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Research Article

ANALYSIS OF QUALITY OF LIFE AND COMPLIANCE LEVEL OF PULMONARY TB PATIENTS AND BODY MASS INDEX IN POST-TRANSFERENCE TREATMENT ANTI TUBERCULOSIS IN HOSPITAL dr. M HAULUSSY AMBON

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ABSTRACT

Tuberculosis is the most common multi-systemic infection, with various types of manifestation and clinical description, lung is the most common location for developing tuberculosis disease (WHO, 2018). As many as 58% of cases of pulmonary TB occur in 3 (three) countries such as Southeast Asia. Based on profile Service Health Maluku Province, in 2021 number of invention Pulmonary TB cases Service Health (Health Office) of Maluku Province to end in 2019 it reached 6,379 people or by 0.35 percent of total population in the province the largest as 1.8 million people.This research uses a quantitative observational design with a cross sectional approach. With sample use systematic type Purposive sampling of 83 respondents. Data analysis using linear regression. Results test statistics show the most influential variable to level pulmonary tuberculosis treatment is a level indicator compliance with level significance sig 0.000. Based on the results of the Multiple Linear Regression analysis, it shows that with a p-value of 0.00 0 < 0.05, H 1 is accepted, so it is concluded that there is a simultaneous influence quality of life as well as the level of compliance of TB lung sufferers And body mass index on post treatment tb lung at DR M Haulussy Ambon Regional Hospital.

INTRODUCTION

Tuberculosis is the most common multi-systemic infectious disease, with a variety of manifestations and clinical features, the lungs are the most common location for the development of tuberculosis (WHO, 2018). As many as 58% of pulmonary TB cases occur in 3 (three) countries such as Southeast Asia. In Indonesia, TB cases in 2019 were found to be 543,874 cases, the highest number of cases reported from provinces with large populations, namely West Java, East Java, and Central Java.

Based on the profile of the Maluku Provincial Health Service, in 2021 the number of cases of Pulmonary TB discovered by the Maluku Provincial Health Service (Dinkes) until the end of 2019 reached 6,379 people or 0.35 percent of the population in the province of 1.8 million people.

Data that has been summarized in the Integrated Tuberculosis Information System (SITT) recorded that up to December 2019, 51 percent of TB cases in Maluku were found or 3,253 sufferers from an estimated 6,379 people. Meanwhile, the number of TB sufferers who could be treated was recorded at 2,699 people or 59 percent of the cases found in 2018, which were 4,575 people. In 2020, the success rate of TB treatment decreased to 19% from 90% with an achievement of 21.11%.

The impact of a disease, especially a chronic disease such as tuberculosis, not only occurs on physical health conditions, but also has an impact on the psychology, economy and social relationships of the sufferer. TB sufferers throughout the course of the disease will experience several symptoms that interfere with their lives. The main symptom of TB is a cough for a long period of time.

The Directly Observed Treatment Short Course (DOTS) program, which was introduced in 1997, also only uses negative sputum test results and weight gain in tuberculosis patients as indicators of the prognosis for successful therapy, so it would be better if the outcome of successful tuberculosis therapy was based on comprehensive assessment, namely by adding an assessment of aspects affected by tuberculosis (Dhuria, et al., 2008).

In addition, TB sufferers also experience fever that is not too high, decreased appetite, weight loss, weakness, and malaise. These various clinical symptoms will be very disturbing to TB sufferers and disrupt their quality of life.

According to Hendrik, quality of life increases in line with the decrease in physical symptoms of TB patients. Arifah's research on quality of life in TB patients found that 76% of TB patients experienced a decrease in quality of life (Nurul et, 2018). Research on the quality of life in Tuberculosis patients was also conducted by Nina, Lilis (2016) with the title Quality of Life of Tuberculosis Patients in the Tamansari Health Center Work Area, Tasikmalaya City where the results showed that out of 46 patients, 27 people (58.70%) of TB patients were categorized as having a moderate quality of life and 19 people (41.30%) of TB patients with a high quality of life category (Nina and Lilis, 2016).

