SURVEILLANCE OF PULMONARY TUBERCULOSIS CASES IN SPECIAL PLACES (ISLAMIC BOARDING SCHOOL/PESANTREN) BANGKA SELATAN, BANGKA BELITUNG

Ena Juhaina[1], Wahyu Indah Dewi Aurora[2]

[1]BTKLPP Kelas I Palembang Kemenkes RI , Sumatera Selatan

[2]Faculty of Medicine And Health Science, Universitas Jambi

Email : juhainaena@yahoo.com

ABSTRACT

Background: *Pulmonary tuberculosis is one of the infectious and contagious diseases with the highest prevalence in the world. Tuberculosis is a major public health problem with the third largest number in the world after China and India, accounting for around 10% of the total number of tuberculosis patients in the world. The purpose of this surveillance is to study the discovery of new TB cases and monitoring of treatment at a Special Place in South Bangka Regency).*

Method: *This study uses a cross-sectional study design carried out in May 2022. The population of this study is the students of the Islamic Boarding School in South Bangka Regency. The sample in this study were 47 respondents with a history of coughing in the last 2 weeks. Primary data collection was in the form of collecting sputum from respondents who indicated symptoms of pulmonary TB. Interviews by filling out questionnaires to respondents.*

Result: *Based on the results of the examination using the TCM method, there were no positive TB samples.*

Conclusion*: Community Health Center TB officers increase promotive and preventive efforts, especially for students/students affected by pulmonary TB to prevent transmission to other students/students.*

Key Word *: Pulmonary tuberculosis*

INTRODUCTION

Pulmonary tuberculosis (pulmonary TB) is one of the infectious diseases with the highest prevalence in the world. According to WHO, from 2010 to March 2011, in Indonesia, there were 430,000 pulmonary TB sufferers with a death toll of 61,000. This number is smaller than the incident in 2009 which reached 528,063 pulmonary TB patients with 91,369 people dying[1]. In Indonesia, tuberculosis is a major public health problem with the third largest number in the world after China and India, with around 10% of the total number of tuberculosis patients in the world. It is estimated that there are 539,000 new cases and 101,000 deaths each year. The number of pulmonary TB incidents in Indonesia which is characterized by the presence of positive acid-resistant bacilli (BTA) in patients is 110 per 100,000 population[2].

The source of TB transmission is smear-positive TB patients through droplets of sputum that they secrete. If this disease is not treated immediately or the treatment is incomplete it can cause dangerous complications up to death.[3]

According to WHO, tuberculosis is a disease of global concern. With various control measures taken, incidents and deaths from tuberculosis have decreased, but tuberculosis is estimated to still affect 9.6 million people and cause 1.2 million deaths in 2014. India, Indonesia and China are the countries with the most tuberculosis sufferers, respectively 23%, 10% and 10% of all sufferers in the world[4]. In 2015 in Indonesia there was an increase in tuberculosis cases compared to 2014. In 2015 there were 330,910 cases of tuberculosis more than in 2014 which was only 324,539 cases.[5]

The Government of Indonesia through the Ministry of Health has made a strategic target for TB control until 2014 referring to the strategic plan, namely reducing the prevalence of TB from 235 per 100,000 population to 224 per 100,000 population. In 2013 WHO estimates that in Indonesia there are 6,800 new cases of TB with Multi Drug Resistance (MDR TB) every year. It is estimated that 2% of new TB cases and 12% of repeated TB cases are MDR TB cases. It is also estimated that more than 55% of Multi Drug Resistant Tuberculosis (MDR TB) patients have not been diagnosed or received proper and correct treatment. The low number of TB sufferers in an area does not necessarily reflect the actual condition, this can be caused by health care facilities that do not have the courage to diagnose TB.[5]

Many risk factors can trigger the incidence of tuberculosis, some of which are the environment. Environmental factors are one that affects home lighting, humidity, temperature, and residential density. In addition to environmental factors, there are also other factors, namely gender, age, occupation, knowledge, smoking behavior, nutritional status, history of chronic disease or immune disease, personal hygiene and measures to prevent TB also affect the occurrence of the disease.

