ORIGINAL ARTICLE

Interpersonal Communication Skill of Tuberculosis Caregivers and Adherence to Medication: A Cross-Sectional Study Among Tuberculosis Patients in Public Health Center of Indonesia

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ABSTRACT

Introduction: Tuberculosis (TB) patient adherence is a determining factor in the success of TB treatment. The procurement of TB treatment caregivers is one of the Government's efforts to optimize patient adherence, which depends on the TB treatment caregivers' interpersonal communication skills with patients. This study aimed to analyze TB caregivers' interpersonal communication skills and adherence to medication among TB patients in the Public Health Center (PHC) of Indonesia. **Methods:** A cross-sectional study design was performed among 47 TB patients in PHC. Data collection used self-administered questionnaires, including sociodemographic, interpersonal communication questionnaires, and the Morisky Medication Adherence Scale (MMAS-8) questionnaire. The data was analyzed using Spearman's rho test. **Results:** The results showed that the majority of TB treatment caregivers interpersonal communication in the high category (87.2%) and the majority of the medication adherence of TB patients in the high category (53.2%). Then, there was no significant relationship between TB treatment caregivers' interpersonal communication and medication adherence (p= 0.067). However, there was a significant relationship between communication indicators of supportive, positive attitudes and equality with TB patient medication adherence (p<0.05). **Conclusion:** TB treatment caregiver's interpersonal communication has no relationship with adherence, but there is a relationship in the indicators of supportive, positive, and equal attitudes. Therefore, TB treatment caregivers must improve interpersonal communication skills by attending socialization and training.

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INTRODUCTION

The global tuberculosis report for 2020 states that Indonesia ranks 3rd in Southeast Asia with a TB prevalence of 824,000 (1,2). Tuberculosis is one of the infectious diseases with the highest morbidity rate and is a global problem, especially in developing countries, including Indonesia (1). In 2020, East Java ranked 8th in Indonesia with findings of 42,922 cases of TB with a Treatment Coverage (TC) of 44.7% and a Treatment Success Rate (TSR) of 88.9% (3). This percentage is still far from the target of 80% TC and 80% TSR≥ 90%.

TB treatment is carried out for quite a long time with a standard treatment of 6 months without interruption (4–6). The need to take long-term medication does not escape the side effects such as tingling hands and feet, nausea, red urine, decreased appetite, diarrhea, rashes, joint pain, fever, impaired vision, and hearing (7). Discomfort with side effects, boredom, and futility will increase the patient's desire to stop treatment (8–11). Not only that, treatment adherence is also influenced by other elements that can improve drug withdrawal rates in TB patients (12). Other influencing factors include patient knowledge and self-awareness, healthcare facilities, the role of the family, health workers, and TB

treatment caregivers (9,10,13). With this, TB patients prefer to stop taking TB drugs.

The decision to stop this treatment will affect the success of TB treatment and its resulting impact. Stopping treatment prematurely will increase the resistance of TB bacteria to TB drugs, increasing the risk of transmission and making treatment more prolonged and complex (4,14). Thus, it is necessary to have an appropriate strategy for treating TB. The Directly Observed Treatment Short Course (DOTS) strategy is a WHO recommendation in TB treatment focusing on case finding, supervision of medication adherence, and appropriate and short-term treatment (12,15). Direct Observed Therapy is an effort to monitor and support patients in medication adherence, which aligns with the TB control strategy in Indonesia carried out by TB treatment caregivers (12,16). TB treatment caregivers directly carry this out by establishing interpersonal relationships with patients who are taking TB treatment to completion.

This interpersonal relationship is in line with Hildegard E. Peplau's theory, which views the process of therapeutic interpersonal relationships as a feature of a nursing process (17). TB treatment caregivers' skills successfully influence interpersonal relationships, including observation, assessment, communication, and evaluation, in which verbal/nonverbal communication skills are the most critical skills in interpersonal relationships (18). Effective interpersonal communication between TB treatment caregivers and TB patients can improve adherence and reduce the boredom that patients feel during the treatment period (19). Therefore, appropriate communication can be an essential point in the success of TB treatment.

