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Factors that Affect the Success of Tuberculosis Therapy in Primary Care: Type of Tb Preliminary Studies

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ABSTRACT

The incidence of tuberculosis disease is a public health problem, although there are standards of therapy and clinical pathway for TB patients. Complications of TB disease will lead to increase mortality and to decrease quality of life of patients. The effectiveness of drug therapy should be enhanced by developing an educational or counseling model as non-pharmacological treatment of primary care. Preparation of that model start with knowing factors that influence the success of tuberculosis therapy in primary care. This step is needed to make the model effective and in accordance with the service condition. The purpose of this research is to know the factors influencing the success of tuberculosis therapy in primary care as the first step to formulate the intervention model of behavior change of Tuberculosis patients. The study design was a cohort for 4 months with a total of 40 early tuberculosis patients. Data collection was done in primary by interviewing with questionnaire guidance. Secondary data retrieval was conducted to obtain therapeutic data, clinical outcomes, laboratory and radiology. The results showed family support factors, medication adherence, companion to take medication from family and good nutrition intake have an effect on the success of tuberculosis therapy. Tuberculosis pharmacologic therapy should be supplemented with family support, medication adherence, companion taking of family-derived medication and good nutritional intake The conclusion showed the most patient has pulmo tuberculosis (61.9%), age <50th (81%), and woman (52,4%). Mineral (Fosfor) from nutrition intake factors have relationships in tuberculosis theraphy ($p = 0.014$; $p < 0,05$).

Keywords: *Success of therapy, factor, model, primary service*

INTRODUCTION

Tuberculosis is a contagious disease caused by *Mycobacterium Tuberculosis.* Tuberculosis is a disease of global concern. With various control efforts being carried out, the incidence and death due to tuberculosis have decreased, but Tuberculosis is estimated to still attack 9.6 million people and cause 1.2 million deaths in 2014.[1] India, Indonesia and China are countries with the most Tuberculosis sufferers, namely 23%, 10% and 10% of all sufferers in the world.[2] Complications of tuberculosis will lead to increased mortality and decrease the quality of life of patients. The effectiveness of therapy should be enhanced by developing knowledge of the factors that influence the success of tuberculosis therapy. Treatment attendance, family carrying capacity, the role

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of drug guidance, depression and nutritional intake in tuberculosis patients are thought to be associated with successful tuberculosis therapy.

OBJECTIVE

Assess the relation of adherence to treatment, family supporting capability, role of drug-taking guides, depression and nutrition with successful tuberculosis therapy

METHOD

The study design was a cohort for 4 months with a total of 40 early tuberculosis patients. Data collection was done in primary by interviewing with questionnaire guidance. Secondary data retrieval was conducted to obtain therapeutic data, clinical outcomes, laboratory and radiology. Place of study in polyclinic and clinic treatment center.

RESULTS AND DISCUSSIONS

Patient characteristics with the number of frequency and percentage are presented in table 1. Patients without depression and patients with mild depression category had the highest number of all respondents. Almost all patients have good treatment, except for one patient. 19 out of 21 patients who have good family support. Then there were 13 people from 21 people who did not get good medication reminders. For nutritional intake, most patients are still lacking in protein, fat, carbohydrates, vitamin A, and vitamin c. Whereas energy intake in tuberculosis patients is less and normal than 9 people. Mineral phosphorus is dominated by patients with over 8 people.

Based on table 2, description of the condition of tuberculosis patients for HDRS very severe on extrapulmonary tuberculosis of 4.8%. Description of the condition of tuberculosis patients less disobedient category in taking tuberculosis drug in pulmonary tuberculosis of 28.6% and in extrapulmonary tuberculosis of 14.3%. The carrying capacity of less family in pulmonary tuberculosis is 9.5%.

