

Individual Coaching on Self-Efficacy, Control and Medication Adherence in Patients with Tuberculosis

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Abstract---Self-efficacy, infection prevention behavior and the treatment adherence are the 3 factors that support TB control programs. The purpose of this study was to analyze the effect of individual coaching on improving self-efficacy, infection prevention behavior, and adherence to the TB treatment. This study used a quasi-experiment with a pre-posttest control group design. The sampling technique used was total sampling. Sixty respondents were divided into control and treatment groups. Each group had 30 respondents. Individual coaching was carried out at the Oesapa Health Center divided into 5 stages with a 60-minute home visit. The respondents were given questionnaires and then observed. The study was conducted for 2 weeks. The independent variable in this study was individual coaching and the dependent variables were self-efficacy, infection prevention behavior and the treatment adherence of tuberculosis patients. The Wilcoxon sign rank test and the Mann-Whitney test were used for statistical analysis. The statistical tests showed that individual coaching has an effect on self-efficacy ($p=0.000$), on the knowledge of infection prevention behavior ($p=0.000$), attitudes ($p=0.000$) and on actions ($p=0.000$) and the adherence to the tuberculosis treatment ($p=0.000$). The individual coaching method affects self-efficacy, the prevention of infection behavior and the adherence to TB treatment as well as the suppression of infection and dropping out of the TB treatment.

Keywords--- Individual Coaching; Tuberculosis; Self-Efficacy; Adherence; Tuberculosis Treatment

I. INTRODUCTION

Self-efficacy, transmission prevention behavior, and medication adherence are some of the factors that can support TB control programs. In TB, patients are still found to have low levels of self-efficacy [1]. The increasing incidence of TB makes TB a re-emerging disease. The World Health Organization (WHO) declared TB to be a global health emergency. The WHO implemented the DOTS (Direct Observed Treatment Short-course) strategy to overcome this problem. The DOTS strategies for TB patient recovery rate up to > 85%. TB drugs are given in the form of a fixed-dose combination (fixed dose) because it is more useful and highly recommended. Even though the medication compliance rate has reached above 90 percent, it is a challenge to get compliance to reach 100 percent. Improving adherence requires an individual training approach that is part of a collaborative approach to patient care. The individual training approach takes the form of providing information and involving, and motivating patients to manage their health.

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In 2016, an estimated 10.4 million new TB cases occurred worldwide, of which 5.9 million (59%) were male, 3.5 million (34%) were women, and 1.0 million (10%) were children [4]. The prevalence of the Indonesian population who experienced TB in 2014 was 324,539 cases with an increase of 272 / 100,000 within one year. In 2013, the prevalence of TB incidence was 183 / 100,000 population and the number increased to 399 / 100,000 population in 2014. The mortality rate of patients due to TB also increased. In 2013, the figure was 25 / 100,000 population and this increased to 41 / 100,000 in the year 2014 [4]. In 2016, the number of new TB cases in Indonesia was 1,020,000 people, while there were 45,000 TB patients with HIV and 11,000 people were estimated to have MDR TB. There were 659,435 cases that were not yet reported in the national records [4]. In 2017, new TB cases in Indonesia totaled 420,994 cases [5]. In NTT in 2017, the number of suspected TB cases was 33,477 and the number of confirmed cases was 6,578. This figure is still far from the target of finding TB patients that are as many as 23,544 cases [6].

According to [7], rejection and shame often prevent people from seeking and completing treatment. The failure of self-efficacy is proven to affect an individual's decision to take self-care measures. The measurement of self-efficacy is designed to test the individual's confidence to carry out the selected activity as their desired business [8]. Patients with a low level of self-efficacy consider themselves to be less able to do something useful or they feel less productive because they have pulmonary TB. This affects the TB patients when they are carrying out prevention behaviors that include knowledge, attitude and actions. The transmission of TB germs is influenced by the behavior of the patient in relation to preventing TB transmission

Individual coaching is a collaborative approach to care that informs, engages, and motivates the patients to play a greater role in managing their health. Individual coaching is part of health coaching. Individual coaching is the process of arranging interactions between the patients and their coaches based on attention, setting goals, and achieving them. The purpose of this study was to explain the effect of individual coaching on improving self-efficacy, transmission prevention behaviors, and compliance with taking TB drugs.

II. METHODS

This research was a quasi-experiment with a pre-posttest control group design. The sampling technique used was total sampling and the population of pulmonary TB clients was from the Oesapa community health center. The sample of this study consisted of new pulmonary TB clients who had been undergoing treatment since July 2018 - early November 2018. There were 30 patients in the treatment group and 30 patients in the comparison group. The inclusion criteria were patients aged 18-65 years old who were able to read and write, undergoing category I treatment and with no comorbidities.

