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CHARACTERISTICS OF ADULT PULMONARY TUBERCULOSIS PATIENTS UNDERGOING HOSPITALIZATION AT SONDOSIA REGIONAL HOSPITAL, BIMA REGENCY PERIOD JANUARY - JUNE 2023

Amandha Rizky Taufika*

**Sondosia Regional General Hospital, Bima Regency, Indonesia*

***Corresponding Author:**
amandharizky1289@gmail.com

Abstract

Pulmonary tuberculosis (TBC) is a disease caused by an aerobic germ, Mycobacterium tuberculosis, which can live mainly in the lungs and various other organs of the body. The type of research is quantitative descriptive. The population in this study was 53 patients of Pulmonary TBC patients who underwent hospitalization at Sondosia Hospital. Sampling in this study used a total sampling technique where the study used the entire population into a research sample, so that the number of samples in this study was 53 people. This research was conducted at Sondosia Hospital, Bima Regency in January - June 2023. The results of this study showed that patients with the most gender were male 66% and female 34%. Based on age, the most age category is the age of >60 years, which is 43.3%,. Based on education, the highest level of education is elementary school level 34%. Based on occupacy, the largest category was working as a farmer 35.8%. Symptoms of TBC disease experienced by patients, most experienced cough as much as 100%, those who experienced shortness of breath was 56.6%, patients who experienced fever was 17%, who experienced night sweats 22.6% while those who experienced weight loss was 11.3%. Based on disease status,it was found that 75.5% new cases, 13.2% dropped out and 11.3% relapsed. Based on comorbidities, type 2 diabetes mellitus was 13.2% and hypertension 11.3%. Based on smoking history, patients with a history of smoking as much as 50.9%. Based on the most nutritional status with normal nutritional status 79.2%.

Keywords: *TBC, comorbidities, cough, characteristics*

INTRODUCTION

Tuberculosis (TBC) is a contagious infection caused by the *Mycobacterium tuberculosis* bacteria which attacks the lung organs (Pulmonary TB) and organs outside the lungs called Extra Pulmonary TB (TBEP) (Uyainah et al, 2020). *Mycobacterium tuberculosis* bacteria have a high fat content in their cell membranes, causing these bacteria resistant to acid and the growth of the bacteria is slow (Asriati et al., 2019; Revision et al., 2022;Ibrahim, 2016). The source of transmission is patients with BTA (+) pulmonary tuberculosis who can transmit to people around them, especially those who have close contact.

Tuberculosis (TBC) is a disease that is still a major global health problem in the world and causes morbidity in millions of people every year.

The World Health Organization (WHO) declares TB as a very important and serious public health problem worldwide and a disease that causes a global emergency because in most countries in the world pulmonary TB disease is uncontrolled. This is due to the large number of patients who have cannot be cured, as well as the main cause of death caused by infectious diseases (WHO, 2015).

Based on data from the World Health Organization (2022), the estimated number of people diagnosed with TBC in 2021 globally is 10.6 million cases, an increase of around 600,000 cases from 2020 which is estimated to be 10 million cases of TBC. Of these 10.6 million cases, there are 6.4 million (60.3%) people who have been reported and undergoing treatment and 4.2 million (39.7%) other people have not been found/diagnosed and reported.

Based on Global Tuberculosis Report in 2018, the total incidence of TBC in 2017 in Indonesia was 842 thousand cases, 319 cases per 100,000 population with a mortality rate of 107,000 per year in TBC patients without HIV coinfection and 9,400 in patients with HIV coinfection (Uyainah et al, 2020).

Data on the incidence of TBC in West Nusa Tenggara Province in 2022 is 20,830 cases with the incidence of TBC in Bima Regency being 3,928 cases (NTB Provincial Health Service, 2023). In this study, it was discovered that there were 53 TBC patients who were hospitalized at RSUD Sondosia, Bima Regency for the period January to June 2023.

There are many risk factors that cause patients to experience TBC infection. Some of these risk factors include low immune system (immunosuppression), comorbidities such as HIV, diabetes mellitus, direct contact with people with pulmonary TBC, poor nutrition (malnutrition), chemicals (alcohol, cigarettes, and illegal drugs) and poverty and the condition of the housing environment (Oktavia et al., 2016).

