

Characteristics of Pulmonary Tuberculosis Patients with Positive Acid-Fast Bacilli at the Makassar Community Lung Health Center in 2017

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Abstract : Pulmonary tuberculosis (TB) remains a health problem and requires information on patient characteristics as a basis for strengthening services and disease control. This study aims to determine the characteristics of patients with positive acid-fast bacilli (AFB) pulmonary TB at the Makassar Community Lung Health Center in 2017 based on age, gender, nutritional status, occupation, disease status, AFB examination results, radiological images, and residence. This study is an observational study with a descriptive design using secondary data from patient medical records from January to December 2017. The population and sample were all patients with positive AFB pulmonary TB who met the selection criteria, using a total sampling technique. Data were collected using medical records and analyzed using descriptive statistics using Microsoft Excel, then presented in tables and graphs. Of the 65 patients, the age group of 46–55 years was the largest group (21.5%), men at 67.6%, malnutrition status at 50.7%, and unemployed at 50.7%. New cases reached 60%, AFB results were positive at least twice at 96.9%, and the most common radiological picture was active tuberculosis at 81.5%. Most patients came from Panakkukang District (20%). Conclusion: Patients with AFB positive pulmonary TB in this study were mainly characterized by a dominance of the 46–55 year age group, male, poor nutritional status, unemployed, new cases, AFB positive at least twice, and active tuberculosis.

Introduction

Health development aims to increase awareness, willingness, and ability to live healthily to achieve the highest possible level of public health. Its implementation is based on humanity, balance, benefit, protection, justice, gender and non-

discrimination, and religious norms (Law No. 36 of 2009). The Healthy Indonesia Program is implemented through three pillars: a healthy paradigm, strengthening health services, and the National Health Insurance (JKN), with enhanced promotive and preventive efforts and community empowerment (Ministry of Health of the Republic of Indonesia, 2016).

Tuberculosis (TB) remains a global health problem and a leading cause of death. The Sustainable Development Goals (SDGs) target for 2030 is to end the global TB epidemic, with a target of reducing TB deaths by 90% and TB incidence by 80% (WHO, Global Tuberculosis Report, 2016). TB kills approximately 10 million people each year and remains one of the top ten causes of death worldwide (WHO, Global Tuberculosis Report, 2017).

In 2015, there were approximately 10.4 million cases of TB, or 142 cases per 100,000 population, and 480,000 cases were multidrug-resistant. Indonesia was the country with the second-highest number of new cases after India, while TB deaths were estimated at 1.4 million (WHO, Global Tuberculosis Report, 2016).

In Indonesia, the number of TB cases increased from 330,729 in 2015 to 351,893 in 2016. The highest number of cases occurred in West Java, East Java, and Central Java, accounting for 44% of all new cases. Based on gender, the number of cases in men is 1.4 times higher than in women (Indonesian Health Profile, 2016).

In Makassar City, 1,928 cases of smear-positive pulmonary TB were found out of 2,600 targets in 2015, with a New Case Detection Rate of 74.15%. This figure increased compared to 73.76% in 2014 and 72.44% in 2013 (Makassar City Health Profile, 2016). This situation indicates the need for information regarding the characteristics of smear-positive pulmonary TB patients in Makassar City.

Based on these conditions, this study aims to determine the characteristics of patients with pulmonary tuberculosis (BTA) (positive) at the Makassar Community Lung Health Center in 2017 based on age, gender, nutritional status, occupation, disease status, culture examination, radiological images, and residence. This study is expected to be a source of information for health practitioners and input for authorities in making policies to reduce the incidence of pulmonary TB. The novelty of this study lies in the description of the characteristics of patients with pulmonary TB (positive) based on various characteristics at the location and year of the study.

Research Method

This study is an observational study with a descriptive design. The study used secondary data in the form of medical records of patients with AFB (+) pulmonary tuberculosis at the Makassar Community Lung Health Center from January to December 2017. The researcher did not provide interventions or control the variables studied because the study was directed to describe the characteristics of AFB (+) pulmonary tuberculosis patients in detail and systematically.

The research instrument consisted of patient medical records containing the characteristics of AFB-positive pulmonary tuberculosis patients, namely age group, gender, nutritional status, occupation, disease status, culture examination, radiological features, and residence. The data obtained were processed computerized using Microsoft Excel and analyzed using descriptive statistics. The results of the data processing are presented in tables and graphs to illustrate the characteristics of AFB-positive pulmonary tuberculosis patients during the period from January to December 2017.

