



The Effect of Education With Animation Media and Picture Pockets on Knowledge, Attitude and Action in The Family of Pulmonary TB Patients in Preventing Transmission

Risma Dumiri Manurung¹, Sulastri Galumbang Panahatan Tambunan^{2*})

^{1,2} Poltekkes Kemenkes Medan

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*) corresponding author

Sulastri GP Tambunan

Poltekkes Kemenkes Medan
Jl. Jamin Ginting KM 13,5 Kel. Lau Cih
Kec. Medan Tuntungan Sumut

Email: astritambunan2018@gmail.com
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ABSTRACT

Pulmonary Tuberculosis is one of the ten leading causes of mortality and the most prevalent infectious agent. According to 2018 data from the World Health Organization, there are 10,4 million cases of pulmonary tuberculosis worldwide, 56% of which are in India, Indonesia, China, the Philippines, and Pakistan. Identifying positive smear cases based on the outcomes of pulmonary TB case detection coverage. Transmission of pulmonary TB germs by splashes of saliva while speaking, sneezing, or coughing is behavior-related, and closest contact, such as with household members, will be twice as dangerous as regular or non-home contact. To interrupt the transmission cycle of pulmonary tuberculosis, it is essential to understand the elements that drive the illness. This research intends to investigate the impact of employing animated media and illustrated pocket books to prevent the spread of pulmonary tuberculosis on the knowledge, attitudes, and behaviors of families before to and after instruction. This is a quasi-experimental study using a pretest-posttest design with a control group. There were 90 participants in the family study (wife, mother, and adult children) who had family members with pulmonary tuberculosis. They were separated into two intervention groups and one control group. Sampling through unintentional sampling. Analysis of univariate and bivariate data using paired t-test 95% CI 0.05.

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INTRODUCTION

The Tuberculosis case Pulmonary health issues have become a global concern, particularly in Indonesia, and one of the Sustainable Development Goals (Sustainability Development Goals). TB of the lungs is one of the top 10 causes of mortality and the leading infectious agent. In 2016, the World Health Organization recorded 10,4 million cases of pulmonary tuberculosis, with 56% of these cases occurring in India, Indonesia, China, the Philippines, and Pakistan. In 2016, around 1.3 million individuals died from pulmonary tuberculosis worldwide, whereas in Indonesia there were 298,000 instances of pulmonary TB and 156,000 cases of positive smear findings based on the coverage of cases of pulmonary TB illness (WHO, 2018). In 2017, Indonesia is projected to have had 10 million cases of pulmonary tuberculosis, which is comparable to 133 cases per 100,000 people. This disease was responsible for the deaths of around

1.3 million HIV-negative patients and approximately 300,000 HIV-positive pulmonary TB patients (Kemenkes, 2018).

The Ministry of Health of the Republic of Indonesia reported in 2018 that the prevalence of clinical pulmonary TB was 1.0% across Indonesia. Aceh Province, DKI Jakarta, the Special Region of Yogyakarta, West Sumatra, the Riau Islands, West Nusa Tenggara, East Nusa Tenggara, South Sulawesi, Central Sulawesi, and eastern Indonesia are among the provinces with prevalence rates higher than the national average (Risksedas, 2018).

Most people when diagnosed with pulmonary TB feel ashamed (Cremers et al., 2015) and have not been able to express their health problems properly, and how to prevent transmission of pulmonary TB, so this will have an impact on the failure of the treatment process such as patients who drop out of drugs and there are still many patients who depend on health workers. Because they are unable to care for their family members with pulmonary TB and the lack of

information about the causes and modes of transmission of pulmonary TB from one person to another (Buregyeya et al., 2011).

Transmission of TB germs occurs through saliva splashes or when the patient speaks, related to the patient's behavior in taking precautions to prevent transmission. This rapid transmission is the trigger for the high incidence of pulmonary TB (Suprpto, 2018). The family has a very vital role in the successful healing of pulmonary TB patients. A person's behavior about health is largely determined by knowledge, attitudes, beliefs and traditions as predisposing factors in addition to supporting factors such as the physical environment, infrastructure and driving factors, namely the attitudes and behavior of health workers. Every one positive smear will infect 10-15 other people, so the probability of each contact for contracting Tuberculosis is 17%. Other studies report that the closest contact (eg family in the house) will be twice as risky as regular or non-home contact (Kunoli, 2013).