Nurdin's research (2020) states that risk factors for TBC are HIV infection, socioeconomic, gender, age group, smoking behavior, alcohol consumption, and history of diabetes mellitus.

Many TB patients do not complete TBC treatment completely and are unaware of the importance of sputum re-examination, thus putting themselves at risk of developing forms of tuberculosis and drug-resistant recurrence. Non-compliance to treatment is still the major obstacle to achieving successful TBC treatment in Indonesia. Most of the patients will feel that they have recovered so they assume they no longer need to take medication regularly. This will also certainly affect patient's motivation to visit the health center or hospital. Moreover, this is supported by the busy schedule of patients, the majority of whom work as farmers, which will certainly take more time in the fields so that the obligation to take medicine according to schedule is ultimately less of a concern (Asriati et al., 2019).

According to Rahmi (2020), TBC medicine is given in packages in the form of Fixed Dose Combination (FDC) Antituberculosis Drugs generally namely rifampicin, isoniazid, ethambutol, and pirazinamid. The advantage of FDC-Antituberculosis Drugs is that it facilitates drug administration and ensures the continuity of treatment until completion. The most frequently found side effects of FDC-Antituberculosis Drugs include digestive disorders, vision disorders, and liver and kidney function disorders.

One of the things that complicates the treatment of TBC is the presence of comorbidities. Tuberculosis mostly infects the lungs, but can also attack body organs other than the lungs and cause extrapulmonary TBC disease which is a complication of the diseases that accompanies pulmonary TBC. The results of a survey by the Indonesian Ministry of Health (2018) showed that the prevalence of pulmonary TBC with comorbidities was 52.1%. Meanwhile, the prevalence of pulmonary TBC in patient with diabetes mellitus (DM) is 44%. Diabetes mellitus is a very dominant disease as a comorbid disease of pulmonary TBC, this is related to blood glucose levels. Patient with diabetes who have uncontrolled blood sugar levels (≥ 200 Mg/dl) are more at risk for bacterial growth and development (Anita &; Sari, 2022).

Based on the background description above, researchers feel it is important to carry out research and studies on "Characteristics of Adult Pulmonary Tuberculosis Patients Undergoing Hospitalization at Sondosia Regional Hospital, Bima Regency".

METHOD

The type of research carried out was quantitative descriptive. Quantitative descriptive is a type of research used to analyze data by describing or illustrating the data that has been collected as it is (Nursalam, 2021). The population in this study was 53 adult patients with pulmonary TBC who were hospitalized at Sondosia Regional Hospital. Sampling in this research used a total sampling techniques where the research used the entire population as the research sample, so the total sample in this research was 53 people. This research was conducted at Sondosia Regional Hospital, Bima Regency in January – June 2023.

RESULT

Table 1. Characteristics of Respondents at Sondosia Regional Hospital, Bima Regency

Variable	F	%
Gender		
Man	35	66.0
Woman	18	34.0
Age		
19-44 years old	9	17.0
45-59 years old	21	39.6
> 60 years old	23	43.4
Education		
Not Finished	9	17.0
Primary School	18	34.0
Junior High School	12	22.6
Senior High School	11	20.8
D3-S2	3	5.7
Work		
Does not work	8	15.1
Employee	2	3.8
Farmer	19	35.8
Housewife	15	28.3
Civil Servant/ Retired Teacher	4	7.5
Merchant	5	9.4

Based on the data in table 1, it is known that most of the patients were 66% male and 34% female. Based on age, most of the patients were in categories >60 years old, which is 43.3%; 45-59 years old is 39.6%; and 19-44 years old is 17%. Based on the education level, most of the patient is primary school 34%; 22.6% for junior high school, 20.8% for senior high school, 17% who have not finished school, and 5.7% for D3-S2. Based on employment, the most categories were jobs as farmers 35.8%, housewives 28.3%, unemployed 15.1%, traders 9.4%, civil servants/ retired/ teachers 7.5%.

A similar study was conducted by Jendra (2015) From the results of the study, it was found that the largest number of respondents were female, as many as 58 respondents (59.8%) and male as many as 39 respondents (40.2%). This is in accordance with the literature where men are at greater risk for developing pulmonary TBC disease compared to women. Where more men smoke and drink alcohol compared to women, smoking and alcohol can reduce the body's immunity making it more susceptible to pulmonary TBC.

