

Family Knowledge and Attitudes to Improve Medication Adherence in Patients with Pulmonary Tuberculosis

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Keywords: Knowledge, Attitude, Family, Medication Adherence of Pulmonary Tuberculosis.

Abstract: Many Pulmonary Tuberculosis (TB) patients forget to take medication because of lack of support from their families due to a lack of knowledge and attitude. This study aimed to analyze the relationship between the knowledge and attitude of families and adherence to taking medication in patients with pulmonary tuberculosis at Perak Timur Health Center. This is a cross-sectional study. The population of this study comprised of the families of patients treated at Perak Timur Health Center. The number of research samples was 110 respondents while for the inclusion criteria, consecutive sampling was used. The dependent variables were knowledge and family attitude in patients of pulmonary TB, while the independent variable was medication adherence in TB patients. Data were collected using questionnaires. The data were analyzed using Spearman. Results indicated that a correlation between family knowledge and TB medication adherence ($p = 0,000$) with contingency coefficient (C) = 0,655. Family attitudes and medication adherence of pulmonary tuberculosis patients ($p=0,000$) with contingency coefficient (C) = 0,926. It can be concluded that there is a relationship between the knowledge and attitude of families and compliance in taking medication in patients of TB. Family knowledge and attitude is good in relation to medication adherence. Researchers are further advised to examine the analysis of factors related to adherence in taking pulmonary TB Medication. Suggestions can be made for education about pulmonary TB, especially regarding disease transmission, accuracy in taking medication, and time to take medication for TB patients.

1 BACKGROUND

Tuberculosis (TB) is a contagious infectious disease caused by the bacterium *Mycobacterium Tuberculosis* that can attack various organs, especially the lungs (Depkes RI, 2016). Pulmonary tuberculosis (TB) is a curable disease but many patients stop treatment prematurely. TB patients often discontinue their own treatment if they feel the symptoms of the disease have been lost or reduced. Many factors that affect the success of TB treatment include regular medicine taking, family support, community, social stigma, level of knowledge, and environment. Non-adherence to TB treatment is significantly associated with unemployment, low status occupation, low annual income and cost of travel to the TB treatment facility (Ii & Urin, 2007).

Pulmonary tuberculosis problems are a challenge for countries all over the world. TB incidences from year to year are increasing (WHO, 2017). The World Global Tuberculosis Report says Indonesia ranks second with the highest number of tuberculosis cases

in the world. The number of pulmonary TB patients in Indonesia by 2016 was 156,723 people, those who completed treatment was 11,427 (6.1%) and those who experienced successful treatment was 141,980 (75.4%) (WHO, 2017). The incidences of confirmed pulmonary TB in Indonesia rose significantly from 7% in 1999 to 13% in 2003. This indicator decline from 2003 to 2014 but by 2015 had increased again to 14% (Depkes RI, 2016).

All patients who have not been treated previously, and do not have other risk factors for drug resistance, should receive a WHO-approved first-line treatment regimen using quality assured drugs. The initial phase should consist of two months of isoniazid, rifampicin, pyrazinamide, and ethambutol. The continuation phase should consist of isoniazid and rifampicin given for four months. Doses of antituberculosis drugs should conform to WHO recommendations. Fixed-dose combination drugs may provide a more convenient form of drug administration (TB Care I & United States Agency for International Development, 2014).

The duration of treatment in patients with pulmonary TB greatly affects adherence of patients in taking the drug. Poor treatment, heavy financial burden (Lei et al., 2016), illiteracy, being divorced or widowed, lacking health insurance and being migrants (Xu et al. 2009) are factors of non-adherence therapy. Family support is indispensable in the treatment of pulmonary TB patients. One fundamental principle of the Family Health Strategy is to build bonds between the health team and the referred community and to maintain the care offered to individuals and families over time, through a proactive attitude in view of health-disease problems (de Souza et al., 2010).