The study population was all patients with AFB (+) pulmonary tuberculosis at the Makassar Community Lung Health Center in 2017. The study sample was all patients with AFB (+) pulmonary tuberculosis who met the selection criteria. Sampling was carried out using a total sampling technique, namely the entire population was used as a sample. Inclusion criteria included patients diagnosed with AFB (+) pulmonary tuberculosis, who had received treatment at the Makassar Community Lung Health Center in 2017, and had medical records containing the study variables. Patients with incomplete medical record data were excluded from the study.

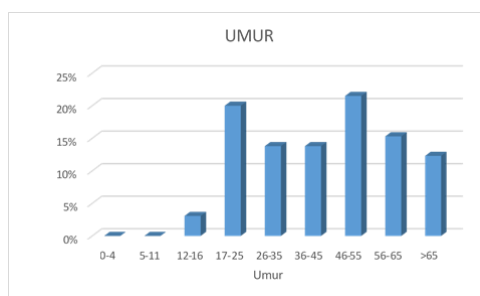
The research was conducted at the Makassar Center for Community Lung Health, Makassar City, with data collection and processing from September to November 2018. The research procedure began with the preparation and processing of research permits, followed by data collection based on the variables studied through patient medical records. The collected data were then processed using Microsoft Excel and analyzed descriptively. The results of the analysis were then presented in tables and graphs to illustrate the characteristics of patients with AFB (positive) pulmonary tuberculosis. During the implementation, patient identities were kept confidential and the research was conducted after obtaining permission from the relevant parties.

Results and Discussion

Distribution of pulmonary tuberculosis (BTA +) based on age at the Makassar Community Lung Health Center in 2017

Table 1. Characteristics of pulmonary tuberculosis BTA + disease based on age

Age	n	%
0-4	0	0%
5 - 11	0	0%
12-16	2	3.07%
17-25	13	20%
26-35	9	13.8%
36-45	9	13.8%
46-55	14	21.5%
56-65	10	15.3%
>65	8	12.3%
Total	65	100%



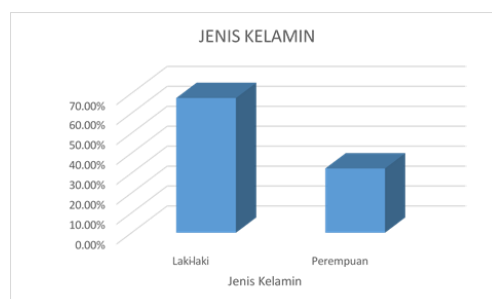
Graph 1 Characteristics of pulmonary tuberculosis BTA + disease based on age

Based on table and graph 1, it can be seen that the number of patients with AFB + pulmonary tuberculosis at the Makassar Community Lung Health Center shows that out of 65 samples, AFB + tuberculosis occurs more in the 46-55 year age group, namely 14 people (21.5%), while the least is in the 12-16 year age group, namely 2 people (3.07%), 0-4 years old, namely 0 (0%), 5-11 years old, namely 0 (0%).

Distribution of BTA+ pulmonary tuberculosis disease based on gender who received treatment at the Makassar Community Lung Health Center in 2017.

Table 2. Characteristics of BTA + pulmonary tuberculosis disease based on gender

Gender	n	%
Man	44	67.6%
Woman	21	32.3%
Total	65	100%



Graph 2 Characteristics of pulmonary tuberculosis BTA + disease based on gender

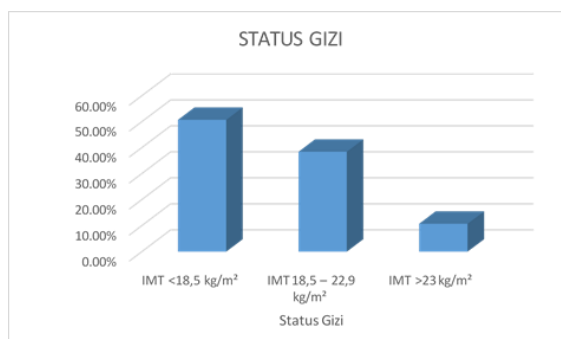
Based on table and graph 2, it can be seen that of the 65 samples, BTA + pulmonary tuberculosis was more common in males, as many as 44 people (67.6%), while in females there were 21 people (32.3%).