Research on quality of life is increasingly developing, especially in patients with chronic diseases because it

can be described that there will be many impacts due to the disease on the quality of life of the patient (Aggarwal, 2010). A literature study on measuring quality of life conducted by Guo, et al. (2009) obtained the result that tuberculosis substantially affects the quality of life of sufferers, anti-tuberculosis therapy has the first positive effect, followed by their physical condition and then the mental state of tuberculosis sufferers. Another result obtained was that after tuberculosis sufferers completed treatment and were declared microbiologically cured, it turned out that the quality of life of tuberculosis sufferers was significantly worse than the healthy population.

This is in line with the results of Rajeswari's research (2004) in India stating that only 54% of pulmonary TB patients who were declared cured microbiologically had a happy mental status at the end of therapy. Although there was a significant improvement in the health status of pulmonary TB patients (less than 7% stated at the beginning of therapy to more than 78% at the end of therapy) but there was no change in social status (stigma) when compared between the beginning and the end of therapy.

Research conducted in other countries shows changes in the quality of life of tuberculosis patients, as well as the magnitude of the influence of quality of life on the success of TB therapy. Another study conducted in Indonesia by Ratnasari (2004) which examined the impact of social support on the quality of life of pulmonary TB patients in BP4 Minggiran obtained results that were the opposite of research abroad, the study stated that of all respondents 68% of pulmonary TB patients were classified as patients with good quality of life, 30% with moderate quality of life and 2% with poor quality of life. The study used a questionnaire from Spitzer and assessed 5 aspects, namely activity, daily life, health, social support and hope.

With the efforts that can be made to increase compliance in taking medication in TB patients by maintaining a commitment to treatment, having family support in the form of time and attention, using aids for educational approaches or compliance in taking TB medication, and researchers provide this SF-36 instrument so that they can seeaspects, namely activities, daily life, health, social support and expectations in the patient's quality of life.

METHOD

The method in this study uses quantitative research with an analytical observational type with a cross-sectional design. The location of this study was carried out at the Dr. M Haulussy Ambon Regional General Hospital. The research time will be conducted in February 2024. The population in this study were all outpatients who had been treated at the outpatient clinic, totaling 105 respondents. Sampling in this study was non-Probability sampling with a purposive sampling type with a sample size of 83 respondents. The addition of samples using the Slovin formula.

RESULTS

Table 1.Characteristics of research subjects based on age, gender, length of service, last education and employment status

Characteristics	n	%
Age		

Characteristics	n	%
16-29 years	35	44.2%
30-39 years	27	32.5%
40-49 years	15	18.1%
50-60 years	7	7.2 %
Gender		
Woman	30	36.1 %
Man	53	63.9%
Work		
Laborer	9	10.8 %
Trader	4	4.8 %
Civil Servants/State-Owned Enterprises	3	3.6 %
Private	12	14.5 %
Doesn't have a permanent job	55	66.3 %
last education		
College	4	4.8 %
High School	44	53.0 %
Junior High School	30	36.1 %
SD	3	3.6 %
Did not finish elementary school	2	2.4 %

Based on Table 1.shows the results of the characteristics of research subjects based onage, gender, length of service, last education and employment status. The largest age group of respondents from a total of 84 respondents was the 16-29 age group with 35 people (44.2%) followed by the 30-39 age group with 27 people (32.5%).

TypeThe gender of the total respondents of 83 people consisted of 53 men (63.9%) and 30 women (36.1%), so that the gender comparison of pulmonary TB patients in this study between men and women was 1.2: 1. The distribution of jobs from the total of 83 respondents with pulmonary TB, the majority did not have permanent jobs, namely 55 people (66.3%).