The independent variable in this study is individual coaching and the dependent variables are self-efficacy, TB transmission prevention behavior and medication adherence. The research instruments of the individual coaching variable include the unit event activities (SAK). The self-efficacy variable instrument used a questionnaire adopted from [1]'s study, the TB transmission prevention behavior variable consisted of knowledge about TB transmission prevention and the attitude about TB transmission prevention using a questionnaire adapted from [9]. For transmission prevention measures, the questionnaire was adapted from [10]. In contrast, the TB medication compliance variable used the TB-01 observation sheet. This research was conducted for 2 weeks carried out through 5 stages in the form of home visits with a duration of 60 minutes. The data obtained was analyzed using the Wilcoxon test and the Mann Whitney test with a significance level of $p \leq 0.05$. The study protocol was approved by the Ethical Commission of the Faculty of Nursing in Universitas Airlangga, certificate number 1182-KEPK.

III. RESULTS

Based on Table 1, the patients who were given individual coaching experience strong self-efficacy (17 respondents: 57%). In the control group, there was no change in self-efficacy. The effect of individual coaching can be seen from the result of the Wilcoxon Rank test between the self-efficacy of the pretest and posttest treatment groups, which was $p = 0.000$. The result of the Mann Whitney self-efficacy test in the posttest between the treatment and control groups was $p = 0.002$. This shows that there is a significant effect of individual coaching on the self-efficacy of TB patients.

Knowledge in the treatment group increased for 20 respondents (67%) in the good category after they were given individual coaching. In the control group, half of the respondents (15 respondents: 50%) were in the sufficient category. Based on the results of the Wilcoxon Rank test, individual coaching can improve the level of knowledge in the treatment group ($p = 0.000$). Based on the Mann Whitney test results, there are differences in the level of knowledge between the treatment group and the control group after being given individual coaching ($p = 0.000$).

Most respondents in the (27 respondents: 90%) treatment group experienced an increase in attitude in the positive category after being given individual coaching. In the control group, there was no change in the attitude score. Based on the results of the Wilcoxon Rank Test, individual coaching can improve the attitude in the treatment group ($p = 0.000$). Based on the Mann Whitney test results, there were differences in attitude in the treatment group and in the control group after being given individual coaching ($p = 0.000$).

Most of the respondents (22 respondents: 73%) in the treatment group experienced an increase in activity in the good category after being given individual coaching whereas the control group had 18 respondents (60%) in the sufficient category. Based on the results of the statistical test, the Wilcoxon Rank test, individual coaching can improve the actions taken in the treatment group ($p = 0.000$). Based on the Mann Whitney test results, there were differences in attitude in the treatment group and the control group after being given individual coaching ($p = 0.000$).

TB medication adherence in the treatment group experienced an increase by 30 respondents (100%) in the compliant category after being given individual coaching whereas the control group had 18 respondents (60%) in the category of non-compliance. Based on the results of the Wilcoxon Rank Test, individual coaching can improve TB medication adherence in the treatment group ($p = 0.000$). Based on the Mann Whitney test results, there were differences in the level of compliance of taking the TB drugs in the treatment group and the control group after being given individual coaching ($p = 0.000$).

Table 1. Distribution of self-efficacy, transmission prevention behavior and compliance with taking TB medicine before and after individual coaching at the Oesapa Health Center

Variables	Category	Group							
		Intervention group				Comparison group			
		Pretest		Posttest		Pretest		Posttest	
		n	%	n	%	n	%	n	%
Self-efficacy	Very weak	2	7	0	0	1	3	0	0
	Weak	10	33	0	0	11	37	3	10
	Enough	11	37	3	10	12	40	12	40
	Strong	4	13	17	57	3	10	10	33
	Very strong	3	10	10	33	3	10	5	17
Total		30	100	30	100	30	100	30	100