Distribution of BTA+ tuberculosis disease based on nutritional status of those treated at the Lung Health Center

Table 3. Characteristics of patients with pulmonary tuberculosis BTA + based on nutritional status

Nutritional status	n	%
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BMI <18.5 kg/m ²	33	50.7%
BMI 18.5–22.9 kg/m ²	25	38.4%
BMI >23 kg/m ²	7	10.7%
Total	65	100%



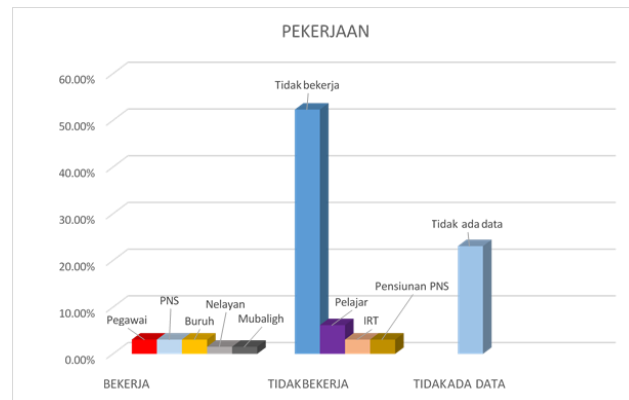
Graph 3 Characteristics of pulmonary tuberculosis BTA + disease based on nutritional status

Based on Table and Graph 3, of the 65 samples, the most AFB (positive) pulmonary tuberculosis patients had undernutrition status (BMI <18.5 kg/m²), namely 33 people (50.7%), while overnutrition status (BMI >23 kg/m²) was the smallest number, namely 7 people (10.7%). Undernutrition status was most common in the age groups 17–25, 46–55, and >65 years, while good and better nutritional status were spread across several age groups.

Distribution of pulmonary tuberculosis BTA + based on the type of work that was treated at the Makassar Community Lung Health Center in 2017

Table 4. Characteristics of patients with pulmonary tuberculosis BTA + based on occupation

Work	n	%
Employee	2	3.07%
Self-employed	3	4.6%
Farmers/fishermen/laborers	3	4.6%
Students	4	6.1%
Doesn't work	33	50.7%
Other	20	30.7%
Total	65	100%



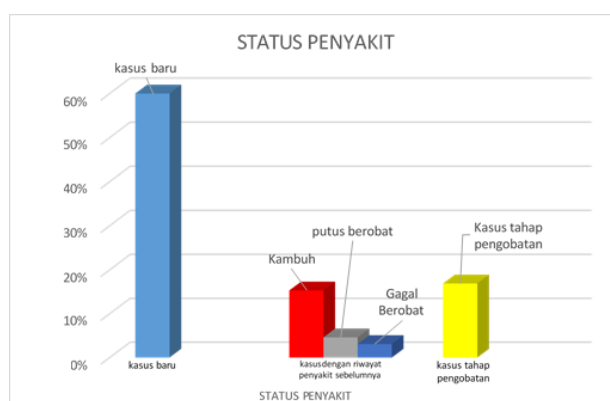
Graph 4 Characteristics of pulmonary tuberculosis BTA + disease based on occupation

Based on Table and Graph 4, of the 65 samples, the most AFB positive pulmonary tuberculosis patients were in the unemployed group, namely 33 people (50.7%). Meanwhile, the group with the smallest number of cases was a preacher with 1 person (1.53%), employees with 2 people (3.07%), and retired civil servants with 2 people (3.07%). Of the 20 people in other employment categories, there were 15 people (23%) without employment data, 2 people (3.07%) housewives, 1 person (1.53%) preacher, and 2 people (3.07%) retired civil servants.

Distribution of BTA+ tuberculosis disease based on the type of work that was treated at the Makassar Community Lung Health Center in 2017

Table 5. Characteristics of patients with pulmonary tuberculosis BTA + based on disease status

Disease Status	n	%
New	39	60%
Relapsed	10	15.3%
Failed treatment	3	4.6%
Discontinued Treatment	2	3.07%
Treatment stages	11	16.9%
Other	0	0%
Total	65	100%



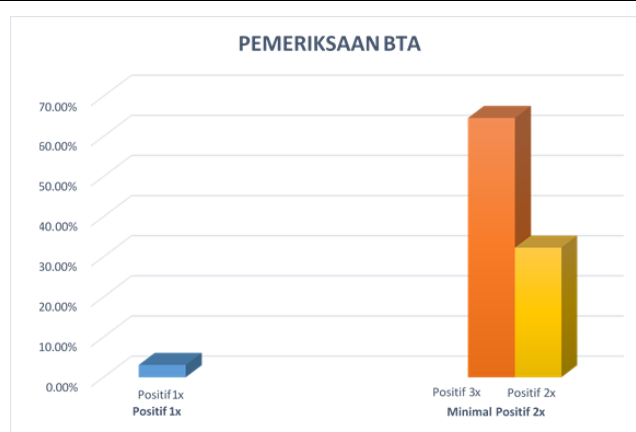
Graph 5 Characteristics of pulmonary tuberculosis disease BTA + based on disease status

Based on table and graph 5, it can be seen that of the 65 samples, the BTA + pulmonary tuberculosis patients were more likely to have the status of new cases of pulmonary tuberculosis, as many as 39 people (60%), while the fewest were pulmonary tuberculosis patients with the status of discontinued treatment, as many as 2 people (3.07%).

