



The Relationship Between Adherence to Taking Medication with the Level of Knowledge and Family Support in TB Patients at Kroya Health Centre, Cilacap Regency

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ABSTRACT

TB (Tuberculosis) patients in Indonesia are the 2nd highest in the world after India. The large number of TB patients in Indonesia is due to the lack of success in TB treatment due to patient non-compliance with medication regularly. Factors that affect non-compliance are low knowledge of TB patients and lack of family support. This study aims to determine the level of family knowledge and support, medication adherence, and determine the relationship between the level of knowledge and family support to medication adherence in TB patients at the Kroya Health Center, Cilacap Regency in 2024. This study uses a non-experimental method with cross-sectional data collection conducted in April-May 2024. The study population is all TB patients totaling 130 respondents who underwent treatment at the Kroya Health Center, Cilacap Regency from November 2023 to May 2024, and the research sample was 56 respondents. The conclusion of this study is that the knowledge level of TB respondents is the highest at 37.5% and 55.4%, and the adherence to taking medication at the Kroya Health Center is 30.4% and 57.1%. In this study, the highest TB patients were at a moderate level of knowledge (55.4%); family support is not supportive (96.4%) and medication adherence is low (30.4%) to moderate (57.1%). Testing with the chi-square method there was a relationship between the level of knowledge and medication adherence in TB patients (p -value 0.000), but there was no relationship between family support and medication adherence (p -value 0.268) in patients at the Kroya Health Center, Cilacap Regency with a r value of 0.541. The limitation of this study is that there is no follow-up on the respondents such as monitoring TB drugs so that the existing data is only data taken when filling out the questionnaire.

Keywords: *Tuberculosis, Knowledge, Family Support, Compliance*

1. INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*, usually characterised by a cough with phlegm for more than 2 weeks with or without blood, chest pain, difficulty breathing, and weight loss (Indonesian Ministry of Health, 2020). The highest number of TB cases in Indonesia occurred in 2020, especially in provinces with a large population, large cities such as West Java, East Java, and Central Java. The TB

detection rate per 100,000 population in Cilacap reached 146.40 people and the success rate of anti-TB treatment was 86.90% (BPS, 2020). Tuberculosis treatment can be influenced by the knowledge and attitude of tuberculosis patients. Previous research showed that Indonesians have a high level of knowledge about tuberculosis and have favourable attitudes with moderate awareness about tuberculosis (Kaaffah et al., 2023). Conversely,

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the better the understanding of the causes of tuberculosis, the lower the transmission routes, the need for testing, and the importance of treatment, the lower the likelihood of patients adhering to treatment or taking medication correctly (Kim et al., 2019). Sources of social support that support the routine treatment of TB patients. The greater the family support, including emotional support, respect, information, and tools, the more adherent TB patients will be to treatment (Hamidah and Nurmalasari, 2019). Support from family members in monitoring patient treatment adherence can increase patient motivation to be more adherent in treatment (Maulidan et al., 2021).

Drug treatment adherence in pulmonary tuberculosis patients is very important, because without regular treatment there will be bacterial resistance to anti-tuberculosis drugs (OAT) or also known as multidrug resistance (MDR) (Pameswari et al., 2016). Some drugs can also predispose patients to adverse drug reactions (ADRs), making them a major cause of treatment discontinuation (Wang et al., 2019). Treatment adherence in the Cimaung District Health Centre area with a total of 100 respondents, resulting in 54% compliance, 40% reduced compliance, and non-compliance when taking OAT by 6% (Herdiman et al., 2020). The cure rate is difficult to achieve due to many obstacles, including TB patients not being adherent to regular treatment (Nugroho, 2019). Previous research showed that as many as 21.42 % of patients did not know that the drugs they used could cure their disease, 42.85% stated that they only used drugs for less than 6 months (Febrianti and Perwitasari, 2021), due to lack of knowledge about tuberculosis, duration of treatment, transportation and access to health facilities, community opinion, community exclusion, side effects of drugs and nonnutritious food (Gebreweld et al., 2018).