According to data from the Jember District Health Office in 2020, Jember Regency holds the second-highest TB cases in East Java, totaling 1,408 (32.9%). The treatment success rate (TSR) is 89.4%, while the recorded deaths are 180 cases (4.26%) (20). In 2022, the prevalence of TB in Jember Regency rose from 2,681 cases to 3,609 cases. The prevalence of TB in Ajung District is known to be ranked 3rd after Kalisat and Sumbersari, with Treatment Coverage at the Ajung Health Center as much as 78%, 90 patients recovered (SR 65%) with one case of failed patient, two cases of patient death and three cases of drop out (DO) patients. Based on the data obtained, the treatment success rate in Ajung is still low compared to other sub-districts and is still far from the treatment success target. Several factors can affect patient adherence to treatment, determining TB treatment's success. However, the relationship between TB treatment caregivers, patient interpersonal communication, and patient medication adherence will be emphasized. Therefore, The purpose of this study was to analyze the interpersonal communication skills of TB caregivers and adherence to medication among TB patients in the Public Health Center (PHC) of Indonesia.

MATERIALS AND METHODS

Design

This research was conducted using a correlational quantitative design with a cross-sectional approach.

Participant

The participants of this study were all tuberculosis patients who had been on TB treatment for the last six months, starting from November 2022-April 2023, in the Ajung Jember Health Center with the inclusion criteria of new TB patients, patients age ≥12 years, and being able to communicate well. Exclusion criteria include patients who died, recovered, moved, and were unwilling to become responders. The sample used in this study included the entire population, totaling 69 respondents. During the survey, 22 respondents dropped out because they needed to meet the inclusion criteria. Specifically, five respondents were in the toddler and child age group, and others met the exclusion criteria: (1) Four respondents passed away; (2) Nine respondents completed treatment during data collection; (3) Two respondents moved away; (4) Two respondents declined to participate. Participant data was obtained from the Ajung Health Center, which was then selected according to the inclusion and exclusion criteria and selected using the total sampling technique and received 47 participants.

Data Collection Procedures

Quantitative data was obtained by filling out interpersonal communication, Morisky Medication Adherence Scale (MMAS-8) questionnaire, and instruments containing participant characteristics. The interpersonal communication questionnaire contains 30 questions with an index of rxy≥0.3, with scores ranging from rbt 0.510 to 0.968. Reliability testing showed a Cronbach's Alpha value between 0.797-0.815 (21). The validity of the MMAS-8 questionnaire was indicated by r-calculated > r-table (0.355) at a 0.05 significance level, and reliability was confirmed with a reliability coefficient of 0.729 (22).

During the data collection process, researchers received directions from local TB cadres regarding the addresses of each respondent. Researchers collected data by visiting TB patients from house to house. Researchers introduced themselves and conveyed the respondents' aims, objectives, and research process. The decision to participate in TB patients as respondents was proven through the patient's agreement to sign the informed consent sheet provided by the researcher. The researcher gave the questionnaire and explained the correct filling procedure to the respondent so that it could be filled in correctly and thoroughly. For respondents who could not write and read, the researcher assisted them in filling

out the questionnaire.

Data Analysis

The data analysis is carried out after all the data has been collected. The entire data obtained will go through the checking, coding, inputting data to the computer, and cleaning process. Univariate descriptive analysis was used for data analysis on sociodemographic variables. This analysis includes frequency measurements and percentage distribution for each sociodemographic variable, such as age, gender, education level, and employment status. The relationship between interpersonal communication variables and medication adherence was analyzed using Spearman's Rho test.

Ethical Clearance

This research has received ethical approval from the Faculty of Nursing, University of Jember No. 142/UN25.1.14/KEPK/2023. All participants signed informed consent, the questionnaire was coded, participant details were not collected, and there were no differences.

RESULTS

Sociodemographics

Characteristics of TB patients in this study include gender, age, last education, occupation, and TB treatment caregiver characteristics including gender, occupation, length of time as TB treatment caregivers, TB treatment caregivers status, history of training, how TB treatment caregivers remind patients, status of residence, and last education.

Based on Table I, TB patients' characteristics as respondents have an average age of 40.57 years, with the majority being female (53.2%). Most TB patients had primary school-equivalent education (42.6%), with the majority not working (42.6%). Meanwhile, the majority of TB treatment caregivers are female (70.2%) with family member status (85.1%) and live in the same house (76.6%). Most TB treatment caregivers' last education was from elementary school, equivalent (53.2%), with the majority not working (40.4%). Most TB treatment caregivers have experience as a TB treatment caregiver for months (91.5%) without participating in TB-related training or training on interpersonal communication (85.1%). The majority of TB patients underwent treatment in the continuation phase (3-6 months) (74.5%), with the majority of patients taking 3 tablets 2 KDT (44.7%). The majority of patients still complained of symptoms (61.7%), and all patients experienced drug side effects (100%)

Table II shows significant differences in TB treatment caregivers' interpersonal communication (p-value <0.05), namely in the indicators of openness, empathy, supportive attitude, positive attitude, and equality attitude.

