Factors Related to the Low Nutritional Status among Tuberculosis Patients

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Abstract

Tuberculosis and malnutrition are serious problems. Tuberculosis causes malnutrition that potentially lessen patients' immunity and increase the risk for activating tuberculosis. The purpose of this study was to identify the factors related to the low nutritional status among tuberculosis patients in Malang City. This research applied a corelational study. The subjects involved were tuberculosis patients with BMI<18.5. Chi-square and Fisher Exact Test were used to analyse the identified factors. Moreover, binary logistic regression to identify factors related to the low nutritional status among tuberculosis patients in Malang City. This study found almost half of participants (46.8%) had poor family knowledge about dietary TB patients. More than half of the participant's culture (62.5%) was abstinence. A more than half of participant (59.6%) had Moderate malnutritions. There was no significant correlation between low nutritional satus and variable of gender p=1.000, education p=0.404, family knowledge p=0.767, and culture p=0.310. The significant correlation was occupational status with p=0.043. The binary logistic regression showed that tuberculosis patient with unoccupied are 1.286 times more likely to have a low nutritional status. Occupational status was the one factor that significantly related to the low nutritional status among TB patients in Malang City.

Keywords: Nutritional status, relating factor, tuberculosis.

Introduction

The prevalence of pulmonary TB based on the Doctor's Diagnosis History in East java and Malang, East Java is 2,161 and 98,566 cases, respectively (Riskesdas, 2018). Pulmonary TB disease suffered by individuals results both physically, mentally, and social life. Physically, if a person with pulmonary TB does not receive treatment, after 5 years the patient will die (50%), will heal themselves with good immune system (25%), and will become a chronic case (25%). Physical is not good will make someone lose the opportunity to actualize themselves due to physical limitations possessed. These limitations will hamper disrupting physical well-being, which in turn will have an impact on low quality of life (Kusnanto, Pradani, & Karima, 2016).

The relationship between TB and malnutrition has long been known. TB worsen malnutrition that then weakens immunity and increase the risk for activating latent TB. A previous study found that a majority of patients had chronic and severe undernutrition which persisted even after successful treatment. These findings indicate the important of nutritional support during treatment of pulmonary TB (Bhargava et al., 2013). A study reported that TB incidence among respondent with BMI <18.5 was approximately 3% of the population or 260.2 per 100,000 person-years equal to11.7-fold higher than that among participants with normal BMI (Cegielski, Arab, & Huntley, 2012).

A study reported that majority of the tuberculosis patient with active tuberculoasis had low nutritional status, which IMT score <18,5. This situation affects the nutritional status of a person which affects the body's endurance (Lazulfa et al., 2016). Most individuals with active tuberculosis experience weight loss and some of them showed signs of vitamin and mineral deficiency at diagnosis. Weight loss among patients with TB can be caused by several factors, including reduced food intake due to loss of appetite, nausea, and abdominal pain; loss of nutrition due to vomiting and diarrhea and metabolic changes due to disease. Low body mass index (BMI) (below 18.5 kg/m2) and lack of weight gain with TB treatment

are associated with an increased risk of death and relapse of TB and can be indicator of TB severity, poor treatment response and/or presence other comorbid conditions (WHOa, 2013).

According to the Depkes (2011), about 75% of patients with pulmonary TB mostly come from economically productive age group (15-50 years). It is estimated that an adult pulmonary TB patient, will lose an average working time of up to 3 to 4 months. This results in a loss of annual household income of around 20-30%. This can decrease the consumption of quality food (Kusnanto et al., 2016). Another study by Noviyani et al. (2015), work activities carried out development of social relationships that will improve one's knowledge compared to people who do not work, so that information related to good nutrition among people with tuberculosis will be more updated.

There were numerous factors influence the low level of nutrition. A previous study (Gurung et al., 2018) reported that working conditions and food intake frequency were significantly associated with calorie intake in TB patients. It also found that the amount of calories, food frequency per day, types of TB, and nutritional status during registration were significantly associated with recent nutritional status among TB patients.

According to Dodor's (2008), nutritional status is significantly associated with marital status, income per month, education level, trust to avoid certain types of food and close family size at the time of starting TB treatment. Two months after starting treatment, changes in BMI were significantly associated with age groups, marital status, employment status, level of education and beliefs to avoid certain types of food. In addition, the success of patients suffering from active phase pulmonary TB to be able to maintain good nutritional status cannot be separated from the support of family's roles. In general, participants said that it was their family (wife/husband, parents and children) who often kept on endlessly to motivate participants to always maintain good health. The family performs health care functions ranging from routinely delivering control, reminding taking medication, to motivation to eat while providing healthy food for

participants (Masruroh, Kurnia, & Melizza, 2019).

