

# CHARACTERISTICS OF BACTERIOLOGICAL PULMONARY TUBERCULOSIS CASES FOR THE JANUARY – AUGUST 2021 PERIOD AT ARIFIN ACHMAD HOSPITAL, RIAU PROVINCE

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**ABSTRACT**

Background: Mycobacterium tuberculosis, which causes TB, is a deadly disease that mostly affects the lungs. Surveys revealed that although there was significant variance, the estimated incidence of bacteriologically proven pulmonary TB per 100 000 people aged 15 or older was high in several countries. With multisectoral action and responsibility to address the larger causes that influence the TB epidemic and the socioeconomic effect of TB, knowing and comprehending the sociodemographic features of tuberculosis can serve as a milestone in the End TB Strategy by 2035. Methods: Descriptive cross-sectional methodology was employed in this study to collect data. 154 samples were collected over the course of eight months in accordance with the inclusion criteria; the findings are displayed as a distribution table. Results: The study's results showed that of 154 samples, patients with positive bacteriological TB were more likely to be men than women, to be in their prime working years, to be HIV-negative and to be medication sensitive. Discussion: Knowing characteristics of patients with pulmonary tuberculosis is important due to prevent higher risk of drug resistant, non-adherence treatment and mortality.

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**INTRODUCTION**

Even though control initiatives using the Directly Observed Treatment Short-course (DOTS) method have been put in place in many countries since 1995, tuberculosis (TB) is still a major worldwide health issue at the moment. Tuberculosis was deemed a global emergency by the World Health Organization (WHO) in 1993 (Kweider et al., 2024). According to a WHO report, around 10 million individuals had TB in 2019 and approximately 1.2 million died from the condition (Bhargava et al., 2020).

The Republic of Indonesian Ministry of Health established the country's national TB control program in 1969 (Bruchhausen et al., 2024). The national TB control program aims to eradicate TB by

2035 and achieve TB-free status by 2050. Compared to the general population, HIV/AIDS patients die from tuberculosis more frequently (Obeagu et al., 2023). According to estimates, 10 million people throughout the world get M (Tham et al., 2014). tuberculosis each year, making about one-third of the world's population (Bai et al., 2024). This means that instances of TB require serious treatment, especially in at-risk groups, one of which is an HIV/AIDS patient (Dauphinais et al., 2024).

One of the top 10 killers globally, tuberculosis is the most common infectious killer other than HIV/AIDS (Palombi et al., 2018). Anyone can get tuberculosis, while it is more common in adults and in men than in women (Perumal et al., 2018). You can both treat and prevent tuberculosis. A 6-month medication regimen can effectively cure 85% of persons with TB illness (Gupta et al., 2024). The additional benefit of this therapy is that it prevents the spread of infection (Fox et al., 2017). By addressing the determinants of TB, including as poverty, malnutrition, HIV infection, smoking, and diabetes, multisectoral intervention can also lower the number of people becoming sick and dying from it (and, consequently, the number of infections and fatalities).

After India, Indonesia has the second-highest number of TB cases worldwide. According to the WHO, eight countries, including India (28%), Indonesia (9.2%), China (7.4%), the Philippines (7.0%), Pakistan (5.8%), Nigeria (4.4%), Bangladesh (3.6%), and the Democratic Republic of the Congo (2.9%), accounted for more than two thirds of all TB cases worldwide in 2021.who 22 other nations on the WHO's list of 30 nations with a high TB burden make up 21% of the world's total.<sup>1</sup>

The morbidity and mortality of patients with tuberculosis are significantly impacted by drug resistance, which is today a new challenge in the therapy of TB (Lange et al., 2018). An expected 450.000 incident cases of MDR/RR-TB were reported globally in 2021, an increase of 3.1% from 437.000 cases in 2020. The major cause of this increase is thought to be an overall rise in TB incidence between 2020 and 2021, which is attributed to the COVID-19 pandemic's effects on TB detection (Dheda et al., 2022). TB Final Strategy In order to meet milestones for 2020 and 2025, diagnostic, treatment, and preventative services must be provided (Behera et al., 2020). In order to address the larger factors influencing the TB epidemic and the socioeconomic effect of TB, TB is offered in the context of progress toward global health, multisectoral action, and accountability (Satyanarayana et al., 2020).

After reading the foregoing explanations, the researcher became curious about how pulmonary TB cases at the Arifin Achmad Hospital in Pekanbaru between January and August 2021 were described in terms of a number of related factors, including sociodemographics, gender, age, results of drug sensitivity tests, and HIV status.

