ORIGINAL ARTICLE

Effect of face-to-face psychoeducation intervention combined with motivational interviewing on adherence in prevention and treatment of pulmonary tuberculosis patients

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ABSTRACT

Introduction: *TB can be cured if patients routinely seek treatment for six months without breaking. Poor adherence to tuberculosis treatment is a global health challenge. At the same time, adherence to the treatment regimen is essential for tuberculosis (TB) control. The consequences of this non-compliance lead to treatment failure and the risk of disease infection is widespread.* ***Objectives:*** *The objective of the study is to examine what Face-to-Face Psychoeducation Intervention Combined with Motivational Interviewing is effective to improve Adherence in Prevention and Treatment of Pulmonary Tuberculosis Patients.* ***Methods:*** *The research design used quantitative with experimental quasi-research design t. The research was conducted at 4 Community Health Centers (Puskesmas), namely Puskesmas Takal, Puskesmas Perak, Puskesmas Pegirian, and Puskesmas Sutopo in Surabaya. Through purposive sampling, the sample number was 60, divided by 30 respondents for the intervention group and 30 for the control group.* ***Results:*** *There was a significant difference after the intervention. In the intervention group, there were changes in outcomes in both preventive adherence (12.37) and medication adherence (4.52). While in the control group, only the value of prevention compliance experienced a change of 5.67.* ***Conclusions:*** *The face-to-face method combined with motivational interviewing is efficacious in improving prevention and treatment adherence in TB patients. Motivational interviewing tends to reduce hopelessness, increase motivation to recover, and the warning of taking medication in tuberculosis patients.*

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1. Introduction

Tuberculosis (TB) is one of the infectious diseases that until now is still high in cases in the community. TB has a broad impact on the quality of life and economy and even threatens the safety of human lives. TB can be suffered by anyone, adults or children, and can affect all body organs, although many are attacked by the lung organs (WHO, 2018). One of the main problems because TB cases are still high is non-adherence (Riquelme-Miralles et al., 2019). This problem has several socioeconomic and health consequences, among which many patients occupy hospitals for too long, lack of costs, prolonged morbidity, psychological disorders, and increased risk of death (Tola et al., 2016).

According to the report, Indonesia ranks second in the world with a high prevalence of TB after India. The risk rate of TB disease in Indonesia ranges from 1.7% to 4.4%. WHO (2018) Based on the data, there were 1.3 million deaths (range, 1.2-1.4 million) of TB patients with HIV negative and about 300,000 deaths due to TB (range, 266,000-335,000) with HIV positive (Director General P2P, 2018).

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TB can be cured if patients routinely seek treatment for six months without breaking. Poor adherence to tuberculosis treatment is a global health challenge. Whereas adherence to the treatment regimen is essential for tuberculosis (TB) control (Nguyen et al., 2017). The consequences of this non-compliance lead to treatment failure, and the risk of infection of the disease is widespread (Karumbi & Garner, 2015; Suwannakeeree et al., 2015).

Factors that hinder treatment adherence include lack of knowledge, loss of income, stigma, lack of social support, medication side effects, and long duration of treatment (Gebreweld et al., 2018). Other factors, characteristics of the disease, relationship between health workers and patients, type of clinical setting, distance to nearby health facility, psychological distress, change of residence, and economic status (Kebede & Wabe, 2012; Tola et al., 2016)

Several studies were conducted in order to improve adherence to treatment. The results of studies conducted with psychological counseling and educational interventions decreased the rate of treatment non-adherence among the intervention group significantly. Educational strategy interventions can significantly decrease failure in treatment. In addition, motivational interviews have also proven effective in improving compliance. Face-to-face education using the CEA (Catharsis, Education, and Action) method is as effective as a short reminder as providing pamphlets to improve compliance. CEA offers additional information that can be useful in designing intervention programs to improve compliance with the guidelines (Tola et al., 2016; Müller et al., 2019; Naderloo et al., 2018).

In addition, adherence to treatment for pulmonary TB patients can be improved through motivational support using the Motivational Interviewing (MI) method. Miller first used this method. MI is a patient-centered, participatory counseling strategy that is motivated to change. This method consists of empathy and externalization of internal conflicts and increases intrinsic motivation by asking open-ended questions, reflective listening, summarizing, and preparing for change (Naderloo et al., 2018).