The last education of the total respondents was 83 people, in order from the most, respondents who had high school education were 44 people (53.0%), elementary school as many as 3 people (3.6%), junior high school 30 people (36.1%), did not graduate from elementary school 2 people (2.4%), and only 4 people (4.8%) had higher education (PT).

Table 2.Characteristics of independent variable indicators

Characteristics	n	%
Quality of Life of TB Patients		
> good	56	67.5
> bad	27	32.5
Compliance Level		
Tall	11	13.3

Characteristics	n	%
Currently	48	57.8
Low	24	28.9
Compliance Level		
Not enough	60	72.3
Normal	22	26.5
Excessive	1	1.2

Based on Table 2.showThe results of the characteristics of the independent variable indicators show that most respondents have a good quality of life after undergoing pulmonary TB treatment, as many as 56 respondents (67.5%), most respondents have moderate compliance with taking medication after undergoing pulmonary TB treatment, as many as 48 respondents (57.8%) and it is known that the body mass index of pulmonary TB patients has a low BMI after post-pulmonary TB treatment, as many as 60 respondents (72.3%).

Table 3. Variable characteristicsdependent

Characteristics	n	%
Pulmonary TB Treatment		
< 2 weeks	12	14.5
> 2 months	71	85.5

Based on Table 3.showThe results of the variable characteristics show that the majority of respondents have received treatment for more than 2 months, as many as 71 respondents (85.5%).

Table 4. Resultsclassical assumption statistical test of quality of life analysis as well as compliance level and body mass index after pulmonary TB treatment.

Variables	Normality	Heteroclassicity	Multicollinearity	
			Tolerance	IF
Body mass index	0,000	0,000	0.095	1.005
Quality of life	0,000	0.184	0.072	1,373
Compliance level	0,000	0.138	0.072	1,377
Pulmonary TB Treatment	0,000			

Table 4.showthe results of the normality test obtained a significance value > 0.05 so it can be concluded that the data contributed normally. Based on the heteroscedasticity test, a significance value of > 0.05 was obtained so it can be concluded that there is no heteroscedasticity between quality of life, level of compliance and body mass index in the treatment of pulmonary tuberculosis. Based on the normality test, a Tolerance value of > 0.000 and a VIF value of < 10.00 were obtained. So the conclusion is that there are no symptoms of multicollinearity.

Table 5. Results of linear regression analysis of quality of life analysis and level of compliance and body mass index after pulmonary TB treatment.

No	Variables	Sig	B	R^2	Sig
1	(Constant)	2,609			
2	Attitude	-0.304	0.414		0.000
3	Responsiveness	- ,116	0.154	0.208	
4	Empathy	-0.096	0.173		

Table 5.showThe results of the Linear Regression analysis show that the p-value is 0.000 <0.05, so H1 is accepted, so it is concluded that partially there is an influence of quality of life on pulmonary TB patients after pulmonary TB treat-ment at the Dr. M. Haulussy Regional General Hospital polyclinic in Ambon. Based on the results of the Linear Regression analysis, it shows that the p-value is 0.000 <0.05, so Ho is rejected and H1 is accepted, so it is concluded that partially there is an influence of the level of compliance in taking medication on pulmonary TB patients after pulmonary TB treat-ment. Based on the results of the Linear Regression analysis, it shows that the p-value is 0.000 <0.05, so Ho is rejected and H1 is accepted, so it is concluded that partially there is an influence of body mass index on pulmonary TB patients af-ter pulmonary TB treatment.

DISCUSSION

The Influence of Quality of Life of TB Patients on Anti-Tuberculosis Treatmentat the Regional General Hospital of Dr. M Haulussy Ambon

Based on the quality of life variable, it was found that most respondents had a good quality of life after undergoing pulmonary TB treatment as many as 56 respondents (67.5%). And based on the results of the Linear Regression analysis, it showed that the p-value was 0.000 <0.05, so H1 was accepted, so it was concluded that partially there was an influence of quality of life on pulmonary TB patients after pulmonary TB treatment at the RSUD dr M Haulussy Ambon polyclinic.