Based on this background, it is necessary to conduct a study on the relationship between medication adherence to the level of knowledge and family support for TB patients at Kroya Community Health Centre, Kroya Regency, Cilacap in 2024. The researcher hopes that this study can help improve treatment adherence in TB patients to improve the quality of life of TB patients, especially patients at the Kroya Health Centre, Cilacap Regency.

2. METHODS

2.1. Research Methods

This study is a type of analytical observational research with a cross-sectional design. Analytical research is research that aims to determine the relationship between variables (Sopiyudin, 2013). Cross sectional is a study in which researchers measure data on independent variables and dependent variables only once (dependent variable and dependent variable data collected independently). the same time) (Yunitasari et al., 2020). The population of this study were all tuberculosis patients who sought treatment at Kroya Community Health Centre, Cilacap Regency from November 2023 to May 2024. Sampling in this study was conducted using purposive sampling technique where the sample was determined based on inclusion and exclusion criteria. Inclusion criteria were patients undergoing TB treatment at Kroya Health Centre, Cilacap Regency, patients willing to become respondents, age 18-65 years, patients in the treatment category from November 2023 to May 2024, and patients who had been treated for at least 3 months. Exclusion criteria were children aged 0-17 years, patients who could not read and write, unstable patients (blind, dumb, deaf), patients who had died at the time of the study, and newly diagnosed TB patients. Respondents who fulfil the inclusion and exclusion criteria can fill in the research instruments provided by the researcher.

Determination of the number of samples used is based on the Slovin formula. The number of samples 130 patients, after calculating the sample size, the resulting sample was 56 patients.

$$n = \frac{N}{1 + N(d^2)}$$

Description:

n = sample size

N = population size

e = maximum tolerable margin of error in the sample aka significance level.

2.2. Research Ethics

This study uses research ethics (code of ethics) because it respects the rights of research subjects, which in this case the research

subjects are humans (respondents suffering from TB) who have rights that must be respected, besides research ethics will ensure that subjects are not exploited or harmed during the research process conducted by researchers.

2.3. Research Instruments

The instruments used in this study were 3 questionnaires, namely:

2.3.1 Knowledge

The knowledge questionnaire was adopted from Kaaffah's (2023) research. The scale used in this research instrument is a Guttman scale, with True and False answer options. True answer options get a score of 1 while False scores 0 (Kaaffah *et al.*, 2023).

2.3.2 Family Support

The family support questionnaire was adopted from Hasanah's (2018) research. The scale used in this research instrument is a Likert scale. The answer options for this question are always score 3, often score 2, sometimes score 1 and never score 0. This research question consists of 12 questions so that the maximum score of the question is 36 and the minimum score is 0 (Hasanah *et al.*, 2018).

2.3.3 Compliance

The adherence questionnaire uses the MGL MAQ questionnaire adopted from research (Hening *et al.*, 2019). The scale used in this research instrument is a Guttman scale, with the answer choices Yes and No. Options answers Yes How to calculate compliance is measured from the value of the questionnaire measurement results (0 = low, 1-2 = medium, 3-4 = high). Determining the percentage, validity and reliability tests were conducted using SPSS. Data were obtained from questionnaires to 56 respondents who were put into tubes, then processed SPSS version 25, specifically using the Chi-square method to analyse univariate and bivariate knowledge levels, family support and treatment adherence in tuberculosis patients. The choice of analysis with the Chi-square method is due to its ease of data processing and in the implementation of solving problems, the Chisquare test is very

simple and flexible in testing differences between theoretical distributions (assumed) and observed distributions (Hasanah *et al.*, 2018).

3. RESULT AND DISCUSSION

This study was conducted to determine the relationship of medication adherence to the level of knowledge and family support in tuberculosis patients at Kroya Health Centre, Cilacap Regency. This research has passed ethical review with letter number. No. B. LPPMUHB/194/03/2024. Data collection for this study began in November 2024 until May 2024 at Kroya Health Centre, Cilacap Regency by distributing questionnaires at the health centre after obtaining permission from the health centre. Researchers also conducted brief interviews with several respondents after filling out the questionnaire.

