



## **EARLY DETECTION OF MICOBACTERIUM TUBERCULOSIS IN PUTRI ISLAMIC BOARDING SCHOOL, BONDOWOSO DISTRICT**

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### **Abstract**

*Indonesia is one of the three countries with the highest number of tuberculosis cases in the world. Islamic boarding schools are one of the places that can cause TB transmission to become more widespread because of the large number of students who interact there and the residential conditions which tend to be lived together for long periods of time. The aim of this research is to detect TB sufferers early at the Putrid Islamic Boarding School using TCM and the Mauntuox Test. The method in this research is the observation method in two groups, namely group 1 with a total of 138 respondents with TCM examination and group two with the Mauntoux test which was carried out in May 2024. The research results were obtained from TCM group one, all of them were negative and group 2 was positive with 11 respondents using the Mauntoux Test. . Conclusion: Early detection of TB disease in Islamic boarding schools is very important to prevent the wider spread of TB disease, one of which is through TCM and the Mautoux Test.*

**Keywords:** Tuberculosis, Islamic boarding school, TCM, Mauntoux test

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## INTRODUCTION

Mycobacteria are a group of rod-shaped bacteria, do not form spores, are aerobic. Distinguishing dyes is not easy, but if they have been colored they will be difficult to remove with acid and alcohol (Sipayung et al., 2023). Therefore Mycobacteria are also called acid-resistant bacteria or abbreviated as BTA. The acid-resistant nature of Mycobacterium is due to the nature of its thick cell walls which consist of mycolic acid. Mycobacteria can be grouped into saprophytic groups and pathogenic groups (Nasution et al., 2022).

Tuberculosis is one of the oldest diseases that has been identified around 3400 BC. Hippocrates described the disease tuberculosis which was associated with fever and the occurrence of wounds in the lungs that could not be healed. The name of this disease is Pthisis from Latin which means to throw away or destroy. Initially this disease was thought to be a disease that attacks cows, when people keep pets near them. From cows inhaled by farmers and their families or from milk from cows they milk, it contains Mycobacterium bovis (Sirait, 2023). Years later it underwent a mutation to become Mycobacterium tuberculosis, which is why M. bovis is very similar to M. tuberculosis so that both are included in the same group, namely M. complex (Sirait, 2023).

Tuberculosis (TB) in Indonesia is ranked third after India and China with 824 thousand cases and 93 thousand deaths per year or the equivalent of 11 deaths per hour (WHO, 2020). In 2021, cases of tuberculosis (TB) in children in Indonesia will reach 42,187, then in 2022 it will become 100,726 (Ministry of Health, 2022). In January to March 2023, there were 118,438 TB cases in Indonesia (Ministry of Health, 2023). This figure represents a very significant increase in the number of tuberculosis (TB) cases in children in Indonesia. The Ministry of Health even reported that this incidence rate increased by 200 percent from 2021 (Kemenkes, 2023).

Mycobacterium tuberculosis, which causes tuberculosis (TB), is an acid-resistant, rod-shaped bacterium that is obligate aerobic. TB is an infectious disease which usually attacks the respiratory system, but can also attack other parts of the body such as the brain and bones (Kirolos et al., 2021). Tuberculosis can be transmitted through droplets of tuberculosis sufferers through talking,

coughing, sneezing. WHO states that around a quarter of the world's population has been infected with tuberculosis. Indonesia is included in the 5 countries that contribute the highest incidence of TB (10%). WHO recommends increasing bacteriological examination for TB diagnosis (Jaganath et al., 2019).

Microbiology in diagnosing TB in sputum microscopically (acid-fast bacilli staining), culture, serological tests to detect/measure antibody levels against Mycobacterium tuberculosis components, molecularly by amplifying M.tuberculosis nucleic acid from specimens (Estela Karolina et al., 2024). Microscopic examination is the easiest, cheapest and most specific examination and can be carried out in all laboratories. For this reason, microscopic examination is the key in carrying out TB control and prevention programs in establishing a diagnosis and evaluating treatment in TB sufferers (Sirait, 2023). Therefore, this research was carried out by carrying out early detection of TB disease at the Al-Ustmani Jambesari Bondowoso Islamic Boarding School by carrying out the Rapid Molecular Test (TCM) and Maunttox Test. TCM tools are able to replace TB diagnostic tests via a microscope. This test checks the germs in the patient's phlegm, whether the patient is positive for TB or not.