Table I: General Characteristics and History of Treatment of TB Patients in the Public Health Center, Jember Regency, Indonesia (n=47)

Characteristics of Respondents	n (%)	
	TB patient	TB treatment caregivers
Patient Age (Years)		
Means (SD)	40.57 (16.166)	
Gender		
Man	22 (46.8)	14 (29.8)
Woman	25 (53.2)	33 (70.2)
Education		
Not completed in primary school	9 (19.1)	5 (10.6)
Graduated from SD-equivalent	20 (42.6)	25 (53.2)
Graduated from junior high school	7 (14.9)	5 (10.6)
Graduated from high school	10 (21.3)	8 (17)
Graduated D1/D2/D3/PT	1 (2.1)	4 (8.5)
Occupation		
Doesn't work	20 (42.6)	19 (40.4)
Student / Student	4 (8.5)	
Self-employed	12 (25.5)	17 (36.2)
Farmer/Farm Laborer	11(23.4)	9 (19.1)
Private employees		2(4.3)
How to Remind the Patient		
Directly		47 (100)
Duration as a TB treatment caregivers		
< 6 months		43 (91.5)
> 6 months		4 (8.5)
TB treatment caregivers status		
Health Cadre		7 (14.9)
Family members		40 (85.1)
Training that TB treatment caregivers has attended		
None		40 (85.1)
Yes		7 (14.9)
Status of residence		
Not Living Together		11 (23.4)
Living Together		36 (76.6)
Length of Treatment		
month (Intensive)	12 (25.5)	
3-6 months (Continued)	35 (74.5)	
Complaints/Symptoms		
None	18 (38.3)	
Yes	29 (61.7)	
Side effects		
Yes	47 (100)	
Medicinal Alloys		
2 tablets 4 KDT	1 (2.1)	
3 tablets 4 KDT	7 (14.9)	
4 tablets 4 KDT	2(4.3)	
2 tablets 2 KDT	13 (27.7)	
3 tablets 2 KDT	21 (44.7)	
4 tablets 2 KDT	2(4.3)	
5 tablets 2 KDT	1 (2.1)	

n (%)=number of respondent
n (%)=number of respondents; KDT=Fixed Dose Combination; 2 KDT=Rifampin and Isoniazid; 4 KDT=Rifampin, Isoniazid, Pyrazinamide, and Ethambutol

Table II: TB Treatment Caregivers Interpersonal Communication in the Public Health Center, Jember Regency, Indonesia (n=47)

Interpersonal Communication Indicator	Md (P25-P75)	Z	p-values
Attitude of Openness	16.0 (15.0-17.0)	2,109	<0.001
Empathy	15.0 (14.0-17.0)	1,650	0.009
Supportive Attitude	18.0 (18.0-18.0)	3,556	<0.001
Positive Attitude	18.0 (18.0-18.0)	2,801	<0.001
Attitude of Equality	18.0 (18.0-18.0)	3,283	<0.001
Total	**86.0 (83.0-87.0)**	**2,223**	**<0.001**

Md=median; P25-P75=25th to 75th precentiles; Z = calculated value of the One Sample Kolmogorov-Smirnov Test; p-value = One Sample Kolmogorov-Smirnov Test significance value

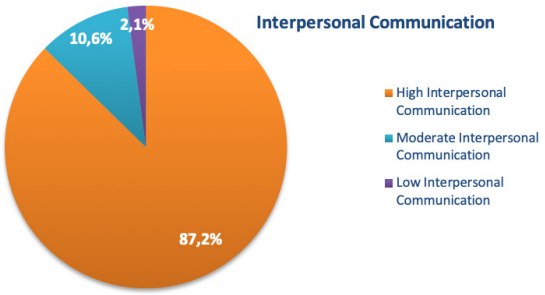

Figure 1: TB treatment caregivers Interpersonal Communication in the Public Health Center, Jember Regency, Indonesia (n=47)

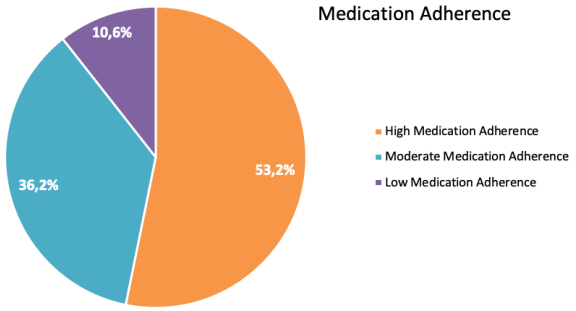

Figure 2: Adherence with Taking Medication for TB Patients in the Public Health Center, Jember Regency, Indonesia (n=47)