3.1. Characteristics of Tuberculosis Respondents

Table 1. Frequency of characteristics in tuberculosis respondents

Characteristics	Category	N	%
Usia	18-49 Years	36	64.3
	≥ 50 Years	20	35.7
Gender	Male	32	57.1
	Women	24	42.9
Education	Rendah	32	57.1
	Tinggi	24	42.9
Duration of Disease	<6 Months	13	23.2
	>6 Months	43	76.8
Total		56	100

Description:

N: Number of respondents

%: Percentage of respondents

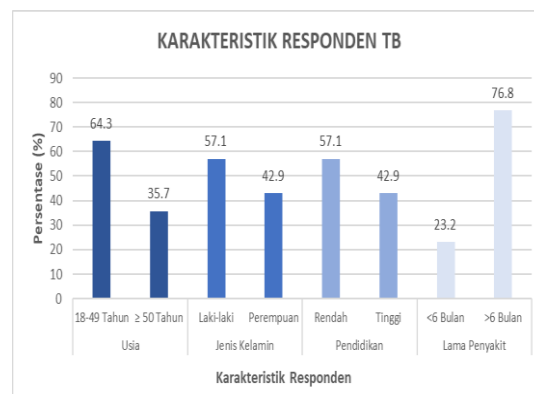


Figure 1. Frequency of characteristics in tuberculosis respondent

3.1.1. Age characteristics

Table 1 shows that there were 56 respondents with tuberculosis at Kroya Health Centre, Cilacap Regency based on age characteristics, of which 36 respondents (64.3%) were aged 18-49 years and 20 respondents (35.7%) were aged ≥ 50 years. The results of this study showed that the majority of respondents were in the age characteristics with the most respondents suffering from tuberculosis aged 18- 49 years as many as 36 respondents (64.3%).

The results of this study are in line with previous research which states that productive age (15-49 years) is an age where a person is at a stage to work or produce something for themselves or others, where 75% of tuberculosis patients are found at the most economically productive age (Sikumbang *et al.*, 2022). The results of this study are also in line with other studies that mention that most tuberculosis patients come from productive age (Siburian *et al.*, 2023).

3.1.2. Gender characteristics

Table 1 on gender characteristics showed that 32 respondents (57.1%) were male and 24 respondents (42.9%) were female. The results of the analysis found that respondents with gender characteristics who suffered from tuberculosis were mostly male as many as 32 respondents (57.1%).

The results of this study are in line with previous research which states that the majority of tuberculosis patients are male (Istiqomah dan Zuriyanti, 2021). The large number of male respondents who suffer from tuberculosis is because men have more smoking habits and have high mobility compared to women. Men also have habits that tend to consume alcohol, go out at night and smoke which can reduce the immune system so that smoking habits can also increase the risk of developing tuberculosis twice (Istiqomah dan Zuriyanti, 2021; Fauzi, 2018).

3.1.3. Education characteristics

Table 1 shows that respondents with low education level (elementary and junior high school) were 32 respondents (57.1%) and 24 respondents (42.9%) with high education level (high school and university). The results of the

analysis showed that respondents with the characteristics of the education level who suffered from tuberculosis were mostly at the moderate level of education as many as 32 respondents (57.1%). The results of this study are in line with previous research which states that the majority of tuberculosis patients come from low education, this can occur because education affects the level of knowledge (Monita dan Fadhila, 2022). The level of education affects a person's knowledge which will affect the understanding of tuberculosis treatment. A low level of education will lead to less understanding of tuberculosis than someone with higher level of education (Istiqomah dan Zuriyanti, 2021; Kaaffah *et al.* 2023). The higher a person's level of education, the faster and more responsive the ability to obtain information so that the understanding of how to overcome tuberculosis is also better (Monita dan Fadhila, 2022).