Tuberculosis has the potential to cause various problems, ranging from physical changes, failure to heal, disability and even death. For patients with pulmonary tuberculosis, the physical impacts include general physical weakness, persistent coughing, shortness of breath, chest pain, decreased appetite, decreased body weight, night sweats and sometimes high fever. For the patient's family there is a risk of transmission to other family members due to lack of knowledge from the family about pulmonary TB, knowledge about treatment management and disease prevention efforts. Productivity also decreases, especially when it comes to the head of the family who plays the role of fulfilling family needs, it will hamper daily living expenses, especially for medical expenses.[6]

The negative impacts that can arise from the recurrence of pulmonary TB are reduced productivity, death, increased transmission of pulmonary TB in the

community and increased MDR-TB which takes 2 years to treat by injection and taking drugs which are 100 times more expensive than treatment with drugs. first line

Based on an explanation regarding the increase in the number of cases from year to year and the negative impact due to pulmonary TB in the Bangka Belitung Islands Province, the Palembang Class I Environmental Health Engineering and Disease Control Center (BTKLPP) as a Technical Implementation Unit (UPT) within the Ministry of Health has the task of carrying out activities for New TB case finding studies, monitoring treatment at Special Places in South Bangka Regency, especially the Tarbiyatul Mubtadi'in Islamic Boarding School in 2022. The purpose of this surveillance is to study the discovery of new TB cases and monitoring of treatment at a Special Place in South Bangka Regency (Tarbiyatul Mubtadi'in Islamic Boarding School).

METHOD

This study uses a cross-sectional study design carried out in May 2022. The population of this study is the students of the Tarbiyatul Mubtadi'in Islamic Boarding School in South Bangka Regency. The sample in this study were 47 respondents with a history of coughing in the last 2 weeks. Primary data collection was in the form of collecting sputum from respondents who indicated symptoms of pulmonary TB. Interviews by filling out questionnaires to respondents.

RESULT AND DISSCUSION

Demographic Characteristics

In this surveillance activity a survey was conducted of 47 respondents who met the criteria to be students of SMP Pondok Pesantren Tarbiyatul Mubtadi'in, South Bangka Regency, consisting of 14 men (29.8%) and 33 women (70.2%) and the most in the age of 13 years amounted to 26 people (55.3%).

Table 1. Frequency Distribution of Respondents based on Gender and Age

Demographic Characteristics	*Count*	
	n = 47	*%*
Gender		
- *Male*	*14*	*29,8*
- *Female*	*33*	*70,2*
Age		
- *11 years*	*1*	*2,1*
- *12 years*	*4*	*8,5*
- *13 years*	*26*	*55,3*
- *14 years*	*12*	*25,5*
- *15 years*	*2*	*4,3*
- *16 years*	*2*	*4,3*

According to gender, BTA+ cases in men are higher than women, which is almost 1.5 times compared to BTA+ cases in women. In each province throughout Indonesia, BTA+ cases are more common in men than women. The highest disparity between men and women occurs in North Sumatra, cases in men are twice as high as cases in women.[7]

Crofton et al (2002) stated that the incidence of TB in men is always higher at all ages but the rate in women has a decreasing trend, besides that after puberty the body is better able to prevent the spread of disease through blood, but prevention of disease in the lungs is greatly reduced. Hiswani (2009) states that in the male sex this disease is higher this is because the average male smokes so that it can lower the body's defense system, making it easier to be exposed to agents that cause pulmonary TB.[8]

