

Prevalence Study on Late Detection Among Drug Resistant and Susceptible Pulmonary Tuberculosis in a Government Hospital in Ormoc City, Leyte: A Basis for Policy Development Plan

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ABSTRACT

This retrospective quantitative study sought to determine the prevalence of late detection among TB patients in a level I government hospital in Ormoc City, Leyte, and used the findings as the basis for a policy development plan. A total of 678 TB patients were enrolled from January 2024 to December 2025, and we included only 48 bacteriologically confirmed TB patients, with 33 males and 15 females, who were purposively selected because of their bacteriologically confirmed status upon initiation of their TB treatment. Data were obtained using a validated survey form and processed and analyzed using Jamovi Version 2.25.6.0. Frequencies and proportions were used to describe the demographic profile and the prevalence of late TB detection. The chi-square test of independence was used to determine whether there was a significant association between the profile and the prevalence of late detection. A p-value of less than 0.05 was considered significant. The results showed that the majority of TB patients experienced late detection, with a delay of >30 days from the onset of symptoms to the initiation of treatment. The duration from consultation to the release of sputum examination results also demonstrated a significant association with TB detection. Respondents who waited one to two weeks, and those who waited two weeks to one month, were classified as having late detection. Further studies can be made on knowledge, attitudes, and practices towards TB diagnosis and treatment to reveal the factors that cause late detection of TB. This study highlights late TB detection and emphasizes policy development focused on early case finding, rapid diagnosis, and timely treatment.

Keywords: *pulmonary tuberculosis, late detection, drug-resistant, drug-susceptible, policy development*

INTRODUCTION

Tuberculosis (TB) has been present in humans since ancient times, and in many developed countries, tuberculosis is considered a disease of the past. However, in poor countries, the high burden of tuberculosis can be devastating even today. Robert Koch discovered the bacillus causing tuberculosis in 1882. TB is an infectious disease that spreads through the air when a person infected with TB sneezes or coughs. Tuberculosis is a significant global health challenge and the World Health Organization has set a goal to reduce TB incidence by 90% between 2015 and 2035. However, TB diagnosis, treatment, and prevention present challenges. Throughout recorded history, TB has been the world's most prevalent human disease before the COVID-19 pandemic.

Tuberculosis cases continue to rise in Eastern Visayas, and according to the Department of Health (DOH) report as of 2023, 3,266 were diagnosed with the disease in the first quarter alone; TB is a leading cause of death in the region, ranking as the 9th leading cause of mortality in 2023. The Philippines is recognized as a high-burden nation for tuberculosis, exhibiting one of the highest incidence rates worldwide. In 2022, the Philippines ranked 4th as the largest contributor to global TB cases, and with its high TB prevalence, it is the leading cause of death from infectious disease in the Philippines, with an estimated incidence of 643 TB cases per 100,000 population. Worldwide, TB is considered the world's deadliest infectious disease, with a global incidence of 134 cases per 100,000 population, with the highest rates in Southeast Asia, Africa, and the Western Pacific regions.

Statement of the Problem

The study aimed to determine the prevalence of late detection among PTB patients in a government hospital, and it specifically seeks to answer the following questions:

- (1) What is the demographic profile of the respondents in the level I government hospital in Ormoc City?
- (2) What is the prevalence of late detection among drug-resistant and drug-susceptible tuberculosis in terms of their clinical profiles?
- (3) Is there a significant relationship between the demographic profile and the level of prevalence of late detection among TB patients
- (4) What is the best plan in reducing the prevalence of late detection among TB patients in a government hospital?

Scope and Delimitations

The study involved 48 bacteriologically confirmed PTB patients enrolled in a government hospital in Ormoc City, Leyte, from January 1, 2024 to December 31, 2025. This study included only patients enrolled in our TBDOTS facility with complete medical records, including demographic variables, X-ray and laboratory results, and treatment data. It did not include patients with incomplete treatment records or those diagnosed outside the study period.

Review of Related Literature

Tuberculosis is a public health challenge that affects all age groups and genders. It is a preventable and curable disease. Social determinants of health – such as food insecurity, poor housing and environmental conditions, geographic and cultural barriers to healthcare access, and limited health literacy are common in low- and middle-income countries where TB burden is high and contribute to a lower likelihood of TB diagnosis and treatment (Talemwa et.al, 2025). The estimated burden of bacteriologically confirmed pulmonary TB in the Philippines in 2016 was 1,159 per 100,000 adult population, indicating an unacceptably high number of people who are not diagnosed with or reported to have TB (Lansang et.al, 2022).

