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Clinical characteristics of tuberculosis patients at Simpang Kawat Public Health Center, Jambi

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Abstract

Background: Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis bacteria transmitted through the air. Based on World Health Organization (WHO) data in 2023, it is estimated that around 8.2 million of the world's population will suffer from TB. Based on the 2023 Indonesian health profile, the prevalence of new TB cases in Indonesia is 821,200 cases. In Jambi province, the highest TB prevalence is in Jambi City, approximately 209 per 100,000 population. This study aims to determine the clinical characteristics of TB patients at a Simpang Kawat Public Health Center, Jambi.
Method: This was a retrospective cross-sectional descriptive study at the Simpang Kawat Public Health Center in Jambi City during Januari to December 2023. A total of 76 TB patients were identified. However, 16 patients were excluded due to incomplete medical records, resulting in final sample of 60 patients. Secondary data was collected from medical records.
Results: The results showed that the majority of TB patients consisted of 40-59 year (35%) age group, male (68.3%), employed (55%), married (73.3%), new cases (80%), first category treatment (100%), smokers (68.3%), and no comorbidities (73.3%).
Conclusion: This study show that most of TB patients in public health center was sensitive TB patients with no comorbidities.

Keywords: clinical characteristics; tuberculosis; public health center

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*. It commonly infects the lung parenchyma but also affects other organs such as the pleura, lymph nodes, and beyond. Transmission occurs primarily through airborne droplets expelled by infected individuals when coughing, sneezing, or speaking. Those with weakened immune systems are at a higher risk of developing active TB (1).

TB remains a major global health problem and one of the priorities of the Sustainable Development Goals (SDGs). Indonesia ranks among the countries with the highest TB burden worldwide, with an increasing number of new cases each year (2). In 2023, Indonesia detected 821,200 TB cases, showing an increase compared to 2022 (3). In Jambi Province, TB continues to be a public health concern, with Jambi City showing the highest incidence in the province (4).

At the primary care level, the Simpang Kawat Public Health Center is one of the health centers in Jambi City with a relatively high number of TB cases. A total of 76 TB patients were recorded at Simpang Kawat public health center during 2023. However, research describing the sociodemographic and clinical characteristics of TB patients at the puskesmas (primary health center) level in Jambi remains limited. Understanding the local profile of TB patients is essential for planning effective control strategies and optimizing early detection and treatment adherence.

This study aims to describe the sociodemographic and clinical characteristics

of TB patients at Simpang Kawat Public Health Center, including variables such as age, gender, employment status, marital status, patient type, treatment category, smoking status, and comorbidities (diabetes mellitus and HIV). The findings of this study are expected to support local TB control programs by providing evidence-based data that can assist health workers and policymakers in optimizing case detection, improving treatment success rates, and reducing TB transmission in Jambi City.

METHOD

This was observational study with cross-sectional design. Ethical approval for this study has been approved by the health research ethics committee, Faculty of Medicine and Health Sciences, University of Jambi, with number 1269/UN21.8/PT.01.04/2025. The study was conducted at Simpang Kawat Community Health Center in March 2025. The data used in this study were secondary data obtained from the medical records of tuberculosis patients in 2023. The population of this study was all outpatient tuberculosis patients at Simpang Kawat Community Health Center in 2023. The sampling method used was total sampling, resulting in a total sample of 76 patients. The inclusion criteria were tuberculosis patients aged 18 years and older. The exclusion criteria included patients with incomplete or missing information in key variables such as employment status, marital status, treatment category, smoking status or comorbid status. As a result, 16 records were excluded, leaving a total of 60 patients for analysis. Data were analyzed descriptively using frequency distribution and measures of central tendency (mean or median) as appropriate, along with measures of dispersion (range or standard deviation). Categorical variables (gender, employment status, marital status, patient type, treatment category, smoking status, and DM/HIV comorbidity) were presented as frequencies and percentages, while numerical variables (such as age) were summarized using central tendency and dispersion measures. All statistical analyses were performed using IBM SPSS Statistics version 26. The results were presented in tabular form.

RESULTS

According to data, there were 60 patients in Simpang Kawat public health center in 2023. Characteristics data of patients in this study age, gender, employment status, marital status, patient type, treatment category, smoking status, and comorbidities (DM and HIV) as seen in table 1 and table 2.

Table 1. Sociodemographic characteristics of tuberculosis patients

Characteristics	Total, n (%) (n = 60)
Age (Median (min-max)) (years)	**53 (18-79)**
18-39 years	19 (31.7)
40-59 years	21 (35.0)
>60 years	20 (33.3)
Gender	
Male	41 (68.3)
Female	19 (31.7)
Employment Status	
Employed	33 (55.0)
Unemployed	27 (45.0)
Marital Status	
Married	44 (73.3)
Unmarried	16 (26.7)

Table 2. Clinical characteristics of tuberculosis patients

Characteristics	Total, n (%) (n = 60)
Patient Type	
New case	48 (80.0)
Relaps	4 (6.7)
Treatment after failure	1 (1.7)
Others	7 (11.7)
Treatment Category	
First Category	60 (100.0)
Smoking Status	
Smoker	19 (31.7)
Non-smoker	41 (68.3)
Comorbidities	
DM	11 (18.3)
HIV	5 (8.3)
No comorbidities	44 (73.3)

DISCUSSION

Based on the data in table 1, the majority of tuberculosis (TB) patients were predominantly in the 40–59 years age group, representing 35.0% of the cases, making this the largest proportion. This result is consistent with the study by Savitri et al. (2021), which showed that the highest number of TB cases occurred in the 50–59 age group, followed by the 40–49 age group (5). The predominance of TB among productive-age adults has significant public health implications, given that this age group constitutes the economic backbone of families and communities. The susceptibility in this age bracket may be associated with fatigue and insufficient rest, which can lower the immune system, thereby increasing vulnerability to TB infection. This suggest that TB is a significant health problem in this age range (6).