2. Methods

The research design used quantitative with experimental quasi-research design t. The research was conducted at 4 Community Health Centers (*Puskesmas*), namely Puskesmas Takal, Puskesmas Perak, Puskesmas Pegirian, and Puskesmas Sutopo in Surabaya. Through purposive sampling, the sample number was 60, divided by 30 respondents for the intervention group and 30 for the control group. The inclusion criteria were adult pulmonary TB disease. The patient is in intensive phase treatment (initial two months).

Intervention Group

The researchers provided Face Psychoeducation and Motivational Interviewing interventions for four weeks with a duration of 30-50 minutes each week. Within one week, this intervention is given two times. After the intervention, a post-test was then carried out. A post-test is conducted to determine the difference between adherence to transmission prevention and treatment adherence.

Control Group

In the control group, patients can receive treatment according to standard instructions that have been carried out at the Community Health Center. The number of sessions and evaluation of short-term effects were the same for the intervention group.

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3. Results and Discussion

Respondent demographic data

Table 1 Demographic Data

Characteristics of respondents	Intervention group (n=30)	Control group (n=30)	p-value
Mean age (SD)	31.15 (6.87)	41.12 (11.75)	**< 0.001***
Age (%)			
17-25 Years	4 (13,3)	2 (6,7)	0.034**
26-35 Years	7 (23,3)	9 (30)	
36-45 Years	11 (36,7)	8 (26,7)	
46-55 Years	5 (16,7)	7 (23,3)	
56-65 Years	3 (10)	4 (13,3)	
Gender			0.037**
Man	17 (56,7)	12 (40)	
woman	13 (43,3)	18 (60)	
Education			
Elementary School	3 (10)	2 (6,7)	0.017**
Junior High School	8 (26,6)	7 (23,3)	
Senior High School	17 (47,7)	19 (63,3)	
College	2 (0,7)	2 (6,7)	
Marital status			0.067**
Unmarried	2 (0,7)	1 (3,3)	
Married	28 (93,3)	29 (96,7)	
Social and economic status			
Upscale	2 (6,7)	1 (3,3)	0.065**
Middle Class	11 (36,7)	9 (30)	
Lower Class	17 (26,6)	20 (66,7)	

*Independent t-test
**Chi-square test; Statistically significant at $p \leq 0.05$

Based on the characteristics of respondents in the age group, most of them aged 36-44, as many as 11 people (36.7%). The gender of respondents was dominated by male respondents, as many as 17 people (56.7%). Meanwhile, based on the level of education, most respondents have a high school education, namely 17 people (47.7%). While marital status is married chiefly 28 people (93.3%). For social and economic status, most of the lower class is 17 (26.6%)

Table 2 Preventive Adherence

	Preventive Compliance									
	Pre-test					Post-test				
Group	Low	Enough	Good	N	%	Low	Enough	Good	N	%
Intervention	8	9	3	30	100	5	4	21	30	100
Control	9	10	11	30	100	7	8	15	30	100

Based on the value of TB transmission prevention, compliance in the intervention group shows a significant improvement. At the time of the pre-test, 13 people had an excellent category after the intervention, compared to 21. Unlike the control group who only received conventional intervention at Community Health Centers (*Puskesmas*), the pre-test results experienced an increase but not significantly.

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Table 3 Preventive Adherence

	Treatment Adherence									
	Pre-test					Post-test				
Group	Low	Enough	Good	N	%	Low	Enough	Good	N	%
Intervention	4	8	18	30	100	1	4	25	30	100
Control	6	8	16	30	100	4	5	21	30	100

Based on Table 3, the adherence scores of TB treatment in the intervention group showed a significant improvement. Four people were found to have a low category at the pre-test time, but after the intervention, it became only one person. In contrast to the control group who only got conventional intervention at Community Health Centers (*Puskesmas*), it increased but not significantly.

Table 4 Median values of prevention and treatment adherence before and after intervention

	Intervention group				**Control group**			
	Before	After	Change	p-value	Before	After	Change	p-value
Preventive adherence	82.75	95.12	12,37	< 0,001	79.5	85.17	5,67	< 0,001
medication adherence	87.6	92.12	4,52	< 0,001	86.6	86.6	0	0.425

Table 4 shows the values in each group before and after the intervention. Based on the data showed that there was a significant difference after the intervention. In the intervention group, there were changes in outcomes in both preventive adherence (12.37) and medication adherence (4.52). While in the control group, only the value of prevention compliance experienced a change of 5.67.

