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Relationship Between Medication Adherence Level and Recovery of Pulmonary Tuberculosis Patients at Gapura Public Health Center Sumenep

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Abstract

Pulmonary tuberculosis is an infectious disease caused by Mycobacterium tuberculosis (MTB). Regarding this, Indonesia is ranked second globally in terms of tuberculosis prevalence. TB cases in Sumenep Regency are increasing every year. The high incidence of TB in Sumenep mostly is caused by the patients' lack of adherence to taking medication. The level of compliance in taking drugs can be influenced by several factors including age, educational level, and gender. This study aimed to ascertain the association between medication adherence and recovery in patients with pulmonary tuberculosis at the Gapura Public Health Center Sumenep. This study employed an analytical observational design with a cross-sectional approach, utilizing secondary data from medical records and TB.01 treatment cards. The population in this study consisted of 40 individuals. Total sampling is used to choose samples. The study's findings revealed that most patients 62.5% were male, 37.5% were between the ages of 26-45, 15% were from Gapura Barat, 35% had an elementary school education, and 55% were farmers. As many as 90% of patients adhere to treatment and 87.5% recover. Additionally, statistical tests yielded a p-value of <0.001. The study concludes a correlation between medication adherence and recovery of patients with pulmonary tuberculosis at the Gapura Public Health Center Sumenep. It is advised that health personnel maintain as many programs as possible, including counseling, home visits, and remote monitoring via telecommunications.

Keywords: Adherence, Recovery, Tuberculosis Patients, Tuberculosis Treatment

Original Research Article

Hubungan Tingkat Kepatuhan Minum Obat terhadap Kesembuhan Pasien Tuberculosis Paru Puskesmas Gapura Sumenep

Abstrak

Tuberculosis paru merupakan penyakit infeksi yang disebabkan oleh kuman Mycobacterium Tuberculosis. Indonesia berada pada ranking kedua negara dengan kejadian TB terbanyak di dunia. Kasus TB di Kabupaten Sumenep meningkat setiap tahunnya. Tingginya angka kejadian TB di Kabupaten Sumenep disebabkan karena kurang

patuhnya pasien dalam mengkonsumsi obat. Tingkat kepatuhan dalam mengkonsumsi obat dipengaruhi beberapa faktor diantaranya usia, tingkat pendidikan dan jenis kelamin. Tujuan penelitian ini adalah untuk mengetahui hubungan tingkat kepatuhan minum obat terhadap kesembuhan pasien tuberculosis paru di Puskesmas Gapura Sumenep. Penelitian ini menggunakan jenis penelitian observational analitik menggunakan desain cross sectional dengan menggunakan data sekunder yang berupa data rekam medis dan kartu pengobatan TB.01. Populasi penelitian ini terdiri dari 40 individu. Pemilihan sampel dilakukan dengan metode total sampling. Hasil penelitian berdasarkan data yang

diperoleh menunjukkan bahwa sebagian besar pasien berjenis kelamin laki-laki yaitu 62,5%, umur 26-45 tahun yaitu 37,5%, berasal dari Gapura Barat yaitu 15%, pendidikan SD yaitu 35% dan pekerjaan sebagai petani yaitu 55%. Jumlah pasien patuh berobat yaitu 90% dan yang sembuh yaitu 87,5% dan dari hasil uji statistik diperoleh nilai $p < 0,001$. Kesimpulan dalam penelitian ini adalah ada hubungan tingkat Kepatuhan minum obat terhadap kesembuhan pasien tuberkulosis

paru Puskesmas Gapura Sumenep. Disarankan kepada tenaga kesehatan untuk tetap melanjutkan program-program seperti penyuluhan, kunjungan ke rumah pasien dan pemantauan melalui telekomunikasi secara berkala dengan maksimal.

Kata Kunci: Kepatuhan, Kesembuhan, Pasien Tuberkulosis, Pengobatan TB

INTRODUCTION

Pulmonary tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis* that affects the lung parenchyma (Versitaria and Kusnoputranto, 2011). According to the Ministry of Health in 2018, tuberculosis is one of the ten deadliest diseases and the primary cause of infectious infections, referencing a WHO report. India, Indonesia, China, the Philippines, and Pakistan were countries with the highest tuberculosis prevalence globally (Indah, 2018). Based on the Dashboard TB Ministry of Health, there were 443,235 tuberculosis cases reported in Indonesia in 2021. In 2018, the incidence of pulmonary tuberculosis increased in East Java, making this province ranked first in Indonesia with 98,566 cases of pulmonary tuberculosis (Basic Health Research, 2018). The increasing annual cases of pulmonary tuberculosis were also reported in Sumenep Regency, Madura. According to Basic Health Regency 2018, there were 2,709 pulmonary tuberculosis cases in Sumenep Regency that year (Basic Health Research, 2018). The high prevalence of tuberculosis in Sumenep Regency might result from patients' failure to adhere to drug programs due to a lack of awareness about the risks of tuberculosis and the significance of taking antituberculosis drugs (Syamsuri, 2018). Adherence to medication programs can be influenced by a variety of factors, including age, educational level, and gender. Education correlates with knowledge, a poor level of education results in a person's lack of understanding about tuberculosis and the importance of taking Anti Tuberculosis Drugs for 6 months consistently until treatment is complete. This results in a person being disobedient when consuming antituberculosis drugs, which harms the recovery rate of tuberculosis patients (Widiyanto, 2017).

