Original Articles: Quantitative Research

KNOWLEDGE, FAMILY SUPPORT, AND COMPLIANCE FOR PULMONARY TUBERCULOSIS MEDICATION AMONG PULMONARY TUBERCULOSIS PATIENTS

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Abstract

Background: Tuberculosis (TB) is a disease caused by the bacterium Mycobacterium tuberculosis, which is an aerobic bacterium that can live mainly in the lungs or in various other organs of the body. According to the Health Profile of East Java Province in Pasuruan Regency in 2020, based on the achievement of TB treatment success rates as many as 18 districts/cities that have reached the target of treatment success of 91.510%.

Objective: The purpose of this study was to determine the relationship between knowledge and family support with adherence to taking anti-tuberculosis drugs in TB patients in the Rembang Public Health Center, Pasuruan Regency.

Methods: This study used a cross sectional research design with a sample of 27 respondents with pulmonary TB undergoing treatment at the Rembang Public Health Center. Data was collected using a questionnaire with an ordinal scale which was then analyzed using the Spearman Rank statistical test.

Result: Data collection of knowledge with medication adherence with a correlation coefficient of .505 with a significant *p*-value = .000. Collecting data on family support with medication adherence with a correlation coefficient of .487 with a significant *p*-value = .000.

Conclusion: It was concluded that there was a relationship between knowledge and family support with adherence to taking anti-tuberculosis drugs. The higher a person's education and family support, the more quickly they receive and understand information so that the knowledge and support from their family is also higher.

INTRODUCTION

Tuberculosis is a disease caused by the bacterium mycobacterium tuberculosis, which is an aerobic bacterium that can live mainly in the lungs or in various other organs of the body (Smeltzer & Bare, 2015). TB disease is still a problem in the world, one of the problems with this disease is regarding treatment programs. This can cause problems in TB treatment due to lack of adherence to taking anti-tuberculosis drugs, as well as support from families of sufferers who are still lacking. It is hoped that

most of the proportion of TB cases that have just emerged are in disadvantaged groups of people and those who have a low level of education are expected to increase a person's compliance and level of knowledge with the maximum possible support. According to Lawrence Green's theory in Nursalam's book (Nursalam, 2014) which includes knowledge as one of the predisposing factors for achieving a compliant behavior in medication. So that by recovering and completing the community's treatment of TB disease, productivity can increase and live normally in the community.

According to WHO in the 2020 Global TB Report, Indonesia is currently the 2nd largest country in the world as a contributor to TB sufferers after India, with an estimated incidence of 845,000 cases or 312 per 100,000 population and a mortality of 92,000 or 34 per 100,000 population (other than TB HIV). The achievement of TB program performance indicators is the detection and treatment of TB cases and the successful treatment of TB cases. In 2020, the number of detection and treatment of all TB cases in East Java ranks eighth in Indonesia with 42,922 cases with Treatment Coverage (TC) of 44.7%. The set target for Treatment Coverage (TC) is at least 80%.

The next performance indicator achievement is the TB case treatment success rate. In 2020, the total number of TB cases that recovered and completed complete treatment was 57,606 cases out of 64,764 cases treated so that the East Java Province Treatment Success Rate (TSR) reached 88.9% with the target set by the Indonesian Ministry of Health, namely ≥ 90% (Source: P2PM Section of East Java Provincial Health Office). Based on the success rate of TB treatment in each district/city, 18 districts/cities have achieved the target of treatment success above 90%. As many as 82% of TB sufferers are of productive age (15-24 years) (East Java Province Health Profile, 2020). According to the East Java Provincial Health Profile in Pasuruan Regency, 2020 has reached the target of 91,510%. Some of the supporting factors for cases of pulmonary TB that are found and treated, especially at the Public Health Center, include: All Public Health Centers (100%) have implemented the DOTS standard in TB treatment in accordance with the International Standard for TB Care (ISTC), Implementation between networks between UPKs (Implementation Units) Health) in TB treatment is increasingly optimal, TB patients take TB medication packages for 6 months in accordance with applicable regulations. Based on data on patients who underwent the TB program from January - March 2022 at the Rembang Public Health Center, Pasuruan Regency, they have treated 29 pulmonary TB patients with new cases with TB treatment continuing, there were 2 patients with relapse cases, no failure cases, no drug withdrawal cases. and no MDR cases.