Post-pulmonary TB treatment has a big impact on quality of life because.Quality of life is one of the main criteria for determining health service interventions such as morbidity, mortality, fertility and disability. Tuberculosis disease can affect the quality of life of sufferers, such as psychological health, physical function, and social roles (Dhuria et al., 2008).

Research by Hendrik et al 2015 found that the average total score of TB patient visits in the first month as the initial period (before the patient underwent treatment) and visits in the second month to the sixth

month (the period during treatment) were respectively 43.57%; second month 30.40%; third month 25.22%; fourth month 20.50%; fifth month 18.45% and sixth month 16.51%. There was a significant difference in the quality of life of TB patients before and during treatment with a p value <0.05. From this study, it was found that the patient's third month visit had completed treatment in the intensive phase, namely for two months of treatment, then measurements were carried out in the same way as the first month visit to see the symptom score, activity score and impact score. The results when compared with the visit in the first month after undergoing treatment, positive symptoms that appeared in the third month visit had decreased, meaning that the treatment that had been carried out was effective so that the patient's quality of life would gradually increase. The sixth month visit was the final stage of patient visits in this study, where in the sixth month almost most of the patients were free from positive symptoms that appeared in the first month visit and during intensive treatment, little by little the side effects that appeared during treatment would begin to disappear, so that if you look at both aspects, the patient's quality of life will increase.

In addition, further research from seshy et al 2016 found that the total quality of life with the SF-36 questionnaire at the beginning and after intensive phase therapy increased, the value at the beginning of therapy was 43.58 to 76.76. The results of statistical calculations obtained a p value in all dimensions of SF-36 of 0.001. This means p <0.05, so it can be concluded that there is a difference in the quality of life of pulmonary TB patients at the beginning and the end of intensive phase OAT therapy has increased.

Based on the results of the study and the description above, the researcher concluded that there is an influence of quality of life on post-pulmonary TB patients at the RSUD dr M Haulussy Ambon polyclinic. This study shows that pulmonary TB patients who undergo intensive pulmonary TB treatment often experience good quality of life in terms of physical function, physical symptoms, pain, general health, social function, vitality and emotional roles. With the measurement of quality of life, a comparison can be made of several management alternatives, clinical research data, assessment of the benefits of a clinical intervention, screening tests in identifying children with certain difficulties and requiring medical remedial action or counseling assistance.

The Influence of the Level of Compliance of Pulmonary TB Patients on Post-Anti-Tuberculosis Treatmentin Regional public hospital dr. M Haulussy Ambon

Based on the compliance level variable, it is known that most respondents have moderate compliance with taking medication after undergoing pulmonary TB treatment as many as 48 respondents (57.8%). And based on the results of the Linear Regression analysis, it shows that the p-value is 0.000 <0.05, then H0 is rejected and H1 is accepted, so it is concluded that partially there is an influence of the level of compliance with taking medication on pulmonary TB patients after pulmonary TB treatment at the Dr. M Haulussy Ambon Regional Hospital polyclinic.

According to research by Dwi et al 2021, Compliance is the level of patient's adherence to treatment methods and behaviors recommended by their doctor or other people. Undergoing long-term treatment, patient compliance is highly demanded to know the patient's attitude and behavior towards the treatment program provided by health workers. In this study, there was low compliance among respondents at the Lung Center. From the researcher's analysis, most respondents had a low level of compliance in taking

medication. The non-compliance of respondents in taking OAT medication from the results of the researcher's analysis based on the distribution of questionnaires was that respondents felt disturbed in taking OAT because they had health problems that made them not comply with treatment, when patients traveled/left the house they sometimes forgot to bring medicine and respondents forgot to take OAT.

