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RESEARCH ARTICLE

Adherence to Taking Medication for Pulmonary Tuberculosis Patients is Associated with Role of Medication Supervisors and Family Support

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Abstract

Tuberculosis (TB) remains a public health issue worldwide, affecting all age groups, despite being a preventable and curable disease. This study investigated the relationship between medication supervisors (RMS) and family support in medication adherence in pulmonary TB patients. This study is an observational type using a case-control design. The research was conducted in the working area of the Johan Pahlawan Community Health Center, West Aceh Regency, Aceh Province, in 2022. A total of 34 participants were recruited using the purposive sampling technique, with 17 participants in each group, i.e., the case group (non-adherent) and the control group (adherent). To minimise bias, matching was performed based on the participants' sex between the case and control groups. The chi-square test was used to test the hypothesis or to answer the research question, and the analysis was performed using computer software. The results showed that the p-value for the RMS and family support with medication adherence was <0.05, indicating a significant relationship. Thus, it can be concluded that RMS and family support significantly influence medication adherence among pulmonary TB patients.

Keywords: Medication adherence; Medication supervisors; Family support; Tuberculosis

Introduction

Tuberculosis (TB) is present in all countries and all age groups, even though it can be prevented and cured (WHO, 2022). The disease is highly contagious and effortlessly transmitted to individuals with weak immune systems. In addition to immunity (Indah, 2018), age, malnutrition, other diseases (such as diabetes and HIV), smoking habits, and occupation are considered risk factors for TB (Irwan, 2017; Ministry of Health RI., 2014). The environment can also increase the risk of contracting TB, including contact with a source of transmission, duration of contact with a source of transmission, and concentration of bacteria in the air (Ministry of Health RI., 2014; Alsagaf, 2015). It has been proven that TB is more prevalent among people with low socio-economic status (Luthfi, 2016). Hence the disease is often associated with poverty.

It is recognised that TB treatment requires an extended period (6-8 months), emphasising the importance of patience and adherence to the treatment regimen by the patient. Treatment adherence refers to the willingness and extent to which a patient complies with the instructions, rules, or medical advice a doctor or other health professionals gives to support the patient's recovery. The long duration of treatment is a significant obstacle for patients, and many of them stop taking their medication before completing the treatment regimen. This can hurt achieving a cure.

In West Aceh Regency in 2019, it was reported that there were 229 TB patients, and only 169 people (73.8%) completed their treatment (Dinkes Aceh, 2020). In 2020, the number of TB cases was 311, of which 260 people (83.6%) completed their treatment (Dinkes Aceh, 2021). Furthermore, in 2021, 261 cases and 224 patients (85.8%) completed their treatment (Dinkes Aceh, 2022). Johan Pahlawan Community Health Center, located in the capital of West Aceh Regency (Meulaboh), reported that there were 48 TB patients in 2020, and only six were declared cured. The number of TB patients in 2021 was 38, while 13 patients were declared cured. From January to September 2022, 31 patients were found, while only two people were declared cured (Johan Pahlawan Community Health Center, 2022).

In addition to failing to achieve a cure and being a transmission source to others, another consequence of non-adherence to medication is the potential development of drug-resistant bacteria. To address non-adherence to treatment, the World Health Organization (WHO) recommends a strategy called Direct Observed Treatment Short Course (DOTS) (WHO, 2018). The

goal is to ensure and monitor that TB patients take their medication according to the treatment plan. This method is expected to achieve a cure rate of >85% (Kartikasari et al., 2012). People who supervise TB patients taking their medication in Indonesia are called Pengawas Minum Obat (PMO) or medication supervisors. Studies have shown that this method (PMO) effectively ensures TB patients adhere to their medication regimen (Permatasari, 2020; Suryana, 2021). However, the critical role of family members as close relatives cannot be ignored. Family support to encourage, information about the disease, and escorting patients to health facilities such as Puskesmas will positively impact TB patients. Several studies have found a significant relationship between family support and medication adherence in TB patients (Hendri, 2016; Warjiman, 2022). Therefore, this study aims to determine the relationship between RMS and family support with medication adherence in TB patients.