2 METHODS

The method used in this research is cross sectional with the population being the families of lung tuberculosis patients at Perak Timur Health Center. The sample comprises of families of patients with pulmonary TB, who were seeking treatment at Perak Timur Health Center and undergoing treatment of anti-tuberculosis drug from October 23 to November 11, 2017. Inclusion criteria are: 1. Families who care for patients with pulmonary TB who are undergoing anti-tuberculosis drug treatment; 2. Families, caring for pulmonary TB patients, who can read and write; 3. Families who have become drug supervisors; 4. Patients who have had pulmonary TB for more than 15 years; and 5. TB patients who can read and write. Exclusion criteria are: 1. TB patients who have accompanying diseases such as diabetes mellitus, hypertension, and others; and 2. Patients' family members aged less than 18 years. Total sampling is used for this research. The number of samples in this study comprised of 110 respondents. Independent variables are the knowledge and attitude of the family. The dependent variable is medication adherence in patients with pulmonary TB. The ethical clearance was conducted at the Faculty of Nursing of Airlangga University and was approved on November 6, 2017 with the certificate number 553-KEPK.

Samples were collected using consecutive sampling and data were collected using questionnaires. Questions in the questionnaire were in four parts: 1. Demographic data including age, education and gender; 2. Family knowledge about TB consisting of 12 closed questions; 3. Family attitudes toward pulmonary TB patients comprising 12 questions; and 4. Patient adherence to taking pulmonary TB drugs, comprising four closed

questions. Data analysis of the knowledge level and attitude of family regarding medication compliance was done using the Spearman Rank statistic test.

3 RESULTS

The table shows that most of the families that care for patients include working women with their most recent education in elementary school and aged between 18 and 65 years. Characteristics of patients based on Table 1 are mostly male with a recent primary school education, all aged 18–65 years, and mostly employed.

Table 1: Family and patient demographic characteristic data.

Characteristic Family		
Gender	f	%
Male	45	40.9
Female	65	59.1
Total	110	100
Last education	f	%
Elementary School	45	40.9
Junior High School	21	19.1
Senior High School	44	40
Total	110	100
Age	f	%
18–65 years	110	100
66–79 years	0	0
Total	110	100
Work	f	%
Employee	92	83.6
Unemployment	18	16.4
Total	110	100
Patient		
Gender	f	%
Male	57	51.8
Female	53	48.2
Total	110	100
Last education	f	%
Elementary School	47	42.7
Junior High School	24	21.8
Senior High School	39	35.5
Total	110	100
Age	f	%
18–65 years	101	91.8
66–79 years	9	8.2
Total	110	100
Work	f	%
Employee	62	56.4
Unemployment	48	43.6
Total	110	100

Table 2: Family knowledge about tuberculosis, family attitude to TB patients, medication adherence in patients with lung tuberculosis.

Variable	Category	f	%
Knowledge	Much less	2	1.8
	Less	16	14.5
	Enough	68	61.8
	Good	24	21.8
Total		110	100
Attitude	Less	6	5.5
	Enough	34	30.9
	Good	70	63.6
Total		110	100
Medication Adherence	Less	6	5.5
	Enough	30	27.3
	Good	73	66.4
	Very good	1	0.9
Total		110	100

Table 2 shows that most families of TB patients have sufficient knowledge about TB (as many as 68 people or 61.8%). Family attitudes to TB patients are mostly good (as many as 70 people or 63.6%). For medication adherence in patients with lung TB, there are 73 respondents or 66.4%.

Table 3 shows that 'much less' family knowledge in correlation with less medication adherence equate to two respondents or 1.8%. 'Enough' family knowledge correlates with good medication adherence at 50 respondents or 45.5%.

Table 3: Relationship of family knowledge with medication adherence in pulmonary tuberculosis patients.