As the long-term goal of the National Management of Pulmonary TB is to reduce the morbidity and mortality of TB cases by breaking the chain of transmission, so that pulmonary TB is no longer a public health problem in Indonesia. So prevention activities are very important to break the chain of transmission by knowing the factors that influence TB disease (Kemenkes, 2018).

TB control efforts with the DOTS (Directly Observed Treatment Short-course) strategy have been proven to be the most economically effective coping strategy with the main focus on finding and curing patients, priority is given to patients with infectious types of TB. This strategy will cut off the transmission of TB and thereby reduce the incidence of TB in the community. Finding and curing patients is also the best way to prevent transmission of pulmonary TB (Kemenkes, 2018).

In order to reduce the incidence and spread of pulmonary TB, it is necessary to take steps to prevent disease transmission, one of which is by providing education to increase public awareness about the importance of maintaining health (Perry & Potter, 2005). Health education that will be provided needs educational media.

Educational media provide benefits to generate interest for the target, can avoid boredom and boredom, help overcome many obstacles in understanding, facilitate the delivery of information and facilitate the receipt of information for target students (Taufik, 2007).

The use of audiovisual media is considered more interesting, because it combines audio, visual, animation so that participants will be easier to understand and not boring and are more dynamic so that the material can be conveyed well (Kapti et al., 2013). Audiovisual is an interesting media, educational aids whose use stimulates the senses of hearing and sight and can be played over and over again (Suiraoaka & Supariasa, 2012)

The results of research related to education using animated media in Sovia et al., (2017) research show that there is a significant difference in p-value 0.000 between respondents' knowledge before and after being given health education about HIV/AIDS using animated media. Tarigan and Manurung (2020) on the effectiveness of using animation media, comics and booklets about nutrition in the first 1000 days of adolescent morning life showed that animation and comics media had a significant effect on increasing the knowledge and attitudes of respondents compared to the control group.

Hartaningsih (2012) There is an effect of health education for 2x60 minutes with audiovisual media and booklet media

in the intervention group and in the control group, but the increase in score is greater in health education with audiovisual media and booklet media simultaneously by 14.3, whereas health education with audiovisual media increased score by 9.07 in the control group, suggesting that health education with the same media could improve caregiver attitudes in preventing tuberculosis in the intervention group.

The results of the study by Maghfiroh L et al., (2017) education with the use of illustrated pocket books and Madurese language can significantly increase the knowledge of pulmonary TB patients and supervisors taking medication before and after education ($p < 0.001$).

Kumboyono (2011) in the results of the study stated that there was an effect of health education on changes in family attitudes in preventing pulmonary TB transmission ($p = 0.000$) and the effect of health education on changes in family behavior in preventing pulmonary TB transmission ($p = 0.000$) in Lhokseumawe City. Where the group that was given health education had a 95.52 times higher chance of changing attitudes in preventing pulmonary TB transmission compared to the group that was not given health education.

Data on the number of pulmonary TB cases in the Humbang Hasundutan Regency area is 128 per 100,000 population. The percentage of new cases of pulmonary TB (BTA positive) found was 75%. The percentage of new cases of pulmonary TB (BTA positive) that were cured was 75%. In the Data on Control and Handling of Patients with TB/BTA from 75% to 82%. One of the prevention efforts carried out by the government of Humbang Hasundutan Regency, namely the availability of reagents, community empowerment and the availability of Anti Tuberculosis Drugs (OAT) at the primary service level must be considered. The way to empower the community is to do counseling.

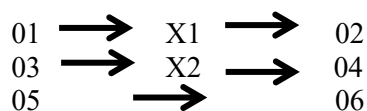
Based on the initial survey conducted by researchers directly with interviews with 5 families of pulmonary TB patients about the effectiveness of the use of animation media education and picture booklets on changes in the level of knowledge, attitudes and behavior to prevent transmission of pulmonary TB. There are 2 (two) families who say that pulmonary TB transmission can come from TB sufferers around them and say that families better understand counseling using animated media, 3 (three) family members say TB transmission comes from other family members who have TB and have lived together in one house, 1 family member chooses counseling with animation media and 2 other people choose counseling with picture pocket book media.

Based on this description, researchers are interested in seeing how the effect of education using animated media and illustrated pocket books on increasing knowledge, attitudes and actions in families with pulmonary TB patients in preventing transmission.

METHOD

Participant characteristics and research design

This research is a quasi-experimental research with a pretest-posttest design with control groups.



