

Effectiveness of Health Promotion Through Audiovisual Media and Lecture Methods on the Level of Knowledge in Elementary School Children About TB Disease

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Abstract

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Introduction : Indonesia is the number two country for TB incidence in the world. To reduce the morbidity and death rate of tuberculosis cases, WHO issued an END-TB Strategy program that has 3 pillars. Pillar number 2 on the importance of cooperation with government, private stakeholders, and community for the prevention of TB disease, one of them in the form of health promotion. The application of speech methods and audiovisual media in conveying information has some differences in the process and achievement of students' level of understanding. This study aims to compare the effectiveness of the use lecture methods and audiovisual media in conveying information.

Method : A total of 136 research subjects were 6th graders at Public Elementary School 205 Palembang and Private Elementary School YWKA Palembang divided into 2 groups for each elementary school. Each elementary school were subdivided into two groups, namely the audiovisual media group and the lecture method group. This study used quasi experimental design with nonequivalent pretest-posttest technique.

Result : After the intervention, the level of understanding for the audiovisual media group was 87.90% while for the lecture method was 83.00% (effective when > 75%) with a value of $p < 0.05$. Conclusion: the delivery of information on TB disease in grade 6 students assessed in two schools, both public and private, using audiovisual media and lecture methods were both equally effective, but the effectiveness of the audiovisual media was higher than the lecture method so that audiovisual media is considered better than lecture methods.

Introduction

Tuberculosis or better known as TB is a contagious infectious disease caused by the mycobacterium tuberculosis, transmitted by droplet nuclei and first attacked the lung organ.¹ Tuberculosis is the main cause of the nine deaths throughout the world and the major causes of infectious agents, ranked higher than HIV / AIDS.² Based on WHO data in global report 2017, globally cases of TB in 2016 of 10.4 million people are equivalent to 140 cases per 100,000 population.^{2,3} Indonesia is the country with the second largest number of new cases in the world after India.⁴ In 2016, There are 9.549 TB cases with 5.674 BTA (+) cases and TB case notification numbers of 117 / 100,000

residents with BTA (+) 70/100.000 population.⁴

To reduce the morbidity and death rate of tuberculosis cases, WHO issued an END-TB Strategy program that has 3 pillars. Pillar number 2 on the importance of cooperation with government, private stakeholders, and community for TB prevention one of them in the form of health promotion.^{5,6} Indonesia has started to promote health promotion of TB contained in Tuberculosis Control Strategy year 2011-2014, case of tuberculosis in indonesia.⁷ Based on the Ottawa Charter (Ottawa Charter, 1986) Health Promotion is an effort made to the community so that they are willing and able to maintain and improve their own health.

Health promotion, such as health education can not be separated from the media because through the media, the message conveyed can be more interesting and understood, so that the target can learn the message to understand it so as to decide to adopt it to positive behavior.⁸

The method used in either the group or the most frequently used for mass is the lecture.⁸ The lecture method is an oral narrative, the easiest method of conveying information and highly efficient without the need for media. The knowledge that can be gained from lecture methods can be overwhelming but does not make the listener understand clearly what is being said, it is also due to boredom and without the help of role play in the lack of knowledge can be remembered with this method.¹⁰ Audiovisual media has the advantage of making someone remembers longer information and gives a more realistic picture so that audiovisual media is more effective. The process of remembering someone with visual + verbal techniques such as audiovisual media can increase a person's memory ability by 85% compared with just verbal (70%) and visual (72%).

The use of audiovisual media is considered more effective than lecture methods in terms of one's ability to remember. At the time of health promotion there are several methods and media to increase one's knowledge related to what will be delivered. Therefore, it is hoped that this research can assess the effectiveness of lecture method and audiovisual media related to the level of children's knowledge about TB disease so that later methods or media that are considered better will be applicable in the wider community to provide a proper way of delivering health programs or counseling so as to reduce morbidity and mortality from the disease.

Methods

This type of research is quantitative using quasi experimental design with nonequivalent pretest-posttest technique. The groups in this study were divided into video audiovisual media groups (F1), and comparison groups or groups of lecture methods with direct explanation (F2). Questionnaires and explanations in this study are presented with a lecture or audiovisual media in the form of videos

about TB disease has the same information.

