
Additional Weight for Patients With Lung Tuberculosis Between Before Treatment and When Treatment in the Advanced Phase

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Abstract: Pulmonary Tuberculosis (Pulmonary TB) is an infectious disease whose etiology is the bacterium *Mycobacterium tuberculosis*. The possibility of getting pulmonary TB disease, one of the factors that influence is body weight which is included in the thin category, because people who are thin do not have the nutrition intake in the body so that it will increase the risk of pulmonary TB, the process of pulmonary TB disease can affect endurance and contribute to weight loss. The research objective was to analyze the weight gain of patients with pulmonary tuberculosis between before treatment and during the advanced phase of treatment in the Teunom Health Center Teunom District Aceh Jaya Regency. This quantitative research method was carried out from July 2017 to January 2018, the study population numbered 31 people with pulmonary TB (BTA+) who were in the advanced phase of treatment (>4 months of treatment) in PUSKESMAS Teunom, Aceh Jaya. Sampling with total sampling technique amounted to 31 people with pulmonary tuberculosis. The results of the bivariate analysis showed that there was an increase in body weight of patients with pulmonary tuberculosis between before treatment and during the advanced phase of treatment (P=0.002). Conclusion: Comparison of the weight of pulmonary TB patients from the weight in the thin category before treatment so that the weight gain becomes a normal category during the advanced phase.

Keywords: Weight Loss, Treatment, Tuberculosis.

Introduction

Tuberculosis is still the largest infectious disease trend topic in the world in 2013, with 6.1 million new cases of tuberculosis, with 5.7 million new people diagnosed with tuberculosis and 0.4 million other cases already under treatment (WHO, 2014). Most of tuberculosis deaths occur in developing countries by 98%, cases of pulmonary tuberculosis have a prevalence of 95% due to the dense population and the high prevalence of more than 65% of new pulmonary tuberculosis cases (Kannan & Kumar, 2011).

The prevalence of TB in Indonesia based on the results of diagnosis is 0.4% of the total population, in other words, on average every 100,000 Indonesians population there are 400 people diagnosed with TB cases by health personnel (RISKESDAS, 2013). The number of new TB patients in the province of Aceh was recorded among 100,000 people in a certain area, in 2015 it was found that the number of new cases of BTA+ was 4,023, this decreased compared to new cases of BTA + found in 2014 totaling 4,062 cases (DINKES Aceh, 2015). Teunom public health center Teunom District Aceh Jaya Regency in 2016 a total of 46 people, 14 people with BTA + and 32 people with BTA + patients, while the patient data in 2017 the frequency of patients increased to 17 people BTA + and 5 people BTA - so the overall frequency of patients with BTA + Lung TB 31 people and BTA Lung TB - 37 people (PUSKESMAS Teunom, 2017). The initial survey interviewed 7 patients, 5 of whom were in

the advanced phase of treatment, gained weight while 2 of them experienced weight loss due to lack of appetite and nausea during the advanced phase of treatment.

The body weight of pulmonary tuberculosis patients must be considered because pulmonary tuberculosis patients must get a high energy intake, namely 35-40 kcal per kilogram of ideal body weight. This energy intake is used to achieve ideal body weight in pulmonary tuberculosis patients (Caroline *et al.*, 2020). In pulmonary tuberculosis patients, high protein intake is needed to replace damaged cells and increase the low serum albumin level. The recommended amount of protein intake for pulmonary tuberculosis patients is in accordance with a high protein energy diet, namely 2.0-2.5 grams per kilogram of body weight (Almatsier, 2016).

The tendency for tuberculosis sufferers to lose weight is the result of symptoms of a distorted body image that causes a deficient nutritional status (BMI <18.5). This condition can lead to poor nutritional status if it is not balanced with a proper diet (Rina *et al.*, 2016). The weight loss that occurs will aggravate the infection, so that weight is the main cause of failure of treatment conversion in tuberculosis patients (Amaliah, 2012). Based on the above problems, this research is important to do to determine the weight gain of patients with pulmonary tuberculosis before treatment and after the advanced phase of treatment in an effort to achieve the pulmonary tuberculosis treatment program at Teunom Public Health Center, Teunom District, Aceh Jaya Regency.

Methods

The quantitative research method is a research method with the aim of analyzing the weight gain of patients with pulmonary tuberculosis between before treatment and during the advanced phase of treatment which was carried out from July 2017 to January 2018 in the Teunom Public Health Center, Teunom District, Aceh Jaya Regency. The entire population of pulmonary tuberculosis patients with AFB + who had consumed pulmonary anti-tuberculosis drugs and were willing to be investigated. The sampling technique was based on total sampling, namely taking samples from the total number of pulmonary tuberculosis patients with AFB+ who had consumed pulmonary anti tuberculosis drugs, totaling 31 people consisting of 19 villages.

Data on height and weight before treatment were taken from direct interviews of respondents and data were checked for the medical records of the Teunom Health Center. Data on height and weight at treatment were taken directly during the survey. The research measuring instrument used was a microtois with an accuracy of 0.1 cm to measure height and the scale with an accuracy of 0.1 kg and a questionnaire to measure body weight, to determine the weight gain of TB patients before treatment with the follow-up phase of treatment, bivariate analysis was carried out. with the Wilcoxon Signed Ranks test.

Result

Table 1 shows that the sex proportion of people with pulmonary TB is more male than female. 9 people (29.0%) were in the early elderly category (46-55 years). The most education level category from the junior high school graduate education level is 11 people (35.5%). Most of the work status as farmers / fishermen amounted to 9 people (29.0%).

