



The effect of health education through brainstorming and booklet method on behavior in prevention of pulmonary Tb transmission

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Abstract

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*. The transmission of pulmonary Tuberculosis can be caused by poor patient behavior. This behavior is influenced by the TB client's low level of knowledge about Tuberculosis and how to prevent transmission. This study aims to analyze the effect of health education through brainstorming and booklets on client behavior in preventing TB transmission. The population in this study were tuberculosis patents recorded from January to March 2017 with a sample of 30 respondents. The sampling technique of this study was purposive sampling. The independent variable of this research was health education through brainstorming and booklets method. The dependent variable of this study was the client's behavior in preventing tuberculosis transmission. The data collection used questionnaires and analyzed using the Wilcoxon rank test and Mann Whitney with significance $\alpha=0.05$. Wilcoxon's statistical test results in the treatment group showed the influence of health education on knowledge ($p=0.001$), attitudes ($p=0.001$), and actions (0.001). The results of the Mann Whitney statistical test after the intervention showed a significant effect on the application of brainstorming and booklets on client knowledge ($p=0.000$), attitudes (0.000), and actions (0.000). This study concluded that health education through brainstorming and booklets could improve the client's knowledge, attitudes, and actions in preventing pulmonary tuberculosis transmission. Health education through brainstorming and booklets become an alternative method of health education in preventing TB transmission.

Keywords: attitudes, booklet, brainstorming, transmission prevention, tuberculosis

Sukartini T, Kurniawati S, Makhfudli M (2020) The effect of health education through brainstorming and booklet method on behavior in prevention of pulmonary Tb transmission. *Eurasia J Biosci* 14: 2697-2702.

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INTRODUCTION

Tuberculosis (TB) is an infectious disease that transmits directly through the air when coughing saliva splash contains *Mycobacterium tuberculosis* bacteria (Izza & Roosihermatie, 2013; Massi et al., 2011; Sinaga, Amin, Siregar, & Sarumpaet, 2014). Tuberculosis can be transmitted primarily through droplets, where each pulmonary TB patient can spread to 10 to 15 new sufferers. (Martin, Simbolon, & Restuastuti, 2016). The transmission of pulmonary TB can be caused due to a lack of patient behavior, where the patient expels phlegm carelessly and does not close the mouth when coughing (Akbar, Lusiawati, & Rahayu, 2016). This behavior is influenced by the TB client's low level of knowledge about Tuberculosis and how to prevent transmission (Kotouki, 2012).

Indonesia is the country with the second-largest number of Tuberculosis worldwide after India (World Health Organization, 2016). The latest tuberculosis cases in 2015 are estimated at 10.4 million new TB cases worldwide. The incidence of Tuberculosis

increased from 2014 with the discovery of 9.4 million new cases. Global progress depends on the progress of tuberculosis prevention and treatment. In Indonesia, the proportion of pulmonary TB clients increased again in 2015 to 14%, with the proportion of confirmed pulmonary Tb clients decreasing from 2003 to 2014. The number of positive BTA cases from 2014 to 2015 has increased from 70 cases of 100,000 population in 2014 to 72 of 100,000 population in 2015 (Kemenkes RI, 2016).

The relation with Proceed Proceeds theory that behavior is influenced by three factors, namely supporting, enabling, and driving factors (Green & Kreuter, 1991). The supporting factors include knowledge, attitudes, beliefs, and values that individuals have for pulmonary Tuberculosis. Prevention of client transmission can be influenced by internal factors of the individual, including knowledge, attitudes, beliefs, and

Received: June 2019

Accepted: March 2020

Printed: August 2020

Table 1. Distribution of demographic data frequency of TB clients

Demographic Data	Treatment		Control	
	n	%	n	%
Age				
18-35 years	1	7	5	33
36-50 years	6	40	4	24
51-65 years	8	53	6	40
Total	15	100	15	100
Gender				
Male	7	47	8	53
Female	8	53	7	47
Total	15	100	15	100
Education				
Elementary	9	60	9	60
Junior High	5	33	4	27
Senior High	1	7	2	13
Total	15	100	15	100
Occupation				
Unemployed	1	7	1	7
Farmer	7	46	7	46
College Student	0	0	1	7
Entrepreneur	3	20	6	40
Etc	4	27	0	0
Total	15	100	15	100
Monthly Income				
None	1	7	2	13
<Rp 1.702.780,-	12	80	8	53
<Rp 1.702.780,-	2	13	5	34
Total	15	100	15	100

values possessed by individuals in preventing tuberculosis transmission (Nursalam, 2016). The client's knowledge about transmission prevention is crucial to preventing transmission from himself to others because good knowledge will show good attitudes and actions (Ninuk Dian et al., 2016; Rachman, Husein, & Trisandi, 2017).

