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Condition of Houses with Smoking Habits in Patients with Pulmonary Tuberculosis

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Abstract

Tuberculosis (TB) is one of the direct infectious diseases caused by the bacteria Mycobacterium tuberculosis which can attack various organs, especially the lungs. Pulmonary TB can be transmitted through the air, the longer and nearer a person contacts with the source of transmission, the greater the chance of contracting it. This study aims to describe the factors that can influence the incidence of pulmonary TB in patients at Undata Hospital, Palu. This study used a cross-sectional study design to describe the factors that influence the incidence of pulmonary TB in 15 patients with pulmonary TB MDR (Multi-Drug Resistant). The results showed that patients who had the most pulmonary TB were male (53.3%), aged or more than 40 years (53.3%), high school education level (46.7%), damaged house condition (73.3%), and have smoking habits (53.3%). Patients of the male sex, old age, high school education level, damaged housing conditions, and smoking habits are the most common factors for MDR pulmonary TB patients.

Keywords: *tuberculosis, house condition, smoking habits*

Introduction

Indonesia is included in the HBC (High Burden Countries) country because it has major problems in dealing with TB, countries with a high burden for TB are based on indicators of TB, TB / HIV, and MDR-TB (Multi-Drug Resistant). The 2014 tuberculosis prevalence survey showed that Indonesia was ranked second in the world as the largest contributor to TB patients after India. The prevalence of TB with bacteriological confirmation is 759 per 100,000 population aged 15 years and over, while the Palu area is 338 per 100,000 population(1).

The pandemic of Human Immunodeficiency Virus (HIV) / Acquired Immunodeficiency Syndrome (AIDS) in the world adds to the problem of pulmonary TB disease, co-infection with HIV will significantly increase the risk of the incidence of pulmonary TB disease. At the same time the double immunity of tuberculosis germs against anti-tuberculosis drugs (MDR), is increasingly becoming a problem due to cases that have not been successfully cured(2). TB drugs are a major public health problem threatening progress in TB care and control. Drug resistance arises due to antibiotic abuse in chemotherapy TB patients who are susceptible to drugs. This improper use is the result of a number of actions including the provision of improper treatment and failure to ensure that the patient completes all treatment. Basically, drug resistance appears in areas with weak TB control programs. A patient who develops the active disease with a type of drug-resistant TB can reduce TB to others.

In 2014-2016 around 89% of the world's population suffered from TB and 14 countries in the world experienced a double burden of TB such as sensitive TB, MDR-TB, and TB / HIV. WHO estimates around 480,000 cases of MDR-TB in 2013 with a mortality rate of around 150,000 cases each year(3). TB is ranked fifth in the disease that causes death after stroke, heart disease, diabetes, and hypertension. In 2002-2020 an estimated 2 billion people will be infected with tuberculosis, 5-10% among infections will develop into disease, 40% among

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those who are sick can end up with death. The spread of tuberculosis is increasing in accordance with the increase and spread of HIV/AIDS and the emergence of MDR TB cases resistant to various drugs[4].

The concept of the epidemiological triangle in TB cases, namely the factors of the host, agent and environment. Host factors consist of gender, age, education level, occupation, and smoking habits. The agent factor is mycobacterium tuberculosis. Factor environment conditions of the house, occupancy density and the presence of home ventilation. TB is an environment-based disease, influenced by environmental and behavioral factors. Environmental factors include ventilation, occupancy density, temperature, lighting, and humidity, while behavioral factors include the habit of smoking, spitting or removing phlegm in any place, coughing or sneezing does not cover the mouth and the habit of not opening the window[5],[6].

TB disease is exacerbated by poor housing sanitation conditions, especially in densely populated settlements. Transmission of TB can be through germs into the air in the form of droplet nuclei when coughing or sneezing, these sparks can survive in the air at room temperature for several hours and are inhaled through the respiratory tract. This survey aims to look at the condition of the home and smoking habits in patients with MDR pulmonary TB.

Method

This survey used a cross-sectional study design, which was to observe risk factors for tuberculosis in 15 patients with MDR pulmonary TB in the same time span in patients in Undata Hospital, Palu in 2019. Data collection was done by obtaining medical record data, conducting interviews and observing site habits and conditions live patients with MDR Pulmonary TB. The TB risk factors observed included: sex, age, education level, occupation, smoking habits, housing conditions, occupancy density, and the presence of home ventilation. The collected categirical data were presented in the form of frequency and percentage.[7]

Findings

The results of the research conducted at the Undata Hospital, Palu from January to June 2019, the number of patients with MDR pulmonary TB was 15 patients, the following results were obtained:

Table 1. Description of risk factors for MDR Pulmonary TB

Variable	f	%
Sex		
Male	8	53.3
Female	7	46.7
Age		
Old	8	53.3
Young	7	46.7
Education		
Elementary	4	26.7
Junior high school	2	13.3
Senior high school	7	46.7
Univeristy	2	13.3
Job		
Housewife	5	33.3
Civil Cervant	4	26.7
Private sector	6	40.0
House Condition		
bad	11	73.3
good	4	26.7
Smoking Habit		
Smoking	8	53.3
Not smoking	7	46.7
Total	15	100

Patients with MDR pulmonary TB who were male were 8 patients (53.3%) while female patients were 7 (46.7%). The age of the patient is as old as 8 patients (53.3%), while in young age there are 7 patients (46.7%). The highest level of education in pulmonary TB patients is high school as many as 7 patients (46.7%) and the least amount of higher education is 2 patients (13.3%). Most MDR pulmonary TB patients have private-sector jobs as many as 6 patients (40%), Housewives 5 patients (33.3%), and PNS 4 patients (26.7%). The home conditions of MDR pulmonary TB patients were the most, namely the condition of damaged homes by 73.3% and patients who had smoking habits as many as 8 patients (53.3%). All MDR Pulmonary TB patients live in homes that are densely populated and have ventilation.

