



## **The Influence of Health Promotion Through Media on Students' Knowledge About TB Disease in State Middle Schools in Makassar City**

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### **ABSTRACT**

TB treatment is a long-term type of treatment. Usually the duration of treatment can last 3-9 months. During treatment, sufferers must be diligent and disciplined in taking medication and regularly check with the doctor to ensure the progress of treatment until the sufferer recovers completely. The aim of this research is to determine the effect of health promotion through the media on students' knowledge about TB disease in Makassar City State Middle Schools in 2020.

The type of research used was a quasi experimental study with a pretest posttest group with control design where the sample members in the intervention and control groups were carried out using purposive sampling, the sample size was 70 students with 35 students in each group. Results: There were differences in knowledge about TB disease in students before and after being given health promotion in both the intervention group ( $p= 0.000$ ) and the control group ( $p= 0.036$ ). Health promotion through the media gave higher results, namely 50.33 compared to leaflet media 28.67 with a knowledge difference of 21.66. Conclusion: The results of the study show that media is more influential than leaflet media on students' knowledge about TB disease in Makassar City State Middle Schools.

**Keywords:** Influence, Health Promotion, Media, Students, Tuberculosis

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### **1. Introduction**

Tuberculosis is an infectious disease that attacks the lungs with very varied symptoms, usually caused by Mycobacterium Tuberculosis (Mansjoer, 1999 in Padila, 2013).





Tuberculosis is an infectious and deadly disease generally caused by Mycobacterium Tuberculosis Handayani, (2014).

### 1. Etiology of Tuberculosis

This disease is caused by infection with the Mycobacterium Tuberculosis germ which can attack the lungs or other body organs such as the lymph nodes, intestines, kidneys, uterus, bones and even the brain. Handayani, (2014). Mycobacterium Tuberculosis bacteria are rod-shaped and acid-resistant, with a length of 1-4  $\mu\text{m}$  and a thickness of 0.3-0.6  $\mu\text{m}$ . Another characteristic of these germs is that they are aerobes that like areas with lots of oxygen and areas that have high oxygen content, namely the lungs, this area has a predilection for tuberculosis (Padila, 2013).

### 2. Classification of Tuberculosis

#### a) Primary Tuberculosis

It is said to be primary tuberculosis if it occurs during the first infection. Individuals who are exposed to tuberculosis bacilli for the first time, initially only react as if there was a foreign object in the respiratory tract, this is because the body has no experience with tuberculosis bacilli (Nurjana et al., 2015).

#### b) Secondary Tuberculosis

It is said to be secondary tuberculosis when germs that are dormant in primary tuberculosis become active many years later as an endogenous infection that becomes adult tuberculosis (Nurjana et al., 2015).

### 3. Signs and Symptoms of Tuberculosis

Tuberculosis can be divided into general and specific signs and symptoms Sumiyati, Hastuti, (2018).

#### a. General

- 1) Not too high fever that lasts a long time, usually felt at night accompanied by night sweats. Sometimes fever attacks are like influenza and come and go.
- 2) Decreased appetite and weight.
- 3) Coughing for more than 4 weeks may be accompanied by blood.
- 4) Unpleasant feeling of malaise, weakness.



**b. Special**

- 1) Depending on which person's body is affected, if there is partial blockage of the bronchus (the tube that leads to the lungs) due to pressure on enlarged lymph nodes, it will cause a "wheezing" sound, a weakened breathing sound accompanied by shortness of breath.
- 2) If there is fluid in the cavity (covering the lungs), it can be accompanied by complaints of chest pain.
- 3) If it affects the bone, it will occur like a bone infection which at some point can form a channel that empties into the skin above it, at this outlet pus fluid will come out.
- 4) In children, it can affect the brain, called meningitis (inflammation of the lining of the brain), the symptoms are high fever, decreased consciousness and convulsions..