The research was conducted in March 2018 in two schools, namely Public Elementary School 205 Palembang and Private Elementary School YWKA Palembang. The sample of this research is children who are sitting in elementary school at the final level or 6th grade. Dependent variable in this study is the method of learning while the independent variable in this study is the level of knowledge of elementary school children. The level of student understanding is divided into three groups: the level of understanding is good when the answer is more than 80% correct, the level of understanding is enough if the answer is 65% -80% true, and the level of understanding is less if the answer is less than 65% .¹²

The method is a regular or systematic way that is used to carry out the work in order to achieve the goals as desired. Methods in health promotion is an activity or effort to deliver health messages to the community, groups or individuals using the application of ways so that can be understood community.⁸ Assessment of effectiveness conducted using the test independent sample t test. A method can be said to be effective if the result can reach or more than 75%.

Audiovisual media is a moving and dynamic medium that can be seen and heard and delivered through electronic aids with the advantages of easy to understand, more interesting, and involving all the five senses so that audiovisual delivery is more easily understood.⁹ The lecture method is an oral narrative, the easiest method of conveying information and very efficient without the need for media. The knowledge that can be gained from lecture methods can be overwhelming but does not make the listener understand clearly what is being said, it is also due to the factor of boredom and without the help of the role plays in the lack of knowledge can be remembered by this method.¹³

Result

This research use two research groups namely audiovisual media group and lecture method group conducted in each school either in public elementary school or private school. The purpose of this research is to see the difference of

audiovisual media effectiveness and lecture method in conveying information to 6th graders and students about TB disease.

Characteristics of Respondents

In this study, an assessment of the characteristics of the study respondents studied in terms of gender, age, father's work, and mother's work. Assessment of this respondent characteristic is seen from each State Elementary and Private Elementary School. The goal is to see whether the variables studied can affect the effectiveness of health promotion both lecture method and audiovisual media to knowledge of TB disease.

Table 1 shows the characteristics of research respondents in grade 6 children in private elementary schools. In 6th grade students in private elementary school, male gender, age 10 years, father's job is private employee, and mother job is housewife is the most variable in lecture method group. Meanwhile, female gender, age 11 years, father's job is a private employee, and mother's job is housewife is the most variable in audiovisual media group. Table 2 shows the characteristics of study respondents in grade 6 children at SD Negeri. In 6th grade students in elementary school, female gender, age 11 years, father's job is labor, and mother's job is housewife is the most variable in lecture group. Meanwhile, female sex, age 11 years, father's job is labor, and mother's job is housewife is the most variable in audiovisual media group.

Univariate Analysis

In table 3, an assessment of the level of students' knowledge in the private elementary school is divided into 3 groups, namely less, enough, and good by looking at the results of pretest and posttest. Knowledge of students in private elementary schools in the group of lecture method and audiovisual media seen from the pretest results done is 67.6% (N = 23) included into the level of knowledge less and 32.4% (N = 11) included into the level of knowledg enough. The result of posttest done on group of health promotion method using lecture method after intervention then got result 79,4% (N = 27) included into category level of good knowledge. While in the group of health promotion methods using audiovisual media after

the intervention obtained 91.2% (N = 31) included into the category of good knowledge level. Overall posttest results of both groups of health promotion methods 0% (N = 0) fall into the category of less knowledge level.

In table 4, an assessment of students' level of knowledge in Public Elementary School is divided into 3 groups, namely less, enough, and good by looking at the results of pretest and posttest. The knowledge of students in Public Elementaru School in the group of lecture method and audiovisual media seen from the pretest result is 67.6% (N = 23) included in the level of knowledge less and 32.4% (N = 11) included into the level of enough knowledge. The result of posttest done on group of health promotion method by using lecture method after intervention then got result of 55,9% (N = 19) included into category level of good knowledge. While in the group of health promotion methods using audiovisual media after the intervention was obtained 88.2% (N = 30) included into the category of good knowledge level. Overall posttest results of both groups of health promotion methods 0% (N = 0) fall into the category of less knowledge level.