This study is supported by research conducted by Amran, Abdulkadir and Madania (2021) on the level of compliance with the use of OAT at the Tombulilato Health Center, it was found that the factors that influence non-compliance of TB patients in undergoing treatment can be caused by patients forgetting to take their medication, patients who do not take their medication on time or patients who take their medication always change, patients who are not used to taking their medication at the same time, patients who are late in taking their medication and patients who are late in re-checking their sputum.

Based on the results of the study and the description above, the researcher concluded that there is an influence of the level of compliance in taking medication for patients with pulmonary tuberculosis after pulmonary tuberculosis treatment at the RSUD dr. M Haulussy Ambon polyclinic. According to the researcher, compliance in taking medication is a key factor in achieving successful treatment in cases of tuberculosis because if patients are regular in taking medication according to the rules of eating, there is no drug withdrawal. In addition, the researcher also found that one of the reasons why patients at the RSUD dr. M Haulussy pulmonary polyclinic have sufficient compliance in taking medication is because respondents get supporting factors, such as medicines and health services that can be accessed so that respondents want to recover.

The Effect of Body Mass Index of Pulmonary TB Patients on Post-Anti-Tuberculosis Treatment In Regional public hospital dr. M Haulussy Ambon

Based on the characteristic results, it was found that the body mass index of pulmonary TB patients experienced a low BMI after post-pulmonary TB treatment of 60 respondents (72.3%). And based on the results of the Linear Regression analysis, it showed that the p-value was 0.000 <0.05, so H0 was rejected and H1 was accepted, so it was concluded that partially there was an effect of body mass index on pulmonary TB patients after pulmonary TB treatment at the RSUD dr M Haulussy Ambon polyclinic.

Ambarwati's research (2014) revealed that the nutritional status of respondents in this study is in accordance with the theory related to the basal metabolic rate which is related to the minimum amount of energy used to maintain body metabolism. The initial condition of TB patients with clinical and psychological symptoms encourages patients to tend to stay at home or can be called immobilization due to the illness they suffer. This immobilization can cause the basal metabolic rate (BMR), intestinal motility and digestive gland secretion to decrease along with the decrease in the body's energy needs. Symptoms of nausea and vomiting in TB patients also cause decreased appetite, this results in a lack of protein intake which can result in nitrogen imbalance which can continue with malnutrition status. A person with poor nutrition has a lower BMR than someone with good nutrition or a healthy condition.

This research is supported by research conducted by Aryan and Windi (2024)The relationship between body mass index and the incidence of pulmonary tuberculosis at Bangun Purba Health Center, Rokan Hulu Regency, Riau, was obtained from research results.showed the thin category of 22 people (53.85

followed by normal as many as 5 people (23.075) and obese as many as 5 people (23.075). The results of the bivariate analysis showed that there was a relationship between body mass index and the incidence of pulmonary TB at Bangun Purba Health Center, Rokan Hulu Regency, Riau with a value of P = 0.02 (p <0.05).In patients with pulmonary tuberculosis, there is a disturbance in intake and metabolic disorders in the form of increased proteolysis and lipolysis. Thus disrupting the synthesis of endogenous protein and fat which causes resting energy expenditure (REE) to increase.

This condition is called energy formation blockade (anabolic block) and is associated with wasting process resulting in malnutrition. Muscle mass reduction is associated with IL-1β, IL-6, TNF-α and malondialdehyde (MDA) due to inflammation. Inflammation activates the intracellular ATP-dependent ubiquinine protease proteolysis pathway and then the protein is destroyed by proteasomes regulated by INF-γ, IL-6, TNF-α due to TB infection inhibits the activity of lipoprotein lipase (LPL) enzyme in fat tissue which plays a role in the triglyceride clearance process. Increased levels of this enzyme increase triglyceride clearance thereby reducing the process of fatty acid synthesis and increasing the process of fat lipolysis in tissue. Increased TNF-α is also associated with anorexia resulting in impaired nutrient intake which triggers and aggravates malnutrition.