In a study by Alenton et al. in Tacloban City, they assessed the trend of tuberculosis for a period of eight years from 1991 to 2000, and the results showed a general increase in the number of cases for all ages, with preponderance of pulmonary tuberculosis at 94.8 percent.

Eight countries accounted for more than two-thirds of global TB cases: India (26%), Indonesia (10%), China (6.8%), the Philippines (6.8%), Pakistan (6.3%), Nigeria (4.6%), Bangladesh (3.5%) and the Democratic Republic of the Congo (3.1%) (WHO, 2023).

In a cross-sectional study conducted in India by Paramasivam et al., the mean diagnostic delay was 37 days, with median patient delays of 16 days and health system delays of 15 days. Patient delay (55.6%) contributed more than health system delay (44.4%). Poor knowledge about TB, first consulting a private physician, and an increased number of consultations were found to be significantly associated with diagnostic delay (Paramasivam et al., 2017). Early diagnosis and treatment of pulmonary tuberculosis (PTB) is essential for effective control of the tuberculosis (TB) epidemic. Delayed diagnosis and treatment of TB increase the chance of complications and mortality for the patients, and enhance TB transmission in the population (Santos et al. al, 2021).

Theoretical and Conceptual Framework

This prevalence study is based on two frameworks commonly used to provide a comprehensive understanding of tuberculosis: (1) The Health Belief Model – which is a psychological model that explains and predicts health behaviors, particularly in response to health threats. In PTB prevalence studies, HBM is widely used in health- related behavior change analysis. (2) Social Determinants of Health Framework – this framework acknowledges that health outcomes are shaped by the social and economic conditions in which people live. It provides a basis for analyzing how systemic inequities influence PTB prevalence, such as poverty, unemployment or low income, overcrowding, limited access to quality, affordable healthcare facilities, lack of social support, and the stigma of PTB, which can hinder health-seeking behavior and treatment adherence.

METHODOLOGY

Research Design and Participants

A retrospective quantitative research design was used to analyze the existing data from the specific period of this study. The study population included all patients admitted at the medical wards as well as outpatient patients at TBDOTS with bacteriologically confirmed laboratory results by sputum GeneXpert or sputum culture to identify drug resistance who were enrolled for treatment from January 1, 2024 to December 31, 2025 with complete medical record data. Purposive sampling was utilized, where the researchers intentionally chose the participants based on their specific characteristics.

Data Collection and Analysis

Following approval to conduct the research, the researchers coordinated with the Infectious Prevention and Control Committee, the hospital medical record staff, and TBDOTS staff to access patient records in compliance with confidentiality policies. The following steps of data gathering will be followed: First, the identification of eligible patients based on the inclusion and exclusion criteria. This was followed by a review of the medical records and

extraction of relevant data using a validated data collection form. Lastly, the collected data were compiled and organized into a database for statistical analysis.

The data were processed and analyzed using Jamovi Version 2.26.6.0. Frequency and proportions were used to describe the demographic and clinical profile as well as the prevalence of late detection among TB patients. Chi-square test for independence was used to determine whether there was a significant association between the profiles and the prevalence of late TB detection. A p-value less than .05 is considered significant. Cramer's V coefficients are then computed to determine the strength of the association.

Trustworthiness, Limitations, and Ethics

All information gathered in this study was treated with utmost confidentiality and anonymity, and will be used for research purposes only. No patient identity was revealed in the presentation of this study.

RESULTS AND DISCUSSION

This study sought to determine the prevalence of late detection among drug-resistant and drug-susceptible pulmonary tuberculosis in a government hospital in Ormoc City, Leyte. The study included 48 bacteriologically confirmed TB patients, with 33 males and 15 females. The baseline characteristics of our study population showed that the largest portion of the TB patients were 40-59 years old (35.4%), the majority were male (68.8%), and more than half were married (58.3%). In terms of educational attainment, the highest proportion had completed secondary education (37.5%). As to employment status, more than half of TB patients were unemployed (52.1%). The vast majority of the TB patients reside in Ormoc (85.4%) and have a monthly income of less than 5,000 pesos (60.4%). In terms of living conditions, the majority owned their homes (70.8%), and none reported belonging to an indigenous community. Most patients have no history of previous TB treatment, and among the comorbidities reported, the most common were hypertension and diabetes.