According to research by Korua et al., (2020) a p-value = 0.01 was found, which means <0.05, this states that there is a relationship between gender and the incidence of pulmonary TBC in outpatients at Noongan Regional Hospital. Patients with pulmonary TBC have a habit of often not covering their mouths when coughing, which can make TBC transmission to healthy people around them. In addition, the increase in cases of pulmonary TBC is influenced by the immune system, nutritional status, and individual personal hygiene.

Based on the results of research conducted by Mangngi (2021), it was found that the highest number of pulmonary TBC occurred in the 15-50 years age group with an incidence of 36 cases. This is because the 15-50 years age group is an age group that has high activity and contact to many people, so the possibility of being exposure to M. Tuberculosis bacteria is greater. Another reason is because most of the respondents in this study also had a working background as farmers with heavy workloads and a weak economic level. TBC disease itself has always been associated with poverty. In addition, endogenous reactivation (reactivation that has been present in the body) can occur in old age.

A similar study was also conducted by Sunarmi & Kurniawaty (2022) Based on the results of the chi square statistical test, it was found that p-value = 0.093 (p<0.10), means that Ho was rejected. This shows that there is a statistically significant relationship between age and the incidence of pulmonary TBC. This is in line with the results of research conducted by Konde et al., (2020) which showed that the group of people with pulmonary TBC mostly at the age of 15-55 years (productive age) while in the group that does not experience pulmonary TBC is mostly aged > 55 years with p-value = 0.003 means p-value < a (0.05), which means Ho is rejected, so there is a relationship between age and pulmonary

TBC. The group of patients with pulmonary TBC is mostly aged 15-55 years (productive age) because at this age people spend time and energy to work where a lot of energy is drained, reduced rest time, which makes the body's immunity decrease, while in the group who do not suffer from pulmonary TBC mostly aged > 55 years. Based on the results of existing and related research and theories, researchers had opinion that there is a meaningful relationship between age and the incidence of pulmonary TBC. The elderly are more susceptible to pulmonary TBC because in old age the body organs have decreased.

Table 2. Description of symptoms of TB patients at Sondosia Regional Hospital, Bima Regency

Tuberculosis Symptoms	F	%
Cough		
Yes	53	100
Not	-	-
Breathing difficulties		
Yes	30	56.6
Not	23	43.4
Fever		
Yes	9	17.0
Not	44	83.0
Night Sweats		
Yes	12	22.6
Not	41	77.4
Weight loss		
Yes	6	11.3
Not	47	88.7

Based on the data in table 2 above, it shows that the symptoms of pulmonary TBC experienced by patients who experience cough were 100%, those who experienced shortness of breath 56.6%, patients who experienced fever were 17%, patients who experienced night sweats were 22.6%, while those who experienced weight loss were 11.3%.

An overview of the condition of pulmonary TBC patients at Sondosia Regional Hospital in Bima can be seen in the following table:

Table 3. Description of TB Patients at Sondosia Ragional Hospital, Bima Regency

Variable	F	%
TBC status		
New	40	75.5
Relapse	6	11.3
Drop Out of Treatment	7	13.2
Comorbidities		
None	39	73.6
Hypertension	6	11.3
Diabetes Mellitus	7	13.2
CHD/Heart Defects	1	1.9
Smoke		
Yes	27	50.9
No	26	49.1
Nutritional Status		
Underweight	11	20.8
Normal	42	79.2

Based on the data in table 3, it was known that 75.5% patients with TBC status were new cases, 13.2% of patients were dropout of treatment, and 11.3% had relapsed.

Based on comorbidities, 73.6% of patients did not have comorbidities, 13.2% had diabetes mellitus, 11.3% had hypertension, and 1.9% had CHD / heart disorders 1.9%.

Based on smoking history, 50.9% of patients with had a history of smoking, and 49.1% did not smoke, while patients with nutritional status were 79.2%, and underweight were 20.8%.