Table 1: TB Patient characteristics of depression scale, taking medicine, carrying capacity and nutritional intake

Patient characteristics	Frequency	Percentage
Hamilton Depression Rating Scale		
Normal	9	42.9
Mild	9	42.9
Moderate	1	4.8
Severe	1	4.8
Very Severe	1	4.8
Treatment Compliance		
Obedient	20	95,2
Disobedient	1	4,8
The carrying capacity of the family		
Positive support	19	90,5
Negative support	2	9,5
Role of supervisior taking medicine		
Good	4	19,0
Bad	13	61,9
None	4	4,8
Nutritional intake		
PROTEIN		
Less	16	76.2
Normal	4	19.0
More	1	4.8
ENERGY		
Less	9	42.9
Normal	9	42.9
More	3	14.3
FAT		
Less	15	71.4
Normal	5	23.8
More	1	4.8
CARBOHYDRATE		
Less	18	85.7
Normal	3	14.3
VITAMIN A		
Less	14	66.7
Normal	3	14.3
More	4	19.0
MINERAL (FOSFOR)		
Less	6	28.6
Normal	7	33.3
More	8	38.1
VITAMIN C		
Less	18	85,7
Normal	3	14,3

Table 2: The relation of factors that affect the success of TB therapy with the type of TB

Variable	Type of TB		∑ TB Patient	P	OR
	Pulmonary TB	Extra pulmonary TB			
Hamilton Depression Rating Scale					
Normal	7 (33,3%)	2 (9,5%)	9 (42,8%)	6.010	0.289
Mild	2 (23,8%)	4 (19,0%)	6 (28,6%)		
Moderate		1 (4,8%)	1 (4,8%)		
Severe	1 (4,8%)		1 (4,8%)		
Very Severe		1 (4,8%)	1 (4,8%)		
Treatment Compliance					
Obedient	12 (57.1%)	8 (38.1%)	20 (95,2%)	0.600	0.289
Disobedient	1 (4.8%)		1 (4,8%)		
The carrying capacity of the family					
Positive support	11 (52.4%)	8 (38.1%)	19 (90,5%)	0.579	0.505
Negative support	2 (9.5%)		2 (9,5%)		
Role of supervisior taking medicine					
None	4 (19.0%)		4 (19,0%)	5.467	0.127
Good	6 (28.6%)	7 (33.3%)	13 (61,9%)		
Bad	3 (14.3%)	1 (4.8%)	4 (19,1%)		
Nutritional intake					
PROTEIN					
Less	8 (38.1%)	8 (38.1%)	16 (76,2%)	5.729	0.133
Normal	4 (19%)		4 (19,0%)		
More	1 (4.8%)		1 (4,8%)		
ENERGY					
Less	3 (14.3%)	6 (28.6%)	9 (42,8%)	6.918	0.052
Normal	7 (33.3%)	2 (9.6%)	9 (42,8%)		
More	3 (14.3%)		3 (14,4%)		
FAT					
Less	7 (33.3%)	8 (38.1%)	15 (71,4%)	7.182	0.075
Normal	5 (23.8%)		5 (23,8%)		
More	1 (4.8%)		1 (4,8%)		
CARBOHYDRATE					
Less	10 (47.6%)		18 (85,7%)	0.556	0.257
Normal	3 (14.3%)	8 (38.1%)	3 (14,3%)		
VITAMIN A					
Less	8 (38.1%)	6 (28.6%)	14 (66,7%)	0.471	0.797
Normal	2 (9.5%)	1 (4.8%)	3 (14,3%)		
More	3 (14.3%)	1 (4.8%)	4 (19,0%)		
MINERAL (FOSFOR)					
Less	3 (14.3%)		6 (28,6%)	11.217	0.014
Normal	2 (9.5%)	3 (14.3%)	7 (33,3%)		
More	8 (38.1%)	5 (23.8%)	8 (38,1%)		
VITAMIN C					
Less	10 (47.6%)	8 (38.1%)	18 (85,7%)	0.556	0,257
Normal	3 (14.3%)		3 (14,3%)		