Table 2. Distribution of Respondents Based on Smoking Habits

Smoke	*Count*	
	n = 47	*%*
- *Smoking*	*0*	*0*
- *No Smoking*	*47*	*100*

Table 2 explains that 100% of respondents at the Tarbiyatul Mubtadi'in Islamic Boarding School do not have the habit of smoking/never smoked. According to Wijaya (2012), smoking is an important risk factor for cardiovascular disease as well as other major causes of death worldwide, namely cerebrovascular disease, lower respiratory tract infections, COPD, TB, and respiratory cancer. Cigarette smoke contains more than 4,500 chemicals that have various toxic, mutagenic and carcinogenic effects. Cigarette smoke produces various components in both cellular and extracellular compartments ranging from water-soluble particles and gases. Many substances are carcinogenic and toxic to cells but tar and nicotine have been shown to be immunosuppressive by affecting the innate immune response of the host and increasing susceptibility to infection. The higher the levels of tar and nicotine the effect on the immune system also increases. The risk of TB can be reduced by almost two thirds if a person stops smoking.

Humidity in Islamic boarding schools exceeds the threshold value determined by the Indonesian Ministry of Health, which is 40-60% Rh. Research by Iwan, Yustini and Indah found that people who live in homes with high humidity have a 2.7 times chance of getting Tuberculosis.[9]

Table 3. Measurement of Humidity and Room Temperature at the Tarbiyatul Mubtadi'in Islamic Boarding School

Measurement	value
- Humidity	79-82 % RH
- Temperature	30,6-30,7 °C

Mycobacterium tuberculosis bacteria like other bacteria will thrive in environments with high humidity. Water makes up more than 80% by volume of the bacterial cell and is essential for the growth and survival of the bacterial cell.[10]

The results of Nurmaini's research and Nuraini's Chi square test showed that there was a significant relationship between humidity and the incidence of pulmonary tuberculosis. This is due to the lack of ventilation holes in some of the respondent's rooms making it difficult for air exchange to occur. Home humidity is closely related to ventilation and lighting of the house. If lighting and ventilation do not meet the requirements, the humidity will not meet health standards.[11]

Table 3 shows that the proportion of respondents' room temperatures that do not comply with the standards of the Indonesian Ministry of Health is 18-30^{0}C.

Based on the results of the research by Dewi, Suhartono, and Adi, in the independent variable temperature, p value = 0.022 and OR value 4.034 (95% CI = 1.217 – 13.367) indicate that respondents with a temperature in the house that does not meet the requirements have a risk of 4 times to suffer Pulmonary TB compared to respondents who live at home with a temperature in the house that meets the requirements. 12 Other studies state that the level of humidity (p = 0.009, OR = 2.93, 95% CI = 1.29 – 6.64) and temperature (p = 0.000, OR = 9.117, 95% CI = 3.66 – 22.65) has a significant relationship to the incidence of pulmonary tuberculosis.[12]

The results of research by Dewi, Suhartono, and Adi show that most of the respondents in the case group live at home with temperatures that do not meet the requirements. Low temperature in the house causes high humidity in the house. An environment with humidity that does not meet the requirements is a good medium for the growth of Mycobacterium tuberculosis. This bacterium can live in an environment with high humidity to ensure its survival. In addition, this bacterium is resistant to low temperatures, can survive for long periods of time at temperatures of 4°C to -70°C, in sputum it will die at 30°C – 37°C within ± 1 week.[12]

Table 4 Distribution of Respondents based on TCM Examination Results

TCM Examination Results	*Count*	
	n = 47	*%*
- *Positive*	*0*	*0*
- *Negative*	*47*	*100*

Table 4 shows the results of sputum examination using the TCM method for all negative sputum samples. Obtaining sputum samples reached the set target. In theory, normal people can produce as much as 100 ml of mucus in the airways every day. This mucus is herded into the pharynx by the ciliary cleaning mechanism of the epithelium lining the respiratory tract. This means that in healthy or sick conditions, the body continues to produce phlegm.[13] Based on the results of the interviews, no family members had a history of pulmonary TB.