Knowledge is a fundamental domain in shaping one's actions, but if a positive attitude does not support it, it will influence the behavior (Notoatmodjo, 2007). The cause of the client's knowledge is lacking is due to the level of education, information, or mass media, socioeconomic, and values owned by the family and can also be caused by not optimal health education (Kristinawati, Muryadewi, & Irianti, 2019; Sumantri, 2015). The efforts that can be made is to optimize the health education provided for tuberculosis clients.

Media and methods used in health education are booklets and brainstorming. Research conducted by Agustin, Irdawati, Susilaningsih, & Zulaicha in 2014 proves the effectiveness of booklets' use in increasing knowledge about dental caries in the elderly (Agustin, Irdawati, Susilaningsih, & Zulaicha, 2014). The brainstorming method can be given to TB clients as a means of information that they do not feel patronized. A brainstorming method is a form of the discussion by gathering ideas, opinions, information, knowledge, and experience from all participants (Sukistiawati, 2014). Health education that is given continuously will improve individual behavior to be better (Trasia & Aryani, 2014). The purpose of this study was to analyze the effect of health education through brainstorming and booklets on the client's behavior in preventing TB transmission.

MATERIALS AND METHODS

This research used a quasi-experiment design with a pre-post test control group design. The amount of population in this study was 43 clients with 30 clinics sample, 15 in the treatment group, and 15 in the control group. The sampling technique used in this study was purposive sampling. The independent variable in this study was health education through brainstorming and booklets method. The dependent variable in this study was the client's behavior in preventing TB transmission. The instrument in this study was a questionnaire consisting of a demographic data questionnaire, a knowledge questionnaire, attitudes, and actions. Each research data was measured using Wilcoxon Rank Test and Mann Whitney statistical test with a significance level $\alpha \leq 0,05$.

RESULTS

Based on **Table 1**, it can be shown that in the majority of the two groups in the age group of 51-65 years, namely the treatment group of 8 clients and the control group of 6 clients. The majority of the two groups have elementary education background with the same number of treatment and control groups of 9 clients. Likewise, the majority of jobs and income in the two groups are the same, namely working as a farmer with an income of less than Rp. 1.702.780. The demographic data shows that there is no difference in both groups.

Based on **Table 2**, it showed that there was a significant influence of health education on the knowledge, attitudes, and actions of respondents groups in preventing TB transmission.

Table 2. Distribution of knowledge, attitudes, and actions level of Tb clients before and after health education with brainstorming and booklet method

Variable	Groups				Mann Whitney test (p)		Wilcoxon test (p)	
	Treatment		Control		Pre-test	Post-test	Treatment	Control
	Pre	Post	Pre	Post				
Knowledge								
Less	3(20%)	0	3(20%)	0	0.342	0.000	0.0001	0.014
Moderate	9(60%)	4(27%)	9(60%)	12(80%)				
Good	3(20%)	11(73%)	3(20%)	3(20%)				
Total	15(100%)	15(100%)	15(100%)	15(100%)				
Attitude								
Less	3(20%)	0	3(20%)	0	0.531	0.000	0.001	0.091
Moderate	10(67%)	4(27%)	9(60%)	12(80%)				
Good	2(13%)	11(73%)	3(20%)	3(20%)				
Total	15(100%)	15(100%)	15(100%)	15(100%)				
Action								
Less	4(27%)	0	3(20%)	3(20%)	0.302	0.000	0.001	0.109
Moderate	8(53%)	0	9(60%)	9(60%)				
Good	3(20%)	15(100%)	3(20%)	3(20%)				
Total	15(100%)	15(100%)	15(100%)	15(100%)				

DISCUSSION

The results showed that health education provided through brainstorming and booklet method could have a significant influence on the knowledge increase of the clients in preventing TB transmission. The provision of interesting and ongoing information through brainstorming and booklet method will increase the client's interest in getting material so that the information to be conveyed can be received and understood by the clients. In accordance with the Precede Proceed theory states that education carried out continuously in a program can change individuals' healthy behavior in compliance, consumption patterns, and preventive actions (Green & Kreuter, 1991). Behavior consists of knowledge, attitudes, and actions (Notoatmodjo, 2010). The influence of brainstorming and booklet on the increase of knowledge is in line with research from Putra in 2015. There was an increase in respondents' knowledge after they were given a booklet. A study from Furianto in 2015, also states that there was an increased knowledge after clients were given a brainstorming intervention about the prevention of diarrhea in children (Furianto, 2015; Putra, 2015).