Our study provides evidence that patient with mild depression can be found out in both type of TB, 2 patient for Pulmonary TB, and 4 patient for Extrapulmonary TB. While moderate and very severe depression only found in Extrapulmonary TB (4,8%), and severe depression is only found in Pulmonary TB (4,8%). All of them has odds ratio 0,289, which means depression factors can be affect the type of tuberculosis patient 0,289x more than tuberculosis patient with no depression. Previous studies said TB patients have a high risk of significant depression when compared to the general population.[3] And previous studies have also reported that stigma is often attached to health problems, including tuberculosis. The stigma attached to TB sufferers is like rejection, exclusion, fear of infection or transmission, changes from people with TB.[4] The stigma in tuberculosis can lead into depression and can cause treatment delay and have a negative impact on the continuity of treatment. Negative impacts in treatment continuity may lead to discontinuation of treatment in patients with tuberculosis that may lead to unresolved treatment.[5]

Compliance is an individual's behavior (for example: taking medication, adhering to a diet, or making lifestyle changes) as recommended by therapy and health. The level of compliance can be started from the act of paying attention to every aspect of the recommendation to obeying the plan.[6] Based on table 2, most of patient (95,2%) was obey. Adherence to treatment is behavior that shows the extent to which individuals follow recommendations related to health or disease. Based on the explanation above, it can be concluded that the behavior of adherence to treatment is the extent to which the efforts and behavior of an individual shows conformity with the rules or recommendations provided by health professionals to support his recovery. There are 4 factors that influence patient compliance in undergoing treatment, namely treatment-related factors, patient-related factors, factors related to medical personnel and factors related to health care provider systems. If these four factors synergistically support, the patient's compliance in carrying out the treatment, the therapeutic target of healing can be achieved.[7]

Family support capacity has a role in the success of tuberculosis therapy. The family has a great role in controlling tuberculosis treatment, because the duration of TB treatment is long and must be organized and the patient also needs support in other things such as daily activities, nutritional support, from emotional to instrumental aspects such as financial support.[8] Long-term treatment and the effects of medication make the patient uncomfortable so that they do not continue treatment, so family support is also needed as a means of treatment compliance.[9]

Families can contribute to contributing to patients in two ways: supporting and caring for patients. Previous research suggests that patients feel support and care should be given directly by the family. The intended support is in the form of assistance in daily routine activities, financial assistance, emotional and moral support, and motivation to complete treatment. Another thing that patients need to be supported is to accompany during treatment, to take and take medication, provide food, and give them time to rest.[10] Family support has a positive effect on nutritional status and adherence to treatment and high family support can increase the likelihood of making the patient's nutritional status better and more obedient in treatment.[11]

The results of the study indicate that work and health services are not a risk factor for treatment behavior for pulmonary TB patients. While the role of PMO, family support and discrimination is a risk factor for treatment behavior for pulmonary TB patients. This means that if the PMO does not carry out its role properly, it can affect the patient's treatment behavior which then has an impact on therapeutic success. Direct treatment supervision is important at least during the intensive treatment phase (first 2 months) to ensure that the drug is eaten with the right combination and the right time period. With direct supervision of treatment, patients do not assume responsibility for compliance with drug use alone.[12] Health care workers, community health workers, the government and the public must all share responsibilities and provide a lot of support to patients to continue and complete their treatment. Treatment supervisors can be anyone who wants, is trained, is responsible, can be accepted by the patient and is responsible for the supervision of tuberculosis treatment.[13]

According to Dorland (2015) nutrition is taking food and burning from food substances that contain nutrients by an organism for survival. Nutritional intake is the amount of food that a person eats in order to obtain energy. As for these foods like carbohydrates, protein, fat. Other names of these nutrients are macro nutrients.[11] The problem of nutrition intake is important because the improvement of nutrition is one of the efforts to

break the transmission and eradication of tuberculosis in Indonesia.[14] Besides that, the lack of macro nutrients will have an effect on Zinc, Vitamin A, Vitamin C, Vitamin D and Mineral deficiency. This lack of micronutrients will result in damage to critical cell immunity to fight tuberculosis.[1]

CONCLUSION

Adherence to treatment, Family carrying capacity, Role of drug taking guides (PMO), Depression and Nutritional intake related to the success of tuberculosis therapy.

Conflict of Interest: The authors declare that they have no conflicts of interest.

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Ethical Clearance: The study was approved by Institutional ethics commitee

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