The TB control program follows the program set by the Pasuruan Regency government, which includes an educational program, namely TB patients receive counseling from officers regarding TB treatment programs when patients take medication. The next program is a nutrition program for TB patients, namely a program to improve the patient's nutritional status to help the healing process of TB patients. Next is the PMO (medicine monitoring supervisor) program, patients with TB receive supervision in taking medication by the PMO who have previously been given education by officers. Patients are always obedient and routine in taking medication, but sometimes still have to be reminded

by the PMO. Patients who are said to be compliant with taking medication are patients who finish their medicine according to the advice of health workers and come back to the Public Health Center to take the next medicine according to the schedule determined by the health worker.

Compliance with long treatment of tuberculosis is key in controlling tuberculosis (Caylà et al., 2009). However, the level of adherence in treatment is a dynamic complex phenomenon with various factors that impact on patient behavior in treatment, health services that are not comprehensive and lack of adherence to treatment are major obstacles to determining effective solutions. Understanding the important factors considered in the patient, the patient's family, the patient's educational level and health care providers can contribute to adherence to the use of anti-tuberculosis drugs (Munro et al., 2007; Putra & Toonsiri, 2019).

Considering that pulmonary tuberculosis is an infectious disease and adherence to TB treatment is very important, therefore adherence in the treatment of tuberculosis is an important thing to analyze. One of the reasons for the lack of adherence to taking medication is the lack of family support given to a family member who suffers from tuberculosis (Putra & Toonsiri, 2019). In addition, efforts to achieve treatment success are not solely the responsibility of the patient, but must be seen how the factors that influence the patient's behavior in completing and complying with the treatment. Especially family support is an important factor in encouraging sufferers to adhere to taking their medication, showing sympathy and concern and not avoiding sufferers from their illness. In providing support for a member who suffers from TB, the support of all family members is very important for the healing and recovery process of the patient (Putra et al., 2020; Putra & Toonsiri, 2019).

However, the relationship between the level of knowledge and family support with adherence to taking anti-tuberculosis medication needs to be investigated further, therefore researchers are interested in conducting research on "The relationship between knowledge and family support with adherence to taking anti-tuberculosis medication in TB patients in the Rembang Public Health Center, Pasuruan Regency".

METHODS

Study Design

The research used is a correlational study with a cross-sectional approach.

Settings

The case study was conducted in Working Area of Rembang Public Health Center, Pasuruan Regency, East Java Province, Indonesia.

Research subject

The population in this study were all TB patients undergoing treatment at the Rembang Public Health Center, Pasuruan Regency in March - April 2022, totaling 29 respondents. The sampling technique used in this research is purposive sampling. The criteria set by the researchers in selecting respondents were pulmonary TB patients who were undergoing active treatment at the Rembang Public

Health Center. The samples used in this study were 27 pulmonary TB respondents who were undergoing treatment at the Rembang Public Health Center.

Instruments

The independent variable (independent) in this study is knowledge and family support. While the dependent variable in this study was adherence to taking anti-tuberculosis medication (OAT). Data collection was carried out using a questionnaire and cross check on form TB 01 with an ordinal scale totaling 20 questions for knowledge (Widianingrum & others, 2018), 37 questions for family support (Ulfah, 2013), and 8 questions for medication adherence (Morisky & DiMatteo, 2011). The knowledge score is divided into three levels: 1) Good: percentage 76-100%; 2) Adequate: percentage 56-75%; and 3) Poor: percentage 0-55%. The family support score is divided into 4, namely: 1) Never, 2) Rarely, 3) Often, 4) Always and the value is said: 20-39: lack of family support; 40-59: sufficient family support; and 60-80: good family support. For medication adherence scores: High adherence: 8; moderate adherence: $6 - < 8$; and low adherence: $0 - < 6$.

Data collection

The data collected is data from the results of direct interviews with respondents using the questionnaires. Before potential respondents filled out the questionnaire, the researchers asked for their willingness to become respondents in this study. After the research data was collected, the researchers tabulated the data and coded it so that it could be analyzed using statistical applications.

Data Analysis

The data that has been collected is analyzed using the SPSS 20 application with the Spearmen Rank statistical test with a significance level of .05

Ethical Consideration

Before potential respondents filled out the questionnaire, the researchers asked for their willingness to become respondents in this study. In addition, the researchers also explained their rights as a respondent in this study. Researchers also explained that this study did not harm their condition. The implementation of this case study activity has received approval from the College of Health Science Husada Jombang. This research has also been declared to pass the health research ethics test at the College of Health Science Husada Jombang with number 0445-KEPKSHJ.