3.1.4. Characteristics of disease duration

Table 1 on the characteristics of the length of illness obtained data, namely respondents who were sick 6 months 43 respondents. (76.8%). The results of the analysis found that respondents in tuberculosis patients with the characteristics of the length of the disease most who suffered from tuberculosis were respondents who were sick > 6 months as many as 43 respondents (76.8%).

The results of this study are in line with previous research where the highest number of tuberculosis patients was also in patients with >6 months of treatment because most respondents in the study were respondents with moderate to low knowledge so that respondents were less motivated to recover from tuberculosis (Khalil dan Meilanny, 2022).

3.2. Frequency Distribution of Knowledge Level and Family Support in Tuberculosis Patients

Table 2. Frequency distribution of knowledge level and family support in tuberculosis patients

Variables	Category	N	%
Level Knowledge	Low	4	7.1
	Medium	31	55.4
	High	21	37.5
Family Support	Not in favour	54	96.4
	Support	2	3.6
Total		56	100

Description:

N : Number of respondents

% : Percentage of respondents

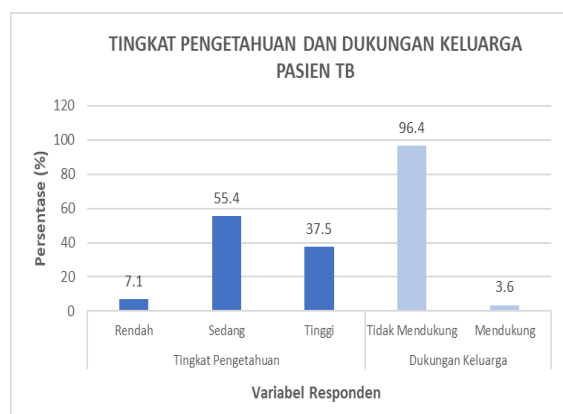


Figure 2. Frequency distribution of knowledge level and family support in tuberculosis patients

3.2.1. Knowledge characteristics

Table 2 shows the 56 respondents who suffered from tuberculosis at Kroya Health Centre, Cilacap Regency based on the level of knowledge, where the data obtained are respondents who have a high level of knowledge. Respondents who had a low level of knowledge were 4 respondents (7.1%), respondents who had a moderate level of knowledge were 31 respondents (55.4%), and respondents who had a high level of knowledge were 21 respondents (37.5%). The results of the analysis showed that the respondents who suffered from tuberculosis were mostly respondents with a moderate level of knowledge as many as 31 respondents (55.4%).

The results of this study are in line with previous research which states that the majority

of tuberculosis patients have moderate knowledge (Siburian *et al.*, 2023). In this study, most respondents with tuberculosis had moderate knowledge, which can occur because a person's knowledge is influenced by many factors including education, experience, facilities, marriage, monthly salary, and place of residence, where usually the higher person's education, the more information received and the higher a person's knowledge (Kaaffah *et al.* 2023; Siburian *et al.*, 2023).

3.2.2. Characteristics of family support

Table 2 shows that respondents who had family support were 2 respondents (3.6%), and respondents who did not have family support were 54 respondents (96.4%). The results of the analysis showed that the respondents who suffered from tuberculosis were the most respondents who did not have family support as many as 54 respondents (96.4%). One of the factors that influence dual role conflict is time pressure, namely the more time used for work, the less time for family (Ardias dan Haryudha, 2020; Khalil dan Meilanny, 2022).

The results of this study are in line with previous research which states that the majority of tuberculosis patients occurred in respondents who did not have family support, this can occur due to one factor, namely families who have jobs will have little time to supervise tuberculosis patients to take medicine (Khalil dan Meilanny, 2022).

3.3. Frequency Distribution of Compliance in Tuberculosis Patients

Table 3. Frequency distribution of adherence in tuberculosis patients

Variables	Category	N	%
Compliance Taking Medicine	Low	17	30.4
	Medium	32	57.1
	High	7	12.5
Total		56	100

Description:

N : Number of respondents

% : Percentage of respondents

Data from 56 respondents who suffered from tuberculosis at Puskesmas Kroya Cilacap Regency based on drug compliance, which obtained data that respondents who had low

drug compliance were 17 respondents (30.4%), respondents who had moderate drug compliance were 32 respondents (57.1%), and respondents who had high drug compliance were 7 respondents (12.5%). The results of this study indicate that the majority of respondents have moderate medication compliance.