Methods

This study uses a case-control design approach, where the disease (outcome) is determined first, and then the causes (risk factors) are identified. The research was conducted from November to December 2022 in the Public Health Centre of Johan Pahlawan's working area. The study's sample size is 17 cases (non-compliant group) and 17 controls (compliant group), making a total sample size of 34. To reduce bias, gender matching was carried out between the case and control groups. The independent variables are the RMS and family support, while the dependent variable is TB treatment compliance. The instrument used for data collection is a questionnaire. To answer the research hypotheses, namely 1) there is a relationship between the RMS and medication compliance and 2) there is a relationship between family support and medication compliance, the researcher uses statistical analysis with the chi-square test.

Results

The study's results are presented in tables, both on the characteristics of the respondents and the RMS and family support in the case and control groups.

The characteristics of the respondents, as shown in Table 1, reveal that in the case group, there were more individuals aged 70 years old (70%), while in the control group, there were more individuals aged 70 years old (70%). As gender was matched, seven males (41.18%) and ten females (58.82%) were in both the case and control groups. Regarding education level, more respondents in the case group had completed primary and high school education (35.29% each). In comparison, more respondents in the control group had completed junior high school education (41.18%).

Table 1. Distribution of respondent characteristics in case and control groups.

Characteristics	Adherent (Control)		Non-adherent (Case)	
	F	%	F	%
Age				
16-25 years old	3	17.6	1	6.0
26-35 years old	3	17.6	0	0
36-45 years old	6	35.4	8	47.0
> 45 years old	5	29.4	8	47.0
Total	17	100	17	100
Sex				
Men	7	41.2	7	41.2
Women	10	58.8	10	58.8
Total	17	100	17	100
Education level				
Elementary school	5	29.4	6	35.3
Junior high school	7	41.2	5	29.4
Senior high school	5	29.4	6	35.3
Total	17	100	17	100

Source: primary data 2022

Table 2 shows that in the compliant group, 15 patients (88.2%) reported having the role of a good medication supervisor. In contrast, in the non-compliant group, only five patients (29%) reported having the role of a good medication supervisor. The chi-square test result showed a P-value of 0.002, which is smaller than 0.05. This result can be concluded that there is a significant relationship between the RMS and compliance in taking TB medication. The OR value was found to be 18.0, which means that the role of a good medication supervisor is 18 times more likely to result in compliance in taking TB medication compared to a poor RMS.

Table 2. The Relationship between RMS and Medication Adherence in Pulmonary TB Patients.

RMS	Medication Adherence				Total		P. Value	OR
	Adherent (Control)		Non-adherent (Case)					
	F	%	F	%	F	%		
Good	15	88.2	5	29.4	20	58.8	0.002	18.000 (2.955-109.658)
Not good	2	11.8	12	70.6	14	41.2		
Total	17	100	17	100	34	100		

Source: primary data 2022

Table 3. The Relationship between Family Support and Adherence to Antituberculosis Medication in Pulmonary TB Patients.

Family Support	Medication Adherence				Total		P. Value	OR
	Adherent (Control)		Non-adherent (Case)					
	F	%	F	%	F	%		
Good	12	70.6	2	11.8	14	41.2	0.002	18.00 (2.955-109.658)
Not good	5	29.4	15	88.2	20	58.8		
Total	17	100	17	100	34	100		

Source: primary data 2022

The difference in proportions (Table 3) of medication adherence based on family support shows that in the group that adheres to medication, there were 12 respondents (70.6%) who received good family support. Meanwhile, in the non-adherent group, only two respondents (11.8%) received good family support. The statistical test results showed that the P value of 0.002 is smaller than 0.05. The conclusion is that there is a significant relationship between family support and medication adherence in TB patients. The OR value obtained is 18.0, which indicates that patients who receive good family support are 18 times more likely to adhere to medication than those who receive less family support.