Figure 1. Risk factors for MDR Pulmonary TB

Table 2. Cross Tabulation between Home Conditions and Smoking Habits of Patients with MDR Pulmonary TB

House Condition	Smoking habit			
	Smoking		Not smoking	
	n	%	n	%
Bad	5	45.5	6	54.5
Good	3	75.0	1	25.0
Total	8	53.3	7	46.7

Patients with MDR Pulmonary TB who have damaged home conditions and have smoking habits as many as 5 patients (45.5%) compared with MDR pulmonary TB patients who have good home conditions and do not smoke as much as 1 patient (25.5%)

Discussion

TB problems in the world are caused by poverty, malnutrition, endurance, slum settlement conditions, insufficient health facilities, late or lack of TB program costs, in Indonesia it is still difficult to control because it is related to social and economic problems. TB is related to poverty and population density. Densely populated and poor areas, meetings and not meeting the requirements of healthy homes, public awareness of environmental health is less. TB events are the result of interactions between environmental components, namely air containing tuberculosis bacilli with people who have habits and smoking behavior, contacts, with TB patients, immunization history, and occupancy density and other influences such as gender, age, nutritional status, socio-economic conditions and the condition of the house, namely the floor of the house, ventilation, lighting and humidity[8],[9].

MDR pulmonary TB patients are more male than female, this is because men have a greater risk than female patients. Male patients have smoking habits compared to women, thus worsening health conditions, especially lung conditions. TB attacks many productive ages and increases mortality in the community, especially in developing countries. productive age is the age at which someone is at the stage to work/produce something both for themselves and others. MDR pulmonary TB patients aged over 40 years, at that age if they experience pulmonary TB, they can cause unproductive individuals to become a burden on their families.

Population density is one of the risk factors for TB, the denser the house is, the more difficult and faster the transmission of diseases, especially infectious diseases through the air. If there are family members who suffer from TB with positive smear who accidentally coughs. Mycobacterium tuberculosis bacteria will remain in the air for approximately 2 hours so that it has the possibility to transmit the disease to members who have not been exposed to tuberculosis bacteria[10]. The size of the house to occupants is closely related to the incidence of pulmonary TB, the denser the occupants of the house the faster the air inside the house is contaminated. The increasing number of residents will affect the oxygen level in the room, including humidity and air temperature. Increased oxygen in the home will provide an opportunity for mycobacterium tuberculosis to multiply and support transmission between occupants and sufferers.

Some countries such as Bangladesh, Vietnam, and Thailand have different pulmonary TB notifications for men and women, this occurs because of the stigma in the disease. Women do not seek treatment in health services because they are worried about the wrong assessment from the community. Pulmonary TB occurs in men because men have a smoking habit that makes it easy to contract pulmonary TB. Smoking habits can worsen TB symptoms, as well as passive smokers who smoke cigarette smoke, it will be easier to get infected with TB germs because cigarette smoke has a negative impact on lung resistance to bacteria[11]. Africa, America, Southeast Asia, and the Western Pacific, most pulmonary TB patients are over 65 years old, while in Europe most TB patients are 45-54 years old. Factors contributing to the incidence of pulmonary TB are population factors (gender, age, socio-economic conditions) and environmental factors (density, floor of the house, walls, ceiling roofs, types of building houses, and fuel used in homes).[12]

The home condition has a major influence on the health status of its inhabitants, tuberculosis germs can live 1-2 hours and can even live for several weeks depending on ultraviolet light, good ventilation, humidity, home temperature and density of occupants of the house[13]. All MDR Pulmonary TB patients have homes that are densely populated and densely populated,

even though they are equipped with ventilation, but have not fulfilled the requirements of a healthy home, so that sunlight, air circulation, and house humidity support the life and transmission of tuberculosis germs.

Healthy homes are residential buildings that meet health requirements consisting of components of the house, sanitation facilities, have healthy latrines, landfills, clean water facilities, wastewater disposal facilities, good ventilation, residential density and the floor of the house not from the ground. Home is one of the basic human needs that functions as a place to live and a means of family development. Houses with environmental conditions that do not meet health requirements are risk factors for transmission of various types of diseases, such as tuberculosis. The tuberculosis germs live in moist conditions. Home conditions that do not meet health requirements, such as lack of lighting and inadequate ventilation, make germs easy to breed. The presence of tuberculosis bacteria in the house can trigger tuberculosis infection[14].

Population density has a positive influence on the number of tuberculosis cases, the dense condition of the population will accelerate the spread of tuberculosis bacteria, which is one of the transmission media through the air. Population density will result in poor environmental conditions, poor nutrition, and low socio-economic conditions that increase the risk of tuberculosis[15].

Conclusions and Recommendations

Patients with MDR Pulmonary TB in Undata Hospital, Palu the majority of the male sex, old age with high school education level, have the most damaged house conditions and have smoking habits. Patients with MDR Pulmonary TB need to pay attention to the conditions of their residence, especially their homes and stop smoking.

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Ethical Clearance- Yes

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