Figure 1. shows that TB treatment caregivers' interpersonal communication in the Public Health Center Jember Regency is mainly in the high category (87.2%)

Figure 2. shows that the highest adherence of TB patients in taking medication in the Public Health Center area has high compliance (53.2%)

Based on Table III. shows no significant relationship between TB treatment caregivers' interpersonal communication and adherence to taking medication for TB patients in the Public Health Center, Jember Regency (p-value = 0.067). However, after conducting an assessment based on each indicator, there was a significant relationship between the indicators of a supportive attitude, a positive attitude, and an attitude of equality with adherence to taking medication for TB patients in the Public Health Center, Jember Regency, Indonesia (p-value <0.05).

Table III: Relationship between TB Treatment Caregivers Interpersonal Communication and Compliance with Taking Medication for TB Patients in the Public Health Center, Jember Regency, Indonesia (n=47)

Indicator	Md (P25-P75)	r	p-values
Attitude of Openness	16.0 (15.0-17.0)	0.283	0.054
Empathy	15.0 (14.0-17.0)	0.160	0.281
Supportive Attitude	18.0 (18.0-18.0)	0.389	0.007*
Positive Attitude	18.0 (18.0-18.0)	0.532	0.000*
Attitude of Equality	18.0 (18.0-18.0)	0.365	0.012*
Total	**86.0 (83.0-87.0)**	**0.270**	**0.067**

Md=median; P25-P75=25th to 75th precentiles; r=Spearman's rho correlation coefficient; p-value=Spearman's rho test significance value, *= significant

DISCUSSION

The results showed that most TB treatment caregivers' interpersonal communication at the Ajung Jember Health Center was in the high category. This is because the majority of TB treatment caregivers can carry out interpersonal communication well, especially in indicators of a supportive, positive attitude and an attitude of equality, which is motivated by the gender of the majority of TB treatment caregivers being female, the status of TB treatment caregivers as family members, and the status of living in the same house. These supporting factors can strengthen TB treatment caregivers' communication to improve patient medication adherence with support, positive attitude, and closeness as a family, as shown by TB treatment caregivers. Based on the research, successful TB treatment caregivers' interpersonal communication depends on the TB treatment caregivers' ability to position themselves when speaking, determine attitudes when talking to patients that are supportive and positive, have a sense of equality, have high empathy, and TB treatment caregivers the ability to explain information related to TB and treatment as well as provide opportunities for patients to ask questions (23). Therefore, it is necessary to maintain good interpersonal communication by exploring TB treatment caregivers' communication skills and improving interpersonal communication, which is lacking in socialization and training.

The results showed that most TB patients' adherence to treatment in the Public Health Center, Jember Regency, Indonesia, had high adherence. Most patients have followed the recommendations of TB treatment caregivers and health workers to take drugs regularly for recovery from TB disease, as seen from the acquisition of compliance scores with maximum mean values for all indicators. Adherence to treatment among TB patients influences the effectiveness of the regimen. Successful treatment outcomes are achieved when patients follow the prescribed regimen consistently (24). Therefore, TB patients are expected to be able to maintain compliance during TB treatment according to the recommendations of health workers and accompanying TB treatment caregivers.

Based on the results of this study, there is no significant relationship between interpersonal communication among TB treatment caregivers and adherence to taking medication for TB patients in the Work Area of the Ajung Jember Health Center. Still, the information content provided by TB treatment caregivers was not acceptable to patients because the ability of patients to receive information was still lacking, which was motivated by the low level of patient education.

Based on the previous study. the majority of individuals with only elementary or junior high school education lack awareness and understanding of the steps involved in taking TB medication, which impacts their treatment adherence (25). Findings from another study indicate that respondents with higher levels of education generally demonstrate better treatment adherence, as they can more readily receive and understand the information provided, leading to greater awareness of the importance of therapy (9). Due to differences in patient perceptions of this interaction, Peplau pointed out that the previous TB treatment caregivers did not consider patient characteristics and situations. This must also be considered to establish a therapeutic relationship between TB treatment caregivers and patients (26). Therefore, TB treatment caregivers must consider the patient's ability to manage information. This can be done by providing brief, concise, clear, and simple information and periodically ensuring the patient understands the information provided.