Variables	Category	Group							
		Intervention group				Comparison group			
		Pretest		Posttest		Pretest		Posttest	
		n	%	n	%	n	%	n	%
Wilcoxon test		0.000				0.25			
Mann Whitney test (pretest)						0.852			
Mann Whitney test (posttest)						0.002			
Knowledge	Low	19	63	3	10	16	53	7	23
	Moderate	8	27	7	23	9	30	15	50
	High	3	10	20	67	5	17	8	27
Total		30	100	30	100	30	100	30	100
Wilcoxon test		0.000				0.03			
Mann Whitney test (pretest)						0.388			
Mann Whitney test (posttest)						0.000			
Attitude	Low	9	30	1	3	6	20	7	23
	Moderate	18	60	2	7	20	67	11	37
	High	3	10	27	90	4	13	12	40
Total		30	100	30	100	30	100	30	100
Wilcoxon test		0.000				0.097			
Mann Whitney test (pretest)						0.377			
Mann Whitney test (posttest)						0.000			
Practice	Low	17	57	0	0	15	50	4	13
	Moderate	11	37	8	27	13	43	18	60
	High	2	7	22	73	2	7	8	27
Total		30	100	30	100	30	100	30	100
Wilcoxon test		0.000				0.001			
Mann Whitney test (pretest)						0.640			
Mann Whitney test (posttest)						0.000			
Adherence	Adherence	6	20	30	100	8	27	12	40
	Not adherence	24	80	0	0	22	73	18	60
Total		30	100	30	100	30	100	30	100
Wilcoxon test		0.000				0.102			
Mann Whitney test (pretest)						0.545			
Mann Whitney test (posttest)						0.000			

IV. DISCUSSION

- Effect of individual coaching on TB patient self-efficacy

There is an effect from individual coaching on the self-efficacy of pulmonary TB patients. The results of this study are in line with [11] the research conducted by [12] who said that individual coaching is based on 7 essential elements of coaching [11]. This includes providing specific disease skills, negotiating behavior change, providing training in relation to problem solving, helping in terms of the emotional aspects of the client, encouraging the client to be actively involved in disease management and regular control carried out for 2 weeks. The supporting research results include the research conducted by [13] which states that motivational interviewing-based health coaching can improve patient self-efficacy. Another research study that is in line is Yohana's research (2017) states that the provision of health coaching can improve self-efficacy. The provision of health coaching is to provide knowledge and motivation but in addition to providing individual knowledge and motivation, skills are also taught to improve self-efficacy.

Self-efficacy can be obtained, changed, enhanced, or reduced through 4 factors, one of which is verbal persuasion. This is where individuals can help others to achieve their desired goals. Individuals who are verbally convinced tend to try

harder to achieve success. The coaching focus includes the factors that affect motivation, overcome obstacles, limit the patient's inability, influence so as not to limit themselves, produce solutions, support, build self-efficacy and show how the patients can become more involved in making decisions [14].

The individual coaching treatment group carried out 5 stages through home visits conducted 4 times in 2 weeks for a duration of 60 minutes. The researcher interacts directly with the patient. The patient is motivated repeatedly so their efficacy increases. The patient develops the strong ability to possess the ability itself. The action taken is in order to convince the patients that the disease can be cured if they take the medication regularly and thoroughly, thus convincing the patients to continue taking the medicine despite experiencing side effects. This motivates the patients to believe in themselves and to believe that they can overcome all obstacles and carry out normal daily activities without the feeling of being avoided by others.

The coaching material generally includes providing information, training the patients on how to prevent TB transmission, helping the patients to overcome obstacles regarding the implementation of treatment and providing motivation to the patients. The treatment group in this study was motivated repeatedly and provided information related to TB. This could support and increase self-efficacy by inspiring the patients' beliefs and abilities from within. The confidence of the treatment group in their ability to prevent the transmission of TB was trained through the technique of using masks facilitated by providing a place to collect sputum.

- Effect of individual coaching on TB patient knowledge about the prevention of TB transmission

There is an effect from individual coaching on the knowledge of pulmonary TB patients. The increase in knowledge is marked by an increase in patient knowledge about the understanding of TB as well as the signs and symptoms, the ways of transmitting TB, the side effects from taking the TB drugs and the ways of transmitting pulmonary TB. The results of this study are in line with the research conducted by [1] stating that health coaching can improve the knowledge of the pulmonary TB patients. Another consistent study conducted by [11] states that peer coaching can increase knowledge and the dietary adherence measures of patients with type 2 diabetes mellitus. The results of other studies that are in line with this research state that coaching given individually can improve one's knowledge [15]. Coaching can increase the knowledge of patients with cognitive impairment [16]. Another consistent study conducted by [10] shows that there is an influence from health education on the knowledge of pulmonary TB patients. Education about medication management and self-care for heart failure patients through one-on-one coaching can increase the knowledge of heart failure patients related to self care [17].

Education is related to the knowledge of the sufferers. This shows that education affects the completeness or success of the patient's treatment [18]. The higher the level of one's education, the better the reception of information on treatment and illness and the more complete the process of treatment and healing. Based on research [19], the majority of the respondents' knowledge was from a high school background level. This is also supported by the theory of [20] which states that a person's knowledge is influenced by their level of education. In general, a higher education will make it easier for a person to receive information. This is also supported by the research by [21] which states that a person's knowledge is supported by an educational background. The longer a person engages in education, the better their level of knowledge. Other research by [22] states that patient education is very influential in the management and treatment of TB.