4. Discussion

Identification of Respondent Characteristics on Intervention and Control Groups

The distribution of age data in this research showed that respondents in the intervention group and control group were mainly in the age range of 36-45 years. The distribution of research data conducted by researchers which shows that respondents with pulmonary tuberculosis are the most in the productive age group (<49 years). This age group is the highest risk factor for pulmonary tuberculosis. Middle age is an age that is active in activities outside the home environment, so it is more at risk of efficiently transmitting pulmonary TB disease, especially in densely populated environments. The World Health Organization (WHO) states that age affects a person's body defenses; the higher the age, the more decreased a person's body defenses (Wulandari, 2017).

The distribution of sex data in this research showed that in the intervention group, there were more respondents with female sex, while in the control group, there were more male respondents. The distribution of research data conducted by Juliati et al. (2020) showed that gender was not related to medication adherence. The distribution of education level data in this study showed that respondents in the intervention and control groups were dominated by high school. Showed that the patient's education level did not significantly influence treatment adherence. Patients with low education and higher education have similar tendencies in medication adherence. It happens because the pattern of tuberculosis treatment has rules for the type of drug, which is more than one. The duration of treatment is at least six months, so the patient feels bored or burdened, and in the middle of treatment, the patient feels improved, so that he stops treatment in the middle of time (drop out).

The distribution of marital status data, most of whom are married and have support from the surrounding environment. The distribution of data on socioeconomic status is mainly in the

lower class because the spread of tuberculosis is more prevalent in poor communities with inadequate facilities and nutrition.

Adherence to prevention and treatment before and after intervention

Based on the research results after being given a motivational interviewing intervention with face to face. It was found that there were significant changes in the increase in prevention adherence and medication adherence in the intervention group compared to the control group. This research showed that in the intervention group, all respondents experienced changes in high preventive compliance after being given treatment. In contrast, in the control group, after being given treatment, it was found that one respondent had sufficient preventive compliance, and some respondents were still in low preventive compliance, the same as before being given treatment.

This research showed that the face-to-face method of combination motivation interviewing improves prevention and treatment adherence in TB patients. In line with the research conducted, face-to-face education Arisanti (2012) can help design intervention programs to improve adherence to the management of tuberculosis patients. Continuous face-to-face education, although simple, has a tremendous effect in helping patients achieve treatment adherence. Subjects who receive this intervention in their treatment can receive direct support to prevent drug withdrawal because withdrawal can cause more excellent effects, such as transmission to others and multidrug resistance that further complicates TB treatment (Adiutama, 2021).

Psychoeducation is a form of education or training to develop and increase patient acceptance of diseases and increase patient participation in therapy to accelerate healing. Drug resistance and treatment failure can result from non-adherence to anti-TB treatment. Thus, the findings of this study play an essential role in achieving TB treatment success rates by reducing the occurrence of drug resistance (Fekadu G, 2020).

Several studies explain that although counseling and counseling are carried out routinely, as is usually done in health services, treatment adherence in the control group tends to decrease. In contrast, in the motivation interviewing group, the tendency increases. Other studies have also reported on the effectiveness of motivational interviewing in promoting treatment adherence among patients with psychiatric disorders, pneumonia, and hypertension (Eyler et al., 2016; Hamrin & Iennaco (Italy), 2017; Palacio et al., 2016). Motivational interviewing is a form of cognitive therapy in the form of counseling; the center of decision-makers like changing ambivalence in themselves so that they can make decisions to change based on their desires and beliefs (Zuliani, 2019).

The results of statistical tests conducted by Garcia et al. (2014) show a significant influence on the provision of motivational interviewing interventions on increasing motivation in tuberculosis patients undergoing treatment. Most of the anti-Tuberculosis Drugs (OAT) have a high hope of recovery. In line with Lin et al. (2017), motivational interviewing increases self-motivation in adherence to statin drug therapy treatment by changing clients' negative perceptions of statin drug use for a long time.

5. Conclusion

The provision of a face-to-face method combined with motivational interviewing is efficacious in improving prevention and treatment adherence in TB patients. Motivational interviewing tends to reduce hopelessness, increase motivation to recover, and the admonition of taking medication in tuberculosis patients.

Ethics approval and consent to participate

The ethical test of this research was obtained from the Health Research Ethics Committee of the Muhammadiyah University of Surabaya with letter number 034 / KET / II.3/AU/F/2023.

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