RESULTS

Tabulation of Respondents Demografic Data

Based on the research data below, it was found that the majority of respondents were male as many as 15 respondents (55.55%) and aged 26-35 years as many as 13 respondents (48.16%). The results of the study also showed that almost half of them had Senior High School education as many as 10 respondents (37.06%) and worked as entrepreneurs as many as 9 respondents (33.37%). Respondents have a good level of knowledge about the treatment of Pulmonary Tuberculosis as many as 13 respondents (48.15%). Based on the results of the study, it was found that 15 respondents (55.56%) had

good family support related to the treatment of Pulmonary Tuberculosis and 16 respondents (59.26%) also had a good level of adherence to Pulmonary Tuberculosis treatment.

Table 1. Tabulation of Respondents Demographic Data based on Gender, Age, Educational Level, Occupational, Knowledge Level, Family Support, and Compliance for Pulmonary Tuberculosis Medication in Working Area of Rembang Public Health Center on March until April 2022 (n = 27).

Demographic Data of Respondents	Frequency (f)	Percentage (%)
Gender		
Male	15	55.55
Female	12	44.45
Total	**27**	**100.00**
Age		
17-25 years	3	11.11
26-35 years	13	48.16
36-49 years	6	22.22
50-66 years	5	18.51
Total	**27**	**100.00**
Educational Level		
No School	4	14.81
Elementary School	7	25.92
Junior High School	5	18.51
Senior High School	10	37.06
Diploma/ Bachelor	1	3.70
Total	**27**	**100.00**
Occupational		
No Work	2	7.40
Farmer	2	7.40
Trader	7	25.92
Laborer	5	18.51
Private Employees	1	3.70
Enterpreneur	9	33.37
Government Employees	1	3.70
Total	**27**	**100.00**
Knowledge Level		
Good Knowledge	13	48.15
Sufficient Knowledge	12	44.45
Lack of Knowledge	2	7.40
Total	**27**	**100.00**
Family Support		
Good Support	15	55.56
Sufficient Support	8	29.63
Lack of Support	4	14.81
Total	**27**	**100.00**
Compliance for Pulmonary Tuberculosis Medication		
Low Compliance	5	18.52

Demographic Data of Respondents	Frequency (f)	Percentage (%)
Sufficient Compliance	6	22.22
Good Compliance	16	59.26
Total	**27**	**100.00**

Sources: Questionnaire Data, 2022.

Analysis of Correlation between Knowledge, Family Support, and Compliance for Pulmonary Tuberculosis Medication among Pulmonary Tuberculosis Patients in the Rembang Public Health Center using Spearmen Rank Test

Table 2. Correlation between Knowledge, Family Support, and Compliance for Pulmonary Tuberculosis Medication among Pulmonary Tuberculosis Patients in the Rembang Public Health Center using Spearmen Rank Test.

	Compliance for Pulmonary Tuberculosis Medication	
	r-value	*p*-value
Knowledge Level	.505**	.000
Family Support	.487**	.000
** $\alpha < .001$		

Sources: Questionnaire Data, 2022.

Based on the results of the above study, it was found that there was a relationship between knowledge level and family support and compliance for pulmonary tuberculosis medication (r = .505, p < .001; r = .487, p < .001, respectively).

DISCUSSION

The discussion is a comparison of the literature review with case reviews to answer the objectives of this study. The difference in comparison is explained by the concept of discussing why and how. With the order of writing based on F-T-O (facts-theory-opinion). Then the contents of the discussion are adapted to specific objectives, namely:

Identification of Patient Knowledge About Pulmonary TB

Based on the results, more than half of the respondents' knowledge was good, namely 13 respondents (48.15%). The results of the analysis show that there is a relationship between knowledge and adherence to taking anti-medication tuberculosis, this is in accordance with the results of many research that there is a relationship between knowledge and adherence to taking anti-tuberculosis medication (Fitria & Mutia, 2016; Putra & Toonsiri, 2019). According to Fitriani (2015), there are several factors that can affect one's knowledge, namely: Education, Mass Media, Age, Environment, Experience, Social, Culture and Economy. The theory from Notoadmojo (2012) which says that a

person's knowledge is influenced by the level of education, in general the higher a person's education, the easier it is to receive information with the longer a person is in education, the better a person's level of knowledge. Based on age, it affects one's comprehension and mindset. The older you get, the more your comprehension and mindset will develop, so that the knowledge you get will be better.

Based on the results of the research, more than half of the respondents' knowledge was good, namely 13 respondents (48.15%), so the higher a person's education, the faster they receive and understand information, so that the knowledge possessed is also higher. Someone who has high knowledge is likely to make more use of existing health facilities, so that information about health will be easily obtained. The high level of one's knowledge of the disease will affect a person's health behavior.

Identification of Patient Family Support in Pulmonary TB Patients

Based on the results of the research above, it showed that the percentage of family support is more than half good, 15 respondents (55.56%). The results of the analysis show that there is a relationship between family support and adherence to taking anti-tuberculosis medication. According to Putra & Toonsiri (2019) who explains the importance of the role of the family, namely solving problems encountered, such as taking time to share stories, listening, paying attention, providing input or solutions.

