immune cell dysfunction, and a failure to kill invading pathogens effectively (34).

Overview of Knowledge Level

Knowledge about a disease refers to an individual's understanding of the illness they are experiencing, including how to manage and prevent it. Individuals with good knowledge tend to be more attentive to their own health. Knowledge is also often associated with treatment adherence, as those who better understand their condition are more likely to follow medical instructions, including medication use, as prescribed. The distribution of tuberculosis patients' knowledge levels regarding the use of anti-tuberculosis drugs at Puskesmas Sukaraja, Bandar Lampung, during the period of February–March 2025 is presented in Table 2.

Table 2. Knowledge Level of Tuberculosis Patients at Puskesmas Sukaraja, Bandar Lampung (February – March 2025)

Knowledge Category	Number (n)	Percentage (%)
Good	24	48
Moderate	12	24

Poor	14	28
Total	50	100

The questionnaire used to measure the level of knowledge of TB patients in this study consisted of 18 statements using the Guttman scale, with true or false answers in the form of a checklist. The assessment in this questionnaire was scored with a score of 1 if the true answer was given to questions 1-8, 10, 12-15, 17-18 and a score of 1 if the answer was false to questions 9, 11, 16. Furthermore, the percentage value of the questionnaire results completed by patients was calculated by grouping the values, namely good (76% - 100%), moderate (56% - 75%), and poor (<56%) knowledge. Most tuberculosis patients at Puskesmas Sukaraja demonstrated a good level of knowledge regarding the use of anti-tuberculosis drugs, with 24 respondents (48%) categorized as having good knowledge, 12 respondents (24%) as moderate knowledge, and 14 respondents (28%) as poor knowledge. These findings are in line with previous studies conducted at RSUD dr. Soehadi (71.4%), Puskesmas Sriamur (54.2%), and RS An-Nisa Tangerang (46.1%), all of which reported a predominance of respondents with good knowledge levels (35–37).

This result may be attributed to the active involvement of healthcare personnel at Puskesmas Sukaraja, who consistently provided clear and communicative explanations to patients during medical check-ups and medication dispensing. In addition, the health center regularly conducts educational and awareness programs related to tuberculosis, which likely enhances the community's understanding of TB treatment. Other influencing factors include age, education, and occupation. Most respondents were in the productive age group (19–59 years), which is generally associated with better cognitive function and capacity to process health information (19). Furthermore, most respondents had completed senior high school (44%) and were employed (80%), conditions that provide more exposure to health-related information and facilitate better understanding of disease prevention and treatment (38,39).

To assess patients' knowledge, the questionnaire included several key indicators, such as the purpose of TB treatment, how to correctly use anti-tuberculosis medication, common side effects, and proper drug storage. The detailed responses to each of these knowledge indicators are presented in Table 3.

Table 3. Question Indicators in the Knowledge Level Questionnaire

Indicator	Question	Correct	Incorrect	% Correct
Treatment Purpose	1. TB treatment is intended to cure the patient and prevent the risk of death	45	5	90%
	2. Proper treatment can inhibit the growth of <i>Mycobacterium tuberculosis</i>	35	15	70%
	3. Proper treatment can prevent the transmission of tuberculosis	35	15	70%
Drug Usage	4. TB drugs prescribed by doctors must be taken in the recommended dosage	48	2	96%

	5. TB drugs must be taken regularly according to the doctor's instructions	45	5	90%
	6. TB treatment is given in two phases: intensive/initial and continuation phases	37	13	74%
	7. In the initial phase, TB drugs must be taken daily for 2 months	39	11	78%
	8. Drugs used in the initial phase include Rifampicin, Isoniazid (INH), Pyrazinamide, and Ethambutol	43	7	86%
	9. TB patients may stop treatment on their own before the scheduled follow-up	39	11	78%
	10. TB therapy must be followed according to the control schedule recommended by the doctor	39	11	78%
Indicator	Question	Correct	Incorrect	% Correct
	11. If a dose is missed in the morning, it should be doubled in the afternoon	42	8	84%
	12. A treatment supervisor (PMO) is important to ensure medication adherence	35	15	70%
	13. A treatment supervisor (PMO) can be a healthcare worker or a family member	28	22	56%
Side Effects	14. If urine turns red after taking TB drugs, it is a common side effect and not a cause for concern	35	14	72%
	15. If experiencing discomfort after taking TB drugs, patients must consult a doctor	21	29	42%
Storage	16. TB drugs must be stored in the refrigerator	46	4	92%
	17. TB drugs must be stored away from direct sunlight	39	11	78%
	18. Proper storage temperature for TB drugs is between 20°C – 25°C	32	18	64%

Based on the analysis of questionnaire indicators, the lowest levels of knowledge among respondents were found in the areas of anti-tuberculosis drug side effects and the role of the Medication Supervisor (PMO). A total of 29 respondents (58%) answered incorrectly when asked whether patients should consult a doctor if they experience side effects after taking TB medication. This lack of understanding may be due to the perception that certain side effects such as red colored urine are normal and do not require medical attention. In addition, 22 respondents (44%) were unaware that a PMO can be either a healthcare professional or a family member. Limited understanding of the PMO's role may negatively impact patient adherence, as PMOs are responsible for ensuring the regular and consistent intake of TB medication (40).

CONCLUSION

Based on the results of the study conducted at Puskesmas Sukaraja, Bandar Lampung, it can be concluded that the majority of respondents had a good level of knowledge regarding the use of anti-tuberculosis medication, with 24 respondents (48%) categorized as having good knowledge, 12 respondents (24%) as moderate knowledge, and 14 respondents (28%) as poor knowledge. These findings indicate that most tuberculosis patients at Puskesmas Sukaraja have a good understanding of TB drug use. Therefore, educational efforts and continuous support from healthcare providers should be strengthened to maintain and further improve patient knowledge.

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