Numerous factors influence the tuberculosis cure rate, including age, education level, occupation, and patient adherence to treatment (Widiyanto, 2017). Adherence is an attitude manifested as a response that occurs when a person is confronted with a stimulus that requires a response or action (Lubis and Panjaitan, 2020). Compliance with antituberculosis drugs is a critical component in the recovery of tuberculosis patients. This study aimed to ascertain the correlation between medication adherence and recovery in patients with pulmonary tuberculosis at the Gapura Health Center Sumenep in 2021.

MATERIAL AND METHODS

This study employed an analytical observational design with a cross-sectional approach. The population in this study consisted of 40 individuals who got 6-month treatment for pulmonary tuberculosis at the Gapura Public Health Center Sumenep in 2021, so the total sampling sample in the study was 40 patients with pulmonary tuberculosis. The inclusion criteria in this study were pulmonary tuberculosis patients who underwent 6 months of treatment (January 2021-December 2021), category 1 primary pulmonary tuberculosis patients of male and female sex aged ≥ 16 years, pulmonary tuberculosis patients who underwent OAT treatment with a dose of appropriate, patients who live in the working area of the Gapura Sumenep Health Center. While the exclusion criteria in this study were all pulmonary tuberculosis patients belonging to category 2, patients who experienced drug side effects and did not take any of the OATs, pulmonary tuberculosis patients accompanied by other chronic diseases, and children aged < 15 years.

Secondary data were collected in this study using TB.01 treatment cards and medical records.

The independent variable in this study is the level of adherence to taking medication for pulmonary tuberculosis patients. The dependent variable in this study is the cure rate of pulmonary tuberculosis patients. The analysis employed in this study is univariate analysis, which entails determining the frequency distribution and percentage of existing variables, and bivariate analysis, which entails determining the relationship between two variables (Lubis and Panjaitan, 2020).

This research has received ethical approval from the Health Research Ethics Commission,

Faculty of Medicine, Wijaya Kusuma University Surabaya with No.75/SLE/FK/UWKS/2021. The data that has been obtained will be analyzed using the *chi-square* test and *the fisher exact test* for those who do not meet the test requirements, followed by the contingency test to determine the strength of the relationship using the SPSS Statistic 26 software. The relationship between the independent variable and the dependent variable is obtained if the p-value is obtained with significant results ≤ 0.05 .

RESULT

Table 1. Respondent Characteristics

Respondent Characteristics	Cases	
	N	%
Gender		
Male	25	62,5
Female	15	37,5
Age		
16-25	9	22,5
26-45	15	37,5
46-65	9	22,5
>65	7	17,5
Domicile		
Andulang	3	7,5
Baban	3	7,5
Banjar Barat	2	5
Banjar Timur	2	5
Batu Putih	1	2,5
Beraji	3	7,5
Gapura Barat	6	15
Gapura Tengah	5	12,5
Gapura Timur	3	7,5
Gersik Putih	2	5
Grujugan	2	5
Longos	4	10

According to Table 1, 25 male respondents (62.5%) compared to 15 female respondents (37.5%). Respondents aged 26-45 years have the largest proportion of 15 people (37.5%), while respondents aged > 65 years have the lowest proportion of 7 people (17.5%). Most respondents (15%) came from Gapura Barat Village, while the least came from three regions, namely Batu Putih, Mandala, and Poja, each with one person (2.5%). There are 36 more respondents who adhere (90%), while there are 4 respondents who do not adhere (10%). According

Mandala	1	2,5
Panangan	2	5
Poja	1	2,5
Adherence Level		
Adhere	36	90
Not Adhere	4	10
Recovery Level		
Recovered	35	87,5
Not Recovered	5	12,5
Educational Level		
No Education	10	25
Elementary School	14	35
Middle School	10	25
High School	2	5
Vocational/Undergraduate School	4	10
Occupation		
Lecturer	1	2,5
Housewife	11	27,5
College Student	3	7,5
Student	3	7,5
Farmer	22	55

to Figure 5, the number of respondents who recovered was 35 (87.5%), while the number of respondents who did not recover was 5 (12.5%). Respondents with the last elementary school education represent the most respondents (14 persons, or 35%). In contrast, respondents with the last high school education stand for the least respondents (2 people, or 5%). The majority of respondents (22 persons, or 55%) work as farmers, while the least number of respondents (1 person) work as lecturers (2.5%).