Distribution of pulmonary tuberculosis disease BTA + based on the results of BTA examinations of those treated at the Makassar Community Lung Health Center in 2017

Table 6. Characteristics of patients with pulmonary tuberculosis BTA + based on BTA examination

Culture Examination	n	%
Positive 1x	2	3.07%
Positive at least 2x	63	96.9%
Total	65	100%



Graph 6 Characteristics of pulmonary tuberculosis disease BTA + based on BTA examination results

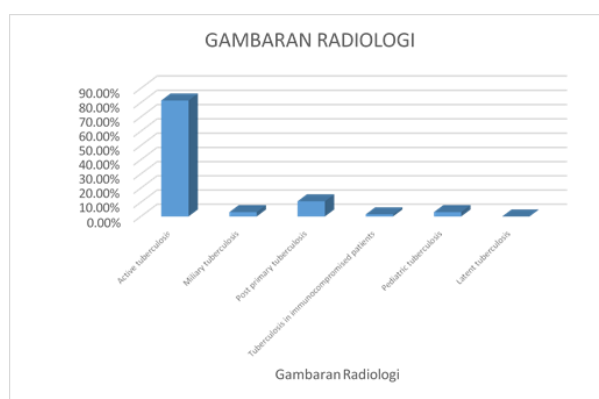
Based on Table and Graph 6, of the 65 samples, the majority of patients with AFB (+) pulmonary tuberculosis had AFB test results that were at least 2 times positive, namely 63 people (96.9%), consisting of 42 people (64.6%) who were AFB positive 3 times and 21

people (32.3%) who were AFB positive 2 times. Meanwhile, AFB positive 1 time was only found in 2 people (2.85%).

Distribution of pulmonary tuberculosis (BTA +) based on radiological images of patients treated at the Makassar Community Lung Health Center in 2017

Table 7. Characteristics of pulmonary tuberculosis BTA + disease based on radiological images

Radiological Image	n	%
Active tuberculosis	53	81.5%
Miliary tuberculosis	2	3.07%
Post-primary tuberculosis	7	10.7%
Tuberculosis in immunocompromised patients	1	1.5%
Pediatric tuberculosis	2	3.07%
Latent tuberculosis	0	0%
Total	65	100%



Graph 7 Characteristics of pulmonary tuberculosis disease BTA + based on radiological images

Based on table and graph 7, it can be seen that of the 65 samples suffering from BTA + pulmonary tuberculosis, more had radiological images of active tuberculosis, namely 53 people (81.5%), while the least had radiological images of tuberculosis in immunocompromised patients, namely 1 person (1.5%) and latent tuberculosis, namely 0 (0%).

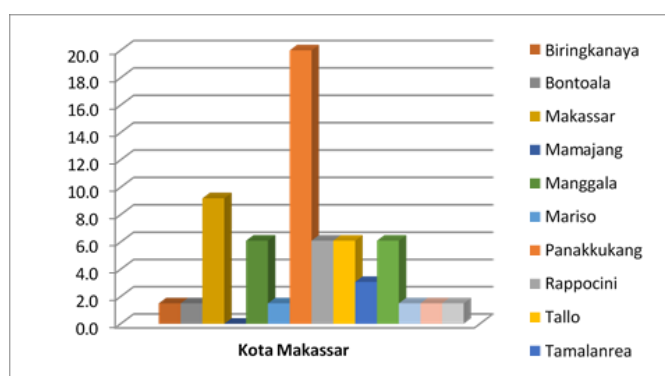
Distribution of pulmonary tuberculosis (BTA +) based on residence of those seeking treatment at the Makassar Community Lung Health Center in 2017

Table 8 Characteristics of pulmonary tuberculosis BTA + disease based on place of residence