Indonesia, which consists of various tribes and cultures, has diverse socio-cultural conditions. Socio-cultural which is a human-human relationship, is often influenced by myths, norms, values, beliefs, habits related to cultural patterns and is the effect of various accesses, which can be in the form of access to food, access to information and access to services and capital owned (Kasmini, 2012). Furthermore, according to Leininger (2002) reported that transcultural nursing refers to culture related to healthcare delivery that can affect disease management and the status of individuals' health and well-being. Transcultural nursing have improved nursing care to diverse populations by providing a means to overcome difficulties and challenges when facing with culturally diverse patients. Furthermore, in this study will exemine culture as a factor that rlated to the low nutritional status (Albougami, Pounds, & Alotaibi, 2016).

This study aims to determine factors related to the low nutritional status of tuberculosis patients. Those factors consist of gender, occupational status, family knowledge, and culture. The finding factors can lead to apply properly treatment for tuberculosis patient with low nutritional status.

Method

This study was used a corelational study with cross-sectional design. Purposive sampling was applied using some inclusion criteria namely had low nutrional status (BMI<18.5), active tuberculosis, able to communicate, and agree to be a respondent. There were 47 TB patients and their family who met the criteria out of 63 TB patients in Kedungkandang and Ciptomulyo public health centers.

The data were collected by using questionnaire and physical examination. The questionnaire contains of patient's characteristics, family knowledge, culture, and occupational status. Patient's characteristics included age, gender, educational level, and occupational status status. Family knowledge questionnaire was developed by Melizza (2018), consisted of

'right' and 'wrong' questions (right answer = 1 & wrong answer = 0) and included 15 items. The realibility of the family knowledge questionnaire was α= 0.928. Meanwhile culture questionnaire consist of 'yes' and 'no' questions (yes = 1 and no = 0) and included 3 items. The realibility of the culture questionnaire was α= 0.605. The total score of each questionnaire was categorized poor = ≤ 55%, sufficient = 56–75%, and good = 76–100%. Correspondence's body weight also must be scaled, as well as their height. Severe malnutrition was categorized as BMI <16 kg/m2, moderate malnutrition as BMI 16–18.4.

The study was obtained permission from the participant before collected the data. The study was conducted in august 2018 with ethical permission from the Ethical Review Board (ERB) committee of University of Muhammadiyah Malang (ERB No.E.5.a/259/ KEPK-UMM/VIII/2018).

Data Analysis
The descriptive data analysis applied to analyse patients' characteristics namely age, gender, education, occupational status, and nutritional status. The analysis applied Chi-square and Fisher Exac Test because of the data was not normally distributed. The correlation between age, gender, education, culture occupational status, family knowledge and low nutritional status were analized using Fisher Exact Test because of the expected count more than 25% . While to identify the most significant factor that related to the low nutritional status among tuberculosis patients in Malang City used binary logistic regression due to the data was not normally distributed.

Results

Demography Data
Table 1 showed that most of the participants (74.5%) were women. Approximately, 35% participants had elementary school for educational level. More than half of the participants (55.3%) had employed, had good family knowledge about dietary TB patients (54.8%), abstinence culture (62.5%), and (59.6%) Moderate malnutritions.

Table 1 Demography Data of Participants

Demography Data	Number	Frequency
Age (46 ± 11.64)	-	-
Gender		
a. Male	12 persons	25.5%
b. Female	35 persons	74.5%
Education		
a. Not taking formal education	1 person	2.1%
b. Elementary School	16 persons	34.0%
c. Junior High School	15 persons	31.9%
d. Senior High School	13 persons	27.7%
e. Undergraduate	2 persons	4.3%
Occupational status status		
a. Employed	26 persons	55.3%
b.Unemployed	21 persons	44.7%
Family Knowledge		
a. Good	25 persons	53.2%
b. Poor	22 persons	46.8%
Culture		
a. Abstinence	35 persons	62.5%
b. Non-Abstinence	12 persons	37.5%
Low Nutritional Status		
Moderate Malnutritions	28 persons	59.6%
Severe Malnutritions	19 persons	40.4%

Table 2 Crosstabulation between Independent Variables and Low Nutritional Status among TB Patients.