Bivariate analysis

In table 5, the level of understanding of 6th grade students in private elementary schools using the lecture method reached an average of 84.42% or included in the category of good understanding level, whereas with audiovisual media reached an average of 88.78% or belonging to the category good level of understanding. At the level of understanding of 6th grade students in Public elementary School with the lecture method reached an average of 81.59% or included in the category of good understanding level, while audiovisual media reached an average of 87.09% which is also included in the level of good understanding. If the level of students' understanding is combined with both private and pibic elementary schools using an average lecture method reaches 83.00% or included in a good level of understanding while the audiovisual method reaches an average of 87.90%. Broadly speaking, the level of understanding of elementary school children in private

elementary school by using lecture method and audiovisual media shows a higher increase when compared to Public elementary school. Audiovisual methods always experience a higher level of understanding compared to lecture methods, both from Public Elementary Schools, Private Elementary Schools, as well as a combination of public and private primary schools.

The level of knowledge of students seen from the results of posttest conducted in both groups showed a significant difference with p value of 0.05 or also called 95% confidence level. The significance test was performed using the Mann-Whitney test. With p value <0,05 it means that there is a significant difference in posttest result of intervention given by both audiovisual media and lecture method in private elementary, public elementary, and public elementary and private school.

In Table 6, the minimum targets to be achieved in the study are equal to or more than 75% true. The level of students understanding by lecture method reaches an average of 83.00% of correct answers, while with audiovisual media reaches 87.90% correct answer. The difference from the posttest of audiovisual media and the lecture method is 4.90%, higher for audiovisual media. The test performed on this result is a 95% confidence level using the Mann-Whitney test. Audiovisual media and lecture methods are equally effective in conveying information to students.

Multivariate analysis

A multivariate analysis was conducted, to see the factors that influenced the increase of students' knowledge of TB disease in this study. Influencing factors consist of gender, age, Parent's work, School, and health promotion. After the binary logistic test, it was found that the factors of health promotion method and age that influence the knowledge level of the child mengenai the disease of tuberculosis so that obtained the formula $Y = 1,306 + 1.507 (X1) - 1,070 (X2)$. In conclusion, when a child aged 10-11 years and using audiovisual methods can increase the knowledge of TB 2 times larger.

In the odd ratio, obtained 4,514 results there is a group of health promotion methods means health promotion method is a risk factor and can increase the knowledge level of TB 4,514 times greater. At the age of odd ratio results obtained 0.343 where if the value of odd ratio less than 1 then considered the determinant factor or not risk factors so that age is not a risk factor in increasing knowledge of TB.

Discussion

Differences in Pretest and Posttest Value of Both Groups in Public Elementary School and Private Elementary School

The mean values obtained at Public Elementary School and Private Elementary School from posttest conducted on audiovisual media group increased compared with their pretest value, in the lecture group method also increased the posttest value compared to the pretest value but the increase of the value was not as big as the increase that occurred at audiovisual media groups. This suggests that video or audiovisual media is superior to lecturing methods in conveying information and may affect students' level of understanding. This result is also seen in a mutual study showing that the group's understanding level of audiovisual video intervention is higher than the lecture intervention group in the form of an explanation.¹⁷ From the results obtained in both groups shows the acceptance of information by using audiovisual media is better than the lecture method. It is also in accordance with the health department's explanation that the best informed media delivery by audiovisual uses where audiovisual can increase one's comprehension 6x compared to lecture or verbal methods only.⁸

Although the increase in understanding among audiovisual media groups is better than that of the lecture method, the increased understanding of lecturer methods is also significant. One of the advantages of the lecture method is discussion, in the discussion the participants of the lecture metode can ask the less obvious about the information they receive to the speaker. However, audiovisual media may attract participants' attention and interest better than lecture methods but discussions on lecture methods may affect TB knowledge in elementary school children.