According to researchersPulmonary TB treatment over 2 months has a low body mass index level of 57 respondents (95%). Researchers conducted measurements of Body Mass Index (BMI) using anthropometric measurements 2 months later after the patient completed intensive phase OAT therapy. This is in accordance with TB symptoms, namely decreased appetite followed by weight loss due to the active presence of M. tuberculosis in the body, after 2 months of intensive phase therapy, improvements in the nutritional status of TB patients began to improve even though the majority were still in the group of poor nutritional status. Healing of pulmonary TB is strongly supported by immunity, while good immunity can be achieved if the nutritional status of the sufferer is good.

The Influence of Quality of Life and Level of Compliance of Pulmonary TB Patients and Body Mass Index Post Anti-Tuberculosis Treatment at Regional General Hospitals dr. M Haulussy Ambon

Based on the results of the Multiple Linear Regression analysis, it shows that with a p-value of 0.000 <0.05, H1 is accepted, so it is concluded that simultaneously there is an influence of the Quality of Life on the level of compliance with taking medication for pulmonary TB patients after pulmonary TB treatment at the Dr. M. Haulussy Ambon Regional Hospital polyclinic.

Quality of life is a subjective perception of satisfaction or happiness towards life in domains that are important to the individual (IDAI, 2020). Quality of life is a concept of analyzing an individual's ability to live a normal life related to individual perceptions of goals, expectations, standards and concerns that are specifically towards life experienced by being influenced by values and culture in the individual's environment and is a feeling of comfort or health that describes multidimensional health and functional components such as physical, emotional, social and behavioral perceived by the child or himself or his parents (Sangkoso, 2020).

Compliance level Compliance with taking medication is defined as the act of taking medication prescribed by a doctor at the right time and dose (Mustaqin et al., 2017). Compliance in taking medication is a key factor

in achieving successful treatment in cases of Tuberculosis which is also included in chronic diseases (Siswanto et al., 2015). Treatment will only be effective if patients comply with the rules for using medication (Danusantoso in Sirait et al., 2020). The high level of medication compliance in these respondents can be caused by several supporting factors, such as free medicines and health services, easily accessible health service centers, and the desire or motivation of respondents to recover (Dewi et al., 2019).

Body Mass Index (BMI) is a simple tool or method to monitor the nutritional status of adults, especially those related to underweight and overweight (Supariasa, 2021). Body Mass Index is defined as a person's weight in kilograms divided by height in meters (kg/m2) (Irianto, 2020). The use of this formula can only be applied to someone aged 18 to 70 years, with a normal back structure, not an athlete or bodybuilder, not a pregnant or lactating mother. BMI measurement can be used if skinfold thickness cannot be done or the standard value is not available (Arman, 2020).

According to researchers, quality of life and level of knowledge and body mass index greatly affect the treatment of pulmonary TB. If the patient with pulmonary TB performs the level of compliance with treatment until completion by undergoing the pulmonary TB program on OAT, it will make the patient's quality of life better even though this study found a low body mass index, so that in the future it is necessary to develop research on the treatment of pulmonary TB at the Dr. M. Haulussy Ambon Regional Hospital polyclinic.

CONCLUSION

Conclusion The results of the study on the analysis of the quality of life and the level of compliance of pulmonary TB patients and body mass index after anti-tuberculosis treatment at the dr. M Haulussy Ambon Regional General Hospital are as follows;

1. The Influence of Quality of Life of TB Patients on Post-Anti-Tuberculosis Treatment at the dr. M Haulussy Ambon Regional General Hospital

2. The influence of the level of compliance of pulmonary TB patients after anti-tuberculosis treatmentat at the dr. M Haulussy Ambon Regional General Hospital

3. The influence of body mass index in pulmonary TB patients after anti-tuberculosis treatmentat at the dr. M Haulussy Ambon Regional General Hospital

4. There is influenceQuality of life and level of compliance of pulmonary TB patients and body mass index after anti-tuberculosis at the dr. M Haulussy Ambon Regional General Hospital

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