## **METHOD**

This research is a descriptive method with a cross-sectional approach, where data collection is carried out only once using data derived from records of microbiological examination results and medical records with the aim of determining the incidence of patients with bacteriological pulmonary tuberculosis and grouped by several variables.

The variable in this study is a single variable, with the description of bacteriological pulmonary tuberculosis patients based on gender characteristics, age, drug sensitivity test results and HIV status. The population that included in inclusion criteria in this study is patients newly diagnosed with bacteriological pulmonary TB based on the positive results of microbiological examination with GeneXpert MTB / Rif at RSUD Arifin Achmad Pekanbaru from January 2021-August 2021.

## RESULTS AND DISCUSSION

The type of data collected in this study is secondary data and collected by observation method using medical record data. A total of 154 samples were taken according to the inclusion criteria. The characteristics observed for each sample were based on sociodemographics, gender, age, drug sensitivity test results and HIV status with the distribution seen table 1.

**Table 1.** Sociodemographic Characteristics of Research Samples

| Variables                | N (%)      |
|--------------------------|------------|
| Gender                   |            |
| • Male                   | 103 (67)   |
| • Female                 | 51 (33)    |
| Age                      | 3 (2)      |
| • Unproductive (0-14 y)  | 141 (91.5) |
| • Productive (15-65 y)   | 10 (6.5)   |
| • Not-productive (>65 y) |            |
| Drug sensitivity         |            |
| • Drug sensitive         | 138 (89.6) |
| • Drug resistant         | 16 (10.4)  |
| HIV status               |            |
| • Negative               | 145 (94)   |
| • Positive               | 9 (6)      |

Based on the findings of the study on the description of the illness in 154 samples diagnosed with bacteriological pulmonary TB, three age categories were created: 0–14 years old, 15–64 years old, and >65 years old, which are all considered to be past the prime of life. The productive age group, with a total of 141 individuals (91.5%), is the age group most affected by bacteriological pulmonary disease, followed by the unproductive age group with a total of 10 people (6.5%) and the elderly with a total of 3 people (2%).

The study's findings are consistent with the literature, which indicates that TB incidence is greater in maturity and the prime of life, or age >15 years. The environment and profession, which enhance the danger of exposure to *M. tuberculosis* germs, can also contribute to this.<sup>6,7</sup>

There have been reports of gender differences in TB all throughout the world. In the world, males are diagnosed with TB more frequently than women are, with a male-to-female ratio of 1.6:1. Various explanations for this gender discrepancy have been put up, including biological variations in illness, exposure, and access to healthcare, particularly in underdeveloped nations. Gender-based characteristics were acquired with the following distribution 51 women and 103 males (67%) made up the entire population.<sup>1,8</sup>

The results of this study are in line with the literature, which shows that men are more likely than women to contract TB. The results of the drug sensitivity testing on rifampicin, one of the drugs from the TB treatment regimen or anti-tuberculosis drugs (ATD), were obtained from the research done on the disease description of 154 samples diagnosed with bacteriological pulmonary TB through GeneXpert MTB/Rif microbiological examination. Patients were divided into two groups based on the results of this drug sensitivity test: those with drug-sensitive TB and those with drug-

resistant TB. There were 138 people (89.6%) with drug-sensitive TB patients and 16 people (10.4%) with drug-resistant TB cases via this group.<sup>4,9</sup>

The worldwide TB crisis has been significantly impacted by the HIV infection epidemic. HIV has become the most important risk factor for infection progression because of its capacity to weaken the immune system. The most prevalent major opportunistic illness among HIV-positive individuals is tuberculosis (TB). They were split into two groups: those with bacteriological pulmonary TB and negative HIV status, and those with bacteriological pulmonary TB and positive HIV status. This category demonstrates that bacteriologic pulmonary TB patients with negative HIV status were found to be higher in 145 (94%) and considerably lower in 9 (6%), according to the findings of the HIV status examination in these TB patients.

## CONCLUSION

Pulmonary tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*. Important risk factors for HIV infection include exposure to infection, birthplace and living in a country where the illness is endemic. Tuberculosis is contagious. This suggests that a person who is afflicted may spread the pathogen to another. Those who are at risk need to be identified and treated early on due to a decreased chance of death and morbidity. The study has some shortcomings. First, the research focused on patients who were referred to a regional referral hospital, which may not represent the same population receiving healthcare in rural areas and may represent patients who were treated elsewhere when local therapy or diagnostics failed. Second, the study lacked information on the differences in health facility usage and health seeking behavior between men and women, both of which may have contributed to the disparities we saw.

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