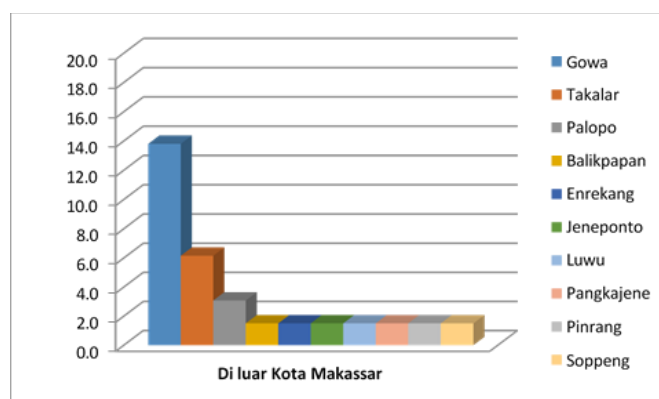
Subdistrict (Makassar City)	n	%
Biringkanaya	1	1.5%
Bontoala	1	1.5%
Makassar	6	9.2%
Mamajang	0	0%
Manggala	4	6.1%
Mariso	1	1.5%

Characteristics of Pulmonary Tuberculosis Patients with Positive Acid-Fast Bacilli at the Makassar Community Lung Health Center in 2017 (Sausan Maulida) 271

Panakkukang	13	20%
Rappocini	4	6.1%
Tallo	4	6.1%
Tamalanrea	2	3.07%
Tamalate	4	6.1%
Edge of View	1	1.5%
Land's End	1	1.5%
Wajo	1	1.5%
Outside Makassar City	22	33.8%



Graph 8 Characteristics of pulmonary tuberculosis disease BTA + based on place of residence



Based on Table and Graph 8, of the 65 samples, the most AFB (positive) pulmonary tuberculosis patients resided in Panakkukang District, namely 13 people (20%). Patients living outside Makassar numbered 22 people (33.8%), with the largest number coming from Gowa as many as 9 people (13.8%) and Takalar as many as 4 people (6.15%). Meanwhile, several districts in Makassar had the fewest number of patients, namely Bontoala, Mariso, Ujung Tanah, and Wajo each with 1 person (1.5%), while Mamajang District had no patients.

Discussion

1. Age

The results of the study were obtained from 65 samples studied, the highest age group was 46-55 years old with 14 people or 21.5%, followed by 17-25 years old with 13

people or 20%, and the lowest age group was 0-4 years old (0%), 5-11 years old (0%), and 12-16 years old with 2 people or 3.07%.

The results of this study indicate that the early elderly and productive age groups are the most likely to suffer from pulmonary tuberculosis. This is consistent with data from the 2013 National Health Insurance (RISKESDAS) Health Research Institute (RISKESDAS), which showed a higher prevalence of tuberculosis in the age group over 45 years compared to other age groups. Meanwhile, according to the WHO, the prevalence of tuberculosis in developing countries is highest in the productive age group.

Approximately 75% of pulmonary tuberculosis patients are in the most economically productive age group (15-50 years). It is estimated that an adult with pulmonary tuberculosis will lose an average of 3 to 4 months of work time. This results in a loss of approximately 20-30% of their annual household income. If they die from pulmonary tuberculosis, they will lose approximately 15 years of income (Indonesian Ministry of Health, 2008).

Productive age is the age at which a person is at the stage of working/producing something for themselves or others. 75% of pulmonary TB sufferers are found in the most economically productive age (15-49 years). At this age, if someone suffers from pulmonary TB, it can result in the individual no longer being productive and even becoming a burden on their family. It is estimated that an adult TB patient will lose an average of 3-4 months of working time, resulting in a loss of annual household income of around 20-30%. In addition to economic losses, TB also causes other negative impacts, namely social stigma and even ostracism in society (Werdhani RA, 2013).

2. Gender

The results of research related to the distribution of pulmonary tuberculosis sufferers at the Makassar Community Lung Health Center for the period January - December 2017 showed that more men suffered from the disease, namely 44 people (67.6%), while women suffered from it as many as 21 people (32.3%).

Gender is closely related to the occurrence of Pulmonary TB. Based on WHO Data Results in 2003 reported that in most parts of the world, more men than women were diagnosed with tuberculosis and from the results of data from the Indonesian Ministry of Health in 2017 stated that pulmonary TB disease mostly occurs in men as much as 69%. The results of the study obtained are not much different from the results of data obtained by the Indonesian Ministry of Health in 2017, the results of the study showed that Pulmonary TB disease mostly attacks men as much as 65.5% while women only 35.5% because men are heads of families and have to earn a living so they are more likely to spend their time outside the home causing the chance of contracting Pulmonary TB is greater than women, in addition men smoke and drink alcohol more than women, smoking and drinking alcohol can reduce the body's immunity so that it is more susceptible to Pulmonary TB disease (Dotulong JFJ, MR. Sapulete et al, 2015).