Table 2. Distribution of Respondents Based on Adherence and Recovery of Pulmonary Tuberculosis Patients at the Gapura Public Health Center Sumenep in 2021

Adherence	Recovery						p-value	R
	Recovered		Not Recovered		Total			
	F	%	F	%	F	%		
Adhere	35	87,5	1	2,5	36	90	0,000	0,661
Not Adhere	0	0	4	10	4	10		
Total	35	87,5	5	12,5	40	100		

Table 3. Respondent Characteristics and Medication Adherence of Pulmonary Tuberculosis Patients at the Gapura Public Health Center Sumenep in 2021

Respondent Characteristics	Adherence						p-value	R
	Adhere		Not Adhere		Total			
	f	%	F	%	F	%		
Education Level								
No Education-Middle School	30	75,0	4	10,0	34	85,0	1,000	0,139
High School-Vocational/Undergraduate School	6	15,0	0	6	6	15,0		
Age								
16-45	23	57,5	1	2,5	24	60,0	0,283	0,232
>46	13	32,5	3	7,5	16	40,0		
Occupation								
Employed	21	52,5	2	5,0	23	57,5	1,000	0,051
Unemployed	15	37,5	2	5,0	17	42,5		
Gender								
Male	23	57,5	2	5,0	25	62,5	0,622	0,086
Female	13	32,5	2	5,0	15	37,5		

According to Table 2, 36 people (90%) recovered, 35 people (87.5%) did not, and 1 person (2.5%) died. Four persons (10%) did not adhere to taking pulmonary tuberculosis medications, with 0 people (0%) recovering and 4 people (10%) failing to recover. The chi-square test resulted in a p-value of 0.05, indicating that adherence was correlated with the recovery of pulmonary tuberculosis patients at the Gapura Public Health Center Sumenep in 2021. Additionally, $r = 0.661$ was obtained using the contingency test, indicating that the relationship is strong.

According to Table 3, respondents with an education level of less than high school who are obedient to treatment total 30 persons (75.0%), whereas those who are not obedient to treatment total 4 (10.0%). Six respondents (15.0%) with a high school education up to vocational/undergraduate school adhere to treatment, while 0 do not (0.0%). The chi-square test showed a p-value > 0.05 , indicating that education had no

significant relationship with medication adherence among pulmonary tuberculosis patients at the Gapura Public Health Center Sumenep in 2021. Additionally, $r = 0.139$ was obtained using the contingency test, indicating no relationship between the two variables. Respondents aged 16-45 years who adhere to treatment are 23 people (57.5%) and 1 person was not (2.5%). Thirteen respondents aged > 46 years adhered to treatment (32.5%), and 3 respondents did not adhere to treatment (7.5%). The chi-square test resulted in a p-value > 0.05 , indicating that age had no significant relationship with medication adherence of pulmonary tuberculosis patients at the Gapura Public Health Center Sumenep in 2021. Additionally, $r = 0.232$ was obtained using the contingency test, indicating no association between those two variables. Respondents who work (farmers and lecturers) adhere to treatment 21 people (52.5%) and 2 do not (5.0%). Meanwhile, respondents who do not work (housewives, college students, and students)

are 15 people (37.5%) who adhere to treatment, and 2 persons do not adhere to treatment (5.0%). The chi-square test showed a p-value > 0.05, indicating no significant relationship between education and medication adherence of pulmonary tuberculosis patients at the Gapura Public Health Center Sumenep in 2021. Additionally, the contingency test suggests that $r = 0.051$, indicates no relationship between those two variables. 23 male respondents (57.5%) are compliant with treatment, and 2 do not comply with the treatment (5.0%). There are 13 respondents of the female who adhered to treatment (32.5%) and 2 respondents who did not (5.0%). The chi-square test resulted in a p-value > 0.05, indicating that gender had no significant relationship with medication adherence of pulmonary tuberculosis patients at the Gapura Public Health Center Sumenep in 2021. Then, using the contingency test, $r = 0.086$ was determined, indicating no relationship between the two variables.

DISCUSSION

According to a study on adherence among pulmonary tuberculosis patients at the Gapura Public Health Center, Sumenep, the obedient category had the most significant proportion of adherence with 36 people (90%). This is consistent with a study undertaken at the Aek Kanopan Health Center in North Labuhanbatu Regency (Lubis and Panjaitan, 2020). According to data from medical records and TB.01 treatment cards, researchers discovered that patients with a high level of education and occupation did not always have a high degree of adherence. The study on patients with pulmonary tuberculosis at the Gapura Public Health Center Sumenep revealed that 35 individuals recovered (87.5%). This is consistent with a study undertaken at the Aek Kanopan Health Center in North Labuhanbatu Regency (Lubis and Panjaitan, 2020). A patient is reported to be recovered from pulmonary tuberculosis if he/she has had complete treatment for 6 months and has had sputum re-examined with negative results following 6 months of treatment (Minister of Health, 2016).