Information :

- 01 : Assessment of knowledge and attitudes and actions of families of pulmonary TB patients regarding prevention of pulmonary TB transmission before being given an animation intervention using the Toba Batak language
- 02 : Assessment of knowledge and attitudes and actions of families of pulmonary TB patients regarding prevention of pulmonary TB transmission after being given an animation intervention using Batak Toba language
- X1 : The intervention carried out is education about the prevention of pulmonary TB transmission using animation media using the Toba Batak language
- 03 : Assessment of knowledge and attitudes of families of pulmonary TB patients regarding prevention of pulmonary TB transmission before being given an illustrated pocket book intervention
- 04 : Assessment of knowledge and attitudes of families of pulmonary TB patients regarding prevention of pulmonary TB transmission after being given an illustrated pocket book intervention
- X2 : The intervention carried out is nutrition education on the prevention of pulmonary TB transmission using picture book media.
- 05 : Pretest knowledge and attitudes of families of pulmonary TB patients regarding prevention of pulmonary TB transmission in the control group
- 06 : Posttest knowledge and attitudes of families of pulmonary TB patients about prevention of pulmonary TB transmission in the control group. To see the impact of compliance with pulmonary TB patients on lung function, the design respondents used a cross sectional design. Where all the variables consisting of the dependent variable and the independent variable were measured at the same time when the research took place, which was carried out by direct interviews using questionnaires.

Sampling procedures

The study population was families of pulmonary TB patients, namely mothers, wives or adult children of pulmonary TB patients in Dolok Sanggul District, Humbang Hasundutan Regency, namely in the working area of Matiti Health Center, Bonandolok Health Center and Saitnihuta Health Center. The number of samples in this study was the total population of 90 people with purposive sampling technique (Notoatmodjo, 2014).

The sample was divided into 2 intervention groups, namely the animation group and the illustrated pocket book group with 30 respondents each and the control group with 30 respondents. Specific inclusion criteria for the animation intervention group and the pocket book intervention group are:

1. Family (mother or wife/husband, adult children) who have members with Pulmonary TB Patients
2. The family lives in the working area of Matiti Health Center, Bonandolok Health Center and Saitnihuta Health Center.
3. Families and respondents who are willing to be Respondents

With the Covid-19 pandemic conditions, health protocols will continue to be implemented, namely: wearing masks for respondents and their families, measuring temperature, washing hands with soap/hand sanitizer, maintaining a minimum distance of 1 meter (distancing).

Measures and covariates

Preliminary data collection, using a questionnaire tool for respondent characteristics, knowledge, attitudes and actions/behaviors regarding pulmonary TB prevention. Characteristics of respondents include: age, education, occupation, gender. The pretest was given to families who have members with pulmonary TB patients who are willing to participate as respondents by being asked to fill out a questionnaire. After the pretest, the intervention was carried out 1 x in 1 day, then it was emptied for 15 days. This activity was carried out for both groups. Animated interventions to prevent pulmonary TB transmission and illustrated pocket books were given to families with pulmonary TB in the work area of Matiti Health Center and Saitnihuta Health Center. Families who have pulmonary TB sufferers who are included in the animation intervention are collected in one room. Animations are sent to each smartphone, and are given the opportunity to view the animation. The social media used is WhatsApp (WA) messenger. Furthermore, families who have pulmonary TB patients who are included in the illustrated pocket book intervention are collected in one room, pocket books are distributed to families who have pulmonary TB sufferers. Given the opportunity to read the Pocket Book. After the intervention of the two groups was carried out, a posttest was carried out on families who have pulmonary TB patients using the same questionnaire as the questionnaire used at the time of the pretest. After completion, the researcher processed the data and analyzed the data. Furthermore, data processing is carried out on existing variables. The data analysis used was univariate by calculating the frequency distribution to determine the characteristics of the research subjects, the average score of knowledge, attitudes and actions/behavior of the respondents. Bivariate analysis to test the hypothesis of increasing knowledge and attitudes of respondents who received health education with animation media and illustrated pocket books was carried out by paired t-test. To test the differences in knowledge, attitudes and actions/behavior of the groups were statistically analyzed using the One-way Analysis of Variance (ANOVA) test ($p < 0.05$) followed by Tukey's test to find out the smallest significant difference. To see the relationship of adherence to pulmonary function of pulmonary TB patients, a statistical test was carried out, namely Chi Square (X^2).