In the results of research conducted by Fariz Muaz on factors that influence the incidence of acid-fast bacillus pulmonary tuberculosis conducted in the Serang district of Serang city in 2014, it was found that men are more at risk of contracting acid-fast bacillus pulmonary tuberculosis. The high number of cases of pulmonary tuberculosis in

men is caused by the smoking habit that is mostly done by men, cigarettes smoked by someone contain toxins that can damage health so that they are easily infected with various diseases including tuberculosis bacteria. (Muaz, F, 2014).

3. Nutritional status

The results of the study showed that more pulmonary tuberculosis sufferers had poor nutritional status (BMI <18.5 kg/m²), namely 33 people (50.7%), while the fewest sufferers had over-nutritional status (BMI >23 kg/m²), namely 7 people (10.7%).

One of the factors that influence the spread of pulmonary tuberculosis is nutritional status. Poor nutritional status will increase the risk of pulmonary tuberculosis due to decreased immunity. Research on the nutritional status of pulmonary patients has also been conducted by Prof. Arsunan Arsin using a population of all pulmonary tuberculosis patients who came for treatment at BBKPM Makassar in 2012, most of whom had poor nutritional status (51.3%) compared to normal nutritional status (40.7%) and overnutrition (8%). Not much different from the results of research conducted by Feby Patiung in 2014 where from the samples obtained at Prof. Dr. RD Kandou General Hospital, only 22% had a normal BMI while those who were underweight were 77.8%.

Based on the results of the research that has been done, it turns out that it is not in line with the results of the research that has been done by Prof. Arsunan Arsin and Feby Patiung where the results of this study showed that there were 62.1% who had normal nutritional status and 37.9% who had low nutritional status. This was because the samples taken by the researchers were samples of Pulmonary TB patients who were still actively undergoing treatment for six months so that it greatly influenced because according to Soedibyo, et al., treatment is related to the nutritional status of the patient, the better the immune system in the body, the use of nutrients to fight infections is reduced so that nutrients can be used optimally for the growth process so that nutritional status can improve. The drugs given to Pulmonary TB patients in the form of Isonizide, Pyrazinamide and Rifampicin function to kill tuberculosis bacteria so that over time they can improve the body's immune system. The better the body's defense mechanism, the nutrients to replace the destruction of body tissue for the formation of proteins or enzymes can be suppressed so that nutritional status increases (Prayitami SP, et al., 2011).

The results of the bivariate analysis obtained a p value of 0.001, meaning $p < \alpha$ (0.05) and OR = 2.513 (CI = 1.441-4.382), meaning that respondents with poor nutritional status had a significant relationship with BTA + pulmonary tuberculosis and were at risk of suffering from pulmonary tuberculosis 2.5 times compared to respondents with good nutritional status (Muaz, F, 2014).

4. Work

The results of the study showed that the highest incidence of pulmonary tuberculosis was suffered by the group of people who did not work, namely 33 people (50.7%), while the lowest was in the employee group, namely 2 people (3.07%), retired civil servants as many as 2 people (3.07%), and preachers as many as 1 person (1.5%).

From the results of the research that has been conducted, it can be concluded that pulmonary tuberculosis is more common in people who are unemployed, namely 33

people (50.7%). This is in line with the data from the research results of Ariani et al. in 2016 that the majority of pulmonary TB sufferers are unemployed, as many as 59%. Prevalence based on type of employment, the population that is unemployed turns out to have the highest prevalence. An interesting fact is that the economic level shows a significant difference only in the upper group, namely with the lowest prevalence of 0.2% (Ministry of Health of the Republic of Indonesia, 2014).

Education reflects a person's health behavior. The lower the education level, the lower the health knowledge, which can directly and indirectly influence the physical, biological, and social environment, negatively impacting health, ultimately impacting the high number of TB cases and the regularity of medication use (Muaz, F, 2014).

As Dotulong wrote in his 2015 study, crowded work environments with large crowds can increase the risk of pulmonary TB. These working conditions make it easier for people of productive age to contract and suffer from pulmonary TB more easily. This is due to the increased chance of exposure to *M. tuberculosis* (Dotulong JFJ, MR. Sapulete et al., 2015).

Work is an activity undertaken to earn a living. Environmental factors influence a person's exposure to disease. A poor work environment is conducive to pulmonary TB infection, while unemployed individuals tend to be less likely to seek treatment regularly, believing that treatment is expensive. They prefer to meet daily needs rather than pay for treatment (Pare AL et al., 2012).