A male predominance was observed among tuberculosis (TB) patients, with men accounting for 68.3% of all cases. A study by Sunarmi & Kurniawaty (2022) who reported a male prevalance of 63.6% (7). Men are 2.07 times more likely to develop TB than women. Smoking contributes to he deterioriation of lung function and weakening of immune defenses, facilitating TB infection and progression. However, the impact of social and behavioral factors, such as healthcare-seeking behaviors and occupational exposure, should also be considered in explaining this gender disparity (8).

Regarding employment status shows that over half of the TB patients (55.0%) were employed, implying potential exposure in the work place. This aligns with observations from Samsuri et al. (2024) in Palembang, where 2,123 employed TB patients comprised 56.9% of cases (9). Occupational roles involving exposure to dust particles or air pollution increase the likelihood of respiratory diseases, particularly pulmonary TB. Work related fatigue and stress may further compromise immune defenses, increasing suspectibillity (10,11).

Marital status analysis showed a higher prevalence of TB among married individuals (73.3%). A study by Talarima et al. (2021) stated that marital status influences the spread of health-related issues due to differing behavior patterns between married and unmarried individuals. Married individuals living with their spouse or extended family may face a higher risk of TB transmission, especially in households with poor sanitation and personal hygiene conditions (12).

Most patiens in this study were new cases (80.0%) as seen in table 2. The data consistent with Dewi et al. (2022), who reported a similiarly high proportion of new TB patients (92.8%) (13). The rise in new TB cases may be attributed to a history of contact with infected individuals. According to the study by Darmin et al. (2020), there is a link between having a contact history and the incidence of pulmonary TB. People who frequently interact with TB patients are more likely to become infected through airborne droplets emitted by those patients (14). Regarding the type of TB patients receiving treatment at Simpang Kawat public health center, all were administered category I treatment. The choice of treatment category for these TB patients was based on sputum smear (15).

Regarding smoking status, 68.3% of patients were non-smokers. While TB is caused by bacterial infection rather than direct smoke exposure. Passive smokers are far more dangerous than active smokers (16). Smoking does increase the risk of TB, because chronic exposure to smoke impairing their ability to destroy *Mycobacterium tuberculosis*—and disrupts T cell immune responses (17).

Among comorbidities, 73.3% of patients had neither diabetes mellitus (DM) nor HIV. However, 18.3% had DM, which, according to data, doubles to triples the risks of developing TB (18). DM can also worsen the severity of TB; individuals with both TB and DM experience higher rates of treatment failure compared to those without DM (19). Similiarly, 8.3% of patients were HIV-Positive, a comorbidty which greatly heightens TB risks ranging from about 15 to 37 times higher than in HIV-negative individuals (20). In Indonesia, 5–10% of TB cases occur in people living with HIV, whose lifetime lifetime TB risk of

approximates 30%. For this reason, TB patients are a key group targeted for HIV screening (21).

This study has several limitations that need to be considered. First, this study used secondary data from mediacl records, which may be incomplete or inaccurate. Second, the sample size of this tudy was relatively small (n = 60), so the results may not be generalizable to a larger population. Third, this study didn't consider behavioral variables such as smoking habits, diet, adn physical activity, which can affect TB risk. Fourth, this study used a cross-sectional design, so it can't determine the casual relationship between the variables studied (22,23).

Based on these findings, a comprehensive strategy for TB control at the Simpang Kawat Public Health Center should encompass strengthening active case finding, particularly among middle-aged men in workplace and community settings, alongside robust contact tracing and tailored health education programs, integrating TB control efforts with chronic disease management, especially for diabetes, and smoking cessation initiatives, improving socioeconomic conditions through better sanitation and housing, and fostering community engagement to address cultural practices that may facilitate TB transmission, ultimately enhancing early detection, treatment adherence, and overall TB control outcomes.

CONCLUSIONS

The findings show that most TB patients at Simpang Kawat Community Health Center were middle-aged men within the productive age group, predominantly employed and married. The majority were classified as new cases and received first-line treatment, indicating that TB detection at the primary care level is functioning effectively. Most patients were non-smokers and did not present with comorbidities such as diabetes mellitus or HIV, suggesting that other risk factors, such as occupational exposure and social interaction may play a larger role in TB transmission within this population.

These findings highlight the importance of strengthening active case finding, contact tracing, and health education programs targeted at productive-age adults, especially men who are more likely to be exposed to TB in workplace and community settings. Integrating TB control efforts with chronic disease management and smoking cessation initiatives could further improve early detection, treatment adherence, and overall TB control outcomes in Jambi City.

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