One of the things experienced by sufferers is influenced by two things, namely from within the sufferer himself with encouragement, the desire to seek treatment or do something better and from outside the sufferer, namely the support of family, community and health workers in dealing with the disease through health education, provide support, encouragement in accordance with the expected goals.

According to researchers, more than half, with good support, a person has positive expectations, hopes and high beliefs in carrying out activities related to the problem at hand. Few of the number of respondents who do not get less family support. With this, the encouragement of support from the patient's family is very important so that the patient never stops taking medication, is always routine in carrying out examinations and treatment so that he can achieve recovery.

Identification of Medication Compliance in Pulmonary TB Patients

Based on the results of pulmonary TB patient adherence to pulmonary TB treatment in this study showed that out of 27 respondents, more than half of 16 respondents (59.26%) had high medication adherence in pulmonary TB patients undergoing treatment. Compliance is the term to describe the patient's behavior in swallowing the drug correctly according to the dose, frequency and time. Patients are involved in making the decision to take the drug or not, this is done to practice compliance (Herdiman et al., 2020).

In general, respondents' adherence tends to belong to the high category, because patients have great support to comply with the rules of treatment. Medication adherence is the level of patient behavior in taking a treatment action, for example in determining healthy living habits and medication adherence. The results of this study are supported by research conducted by Andesti et al. (2018) that as many as 86% of pulmonary TB patients have a high level of adherence and have been successfully cured in undergoing pulmonary TB treatment. Based on these results, it is known that the majority of pulmonary TB patients do not experience any difficulties remembering to take the anti-tuberculosis drugs they get. In addition, pulmonary TB patients also appreciate the meaning of health more and do not want the people around them to experience the same suffering as themselves. Thus pulmonary TB patients have a great desire and high adherence to recovery.

Based on this research, it can be seen that adherence to treatment at the Rembang Health Center can be said to be high because more than half of 16 respondents have compliance. The reasons most often expressed by obedient patients were the belief in recovery, family support and complete information from health workers. This is also due to the level of knowledge of respondents who are mostly good. This awareness and adherence is very important because if not pulmonary tuberculosis will return and the treatment period will have to start all over again.

Analysis of the Relationship between Knowledge and Compliance with Taking Anti-Tuberculosis Medication in Pulmonary TB Patients

Based on the result above, it can be seen that the spearman rank correlation coefficient is 0.505. The correlation coefficient of 0.505 indicates that the relationship between knowledge and medication adherence is a strong relationship. Knowledge has a significant relationship with adherence to taking anti-tuberculosis medication in the working area of Rembang Public Health Center. Respondents who have high knowledge tend to be obedient in taking anti-tuberculosis drugs.

The results of the analysis show that there is a relationship between knowledge and adherence to taking anti-tuberculosis medication, this is in accordance with the results of Fitria & Mutia's research, that there is a relationship between knowledge and adherence to taking anti-tuberculosis medication (Fitria & Mutia, 2016). This is also supported by the results of research from Dwiatmojo et al. (2021) which states that there is a significant relationship between knowledge and adherence to taking anti-tuberculosis medication in TB patients. Factors that affect knowledge in TB patients include internal factors which include education, employment and age, while external factors include social, cultural and economic environmental factors (Notoadmojo, 2012).

Based on the results of the study, it was found that most of the respondents had a high school education, with the majority being self-employed, it can be concluded that the majority of respondents in this study were good, this is also supported by the theory of Notoadmojo (2012), which says that a person's knowledge is influenced by the level of education, In general, the higher a person's education, the easier it will be to receive information. This is also supported by research from Mujizat (2022) that

a person's knowledge is supported by educational background, the longer a person has been in education, the better one's level of knowledge will be. Apart from the educational factor, another factor that can influence is the existence of health education regarding TB at the Rembang Health Center, with a good educational background, this will greatly support high medication adherence in TB patients, because with a good educational background good, it will make the respondent better at receiving the information that has been provided by the health worker.

Another theory that supports is the theory of Nursalam (2014), which states that education itself is needed to obtain information, for example things that support health so that it can improve the quality of life, education can influence a person's attitude and behavior. Information factors obtained by TB patients from counseling given by health workers. The results of this study can also support the results of this study, because in addition to having a good educational background, the knowledge of the patients is also supported by health counseling about TB which is routinely carried out by health workers, in addition to health education, visits are also made from house to house.