Discussion

The research results indicate a significant contribution from the RMS to TB patients' medication adherence. TB patients who receive good supervision from healthcare workers are more compliant in taking medication according to the schedule and regulations set by healthcare professionals. Patients may feel they are constantly monitored and directly observed by healthcare workers. This condition can foster commitment and motivation within the patient to seriously undergo treatment by taking medication according to the treatment plan and schedule.

Several previous studies on the correlation between RMS and adherence to medication support the results of this study. A study conducted in Puskesmas Sario, Manado City's working area, showed a significant relationship between RMS and adherence to TB medication (Yosangadji, 2016). Permatasari (2020), who conducted research in South Denpasar, also found a strong correlation between the RMS and adherence to TB medication. Furthermore, Yuniar's study (2017) in Puskesmas Sempor 1 Kebumen found that the RMS determined the level of adherence to TB medication. Studies in Puskesmas Setu II, Bekasi Regency, conducted by Suryana (2021) and in Kupang City by de Fretes (2021), also found similar results regarding the RMS in adherence to TB medication.

A medication supervisor has several tasks that need to be carried out for the success of TB treatment, namely 1) supervising patients to complete treatment by taking the medication regularly; 2) encouraging TB patients to seek regular treatment; 3) reminding patients to undergo sputum re-examination according to the predetermined schedule; 4) advising family members of TB patients with suspicious symptoms to immediately seek medical attention (Kementerian Kesehatan RI, 2009). Patients may be more motivated to adhere to treatment when medication supervisors perform their tasks with a high sense of responsibility and enthusiasm, triggering their desire to seek treatment earnestly. In addition, Erlinda et al. (2013) added several tasks of a medication supervisor, such as providing encouragement to TB patients when they feel bored consuming TB drugs, informing them of the medication schedule, and conveying what is allowed and not allowed (such as wearing a mask at home and outside and covering their mouth when coughing).

Family support is considered as support from the family members to those who need it (Aldersey et al., 2016). Family support involves providing assistance given by the family to the member in need (Fry et al., 2016; Kamaryati & Malathum, 2020). One of the aims of family support is to increase the strength and resilience of the family and its members. Family support is essential in helping family members with chronic illnesses (Kamaryati & Malathum, 2020), including those with tuberculosis (TB). Our study has shown that family support significantly contributes to the compliance of pulmonary TB patients in taking their medication. The better the support given by the family to the patient, the greater the likelihood of success in the patient's adherence to their medication schedule.

Family support can be emotional, instrumental, informational, and appreciative (Kamaryati & Malathum, 2020; Anwar et al., 2021). Communicating with the patient with respect and politeness as a family member is a form of appreciative support. Emotional support includes sincerely loving them, listening to their complaints and feelings, and showing concern for the TB disease they are suffering from. Informational support can be demonstrated by providing knowledge about their illness or the treatment they are undergoing. Meanwhile, instrumental support can accompany them to health facilities for treatment and preparing their finances for medical care. Essentially, families try to facilitate, assist, and encourage family members experiencing or experiencing health problems. Families are the front line in supporting those who suffer from illnesses, especially chronic ones (Kamaryati & Malathum, 2020).

The study conducted by Hamidah (2020) strengthens our findings, as it is proven that family support has a significant relationship with the compliance of taking medication in TB patients. The research conducted by Sibua (2021) in East Bolang Mongondow Regency reveals that compliance in taking medication has a significant relationship with the support given by the family of TB patients. The positive contribution of family support to compliance with TB medication was also found in Yosangadji's (2016) research in the working area of Puskesmas Sario in Manado City. Another study conducted by Sunarmi (2020) in the Special Lung Hospital in South Sumatra Province also shows the same results as other studies on the critical role of family support in the success or compliance of TB medication.

Conclusion

This study has shown that RMS and family support significantly contribute to pulmonary TB patients' adherence to medication. Patients need to accept the presence of medication supervisors openly when they visit or supervise them. Their advice and guidance should be heard and followed for successful treatment. Family members can be more active in encouraging and assisting patients to be patient and obedient to the recommended treatment rules by health workers, including compliance with schedules and doses. Further studies need to involve larger samples.

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Author Contributions and Competing Interests

The author has stated that no competitor's interest exists.

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