Family Knowledge	Medication Adherence								Total	
	Less		Enough		Good		Very good		f	%
	f	%	F	%	F	%	f	%		
Much less	2	1.8	0	0	0	0	0	0	2	1.8
Less	4	3.6	12	10.9	0	0	0	0	16	14.5
Enough	0	0	18	16.4	50	45.5	0	0	68	61.8
Good	0	0	0	0	23	20.9	1	0.9	24	21.8
Total	6	5.5	30	27.3	73	66.4	1	0.9	110	100

Spearman Rank Test $p=0.000$, contingency coefficient (C)= 0.655

Table 4: Relationship of family attitude with medication adherence in pulmonary TB patients.

Family Attitude	Medication Adherence								Total	
	Less		Enough		Good		Very good		f	%
	f	%	F	%	f	%	f	%		
Less	6	5.5	0	0	0	0	0	0	6	5.5
Enough	0	0	30	27.3	4	3.6	0	0	34	30.9
Good	0	0	0	0	69	62.7	1	0.9	70	63.6
Total	6	5.5	30	27.3	73	66.4	1	0.9	110	100

Spearman Rank Test $p = 0.000$, contingency coefficient (C) = 0.926

The Spearman Rank test showed $p = 0.000$ with contingency $\alpha < 0.05$.

Table 4 shows that 'enough' family attitude correlates with 'enough' medication adherence with 30 respondents or 27.3%. A 'good' family attitude correlated with 'very good' medication adherence with just one respondent or 0.9%. The Spearman Rank test shows $p = 0.000$ with contingency $\alpha < 0.05$, at 0.926.

4 DISCUSSION

Family knowledge of pulmonary TB patients at Perak Timur Health Center is largely adequate. The compliance of treatment of pulmonary TB patients at Perak Timur Health Center is good. Sufficient family knowledge has good medication adherence. The results of statistical tests show that family knowledge has a strong relationship with the need for taking medication in patients with pulmonary TB at in Perak Timur Health Center.

Family attitudes towards of pulmonary TB patients at the Perak Timur Health Center is mostly good. The compliance of patients taking medicine at Perak Timur Health Center attitudes of patients with pulmonary TB makes the TB medication adherence good. Good family attitudes are related to medication adherence in patients with pulmonary TB in East Perak Surabaya Public Health.

The success of pulmonary TB lung treatment is not only the responsibility of the patient, but other factors that influence family support and family

behavior during treatment must be considered. Families with good knowledge encourage patients to be obedient during treatment because they know the consequences of non-compliance. Family knowledge support is essential for the healing and recovery of patients.

Family knowledge affects medication adherence of patients with pulmonary TB because with good knowledge a family can supervise medicine taking to ensure the schedule and doses the patient is drinking are appropriate. Good family knowledge can also prevent transmission to other family members and avoid drug withdrawal.

The results are in accordance with factors of medication adherence in TB patients, such as lost access to essential financial and practical support over time, often because relatives and friends are financially and socially exhausted by supporting them (Sagbakken et al., 2008). Other research states, that non-adherence in medication patients in Pakistan was associated with stigma, experience of direct observation, social support received from the family, and reasons for stopping treatment early (Khan et al., 2005). Personal situations, including related factors to medication adherence, are accommodation, unemployment, and nutritional requirements; knowledge about tuberculosis comprises of causes, treatment, and prevention, which are crucial for adherence to treatment (Akeju et al., 2017).

5 CONCLUSIONS

Most family members who regulate patients with tuberculosis are women. This is because women are more conscientious and more attentive to family members. The age of family members who treat patients with TB is a productive age, so the ability to care for family members has more leverage. Most of the educational levels of family members who care for TB patients are elementary and high school. This indicates the level of knowledge of family members.

There is a relationship between family knowledge and medication adherence in patients with pulmonary TB at East Surabaya Perak Health Center. Family members who have a high level of education improve patient compliance with TB medication because family members understand the impact if the patient does not fully take the medicine and the risks of recurrence, transmission, and drug resistance OAT will be higher.

There is a relationship between family attitudes and medication adherence in patients with

pulmonary TB at East Surabaya Perak Health Center. Family members who have a positive attitude will provide support to patients with tuberculosis regarding treatment. Family members will accompany p in treatment and provide motivation to TB patients.

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