Table 1: Frequency Distribution of Respondent Characteristics

No.	Demographic Data	Frequency	%
1.	Age:		
	Children (5 - 11 Years)	1	3.2
	Early adolescence (12 - 16 years)	1	3.2
	Late adolescence (17-25 years)	1	3.2
	Early adulthood (26 - 35 years)	5	16.1
	Late adult (36 - 45 years)	4	12.9
	Early Elderly (46 - 55 Years)	9	29.0
	Late elderly (56 - 65 years)	4	12.9
	Seniors (> 65 years)	6	19.4
	Total	31	100
2.	Gender :		
	Male	21	67.7
	Women	10	32.3
	Total	31	100
3.	Job Level		
	Student	2	6.5
	College student	2	6.5
	Civil servants	1	3.2
	Farmers / Fishermen	9	29.0
	entrepreneur	7	22.6
	Driver	2	6.5
	Housewife	6	19.4
	Etc	2	6.5
	Total	31	100
4.	Education Level		
	Kindergarten	1	3.2
	Primary School	8	25.8
	Junior High School	11	35.5
	High School	8	25.8
	Bachelor	3	9.7
	Total	31	100

Table 2 shows that most of the body weight of pulmonary TB patients was normal during the follow-up phase of treatment, amounting to 14 people, whereas before treatment the body weight of pulmonary TB patients was underweight, amounting to 20 people. My research is in line with research conducted by Mandala (2015) of 80 people with pulmonary TB who are receiving intensive treatment, it turns out that more than half of the sample, namely 69 people (86.3%) who experienced weight gain.

Table 2 The Frequency Distribution of Respondents' Weight Before and During the Advanced Phase of Treatment

Weight Loss Before Treatment	weight at the time of the advanced phase of treatment			P-value
	Lean	Normal	Total	
Lean	6	14	20	0,005-0,002
Normal	6	6	11	
Total	11	20	31	

Discussion

Body weight in the underweight category is included in the under nutritional status so that it can reduce a person's immune system so that disease will be easy. Protein content as well as calories and iron can increase the risk of pulmonary tuberculosis. The immune system will function properly if the fulfillment of nutrition and food is fulfilled properly. In this case, it is necessary to pay attention to the quality of food consumption which is determined by the composition of the type of food. Poor nutrition can reduce resistance to tuberculosis in both adults and children (WHO, 2016). For the body weight of the respondents when the advanced phase of pulmonary TB treatment was carried out (Table 2), it was found that 6 out of 31 people were underweight, 25 of 31 people had normal weight. There is normal weight gain and thin weight loss. This is due to the weight gain experienced by respondents after experiencing treatment, bivariate analysis with the Wilcoxon Signed Ranks test showed that there was a significant difference between body weight before and during the advanced phase of treatment ($P = 0.002$).

Normal weight change is one of the predictors of successful pulmonary TB treatment. Pulmonary TB patient weight will be normal during treatment. This can be caused by several factors including an increase in food intake and appetite, as well as the body's metabolic processes starting to improve Harna *et al.*, (2017). The effect of body weight of pulmonary tuberculosis patients after being given nutrition education in the form of milk, protein and carbohydrates, it can be seen that the difference in body weight of patients before and after education of nutritional intake in pulmonary TB patients is obtained $P = 0.000$ which means there is a significant difference in body weight between TB patients Lungs before being given nutrition intake education and after being given nutrition intake education (Novita *et al.*, 2017).

The Wilcoxon Signed Ranks test results obtained a sig value of 0.002 (Less than 0.05), so there is a difference in body weight of pulmonary TB patients before treatment and during treatment. This is the same as a study conducted by Anatasya & Ratih (2016) that the patient had a smoking habit since the age of 18 years and quit after being diagnosed with pulmonary tuberculosis. body 168 cm. After following the treatment for 3 months on a regular basis and consuming the food recommended by the puskesmas, the patient's weight became 61 kg. The patient's weight gain is still small, because when he is sick, the patient's appetite decreases due to the side effect of nausea from the anti-tuberculosis drugs the patient is taking. At this time the patient's condition had improved compared to before the treatment, there was no appetite at all and there was no increase in the patient's weight.

Malnutrition often occurs in TB patients is predicted to affect the immune system and the treatment of pulmonary TB. Several studies have reported that pulmonary TB patients tend to have a very thin body compared to healthy people (Kholis *et al.*, 2018). Pulmonary tuberculosis can cause poor nutritional status, and conversely, poor nutritional status will aggravate pulmonary TB. Pulmonary TB patients with poor nutritional status often take longer to heal and have a higher risk of experiencing secondary infections (Puspita *et al.*, 2016)

In general, nutritional status is an indicator in measuring public health (Nursilmi & Kusharto, 2017). Poor nutritional status can cause low body resistance so that the *Micobacterium Tuberculosis* bacteria is easy to grow and reproduce and this can inhibit healing (Wang *et al.*, 2013). Improvements in nutritional status through provision of nutrition or metabolism of nutrients have a good impact on lung function and the patient's condition. Nutrition can also cause problems with hypercapnia and aspiration, therefore in lung disease, energy requirements and methods of administration must be carried out with standards so that there is no under or overfeeding. Providing nutrition in pulmonary tuberculosis can maintain and increase body weight so that it is hoped that by providing good nutrition, the quality of life of patients with pulmonary tuberculosis can improve (Rahardja, 2015).

Conclusions

Comparison of the weight of pulmonary TB patients from the weight in the thin category before treatment so that the body weight increases to the normal category during the advanced phase of treatment. The results of the bivariate test show that there is weight gain between before treatment and during the advanced phase of treatment.

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