RESULTS AND DISCUSSION

Table 1. Distribution of Characteristics of Respondents by Group of Picture Pocket Books (N=30)

No	Characteristics of Respondents	Amount	Percentage
1	Age	f	%
	< 20 year	2	6.7
	20-35 year	17	56.7
	> 35 year	11	36.7
2	Gender		
	Male	13	43.3
	Famale	17	56.7
3	Profession		
	Doesn' work	4	13.3
	Farmer	12	40
	Entrepreneur	9	30
	PNS	5	16.7

Based on Table 1. It is known that in the education group using pocket books with pictures the most age variable is the age category 20-35 years, namely 17 people (56.7%), age > 35 years as many as 11 people (36.7%) and minorities in the age category < 20 years as many as 2 people (6.7%). The age of the respondent was taken at the time of the interview using a questionnaire. Data collection on the age of the respondent was carried out by looking at the respondent's ID card.

Based on the gender variable in the group using a picture pocket book, more respondents were female as many as 17 people (56.7%) and male sex as many as 13 people (43.3%).

For the type of work, it is known that most work as farmers because they live in high residential areas so that they are suitable for farming as many as 12 people (40%) while the least profession is 4 people (13.3%).

Table 2. Distribution of Respondents' Characteristics Based on Animation Media Groups (N=30)

No	Characteristics of Respondents	Amount	Percentage
1	Age	f	%
	< 20 year	1	3.3
	20-35 year	6	20
	> 35 year	23	76.7
2	Gender		
	Male	20	66.7
	Famale	10	33.3
3	Profession		
	Doesn' work	1	3.3
	Farmer	6	53.3
	Entrepreneur	11	36.7
	PNS	2	6.7

Based on the table above, it can be seen that in the group of illustrated pocket books, the most age variable is the age category > 35 years, as many as 23 people (76.7%), age 20-35 years as many as 6 people (20%) and minorities in the age category < 20 years as many as 1 person (3.3%).

Based on the gender variable in the education group using animation media, 20 respondents (66.7%) were male and 10 female respondents (33.3%).

For the type of work it is known that most work as farmers because they live in high residential areas so that they are suitable for farming as many as 16 people (53.3%) while the least profession is 1 person (3.3%).

Table 3. Distribution of Control Group Respondents Characteristics (N= 30)

No	Characteristics of Respondents	Amount	Percentage
1	Age	F	%
	< 20 year	1	3.3
	20-35 year	14	46.7
	> 35 year	15	50
2	Gender		
	Male	14	4.7
	Famale	16	53.3
3	Profession		
	Doesn' work	0	0
	Farmer	14	46.7
	Entrepreneur	11	36.7
	PNS	5	16.7

Based on Table 3 above, it can be seen in the control group that the most age variables are the age category > 35 years, namely 35 people (50%), 14 people aged 20-35 years (46.7%) and minorities in the < 20 age category. Year as many as 1 person (3.3%).

Based on the gender variable in the control group, 16 respondents (53.3%) were female and 16 were male (46.7%).

For the type of work it is known that most work as farmers because they live in high settlement areas so that they are suitable for farming as many as 14 people (46.7%) while the minimum profession is 5 civil servants (16.7%).

Description of Knowledge, Attitudes and Actions of Families of Pulmonary TB Patients in the Educational Group Using Animation Media, Picture Pocket Books and Control Groups

Table 4 Results of Variable Knowledge, Attitudes and Actions of Families of Pulmonary Tuberculosis Patients Pre-Test and Post-Test Interventions Using Animation Media (N= 30)

No	Variable	Pre Test		Post Test	
1	Knowledge	n	%	N	%
	Good	13	43.3	24	80
	Enough	12	40	6	20
	Not Enough	5	16.7	0	0
2	Attitude				
	Positive	22	73.3	22	73.3
	Negative	8	26.7	8	26.7
3	Action				
	Conducted	23	76.7	28	93.3
	Not Conducted	7	23.3	2	6.7

Based on table 4 above, it can be seen that before the intervention using animation media (Pre Test) at the level of good knowledge as many as 13 people (43.3%), enough as many as 12 people (40%) and the category of lack of knowledge as many as 5 people (16.7%), after intervention using animated media, the knowledge of the family of pulmonary TB patients increases, namely the level of knowledge in the good category as many as 24 people (80%), sufficient category as many as 6 people (20%) and the lack of knowledge does not exist.