Understanding of students in public and private primary schools about TB disease is higher in audiovisual media group when compared with lecture method group. The significance test was performed using Wilcoxon Signed Ranks test with a significance level of 5% or p value of 0.05. After the significance test on the students' level of understanding about TB disease, p value = 0.00 ($p < 0.05$), meaning that there is a significant difference to the level of students' understanding of TB disease. The average values obtained in private elementary school of posttest performed both in audiovisual media group and lecture method increased pretest value higher than Public Elementary School. In Public Elementary School also increased the value of posttest compared to its pretest value but the increase in value is not as big as the increase that occurred in private elementary either from lecture method or audiovisual media. This indicates Private Elementary School has a higher level of understanding compared to Public Elementary School when receiving information submitted. This is consistent with sandjaja research which states that Private Element always maintains its quality and improves excellence by selecting competent teachers in teaching so that parents feel satisfied and always want to send their children to private education.¹⁴

Differences Effectiveness of Audiovisual Media and Lecture Methods.

To overcome the limitations of time funds in the study then the assessment of differences in effectiveness is done by determining the limit or target to be achieved. A method is said to be successful or effective when reaching a target of at least 75% in accordance with research conducted by safitrah.¹⁸

The posttest value obtained from the audiovisual method group has exceeded the specified target of 75%, while the posttest value obtained from the lecture group is also above the target. However, although both methods are both passing the targets set, the effectiveness value in the audiovisual media group is higher than the lecture method. This is evident from the enthusiasm of elementary school children in both public and private elementary schools when watching videos about TB disease is quite high. Students' interest in participating in watching videos

together was also a factor influencing answers to the questionnaire.

In the lecture method group also increased posttest value compared to pretest value, but not as big as in audiovisual media group. The decrease in the concentration of elementary school children in lecture methods influences the effectiveness of the reception of information by lecture participants which may impact on the answers as well as the students' pretest and posttest values. This is in accordance with the ministry's health statement, that if the communication through verbal alone can make bored participants who listen and increase the ability of someone with verbal only 1x to improve memory compared to audiovisual.⁸

In this study obtained results that show that audiovisual media affect the acceptance of information better when compared with the lecture method. The interest and enthusiasm of the video participant looks higher when compared to the lecture method so that the information conveyed by video is more easily accepted by the students. Information which is delivered using the video more easily accepted by the students. In accordance with Sanjaya's opinion using audiovisual as a learning medium can make the learning process two way traffic more likely to occur so that learning becomes more interactive.¹⁹

Audiovisual media groups and lecture methods have met the limits or targets set in the study. From the results obtained from both groups it can be concluded that the audiovisual method and the lecture method are equally effective with the effectiveness value in the audiovisual media group higher than the lecture method. The significance test was performed with an accuracy of 95% or p value of 0.05 to see if there was any significant difference in the effectiveness of audiovisual media compared with the lecture method. After significance test obtained p value = 0,00 ($p < 0.05$), meaning there is significant difference to effectiveness of audiovisual media and lecture method in conveying information about TB disease. This is in accordance with the ministry's health statement that audiovisual media is a medium that uses the eyes and ears simultaneously in receiving information so that the process of receiving information becomes more effective.⁸

Multivariate Analysis

Multivariate analysis was conducted to see the most influencing factors on TB disease knowledge level. In this study, included factors such as gender, age, parent occupation, type of primary school, and health promotion methods. In this research, tested by using binary logistic obtained faktor method of health promotion and age which influence to level of knowledge about TB disease. the formula $Y = 1,306 + 1.507 (X1) - 1,070$ means that if a child is aged 10-11 years and using audiovisual methods can increase the knowledge of TB 2x larger. In the odd ratio, health promotion method has a value of 4,514, it means that health promotion method is a risk factor and can increase 4x more about TB disease knowledge. Whereas, age has an odd

value of 0.343 is a determinant or not a risk factor to increase the knowledge level of TB disease.

Conclusions

Health promotion methods using audiovisual media and lecture methods are equally effective, but the value of effectiveness on audiovisual media is higher than that of the lecture method so that audiovisual media is considered better than the lecture method.