Based on the results of the study, not all respondents with high knowledge were obedient in carrying out treatment programs and also in carrying out daily medication. The theory explains that the better a person's knowledge, the more obedient he will be in carrying out treatment programs and taking anti-tuberculosis drugs. However, the results of the study found that respondent number 3 had less knowledge but was obedient in the high category of taking medication, this happened because based on the respondent's data, he had sufficient family support. The results of the study also showed that not all respondents who had less knowledge were disobedient in taking medication. Generally, the less knowledgeable a person is, the more risky he will be to disobey. So the role of the PMO (medicine supervisor) has a major influence on TB patient compliance in carrying out the treatment program to take medication every day.

Analysis of the Relationship between Family Support and Compliance with Taking Anti-Tuberculosis Medication in Pulmonary TB Patients

Based on the results of the above study, it was found that the Spearman rank correlation coefficient was 0.487. The correlation coefficient of 0.487 indicates that the relationship between family support variables and the level of adherence to taking medication is an adequate relationship. The results showed that family support had a relationship with adherence to taking anti-tuberculosis medication in TB patients in the Rembang Health Center area.

Based on the data obtained, most of the respondents had good family support in achieving recovery, and some others had sufficient family support. Respondents who have good family support tend to be obedient in taking anti-tuberculosis drugs.

According to Yuda & others (2019), one of the factors that influences adherence to taking medication is family support in determining individual health beliefs and values and can also help determine which treatment programs they can accept. Social support in the form of emotional support

from other family members, friends, and time is an important factor in adherence to medical programs. But besides that, the quality of the interaction between health workers and patients is an important part in determining the degree of adherence. Support from health workers is another factor that can influence behavior in the level of adherence. If supervision is carried out during the treatment period, including through home visits by health workers, it is hoped that pulmonary TB patients will be obedient and regular in treatment. The quality of interaction between health workers and patients is an important part in determining the level of adherence. This is where the family has a very important role for pulmonary TB patient compliance. Apart from being a party that always supports the patient's recovery, the family is also responsible as a Medication Supervisor (PMO) who will play a role in monitoring and constantly reminding pulmonary TB patients so that patients take their medicine regularly and on time according to the prescribed dose. has been determined by health workers (Yuda & others, 2019).

Family support for pulmonary TB sufferers is influenced by two things, namely from within the pulmonary TB patient himself with encouragement, the desire to seek treatment or do something better and support from family, community and health workers in dealing with cases of pulmonary TB disease through health education. , provide support, encouragement in accordance with the expected goals. The desire to live is the main desire of everyone, humans work to be able to eat and eat to continue their lives. In this study, the respondents who had a strong healing motivation were mostly respondents who had a high desire to live and desire to recover.

Based on the research results collected through questionnaires, it can be seen that families have tried to provide support to sufferers. Support provided by the family is emotional support, appreciation support, informational support and instrumental support.

If seen from the family support of the majority of respondents, it is good in terms of emotional support and possibly due to the fact that most of the respondents work at home so that communication between families is maximized. The family will better understand the emotional needs of the respondent and the respondent will feel fulfilled. Even though most of the respondents had good family support, there were 4 respondents who got less family support. Family support is still lacking, it is possible that the respondent still does not get full appreciation from his family, such as making decisions regarding his treatment or the family does not respect the patient's suggestions and complaints during his treatment. According to the patient's knowledge, there were 2 respondents who were still classified as lacking. The ability to support information from the family is very important, one of which is the level of education of family members. Cognitive abilities will shape one's way of thinking including the ability to understand factors related to disease and use knowledge about health to always maintain health. With the majority of the work of self-employed respondents, more respondents earn their own income. There is instrumental support and compliance with taking medication, the health of pulmonary TB patients in terms of adherence to TB patients in treatment by helping their family's medical expenses which are classified as low-income, and the family reminds them to rest and avoids the patient from fatigue.

LIMITATION

There are many other factors that can affect compliance for pulmonary tuberculosis medication, so other research needs to be done.

CONCLUSION

Knowledge of patients about TB disease found that more than half had good knowledge. The patient's family support found that more than half had good family support. It was found that more than half of the patients' adherence to taking medication had high adherence to taking medication. There is a relationship between knowledge and medication adherence and family support with medication adherence in TB patients. The results of this study can provide information regarding knowledge and family support of TB patients with adherence to taking anti-tuberculosis drugs in TB patients.

AUTHOR CONTRIBUTION

Eliza Zihni Zatihulwani: Literature review, conceptualization, methodology, investigation, resources, project administration, and manuscript drafting.

Gevi Melliya Sari: Literature review, conceptualization, methodology, investigation, resources, and manuscript drafting.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

ACKNOWLEDGEMENT

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