The study's findings addressing the relationship between medication adherence and recovery of patients with pulmonary tuberculosis at the Gapura Public Health Center Sumenep in 2021 indicated that the chi-square test showed a

significance value of (p) 0.000 with (α) = 5%. Because $p \leq 0.05$, H_0 is rejected, indicating a relationship between medication adherence and recovery in patients with pulmonary tuberculosis at the Gapura Public Health Center Sumenep in 2021. The contingency test analysis revealed an r-value of 0.661, indicating a strong correlation between these variables. A patient's personality can influence medication adherence, precisely their motivation to recover (Carole Wade, 2016). Patients who do not adhere to treatment will have their antituberculosis medications discontinued. This will enhance the high prevalence of bacterial resistance to MTB and need increased expenses and treatment duration (Prihantana and Wahyuningsih, 2016).

The results of this study support those of (Wibisana, 2017) at Haji Adam Malik Hospital, Medan ($p = 0.0001$) and (Munthe, 2019) at Kuala Public Health Center in Langkat Regency ($p = 0.000$). Both studies demonstrate a relationship between medication adherence and recovery in patients with pulmonary tuberculosis. This study, however, contradicts research conducted by (Manunggal et al., 2015) at the BKPM Semarang Region, which found no significant relationship between medication adherence and recovery in pulmonary tuberculosis patients with a p-value of 0.109. This is because the patient's adherence to medicine is not accompanied by the availability of pharmaceuticals at the same time, resulting in a disrupted or non-routine medication schedule.

The study's findings on the relationship between education level and medication adherence in patients with pulmonary tuberculosis indicated that the chi-square test had a significant value of (p) 1,000 and (α) = 5%. Because $p > 0.05$, H_1 is rejected, indicating no relationship between education level and medication adherence among patients with pulmonary tuberculosis at the Gapura Public Health Center Sumenep in 2021. The contingency test analysis resulted in an r-value of 0.139, indicating that there is no correlation between the two variables. According to the cross-tabulation data, significantly more respondents adhered to treatment with education below high school, up to 30 people (75.0%). Researchers discovered that individuals with a high level of education did not always have a high level of adherence, using data from medical records and TB.01 treatment cards. This, however, can be influenced by the

respondents' understanding of the importance of adhering to the advice offered by healthcare workers.

This finding confirms studies conducted by Supriano (2018) at the Malang City Public Health Center ($p = 0.264$), which found no correlation between education and antituberculosis medication adherence. However, this study contradicts research conducted by (Absor et al., 2020) in the Lamongan Regency between January 2016 and December 2018 ($p = 0.026$), which correlated education level and medication adherence for pulmonary tuberculosis patients. This is because patients with a low level of education are less likely to seek treatment. They believe, that whether they seek treatment or do not seek treatment, the outcome will be the same.

The study's findings addressing the relationship between gender and medication adherence in patients with pulmonary tuberculosis indicated that the chi-square test showed a significant value (p) of 0.622 with (α) = 5%. Because $p > 0.05$, H_1 is rejected, indicating no relationship between gender and medication adherence for pulmonary tuberculosis patients at the Gapura Health Center Sumenep in 2021. The contingency test analysis yielded an r -value of 0.086, indicating no relationship between the two variables. According to the cross-tabulation results, 23 male respondents (57.5%) adhere to treatment, and 2 persons do not adhere to treatment (5.0%). While 13 female respondents (32.5%) adhere to treatment and 2 persons do not (5.0%). Based on data from medical records and a tuberculosis treatment card TB.01, it is clear that the respondents, both male, and female, had similar levels of adherence to taking pulmonary tuberculosis medications.

This result confirms previous research by (Dewanty, Haryanti and Kurniawan 2016) at the Nguntoronadi I Public Health Center in Wonogiri Regency ($p = 1,000$), which concluded that there was no correlation between gender and antituberculosis medication adherence. However, this study contradicts research conducted at the Jember Pulmonary Hospital (Primadiah, 2012) that found a relationship between gender and adherence to treatment for pulmonary tuberculosis patients ($p = 0.028$). This is because men are more disobedient when it comes to drug use than women, and men are more active and neglect their health.

CONCLUSION AND SUGGESTION

The conclusion of this study there is a significant relationship between medication adherence and patient recovery at the Gapura Health Center Sumenep in 2021. The study suggests that health care workers enhance the use of programs such as counseling, home visits, and remote monitoring via telecommunications.

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