The results of this study are in line with previous research which states that adherence to taking one's medication is influenced by motivation to recover and most patients in previous studies came from respondents with low knowledge and lack of motivation so that most respondents had less adherence to taking medication (low to moderate adherence category) (Istiqomah dan Zuriyanti, 2021).

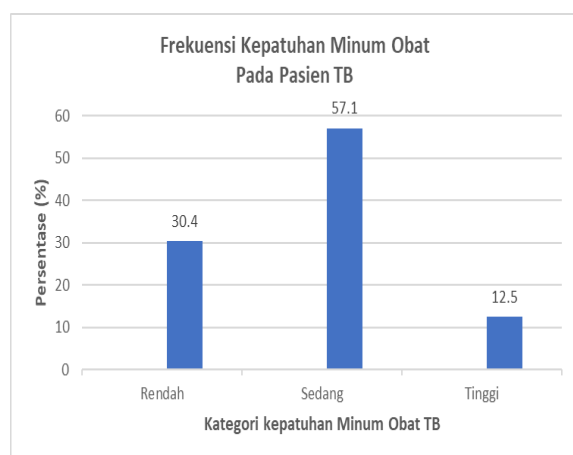


Figure 3. Frequency distribution of compliance in tuberculosis patients

3.4. The Relationship between Knowledge Level and Family Support on Adherence to Taking Medication in Tuberculosis Patients

Table 4. Frequency distribution of the relationship between the level of knowledge and family support on adherence to taking medication in tuberculosis patients

Variable	Compliance with medication								P-value
	Low		Medium		High		Total		
	N	%	N	%	N	%	N	%	
Knowledge Level									
Low	4	100	0	0	0	0	4	7.1	0.000
Medium	13	41.9	18	8.1	0	0	31	55.4	
High	0	0	14	6.7	7	3.3	21	37.5	
Family Support									
Not in favour	15	27.8	32	9.3	7	3.0	54	96.4	0.268
Support	2	100	0	0	0	0	2	3.6	
Total	17	30.4	32	7.1	7	2.5	56	100	

Description:
N: Number of respondents
%: Percentage of respondents

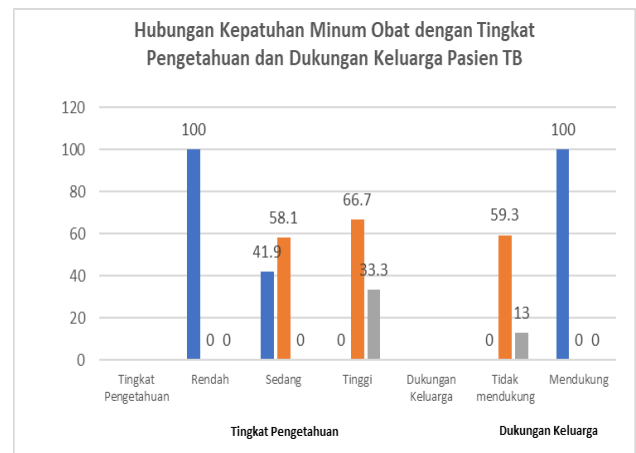


Figure 4. ion of the relationship between the level of knowledge and family support on adherence to taking medication in tuberculosis patients

3.4.1. Relationship between knowledge level and medication adherence

Table 4 regarding the relationship between knowledge and compliance with taking medication has a frequency of high knowledge with high medication compliance as many as 7 respondents (33.3%) while in the high knowledge category with low medication compliance as many as 0 respondents (0%). The results of the *Chi Square* statistical test between knowledge and compliance with taking medication with a p value = 0.000 (p value \leq 0.05). This value can indicate that there is a significant relationship between the level of knowledge and adherence to taking medication in tuberculosis patients at the Kroya District Health Centre Cilacap. The results in this study show that someone with high knowledge does not have low medication compliance, and someone with moderate to high knowledge will have high medication compliance

The results of this study are in line with previous research which states that high knowledge can affect health behaviour, namely the higher a person's knowledge, the higher the motivation to take medicine so that it can affect the healing of the disease, so it can be seen that knowledge will affect adherence to taking medication in tuberculosis patients, especially tuberculosis patients who have good knowledge have a good level of compliance in

terms of taking medication (the better the patient's knowledge about tuberculosis, the more obedient the patient is in taking medication) (Istiqomah dan Zuriyanti, 2021).