5. Disease Status

The results of the study showed that as many as 39 people (60%) of the 65 samples studied had the status of new cases of tuberculosis, while the fewest number of tuberculosis patients had the status of discontinuing treatment, namely 2 people (3.07%).

Research conducted by Nawas also showed that some pulmonary TB patients relapsed and discontinued treatment. Patients with relapsed disease were associated with their treatment. Factors inhibiting the success of TB treatment include incomplete and inadequate treatment resulting from irregular and non-compliance with medication, incorrect regimens, dosages, and administration methods, interruptions in the availability of anti-TB drugs, and low drug quality. TB patients who do not receive complete information about TB and lack of counseling will affect patient adherence to TB treatment. The level of transmission and adherence to treatment also influence the level of infection in a patient. Based on the results of AFB laboratory tests, the study showed that the number of patients with AFB positive results was greater than those with AFB negative results (Nawas, 2010).

6. BTA examination

The results of the study showed that from the results of the BTA examination, more pulmonary tuberculosis sufferers had BTA examination results of at least 2x positive, namely 42 people (64.6%), while the fewest had BTA examination results of 1x positive, namely 2 people (2.85%).

This is in line with research conducted by Rusyono because based on the degree of AFB positivity, it can be seen that the number of AFB+ pulmonary tuberculosis sufferers who have the highest degree of AFB positivity is AFB positive degree three, as many as

490 cases (44.2%). This can occur because the patients who come contain a lot of germs in their sputum so that they are easily seen with a microscope. The factor of often being late in checking themselves can also result in germs growing more. The higher the degree of positivity of the sputum examination results, the higher the potential for transmission to others. With a positive AFB result of three (44.2%) of course, there is a very high potential for transmission. (Rusyono, Rahmatullah P, Udiono A, 2007).

This will have a systemic impact where the sufferer will infect those closest to them, especially their family. Therefore, prevention can be carried out on the sufferer and the people around him. For example, the sufferer is given counseling not to throw phlegm anywhere, spitting should be done in a container or a specific place. In addition, they can always use a mask to cover the mouth. (WHO, Global Tuberculosis Control, 2011). According to the Indonesian Ministry of Health 2008, the diagnosis of Pulmonary TB in adults can be confirmed by finding a positive test result if at least two of the three SPS AFB specimens are positive. If only one specimen is positive, further examination is needed, namely a chest x-ray or repeated SPS sputum examination.

- 1.If the X-ray results support Tuberculosis, then the patient is diagnosed as having positive BTA Tuberculosis.
- 2.If the X-ray results do not support Tuberculosis, the SPS sputum examination is repeated.

If facilities permit, other tests, such as cultures, can be performed. If all three sputum specimens are negative, broad-spectrum antibiotics are given for 1-2 weeks. If there is no improvement, but clinical symptoms remain suspicious for tuberculosis, repeat the sputum SPS examination.

- 1.If the SPS result is positive, the patient is diagnosed as having positive BTA Tuberculosis.
- 2.If the SPS results remain negative, perform a chest X-ray to support the diagnosis of tuberculosis.

If the X-ray results are positive and support tuberculosis, the patient is diagnosed as having TB with a negative AFB smear and a positive X-ray. If the X-ray results are not supportive of tuberculosis, the patient may be referred for a chest X-ray. (Indonesian Ministry of Health, 2008)

7. Radiological Image

The results of the study showed that from the radiological images, pulmonary tuberculosis patients had more radiological images of active tuberculosis, namely 53 people (81.5%), while the least number of people with radiological images of tuberculosis in immunocompromised patients was 1 person (1.5%) and latent tuberculosis was 0.

A study conducted by Icksan & Luhur showed that of the 66 cases, patients with long-term active pulmonary TB were more common, at 48 cases (72.7%), while patients with active pulmonary TB were 18 cases (27.3%). This is due to the frequent delay in diagnosing pulmonary TB. Many patients already have symptoms of pulmonary TB but

have not sought health care. They come to health care when they are no longer able to control their illness (chronic cases). Furthermore, the level of patient compliance in taking OAT also affects radiological images. The large number of long-term active TB cases is due to discontinuation of medication, treatment failure, or disease relapse due to a weakened immune system. Furthermore, patients with pulmonary TB with extensive lesions were more common, at 64 cases (97%), while patients with pulmonary TB with minimal lesions were only 2 cases (3%). This is consistent with a retrospective study conducted at the hospital. Friendship in 2008 that extensive lesions were the most common lesion coverage of 50 cases (51%) (Icksan A. G, Luhur. R, 2008).