Independent Variables	Low Nutritional Status		P
	Severe malnutrition	Moderate malnutrition	
Gender[1]			
Men	5 (26.3%)	7 (25%)	1.000
Women	14 (73.7%)	21 (75%)	
Education[1]			
No education	1 (5.3%)	0 (0%)	0.404
Formal education	18 (94.7%)	28 (100%)	
Occupational status[2]			
Employed	7 (36.8%)	19 (67.9%)	0.043*
Unemployed	12 (63.2%)	9 (32.1%)	
Family Knowledge[2]			
Good	11 (57.9%)	14 (50%)	0.767
Poor	8 (42.1%)	14 (50%)	
Culture[1]			

Independent Variables	Low Nutritional Status		P
	Severe malnutrition	**Moderate malnutrition**	
Abstinence	16 (84.2%)	3 (15.8%)	0.310
Non- Abstinence	19 (67.9%)	9 (32.1%)	

Note: [1]Fisher Exac Test; ([2]) = Chi-square
*Correlation is significant at the .05 level (2-tailed)

Table 3 Determinant of the Low Nutritional Status among Tuberculosis Patients

Variable	B	Sig.
Ocupational status	1.286	0.039*

*Correlation is significant at the .05 level (2-tailed)

Table 2 showed that participants who suffered the most of moderate malnutritions (75%) and severe malnutritions (73%) were woman. The most of partisipant that have low nutritional status in category of moderate malnutritions are educated participants (100%). The majority of participants who worked experienced moderate malnutritions (67.9%), while respondents who did not work mostly experienced severe malnutritions (63.2%). Eleven people have good knowledge, the percentage of participants who experience severe malnutritions is quite high at 57.9%. Furthermore, 84.2% of participants who abstained from certain foods experienced low nutritional status in the severe category. Among identified factors, only occupational status that significantly correlated to low nutitional status among TB patients (p <.05).

Table 3 showed that tuberculosis patient with no occupational status are 1.286 times more likely to have a low nutritional status.

Discussion

The results also showed that gender was not associated with low nutritional status in patients with tuberculosis. This is supported by research conducted by Hoyt et al. (2019) which explained that gender is not related wth nutritional status among people with tuberculosis. Another reason is also mentioned because biological factors, namely women have a greater ability to adapt to starving (Bharvaga et al., 2013).

In addition, education is also not related to the low nutritional status of patients with tuberculosis. The statement is not in accordance with the research of Widianti (2007) in Putri, Harmayetty, & Utomo (2016) which stated that through knowledge obtained during formal education, people with highly educated will have broader knowledge than those with low education, in this case regarding health knowledge. Nevertheless, education can also be connected to age and knowledge. Since, based on the demographic data, approximately 35% of participant had elementary school of educational level. This finding in line with a previous study by Hoyt et al. (2019) that reported years of education did not differ significantly between subjects with severe malnutrition, moderate malnutrition and normal BMI among people with Tuberculosis.

Another research finding stated that family knowledge is not related to low nutritional status of patients with tuberculosis. As explained above, the knowledge level not only corresponds with formal education but also age and social interaction. The results of the research showed that even the family have good knowledge about tuberculosis, approximately 60% of the participant had severe malnutrition. This condition might be occurred due to information accessibility is not spread well among family member. However, the spread of information will increase individual knowledge and understanding regarding disease information (Driscoll et al., 2009 in Mohammadpour et al., 2015). Essentially, knowledge also can be influenced by people interaction. It helps an individual to develop the knowledge and hopefully, an individual will treat himself well (Mohammadpour et al., 2015).

Culture does not influence low nutritional status in TB patients. It is related to abstinence of consuming certain foods.

According to Dodor (2008), belief to a certain food can affect nutritional status in TB patients. Shivalli et al. (2015) revealed that culture is responsible for the occurrence of the disease. Nutritional treatment of TB can be solved by identifying and preventing the cause of poor nutrition through education, counseling, and dietary habit. In a severe case, nutritional treatment aims at reducing death risk and rehabilitation period (WHOb, 2013). Somehow, several foods should be avoided due to cough stimulus can distract the respiratory system of TB patients.

Furthermore, the results indicated that occupational status relates to low nutritional status in TB patients. Tuberculosis patient with unemployed are 1.286 times more likely to have a low nutritional status. This result might be caused by the activity will led them to improve their intake nutrition. The percentage stated that working and not working patients are not deeply different. It is in accordance with Dodor (2008), nutritional status is related to marriage status, monthly income, and avoiding certain foods. Occupational status surely affects individual income. Winetsky et al. (2014) explained that low access to nutrition corresponds with the low economy condition, difficulty in obtaining nutritional food, and a geographical factor which affect the occurrence of TB.

Conclusion

There are numerous factors that influence nutritional status, such as age, gender, education, occupational status, family knowledge, and culture. However, the most dominant factor is occupational status. Tuberculosis patient with unemployed are 1.286 times more likely to have a low nutritional status.The occupational status is highly related to nutrition intake and family attention to treat TB patients.

Acknowledgment

Conflict of interest

There was no conflict of interest declare in this study.

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