3.4.2. The relationship between family support and medication adherence

Table 4 shows that families who do not support tuberculosis patients in taking medication show low adherence to taking medication, which only reaches 27.8% (15 respondents) compared to high adherence of only half 13% (7 patients). *Chi Square* statistical test result between family support and medication adherence with $p\text{ value} = 0.268$ ($p\text{ value} \geq 0.05$). This value indicates that there is no significant relationship between family support and adherence to taking medication in tuberculosis patients at Kroya Health Centre, Cilacap Regency. These results show that someone who does not have family support is low.

Based on brief interviews with several respondents, it is known that respondents lack family support because the respondents in this study did not live with their families. This causes respondents to lack communication, attention, and support from their families because they live in different places and respondents and their families have different activities which cause communication between respondents and their families to be less smooth, causing respondents to not get support from their families, especially from their families. In terms of support instrumental/facilities and emotional support and appreciation.

Table 2 shows that the highest frequency of respondents in the relationship between family support and adherence to taking medication is found in respondents with a family category that does not provide support with low (26.8%) to moderate (57.1%) adherence to taking medication, which can occur because based on the researcher's assumption that many respondents who come from moderate to high education and productive age cause knowledge and memory of respondents about tuberculosis from health education (health workers) in a good category so that respondents are able to know and understand the importance of adherence to taking medication even though there is no support from the family so that the

respondent's attitude will remain obedient to taking medication.

Support from health workers can foster beliefs in respondents to perform a self-efficacy behaviour (beliefs that adhering to taking medication will cure tuberculosis). Self-efficacy (social cognitive) is a theory of compliance, where self-efficacy is a belief that exists in individuals about their ability to perform a behaviour in order to successfully achieve certain goals (Fauzi, 2018). A person's *self-efficacy* is formed by 4 components, one of which is social *persuasions*, namely verbal support from both the family (such as parents, siblings, husband/wife, and children) and the social environment (such as health workers) which will foster confidence in a person to perform a behaviour and increase *self-efficacy* (Fauzi, 2018; Jannah *et al.*, 2022).

The results of this study are in line with previous research which states that the absence of a relationship between family support and compliance with taking medication can occur because several factors can affect a person's compliance with taking medication, including knowledge and attitudes, family support, and counselling from health workers (Dwiningrum, 2021), but knowledge and attitude factors are the main factors for a person's compliance in taking medication (Fauzi, 2018; Dwiningrum, 2021).

CONCLUSION

Based on the results of the research that has been carried out, it can be concluded as follows:

1. The level of knowledge of TB patients at Kroya Health Centre, Cilacap Regency, was categorised as moderate knowledge (55.4%) and family support was not supportive (96.4%).
2. Adherence to taking medication in TB patients at the Kroya Health, Cilacap Regency, has a low (30.4%) to moderate (57.1%) adherence to taking medication.
3. In this study, there was a relationship between the level of knowledge and adherence to taking medication in tuberculosis patients with a $p\text{ value} 0.000$, but there was no relationship between family support and adherence to taking medication in patients at Kroya Health Centre, Cilacap Regency with a $p\text{ value} 0.268$.

RECOMMENDATION

Based on the research that has been conducted, it is necessary to conduct further research on the relationship between drug compliance with the level of knowledge and family support in tuberculosis patients at Kroya Health Centre, Cilacap Regency by means of researchers not only collecting data at a certain point in time using a questionnaire but also following up on respondents such as monitoring drug monitoring.

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