A similar study conducted by Konde et al., (2020) showed that respondents mostly had abnormal nutritional status with 34 respondents (81.4%). Nutritional status is a measure of success in fulfilling nutrition as indicated by body weight and height. The results of the chi square statistical test obtained a p-value = 0.003, so that the p-value <α (0.05), then statistically it means that Ho is rejected or there is a relationship between nutritional status and pulmonary TBC and the

Odds Ratio (OR) results have a value of 4.675 with CI = 1.755-12.453, which means nutritional status is a risk factor for pulmonary tuberculosis. There were 34 respondents (81.0) in pulmonary TBC sufferers (cases). The results of this study show that on average respondents have abnormal nutrition, which means they are at risk of suffering from pulmonary TBC compared to those who have normal nutritional status, because in general, malnutrition can cause weakening of the body's immunity against disease attacks. Infection can cause malnutrition, on the contrary, malnutrition can trigger infectious diseases because malnutrition can inhibit the reaction of immune formation in the body (Hartina et al., 2019).

According to Yuniar & Lestari (2017), one of the factors that affects TBC is nutritional status. Nutritional status is one of the most important factors in the body's defense against infection. In poor nutritional conditions, the body's immune reaction will weaken so that the ability to defend itself against infection decreases. Another factor that affects a person's nutritional status is socioeconomic status (Budi et al., 2018).

Based on the results of research conducted by Yuniar & Lestari (2017) in the working area of the Sempor 1 Health Center, Kebumen Regency, the results showed that the majority of respondents had poor nutritional status, which are 56 (70%) of the 80 respondents consisting of 33 case respondents (pulmonary TBC patients) and 23 control respondents (not pulmonary TBC patients). Insufficient nutritional status will weaken the immune system in defending itself from a disease. The poor nutritional status of the majority of respondents, especially in case respondents (patients with pulmonary TBC) is basically caused by many factors. Two factors include lack of knowledge about the need for good and nutritious food intake and good (economic) income to meet the needs of nutritious food. If a person's level of nutritional knowledge is good, it is expected that food intake will be good so that their nutritional status will also be good.

Based on comorbidities in TBC patients, this study is in line with Anita & Sari's (2022) research. The results of the study showed that obedience to taking medicine of pulmonary TBC (OAT) of patient with a history of diabetes mellitus in Cilegon City was 62.2%. The results of this study illustrate that the obedience of taking OAT for pulmonary TBC patients with DM is quite good, but still below the target set by the government, which is 100%. One way to improve the cure of pulmonary TBC is to increase compliance with treatment for pulmonary TBC patients, especially in patients with pulmonary TBC who have comorbidities such as DM which are relatively more difficult to cure compared to those who suffer from pulmonary TBC alone.

The Indonesian Ministry of Health (2022) stated that one of the things that complicates the treatment of TBC is the presence of comorbidities. Tuberculosis often infects the lungs, but can also attack organs other than the lungs, causing extra-pulmonary tuberculosis as a complication of accompanying diseases or as comorbidities of pulmonary TBC. Diabetes mellitus is a disease that is often a comorbid disease of pulmonary TBC, this is related to blood glucose levels. Patients with diabetes who have uncontrolled blood sugar levels (≥ 200 Mg/dl) are more at risk for bacterial growth and development (Prihanti et al., 2015; Klemens, 2018).

CONCLUSION

Based on the results of this study, it can be concluded as follows:

1. The most gender in patients were male 66% and female 34%. Based on age, the most age category is >60 years old, which is 43.3%, 45-59 years old is 39.6%, and 19-44 years old is 17%. Based on the education level, the most of the patients have education level on primary school 34%, junior high school 22.6%, senior high school 20.8%, not finishing school 17%, and D3-S2 5.7%. Based on employment, most of the patients are working as farmers 35.8%, housewives 28.3%, unemployed 15.1%, traders 9.4%, civil servants/ retired/ teachers 7.5%.
2. Based on the symptoms of pulmonary TBC disease, 100% of patients experienced coughing, 56.6% experienced shortness of breath, 17% of patients experienced fever, 22.6% experienced night sweats, while 11.3% experienced weight loss.
3. Based on the status of pulmonary TBC disease, it is known that the status of new cases is 75.5%, 13.2% of cases have dropped out of treatment, and 11.3% have relapsed. Based on comorbidities, 73.6% had no comorbidities, 13.2% had diabetes mellitus, 11.3% had hypertension, and 1.9% had CHD/heart disorders. Based on smoking history, patients who had a history of smoking were 50.9%, and did not smoke were 49.1%. Meanwhile, nutritional status with normal nutritional status was 79.2%, and underweight was 20.8%.

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