Based on it, it can be seen that the attitude variable of 30 respondents before the intervention used animation media (Pre Test) was 22 people (73.3%), negative attitudes as many as 8 people (26.7%), after intervention using animation media, the attitude there was no increase in the family of patients with pulmonary TB the same as before the intervention, namely a positive attitude as many as 22 people (73.3%), a negative attitude as many as 8 people (26.7%)

Based on the action variable, it can be seen that of the 30 respondents, namely families of pulmonary TB patients who took action in preventing the transmission of pulmonary TB before counseling (Pre Test), 23 people (76.7%) took preventive measures and 7 people did not take preventive measures (23.3%) after counseling, the actions of families of pulmonary TB patients in preventing pulmonary TB transmission increased, namely the category that carried out prevention as many as 28 people (93.3%), and those who did not prevent as many as 2 people (6.7%).

Based on table 5, it can be seen that before the intervention using a picture pocket book (Pre Test) at the level of good knowledge as many as 10 people (33.3%), 15

people (50%) were sufficient and the category of lack of knowledge was 5 people (16.7%). After the intervention using a picture pocket book, the knowledge of the family of pulmonary TB patients increased, namely the level of knowledge in the good category as many as 24 people (86.7%), sufficient category as many as 4 people (13.3%) and lack of knowledge.

Table 5: Results of Variable Knowledge, Attitudes and Actions of Families of Pulmonary Tuberculosis Patients Pre-Test and Post-Test Intervention Picture Pocket Book (N= 30)

No	Variable	Pre Test		Post Test	
		n	%	n	%
1	Knowledge				
	Good	10	33.3	26	86.7
	Enough	15	50	4	13.3
	Not Enough	5	16.7	0	0
	Amount	30	100	30	100
2	Attitude				
	Positive	22	73.3	30	100
	Negative	8	26.7	0	0
	Amount	30	100	30	100
3	Action				
	Conducted	20	66.7	26	86.7
	Not Conducted	10	33.3	4	13.3
	Amount	30	100	30	100

Based on it, it can be seen that the attitude variable of 30 respondents before the intervention used a picture pocket book (Pre Test), namely a positive attitude as many as 22 people (73.3%), a negative attitude as many as 8 people (26.7%), after the intervention using a picture pocket book then the attitude of the family of pulmonary TB patients increased, namely all respondents were positive in preventing the transmission of pulmonary TB as many as 30 people (100%).

Based on the action variable, it can be seen that of the 30 respondents, namely families of pulmonary TB patients who took action to prevent transmission of pulmonary TB before counseling (Pre Test), 20 people (66.7%) took preventive measures and 10 people did not take preventive measures (33.3%) after counseling, the actions of families of pulmonary TB patients in preventing the transmission of pulmonary TB increased, namely the category that carried out prevention as many as 26 people (86.7%), and those who did not prevent as many as 4 people (13.3%).

Based on table 6, it can be seen that (Pre Test) in the control group at the level of good knowledge as many as 3 people (10%), enough as many as 12 people (40%) and the category of lack of knowledge as many as 15 people (50%), after post test, there is no increase in the knowledge of the family of pulmonary TB patients, the same thing as the pre test, namely the level of good knowledge is 3 people (10%), enough is 12 people (40%) and the category of knowledge is less as many as 15 people (50%)

Based on it, it can be seen that the attitude variable of the 30 pre-test respondents in the control group is a positive attitude as many as 24 people (80%), a negative attitude as many as 6 people (20%), after the post test, the knowledge of the family of pulmonary TB patients does not increase. The same thing with the pre-test, namely positive attitudes as many as 24 people (80%), negative attitudes as many as 6 people (20%).

Based on table 6, it can be seen that (Pre Test) in the control group at the level of good knowledge as many as 3

people (10%), enough as many as 12 people (40%) and the category of lack of knowledge as many as 15 people (50%), after post test, there is no increase in the knowledge of the family of pulmonary TB patients, the same thing as the pre test, namely the level of good knowledge is 3 people (10%), enough is 12 people (40%) and the category of knowledge is less as many as 15 people (50%)

Table 6: Results of Variable Knowledge, Attitudes and Actions of Families of Pulmonary Tuberculosis Patients Pre-Test and Post-Test Control Group (N=30)

No	Variabel	Pre-Test		Post Test	
		n	%	n	%
1	Knowledge				
	Good	3	20	3	10
	Enough	12	40	12	40
	Not Enough	15	50	15	50
	Amount	30	100	30	100
2	Attitude				
	Positive	24	80	26	86.7
	Negative	6	20	4	13.3
	Amount	30	100	30	100
3	Action				
	Conducted	26	86.7	26	86.7
	Not Conducted	4	13.3	4	13.3
	Amount	30	100	30	100

Based on it, it can be seen that the attitude variable of the 30 pre-test respondents in the control group is a positive attitude as many as 24 people (80%), a negative attitude as many as 6 people (20%), after the post test, the knowledge of the family of pulmonary TB patients does not increase. The same thing with the pre-test, namely positive attitudes as many as 24 people (80%), negative attitudes as many as 6 people (20%).