- Effect of individual coaching on the TB patient's attitude about preventing TB transmission

There is an effect from individual coaching on the attitude of pulmonary TB patients. Improved patient attitude is characterized by an increase in the patient's perspective of the perceived benefits when making TB control efforts and in the prevention of TB transmission. Motivational interviewing based on health coaching can improve the patient attitude when it comes to behaving, self-management [23] and the attitude related to preventing the transmission of pulmonary TB [1].

Socio-economic factors influence [24]. Likewise, work is a factor related to TB recurrence [25]. Attitude is a reaction or the response of someone who is still closed or whose potential has not been realized against a stimulus [26]. Changes in attitude can occur when the respondents are given a stimulus using individual coaching. This affects their knowledge which impacts on the patients' attitude toward preventing pulmonary TB transmission. This happens if the patient can receive information, respond to the material presented and solve the problem. The implementation of individual coaching was conducted 4 times through home visits based on the previous research by [27]. This showed that 2 meetings with 2-3 materials presented per meeting can improve knowledge and attitude.

Attitudes are formed from the social interactions experienced by individuals. This social interaction is about more than just the social contact and relationships between individuals as members of different social groups. In social interactions, there is a reciprocal relationship that also affects the mindset of each individual as a member of the community. Furthermore, this social interaction can include the relationship between individuals and the environment [10].

- Effect of individual coaching on the actions of TB patients regarding the prevention of TB transmission

There is an effect of individual coaching on the prevention of transmission. The observation of the increase in TB prevention can be seen when the patient coughs with his mouth shut into a tissue, expels phlegm into a container that has a lid that is filled with a disinfectant solution, dries the mattress and pillows in the sun, uses a mask when inside or outside of the house and eats healthy food. To [16], the re-coaching of injection skills in TB patients is increasing. According to [12], they state that after being given individual coaching, the behavior of the clients improves for the better. Other studies explain that individual job coaching on the prevention of musculoskeletal injuries while working can improve the prevention of musculoskeletal injuries in industrial workers [7].

Teaching, training, motivating and facilitating patients through coaching helps the patients to change their behavior in the prevention of pulmonary TB transmission such as by wearing a mask and closing the mouth when coughing or sneezing. The increased knowledge and attitudes experienced by the respondents can change the patient's actions when it comes to preventing TB transmission for the better. The difference in transmission prevention measures between the treatment and control groups is influenced by the provision of individual coaching. The patients receive health coaching through supportive relationships that influence the patients to act better in terms of preventing pulmonary TB transmission. Individual coaching focuses on increasing the perceptions of the benefits of prevention and transmission and when coughing or sneezing, expelling phlegm in a disinfectant solution, drying their sleeping equipment and creating a good environment for the prevention of pulmonary TB transmission.

- Effect of individual coaching of TB patients on TB medication adherence

There is an individual coaching effect on medication adherence in pulmonary TB patients. According to [28], they state there are differences in compliance between the treatment group and the control group after being given individual coaching. According to [29], this was demonstrated in his research providing health education regarding meal planning with a healthy calendar media (KASET) concerning diabetes mellitus dietary compliance. Health education can increase the

dietary adherence score of the patients with diabetes mellitus. Someone who leads a normal life can assume that the longer the life, the more the breadth of experience, the more extensive the knowledge, the more profound the expertise and the better the wisdom involved in decision making [30]. Compliance is a multidimensional phenomenon determined by 5 interrelated dimensions, namely patient factors, therapeutic factors, health factors, environmental factors and socioeconomic factors. All of these factors are important when it comes to influencing adherence so there is no one effect that is stronger than the other factors [4].

Providing individual coaching can be achieved by taking an individual approach to motivate and support medication adherence. Home visits are carried out 4 times over 2 weeks. The factors affecting compliance are knowledge, trust, attitude, the support of the health workers and so on. To achieve increased adherence, individual coaching is given which aims to help the patients to identify, understand and prioritize improvements in health behavior. Besides helping patients when they are making decisions, they encourage planning, starting and maintaining health behaviors. The limitation of this study is that the intervention requires a long time because it is done through home visits.

V. CONCLUSION

Individual coaching has an effect on improving the self-efficacy of TB patients, the attitude of TB patients towards the prevention of TB transmission, the actions of the TB patients towards the prevention of TB transmission and their adherence to taking the TB drugs through teaching, training, motivating and facilitating the patients. TB patients who have good self-efficacy and good knowledge about the prevention of transmission will have a positive attitude and this will be manifested in positive actions. Increased self-efficacy, transmission prevention behavior and medication adherence can reduce TB transmission and reduce the drop-out rate.

CONFLICT OF INTEREST

No conflicts of interest have been declared.

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