Islamic boarding schools are often faced with health problems, this has an impact on the emergence of various types of diseases such as skin diseases and tuberculosis. One of the efforts to prevent TB transmission is by implementing Clean and Healthy Living Behavior (PHBS). Islamic boarding schools have the potential to transmit TB disease if one of their students does not practice PHBS and carry out early detection of TB disease to prevent wider transmission in the community. Islamic boarding school. Based on the description above, it is important to carry out research related to the detection of TB disease in Islamic boarding schools.

## METHOD

As we know, Islamic boarding schools are crowded places where one room can be occupied by 5-10 students. This makes Islamic boarding schools often experience health problems. Inadequate ventilation and low sunlight increase indoor humidity quite high. Observational research method. Based on this, it is important to

carry out tuberculosis screening in Islamic boarding schools with the aim of screening for the incidence of TB and providing knowledge and application of PHBS to prevent the infectious disease TB.

The total sample used was 200 respondents, with details of 138 respondents undergoing TCM and 138 other respondents undergoing the Mauntox test. This research was conducted once and took place in May 2024 and the location of the activity was at the Al-Ustmani Jambesari Islamic Boarding School, Bondowoso Regency. The types of activities carried out were TCM examinations and Mauntox tests to see whether respondents were positive for TB or not at the Al-Ustmani Jambesari-Bondowoso Islamic Boarding School.

## RESULTS AND DISCUSSION

### A. Characteristics of Respondents Based on Age.

Table 1. Frequency distribution based on respondent age (n=200)

Age	Frequency	Percentage (%)
12-15 years old	126	63
16-18 years old	84	42
Amount	200	100

Based on table 1. The majority of respondents aged 12-15 years were 126 respondents with a percentage of 63%.

### B. Results of the Rapid Molecular Test (TCM)

Table 2. Results of TCM examination on respondents (n=138)

Result	Frequency	Percentage (%)
Negative	138	100
Amount	138	100

Based on table 2, all 138 respondents had negative status with a percentage of 100%.

### C. Result of Mauntoux Test

Table 3. Mauntoux test results for respondents (n=62)

Result	Frequency	Percentage (%)
Negative	51	82.25
Positive	11	17.75
Amount	62	100

Based on table 3, the majority of respondents had negative status, 51 respondents with a percentage of 82.25%.

## Discussion

Based on the results of early detection, it is known from the results of the TCM examination that all 138 respondents were negative for TB. Meanwhile, in the Mauntox Test group, 11 positive respondents were obtained.

The spread and transmission of TB can be minimized by carrying out early detection of TB in Islamic boarding schools, one of which is Islamic boarding schools for girls. Islamic boarding schools are places where Islamic boarding schools often experience health problems. Inadequate ventilation and low sunlight increase indoor humidity quite high. Sunlight can be used to prevent TB disease, by letting in light morning sunlight enters the house (Madona et al., 2023). Sunlight enters the house through windows or glass tiles. It is best if morning sunlight contains ultraviolet light which can kill germs. Tuberculosis germs can survive for years, and die when exposed to sunlight, soap, lysol, carbolic acid and the heat of fire. Houses that do not receive sunlight have a risk of suffering from tuberculosis 3-7 times higher than houses that do not receive sunlight (Widiawati & Puspita, 2021). Based on research by Zulaikhah (2019), lighting that does not meet standards puts residents at 5 times greater risk of suffering from pulmonary TB compared to those who live in houses with lighting that meets health requirements.

Therefore, early detection carried out at the Al-Ustmani Jambesari Islamic Boarding School is very useful for preventing the spread of TB transmission in Islamic Boarding Schools.

## CONCLUSION

Early detection of TB disease can be a tool that helps and makes it easier for health service facilities to increase the detection of TB cases in Islamic boarding schools. Of the 138 respondents who underwent TCM, all were negative, and of the 62 respondents who underwent the Mauntox Test, 11 respondents were positive. The findings from this screening can help community health centers and health workers to carry out further treatment and distribute it more widely.

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