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Table 1. Characteristics respondents in Private Elementary School

Private Elementary School		Promotion Health Method			
Variable	Category	Lecture		Audiovisual	
		N	%	N	%
Gender	Male	19	27,9	15	22,1
	Female	15	22,1	19	27,9
Age	10 years	20	29,4	10	14,7
	11 years	14	20,6	24	35,3
Father work's	Worker	4	5,9	7	10,3
	Teacher	1	1,5	2	2,9
	Private employee	11	16,2	10	14,7
	Merchant	6	8,8	5	7,4
	Businessman	1	1,5	0	0
	Tailor	1	1,5	0	0
	Civil servant	7	10,3	7	10,3
	Police	0	0	1	1,5
	Driver	2	2,9	1	1,5
	Soldier	1	1,5	1	1,5
	Mother work's	Midwife	0	0	1
Lecturer		0	0	1	1,5
Teacher		4	5,9	4	5,9
Housewife		24	35,3	24	35,3
Private employee		1	1,5	0	0
Merchant		5	7,4	2	2,9
Civil servant		0	0	2	2,9

Table 2. Characteristics of Respondents in Public Elementary School

Public Elementary School		Promotion Health Method			
Variable	Category	Lecture		Audiovisual	
		N	%	N	%
Gender	Male	16	23,5	13	19,1
	Female	18	26,5	21	30,9
Age	10 years	1	1,5	0	0
	11 years	16	23,5	16	23,5
	12 years	12	17,6	15	22,1
	13 years	4	5,9	3	4,4
	14 years	1	1,5	0	0
Father Work's	Worker	21	30,9	18	28,5
	Teacher	0	0	1	1,5
	Private Employee	0	0	3	4,4
	Merchant	1	1,5	2	2,9
	PLN Worker	2	2,9	0	0
	Civil Servant	0	0	1	1,5
	Driver	3	4,4	3	4,4
	Unemployee	6	8,8	3	4,4
	Soldie	1	1,5	3	4,4
Mother Work's	Teacher	0	0	2	2,9
	Housewife	31	45,6	29	42,6
	Merchant	1	1,5	1	1,5
	Tailor	1	1,5	0	0
	Nurse	0	0	1	1,5
	PLN worker	1	1,5	0	0
	Worker	0	0	1	1,5

Table 3. Pretest and Posttest Result in Private Elementary School (Univariat analysis)

Group		Student Knowledge						Sum	
		Less		Enough		Good			
		N	%	N	%	N	%	N	%
Pretest	Lecture	23	67,6	11	32,4	0	0	34	100
	Audiovisual	23	67,6	11	32,4	0	0	34	100
Posttest	Lecture	0	0	7	20,6	27	79,4	34	100
	Audiovisual	0	0	3	8,8	31	91,2	34	100

Table 4. Pretest and Posttest Result in Public elementary School (Univariat analysis)

Group		Student Knowledge						Sum	
		Less		Enough		Good			
		N	%	N	%	N	%	N	%
Pretest	Lecture	23	67,6	11	32,4	0	0	34	100
	Audiovisual	23	67,6	11	32,4	0	0	34	100
Posttest	Lecture	0	0	15	44,1	19	55,9	34	100
	Audiovisual	0	0	4	11,8	30	88,2	34	100

Table 5. Comparison from post-test result using Lecture Method and Audiovisual Media

Group		Amount (N)	Average of student knowledge	P value
Private Elementary School	Lecture	34	84,42 %	0,006
	Audiovisual	34	88,78 %	
Public Elementary School	Lecture	34	81,59 %	0,002
	Audiovisual	34	87,03 %	
Both school	Lecture	68	83,00 %	0,000
	Audiovisual	68	87,90 %	

Table 6. Differences Effectiveness of Audiovisual Media and Lecture Method from Percentage of Posttest Results After Intervention

Group	Amount (N)	Average of Student Knowledge	Target	Result
Lecture	68	83,00 %	75 %	Effective
Audiovisual	68	87,90 %	75 %	Effective
Difference Persentase		4,9 %		

Table 7. Multivariat analysis

Variable equation in	Nilai koefisien	Konstanta	Category	Odd ratio
Health Promotion Method	1,507	1,306	0 = lecture	4,514
			1 = Audiovisual	
Age	-1,070		0 = 10-11 years	0,343
			1 = >12 years	
Formula	$Y = 1,306 + 1,507 (X_1) - 1,070 (X_2)$			