In addition, the results of this study are also in accordance with research conducted at BBKPM Surakarta in 2012 that the distribution of pulmonary TB patients with extensive lesions was greater, namely 51 cases (70.83%) than minimal lesions, which were only 21 cases (29.17%) (Kasim, H, 2012).

Misdiagnosis of pulmonary TB can be caused by inaccurate reading of chest radiographs. To address this, factors influencing chest radiograph reading must be considered, such as the quality of the equipment, the quality of the images, the equipment used to read chest radiographs, knowledge of disease pathogenesis, and experience in reading chest radiographs. Overdiagnosis often occurs due to diagnosing pulmonary TB when seeing sequelae of TB such as fibrosis, TB calcification, and pleural effusion, which are actually residual symptoms. Underdiagnosis occurs due to the failure to detect minimal lesions when reading chest radiographs, and misdiagnosis occurs due to diagnostic errors (Icksan A.G, Luhur.R, 2008).

This occurs because various early abnormalities can be clearly identified through a chest X-ray before the clinical symptoms of pulmonary TB appear. For example, a tuberculosis nest with a diameter of only 2 mm can be seen with a chest X-ray, whereas a history and physical examination would not necessarily detect such a small nest (Soesanti, et al, 2006).

8. Residence

The research results obtained from 65 samples studied, the most sufferers resided in Panakkukang District as many as 13 people (20%) and the least resided in Bontoala District as many as 1 person (1.5%), Mariso District as many as 1 person (1.5%), Ujung Tanah District 1 person (1.5%), Wajo District 1 person (1.5%) and Mamajang District (0%).

The distance from home to a health facility or service location is how far the respondent travels to reach a health service location, including hospitals, community health centers, and others. Accessibility, including distance to health services, will influence the choice of health service (Khudhori, 2012).

Furthermore, distance is the second component that allows someone to utilize medical services. One of the considerations that determine an individual's attitude in choosing a source of care is the distance from their residence to the source of care. Access to health services includes the accessibility of the service location, the type and quality of services available. Accessibility can be calculated from travel time, distance, type of transportation, and conditions at health services, such as the type of health service,

available health workers, and the time of health services (Khudhori, 2012). $UL = 0.500-2.335$ with a 95% confidence level. This value indicates that respondents who live far from health care facilities have a 1,080 times greater risk of developing pulmonary TB compared to those who live close to health care facilities, but this result is not statistically significant (Yusran, M, 2018).

Research conducted by Eka Fitriani (2013), showed that the incidence of pulmonary TB in the working area of the Ketanggungan Community Health Center was mostly found at a short distance or ≤ 5 km from the community health center, namely 75.8%. This is because pulmonary TB sufferers whose homes are far away or > 5 km do not check themselves and seek treatment at the community health center so that they are not recorded in the community health center's medical records. This happens if the distance traveled is too far and health workers at the community health center do not carry out counseling or education activities, especially regarding pulmonary TB in remote or isolated areas in their working area, so that public awareness of their health and their participation in health checks at the community health center is much lower, so the community health center must take initiative steps in dealing with and preventing diseases such as pulmonary TB (Fitriani, E, 2012).

Conclusion

A study of 65 patients with AFB (+) pulmonary tuberculosis at the Makassar Community Lung Health Center in 2017 showed that the characteristics of the sufferers were mostly in the 46–55 years age group as many as 14 people (21.5%), male gender as many as 44 people (67.6%), have poor nutritional status as many as 33 people (50.7%), and unemployed as many as 33 people (50.7%). Based on disease status, most were new cases as many as 39 people (60%). The results of the AFB examination showed that 63 people (96.9%) had positive results at least twice, while the radiological picture was mostly active tuberculosis as many as 53 people (81.5%). Based on residence, most sufferers came from Panakkukang District as many as 13 people (20%), while 22 people (33.8%) came from outside Makassar City. These findings provide an overview of the characteristics of patients with AFB (+) pulmonary TB which can provide information for health practitioners in understanding the profile of patients receiving services at BBKPM Makassar.

This study has limitations due to the use of secondary data from medical records, so the completeness and availability of information depend on previous records. Future research is recommended to use more comprehensive data and include other relevant variables to provide a more comprehensive description of the characteristics of pulmonary TB patients. Practically, the results can provide information for relevant parties in planning health services, monitoring patient characteristics, and efforts to control pulmonary tuberculosis, particularly regarding the characteristics most frequently identified in this study.

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