Another related research conducted by Buanasari in 2016 showed an increase in maternal knowledge in exclusive breastfeeding after brainstorming interventions were given (Buanasari, 2016). The results of other studies related are the study from Sukartini in 2015 about developing a model for enhancing adherence based on the King's interaction system, theory, and its effect on compliance with pulmonary TB patients (Sukartini, 2015). The results found an increase in knowledge of pulmonary TB patients after the intervention in the model of compliance improvement based on King's interaction theory. Interventions that are provided with interventions carried out by the researcher also provides information needed by clients. This is in line with the opinion of Coronas, Coyer, & Theobald in 2009 that the needs of patients regarding information in

carrying out treatment and care for the environment are important and high (Coronas, Coyer, & Theobald, 2009).

Attitude is a reaction or response of someone who is closed or has not been realized against a stimulus (Putra, 2016). Changes in attitude can occur when respondents are given health education stimulus, one of which is brainstorming and booklet methods. This happens if the client can receive information, respond to the material presented, and resolve the problem and appreciate the material presented, so the client can change the behavior to be better. Brainstorming is done two times, with 60 minutes for each meeting because the ideal time for brainstorming is 30-60 minutes (Wilson, 2013). The previous study from Cahyani in 2012 shows two meetings with 2-3 materials per meeting that can improve knowledge and attitudes (Cahyani, 2012). It also supported research by Safitri & Fitranti in 2016 about the effect of nutrition education with lectures and booklets on increasing knowledge and nutritional attitudes of overweight adolescents (Safitri & Fitranti, 2016). The results show an increase in attitudes of adolescents after being educated through lectures and booklets. This study equally provides education to respondents in improving attitudes and using methods and media, but the method used is different. This method requires all participants to think to share with other clients. The opinions expressed are mutually agreed upon so that all participants will quickly remember, understand and increase their client's beliefs about how to behave well so that the client's cognitive foundation will increase in attitudes formation.

Related research conducted by Naganingrum in 2014 shows that there is an attitude change in adolescents to be positive about menstruation (Naganingrum, 2014). In this study, the researcher used the media to make it easier for clients to recall material delivered during brainstorming and as an effective learning medium because it stimulates clients by providing information through pictures and writings about tuberculosis prevention that is easily understood by clients (Aliyah, 2016). This relates to a statement by

Yulianti in 2013 states that booklet use is considered more effective than lectures, leaflets, and peer groups (Yulianti, 2013).

Increased knowledge and attitudes experienced by respondents can change the respondent's actions in preventing TB transmission for the better. Health education provides the process of one's knowledge and abilities through practical learning techniques or instruction by changing and influencing human behavior in raising awareness so that clients are aware and willing to change their behavior to be healthy (Abdul et al., 2019; Agustina & Wahjuni, 2016; Pandia, Syafiuddin, Bachtiar, & Rochadi, 2019). Health education is provided through booklet media and brainstorming methods, where respondents get information about health through discussions with all respondents so that they can express opinions without any objection from other respondents. Then, the opinions are classified, verified, and agreed upon by everyone. The information then can be understood by all respondents and applied, booklets can be used as reading material as additional information.

Good cause or lack of actions from clients in preventing TB transmission is influenced by the knowledge and attitudes of the client, which knowledge and attitude are influenced by the provision of information from health workers who are not optimal or from clients who are less active in asking questions (Bella & Prasetyo, 2011; Wahyuni, Soeroso, Wahyuni, Amelia, & Alona, 2018). It is related to the theory proposed by Green & Kreuter in 1991 that behavior is influenced by predisposing factors that encompass the environment, knowledge, and attitudes (Green & Kreuter, 1991).

This is in line with research conducted by Naganingrum in 2014 that brainstorming can influence actions, also the research from Putra in 2016 and Aliyah in 2016 that giving booklets can influence how to change

actions for the better (Aliyah, 2016; Naganingrum, 2014; Putra, 2016). All three studies have similar interventions in providing health education that can increase clients' knowledge to improve action for the better. This research distinguished this research from other researchers' intervention in the form of collaboration between brainstorming and booklet methods (Aliyah, 2016; Naganingrum, 2014; Putra, 2016). This intervention will have a significant influence on the actions of TB clients in preventing TB transmission because these interventions are provided on an ongoing basis, and booklets contain material that is targeted and can be read continuously by the client. The results of research conducted by Widari in 2010 examined the comparative effectiveness of health education and counseling on changes in transmission prevention behavior in TB patients. They were in the same results (Widari, 2010).

CONCLUSION

Health education through brainstorming and booklet method can influence the client's knowledge, attitudes, and actions in preventing the transmission. That is because the brainstorming method is given on an ongoing basis with the implementation of 2 meetings, makes the client excited in doing discussion and make the client actively participate. The material in the booklet using simple language can also be repeated. So that information will be easily conveyed to the client so that the client's understanding increases. Increased client understanding will uphold knowledge and stimulate the clients' awareness to be positive. Increased knowledge and attitudes in preventing TB transmission will make clients able to improve their perception, respond to the desire to adopt actions that are considered better, so that, the clients' actions in preventing TB transmission increase.

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