Based on the action variable, it can be seen that of the 30 respondents, namely families of pulmonary TB patients who took measures to prevent transmission of pulmonary TB Pre-Test in the control group, 26 people (86.7%) took preventive measures and 4 people did not take preventive measures (13.3%).) after the post test, the knowledge of the family of pulmonary TB sufferers did not increase the same as the pre test, namely 26 people (86.7%) who did prevention and 4 (13.3%) who did not.

The data obtained from the two variables are categorical data, tested using a statistical test, namely the Paired Samples Statistics T-Test which aims to test the relationship between the average differences of the 2 paired groups in the study, namely pre-test and post-test data in the experimental group and control group. The requirement to perform the Paired Samples Statistics T-Test test is that the Paired Samples Statistics T-Test performs a normality test

a. Results of Normality Test for Pre-Test Group and Post-Test Group

Data processing on the effectiveness of education using illustrated pocket books, animation media, and the control group with the Pre Test and Post Test groups using the Paired T-Test statistical test with a significance level of 5%. Prior to the test, the test was used to determine the normality of the data. One-Sample Kolmogorov-Smirnov Test. The following are the findings of the data normality test:

Table 7 Normality Test Results of Knowledge, Attitudes and Actions Pre Test and Post Test in the Picture Pocket Book Group, Animation Media and Control Group

Group	Variable	Mean	Std Deviation	T	df	Sig (2tailed)
Animation Media	X7PreKnowledge	-1.033	1.377	-4.111	29	0.000
	X8PostKnoledge					
	X9PreAttitude - X10PostAttitude	-4.733	5.298	-4.894	29	0.000
	X11PreAction- X12PostAction	-3.867	4.167	-5.083	29	0.000

Based on table 7, it is found that the test results using the Kolmogorov-Smirnov test obtained a significant number ($p = 0.181 > 0.05$), then the data is declared normally distributed.

b. Test Results Paired Sample T-Test

The results of the normality test indicate that the data have a normal distribution, thus the research satisfies the conditions for the T-test and the hypothesis test is conducted using non-parametric statistics. A Paired Sample T-Evaluate with a 95% confidence level and a 5% error rate is employed

to test the hypothesis. The Paired Samples T-Test was performed to examine the connection between the average differences of the two paired groups in the research, namely the pre-test and post-test data in the experimental group. The following are the T test results:

Based on table 8, in the education group using animation, it is stated that the Mean Paired Differences p value on the knowledge variable is -1.033. This means that there is a change in the average value of knowledge from the pre-test value to the post-test value, which is an increase of 1.03.

Table 8 Test Results Paired T-Test Score Knowledge, Attitudes, Family Actions of Patients with Pulmonary TB Pre Test and Post Test Animation Media Education

Group	Variable	Mean	Std Deviation	T	df	Sig (2tailed)
Control Group	X13PreKnowledge	-1.167	1.416	-	29	0.000
	X14PostKnowledge			4.512		
	X15PreAttitude - X16PostAttitude	-1.033	2.606	-	29	0.038
	X17PreAction - X18PostAction	-1.600	2.328	-	29	0.001

Based on the results of the analysis, it was found that p value = $0.000 < 0.05$, it can be concluded that there is a significant difference in the knowledge variable between the pre-test and post-test interventions in the experimental group who were given education using Batak language animation.

In the attitude variable of the animation group, the results of this Mean Paired Differences are - 4.733. This means that there is a change in the average attitude value from the pre-test value to the post-test value, which is an increase of 4.73.

The results of the analysis showed that p value = $0.000 < 0.05$, it can be concluded that there is a significant difference in the attitude variable between the pre-test and post-test interventions in the experimental group who were given education using Batak language animation.

In the action variable of the animation group, the results of this Mean Paired Differences are - 3,867. This means that there is a change in the average value of the action from the pre-test value to the post-test value, which is an increase of 3.86

The results of the analysis showed that p value = $0.000 < 0.05$, it can be concluded that there is a significant difference in the action variables between the pre-test and post-test interventions in the experimental group who were given education using Batak language animation.