Mubtadi'in Islamic Boarding School did not smoke. The results of the examination using the TCM method did not find any positive TB samples. All respondents had no family history of TB disease. Humidity and room temperature in Islamic boarding schools do not meet health requirements.

Prevention efforts with clean and healthy living behavior (PHBS), if there is a patient with pulmonary TB, immediately isolate the queue and supervise treatment until the detainee is declared cured.

Conclusion

The number of respondents who were successfully interviewed and the sputum examined in the laboratory totaled 47 samples. The highest age of respondents at the Tarbiyatul Mubtadi'in Islamic Boarding School was at the age of 13, namely 55.3%. Respondents at the Tarbiyatul Mubtadi'in Islamic Boarding School were mostly women, namely 70.2%. All respondents at the Tarbiyatul

REFERENCE

1. *World Health Organization, 2012, Guidelines for Intensified Tuberculosis Case-Finding and Isoniazid Preventive Therapy for People Living with HIV in ResourceConstrained Settings,*
2. *Pangaribuan, L., Kristina, K., Perwitasari, D., Tejayanti, T., & Lolong, D. B. (2020). Faktor-Faktor yang mempengaruhi kejadian tuberkulosis pada umur 15 tahun ke atas di Indonesia. Buletin Penelitian Sistem Kesehatan, 23(1), 10-17.*
3. *Kementerian Kesehatan Republik Indonesia, 2015, Rencana Strategis Kementerian Kesehatan Tahun 2015-2019, Jakarta, Indonesia.*
4. *World Health Organization, 2015, WHO Global Tuberculosis Report 2015, http://www.who.int/tb/publications/global_report/en/, 2 April 2019.*
5. *Kementerian Kesehatan Republik Indonesia, 2016, Profil Kesehatan Indonesia Tahun 2015, Jakarta, Indonesia.*
6. *Isselbacher, K. J. (2009). Paul C. Zamecnik (1912–2009).*

7. *Kusuma, A. H., & Anggraeni, A. D. (2021). Pemberdayaan Kader Kesehatan Masyarakat Dalam Pengendalian Tuberkulosis. Jurnal EMPATI (Edukasi Masyarakat, Pengabdian dan Bakti), 2(1), 65-70.*
8. *Hiswani (2009) Tuberkulosis merupakan penyakit Infeksi yang masih menjadi masalah kesehatan masyarakat.*
9. *Iwan Stia Budi, Yustini Ardillah, Indah Purnama Sari, Dwi Septiawati. 2018. Analisis Faktor Risiko Kejadian penyakit Tuberculosis Bagi MasyarakatDaerah Kumuh Kota Palembang. Jurnal Kesehatan Lingkungan Indonesia17 (2),2018, 87 – 94.*
10. *Sinaga, F. R., Heriyani, F., & Khatimah, H. (2016). Hubungan kondisi ventilasi rumah dengan kejadian tb paru di wilayah Puskesmas Kelayan Timur. Berkala Kedokteran, 12(2), 279-288.*
11. *Siregar, A. F., & Nurmaini, N. D. (2015). Hubungan Kondisi Fisik Rumah Dan Pekerjaan Dengan Kejadian Tuberkulosis Paru Di Desa Bandar Khalipah Kecamatan Percut Sei Tuan Tahun 2015. Sumatra Utara: Fakultas Kesehatan Masyarakat USU Sumatera Utara.*
12. *Dewi, E. F., Suhartono, S., & Adi, M. S. (2015). Hubungan faktor lingkungan rumah dengan kejadian TB paru di Kota Magelang. Jurnal Kesehatan Masyarakat (Undip), 4(2), 149-159.*
13. *Sylvia, S., Xue, H., Zhou, C., Shi, Y., Yi, H., Zhou, H., ... & Das, J. (2017). Tuberculosis detection and the challenges of integrated care in rural China: a cross-sectional standardized patient study. PLoS medicine, 14(10), e1002405.*