The results showed a significant relationship between indicators of supportive attitude and adherence to medication for TB patients in the working area of the Ajung Jember Health Center. This is because the majority of TB treatment caregivers are family members with the status of living at home. TB treatment caregivers can provide optimal support to patients by motivating patients to adhere to taking medication. This approach helps patients feel valued and builds trust in adhering to the caregiver's recommendations throughout TB treatment (27). A supportive attitude can also be shown by appreciating and giving appreciation to patients when communicating (19). In line with Peplau's theoretical model, the support provided by the TB treatment caregivers is a form of good listening to increase TB patients' trust in TB treatment caregivers (17). Therefore, TB treatment caregivers need to pay attention to meeting times or regular visits with a minimum of 2 trips outside of taking medication to discuss treatment related to being carried out to maintain closeness and show an attitude of support to patients.

The results showed a significant relationship between positive attitude indicators and adherence to medication for TB patients in the working area of the Ajung Jember Health Center. The majority of TB treatment caregivers have shown a positive attitude by being able to convince patients of the healing of the treatment that is being carried out from positive attitude indicator scores with mean values, percentiles, and high Z-scores. Patient and mutual respect are patients' expectations in communicating with TB treatment caregivers (19). Considering Peplau's theoretical model, the positive attitude given by TB treatment caregivers can help patients explore their feelings, thoughts, and behaviors while undergoing TB treatment so that they can change negative feelings about the disease they are experiencing with positive emotions in the form of optimism to recover (28). Therefore, the Public Health Center must create a training program for interpersonal communication techniques with patients, primarily aimed at TB treatment caregivers to optimize communication skills while accompanying TB patients.

The results showed a significant relationship between the indicators of equality and adherence to taking medication for TB patients in the working area of the Ajung Jember Health Center. TB treatment caregivers have shown equality with no distance from the patient to discuss TB disease and treatment, as seen from the acquisition of high mean, percentage, and z-scores in the attitude indicator of equality. The absence of differences in status between the two shows the relationship between a TB treatment caregiver and a TB patient. In line with Peplau's interpersonal relationship theory, the process of interpersonal interaction between TB treatment caregivers and TB patients is carried out with the same goal of mutual respect between individuals (28). Therefore, TB treatment caregivers must improve their communication skills by showing that the TB patient being accompanied is part of their own family.

There is no significant relationship between openness and adherence to taking medication for TB patients in the working area of the Ajung Jember Health Center. The lack of optimal information conveyed by TB treatment caregivers is due to a lack of knowledge and experience with TB treatment caregivers. However, patients still follow and adhere to recommendations for taking medication according to the schedule due to the patient's strong desire and motivation to recover and the TB treatment caregivers' support and positive attitude. TB patient treatment adherence will influence the prescribed regimen outcomes (24). According to Peplau's theoretical model, this open communication should be necessary during the interpersonal relationship phase, especially during the exploitation phase, to foster patient trust in TB treatment caregivers (18). Thus, the lack of information possessed by the TB treatment caregivers still makes the TB treatment caregivers open about conveying the information they know to patients. Thus, the limited information related to TB disease and treatment owned by TB treatment caregivers does not significantly affect patient compliance. Patient adherence to medication according to schedule will be maintained as long as the patient's motivation and enthusiasm are high for recovery.

There is no significant relationship between empathy and adherence to taking medication for TB patients in the working area of the Ajung Jember Health Center. Because TB treatment caregivers still lack empathy, as seen from the score of the empathy indicator with a mean value, the percentage is up to the lowest z-score of the other indicators. However, most patients still have high adherence because they felt the spirit of recovery due to the communication attitude shown by the TB treatment caregiver in other communication indicators. Empathy can be manifested in verbal and nonverbal forms such as expressions, body gestures, and the ability to understand patients (29). Based on Peplau's theoretical model, in establishing interpersonal relationships, it is essential to develop verbal communication, but nonverbal communication can be a form of expression of affection, which can be necessary because of differences in patient sensitivity in feeling or understanding situations (26). This TB treatment caregiver has shown empathy verbally but not nonverbally, which does not affect patient compliance in taking medication and has received enthusiastic support and a positive attitude from TB treatment caregivers.

CONCLUSION

This study concluded no significant relationship exists between TB treatment caregivers' interpersonal communication and adherence to medication for TB patients in the Public Health Center, Jember Regency, Indonesia (p-value 0.067 > 0.05). However, an assessment based on each indicator found that there was a significant relationship between the indicators of a supportive attitude, a positive attitude, and an attitude of equality with adherence to taking medication for TB patients in the Public Health Center, Jember Regency, Indonesia (p-value <0.05).

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare

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