Tabel 9 Hasil Uji Paired T-Test Skor Pengetahuan, Sikap, Tindakan Keluarga Penderita TB Paru Pre Test Dan Post Test Education Picture Pocket Book

Based on table 9 above in the illustrated pocket book education group, it is stated that the Mean Paired Differences p value on the knowledge variable is -1.300. This means that there is a change in the average value of knowledge from the

pre-test value to the post-test value, which is an increase of 1.3.

Based on the results of the analysis, it was found that p value = $0.000 < 0.05$, it can be concluded that there is a significant difference in the knowledge variable between the pre-test and post-test interventions in the experimental group who were given education using a pocket book with pictures of the Batak language.

In the attitude variable of the illustrated pocket book group, the results Mean Paired Differences are - 4.133. This means that there is a change in the average attitude value from the pre-test value to the post-test value, which is an increase of 4.13.

The results of the analysis showed that p value = $0.000 < 0.05$, it can be concluded that there is a significant difference in the attitude variable between the pre-test and post-test interventions in the experimental group who were given education using a Batak language picture pocket book.

In the action variable of the illustrated pocket book group, the results Mean Paired Differences are - 5.933. This means that there is a change in the average value of the action from the pre-test value to the post-test value, which is an increase of 5.93.

The results of the analysis showed that p value = $0.000 < 0.05$, it can be concluded that there is a significant difference in the action variables between the pre-test and post-test interventions in the experimental group who were given education using a Batak language picture pocket book.

Table 10 Test Results Paired T-Test Score Knowledge, Attitudes, Family Actions of Patients with Pulmonary TB Pre-Test and Post-Test Control Group

Based on table 10 above, the control group stated that the Mean Paired Differences p value on the knowledge

variable was -1.167. This means that there is a change in the average value of knowledge from the pre-test value to the post-test value, which is an increase of 1.16

Based on the results of the analysis, the p value = 0.000 < 0.05, it can be concluded that there is a significant difference in the knowledge variable between the pre-test and post-test interventions in the control group.

In the attitude variable of the control group this result Mean Paired Differences is -1.033. This means that there is a change in the average attitude value from the pre-test value to the post-test value, which is an increase of 1.03.

The results of the analysis showed that p value = 0.038 < 0.05, it can be concluded that there is a significant difference in the attitude variable between the pre-test and post-test interventions in the control group.

In the action variable of the animation group, the Mean Paired Differences result is - 1,600. This means that there is a change in the average value of the action from the pre-test value to the post-test value, which is an increase of 1.6

The results of the analysis showed that p value = 0.001 < 0.05, it can be concluded that there is a significant difference in the action variables between the pre-test and post-test interventions in the control group.

c. Test Independent Sample T. Test

Dependent t test was conducted to see whether there was a difference in the post test results of respondents from the experimental group, namely illustrated pocket books and animation media and the control group. The results of the calculation of the hypothesis test are:

Table 11 Test Results of Independent Sample T. Test

Based on the table above, there is a difference in the average comparison of the knowledge variable in the pocket book and animation group, namely in the pocket book of 8.17 and the average comparison in the animation group of 8.13.

Category	Group	N	Mean	Std Devition
Knowledge	Pocket Book Post	30	8.17	.747
	Post Animation	30	8.13	1.008
Attitude	Pocket Book Post	30	31.67	2.820
	Post Animation	30	30.73	4.472
Action	Pocket Book Post	30	31.07	5.638
	Post Animation	30	31.77	4.797

Based on the attitude variable, there are variances between pocket books and animation, ranging from 31.67 to 30.73. Comparing the averages of the action variable with those of the pocket book and animation groups reveals a difference of -31.77%.

Knowledge is the product of human perceiving, or the consequence of a person's sensory perception of an item. Sensing is accomplished by the five human senses: sight, hearing, smell, taste, and touch. The majority of human information is acquired by the eyes and hearing. Knowledge or cognitive ability is a crucial determinant of one's behaviors. In contrast, attitude is a state of mind (mental) and a state of thinking (neural) that is prepared to react to an object that is structured by experience and impacts the practice of action either directly or indirectly. In determining a complete attitude, knowledge, thoughts, beliefs, and emotions play a significant role in measuring attitudes, making it difficult to measure and easy to change because it depends on personal experience, the influence of other people who are deemed significant, the influence of culture, mass media, educational institutions, and religious institutions, as well as the emotional factors of the respondents' own selfish nature. While the creation of behavior is an effort to modify the conduct of an individual. Several measures alter conduct (Mubarak, 2012). Health actions or behaviors may be categorized into three groups: health maintenance behavior, search and use of health service systems or facilities (Health seeking behavior), and environmental health behavior, which consists of healthy living behavior, ill behavior, and sick role behavior.