In the association between the demographic profile of the patients and TB detection, results showed no significant relationship between age, sex, and civil status and TB detection status. In contrast, the level of education showed that patients who only reached elementary and secondary education were more likely to experience late detection as compared to those who reached college level. This result may be strongly related to their knowledge about TB, its prevention and treatment. There is also a significant association between employment status and TB detection among the patients (p-value = 0.001), which showed that late detection was highest among unemployed patients. Likewise, the monthly income demonstrated a strong association with TB detection (p-value <0.001). The results showed that those respondents earning less than P5,000 per month had experienced late detection.

The distribution of TB patients according to their clinical profile reports that cough was the most common symptom affecting 47 patients (97.9%), followed by weight loss (35.4%). Half of the TB patients (50.0%) sought medical attention after experiencing symptoms for more than 2 weeks up to 2 months. In a similar study by Tedla et al. in Tigray, Northern Ethiopia, the major self-reported clinical symptom was cough (99.2%) followed by fever (48.6%). The same study shows that the level of infectiousness was higher in a group that delayed for 30-60 days as compared to patients who initiated treatment within one month.

The duration for which the sputum examination results were released from the time of consultation showed that most patients (75.0%) received their results in less than one week.

The same was also noted for the duration from sputum report release to initiation of TB treatment; the majority (72.9%) began treatment in less than one week after receiving their sputum results. The study also revealed that the majority of TB patients (60.40%) had late detection, which means that approximately 3 out of 5 patients only begin their treatment more than one month after the onset of their symptoms. These findings are supported by the cross-sectional study conducted in India by Paramasivam et. al.; it was found that the mean diagnostic delay was 37 days, with median patient delays of 16 days and health system delays of 15 days. Patient delay (55.6%) contributed more than health system delay (44.4%). Poor knowledge about TB, first consulting a private physician, and increased number of consultations were found to be significantly associated with diagnostic delay.

Based on the results of this study, a large portion of our patients in the government hospital experienced late TB detection (60.40%). We are challenged to address this by creating a policy plan that can reduce late TB detection. This can be done by emphasizing early case finding, rapid diagnosis, and timely treatment. The hospital can increase early identification of suspected TB cases by implementing routine TB screening during emergency visits, admissions, and outpatient visits. To address the delay in diagnostic testing, the hospital should ensure timely access to sputum microscopy and molecular testing like sputum GeneXpert to establish a fast turnaround time. Lastly, regular training for healthcare workers in TB recognition, infection prevention, and specimen collection should be done to ensure that hospital staff follow the national TB guidelines.

SUMMARY

The study results showed that a large portion of TB patients belong to the 40-59 years old age group, the majority are males, and mostly have a secondary level of educational attainment. Most enrolled TB patients were unemployed and belonged to the low-income bracket. Out of 48 patients included in the study, 29 or 60.40% had late detection. This means that approximately 3 out of 5 patients begin their treatment more than one month after the onset of symptoms. There was no significant association between the clinical symptoms of the respondents and TB detection. However, the duration of symptoms at the time of consultation and the duration from the consultation to the release of the sputum examination result have a significant association with late TB detection.

CONCLUSIONS

Based on the findings of this study, the following conclusion were drawn: (1) That majority of TB patients were male, with secondary level of educational attainment, and in terms of the socioeconomic profile, majority of TB patients were unemployed and belong to low-income family with <5,000 pesos a month; (2) In terms of their clinical profile, most common symptoms were cough and weight loss, mostly presented for consult only after 2 weeks of symptoms with most common comorbidities reported was hypertension followed by diabetes;

(3) Majority of TB patients experienced late detection with >30 days from onset of their symptoms to the initiation of treatment.

RECOMMENDATIONS

Further studies can be made on knowledge, attitudes, and practices towards TB diagnosis and treatment in a bigger sample to better reveal the factors that cause the late detection of TB in the public. Create hospital policies that will shorten the turnaround time of sputum results to avoid delays in TB diagnosis and treatment.

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AI DECLARATION STATEMENT

AI-supported tools were used only for language refinement, organization, and formatting. They were not used to recruit participants, collect data, create responses, or independently determine findings. The researcher retained full responsibility for the design, analysis, interpretation, conclusions, and final manuscript.

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