The researcher argues that there are significant differences in knowledge, attitudes and actions of families with pulmonary TB patients regarding prevention of pulmonary TB transmission between the three groups, namely picture booklets, animation media directly causing respondents to have material objects that can be observed, especially through the five senses of hearing and sight. The

picture pocket book group is known to have changed knowledge and attitudes. There is a change in knowledge and attitudes where respondents can see pictures that are alive and alternate so as to provide continuous visuals, with a combination of pieces of two or more images, helping to meet the need for images that are in accordance with learning objectives. (Febriani et al., 2019) illustrated pocket books are more concrete, that is, they can more realistically show the main problem compared to animation media so that they can see the problems conveyed in the message. When the respondent pays attention to the delivery of information that the researcher provides through a picture pocket book about the prevention of pulmonary TB transmission, there is a transfer of information that causes the cognitive knowledge of the respondent to be better than the animation media intervention.

This has an impact on the ability of respondents to answer questions on the questionnaire well. Researchers saw that respondents in the illustrated pocket book group found it easier to understand what was conveyed, the message delivery process was more interesting, respondents would be stimulated to actively observe without any detailed explanation because they only used the sense of sight. However, in this study, it turned out that the animation media was less effective in its acceptance by the respondents, so that respondents who used animated media had lower knowledge and attitude values when compared to using illustrated pocket books. However, for changes in the results of the action variables, it is more effective to use animation education compared to illustrated pocket books, this can be seen from the independent results which stated that the average comparison of animation media action variables was 31.77 compared to 31.07 pocket books. When respondents pay attention to the delivery of information that researchers provide through animated media about preventing transmission of pulmonary TB, there is a process of information transfer that causes changes in the

respondent's actions, which are better than the intervention using illustrated pocket books. This can be seen in the ability of respondents to answer questions on the questionnaire well. Therefore, the importance of illustrated pocket books in assisting the role of health workers is very significant to increase the knowledge and attitudes of families of patients with prevention of pulmonary TB transmission by involving the respondent's sense of sight directly and for very significant action variables using animation media by involving the senses of hearing and sight. This media can increase the attention, concentration and imagination of the respondent then the respondent is expected to start learning to apply good prevention methods so as not to be infected in one family, good knowledge and attitude are based on a good understanding of the material being studied and understood. Another important thing to do is that the Puskesmas and the Health Office can apply picture booklets and animated media as new media in the learning process or educational process to the community so as to provide modifications to the delivery of health messages regarding the prevention of pulmonary TB transmission so that the process of providing education is not monotonous and the message is clear. Delivered is well received.

CONCLUSIONS AND SUGGESTIONS

There are significant differences in knowledge, attitudes and actions of families with pulmonary TB about preventing transmission of pulmonary TB between the three groups, namely picture booklets, animated media, which directly cause respondents to have material objects that can be observed, especially through the five senses of hearing and sight. The picture pocket book group is known to have changed knowledge and attitudes. There is a change in knowledge and attitudes where respondents can see pictures that are alive and alternate so that they provide continuous visuals, with a combination of pieces of two or more images, helping to meet the need for images that are in accordance with learning objectives. When the respondent pays attention to the delivery of information that the researcher provides through a picture pocket book about the prevention of pulmonary TB transmission, there is a transfer of information that causes the cognitive knowledge of the respondent to be better than the animation media intervention. This has an impact on the ability of respondents to answer questions on the questionnaire well. The researcher saw that respondents in the illustrated pocket book group were easier to understand what was conveyed, the message delivery process was more interesting, respondents would be stimulated to actively observe without any detailed explanation because they only used the sense of sight. However, in this study, it turned out that animation media was less effective in receiving it by respondents, so that respondents who used animated media had lower knowledge and attitude values when compared to using illustrated pocket books. However, for changes in the results of the action variables, it is more effective to use animation education compared to illustrated pocket books

ETHICAL CONSIDERATIONS

This research has been approved by the Health Research Ethics Commission Number 01/525/KEPK/Poltekkes Kemenkes Medan 2021.

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CONFLICT OF INTEREST STATEMENT

Manurung and Tambunan stated that there was no conflict of interest in this study.

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