**4. Clinical manifestations of Tuberculosis**

Common symptoms of tuberculosis are cough for more than 4 weeks with or without sputum, malaise, flu symptoms, mild fever, chest pain, coughing up blood. (Mansjoer, 1999 in Padila, 2013). Other symptoms are fatigue, anorexia, weight loss (Luckman et al, 1993 in Padila, 2013). The most common complaints are:

**1) Fever**

The first attack of fever can recover, but sometimes the body heat reaches 40-41°C. Fever usually resembles influenza.

**2) Cough**

Coughing occurs due to irritation of the bronchi. Coughs are usually experienced for more than 4 weeks or even months. A cough usually starts as a dry cough (non-productive) then usually progresses to a productive cough (sputum).

**3) Out of breath**

Shortness of breath will be found in advanced tuberculosis disease where the irritation is already ½ part of the lung.

**4) Chest pain**



Chest pain occurs when inflammatory infiltration has reached the pleura, causing pleurisy.

#### 5) Malaise

Tuberculosis is a chronic inflammation, symptoms of malaise are often found in the form of anorexia, decreased appetite, headaches, muscle aches and night sweats. Symptoms of malaise become increasingly severe over time and occur intermittently and irregularly (Padila, 2013).

#### 5. Tuberculosis Prevention

The Indonesian Ministry of Health and WHO (2018) issued a health advisory to prevent one of the diseases, tuberculosis, known as cough etiquette. When a person coughs, up to 3500 particles are released from their mouth, while when they sneeze they emit 4500-1 million particles. Therefore, tuberculosis patients must wear a mask when talking, coughing or sneezing. The process of transmitting bacteria from one person to another can also be triggered by a weak immune system.

There are four steps to prevent airborne disease transmission. It sounds simple, but this step can prevent various types of airborne infectious diseases, one of which is tuberculosis (Ministry of Health of the Republic of Indonesia, 2018).

Steps for cough etiquette are as follows (Indonesian Ministry of Health, 2018):

- a. Cover your nose and mouth using a tissue/handkerchief or upper sleeve when coughing or sneezing.
- b. Throw away the used tissue in the trash.
- c. Wash your hands using running water and soap or alcohol-based hand sanitizer.
- d. Use a mask when you are sick or around sick people.

#### 6. Tuberculosis Treatment

TB treatment is a long-term type of treatment. Usually the duration of treatment can last 3-9 months. During treatment, sufferers must be diligent and disciplined in taking medication and regularly check with the doctor to ensure the progress of treatment until the sufferer recovers completely. The following are several





things that need to be considered in the treatment and care of TB (Rimbi, 2014:79-80):

- a. Take medication regularly and correctly according to doctor's recommendations for 6 consecutive months without interruption. If it is interrupted, TB germs will not die and will grow resistant to drugs, making TB more difficult to cure.
- b. Consume balanced nutritious food.
- c. All family members play an active role in supervising the patient to take TB medication so that he or she takes it regularly.
- d. Monitor the progress of treatment.
- e. Enough rest.

TB treatment is carried out by fulfilling 4 treatment principles. Anti-Tuberculosis Drugs (OAT) are the most important component in TB treatment. TB treatment is one of the most efficient efforts to prevent the further spread of TB germs. The following are 4 principles in carrying out TB treatment (RI Ministry of Health, 2014:20-21):

- a. Treatment is given in the form of an appropriate OAT guide containing a minimum of 4 types of appropriate medication.
- b. Given in the right dose.
- c. Swallow regularly and be supervised directly by the Medication Monitor (PMO) until completion of treatment.

Treatment is given over a sufficient period of time divided into initial stages and advanced stages to prevent recurrence. Tuberculosis disease can be transmitted through the air (droplet nuclei) when a TB patient coughs or sneezes, splashes of saliva containing Mycobacterium Tuberculosis bacteria are inhaled by other people when breathing. Apart from being transmitted when coughing and sneezing by pulmonary TB sufferers, tuberculosis can also be transmitted by TB sufferers when talking face to face. The incubation period for this disease is 3-6 months (Anggraeni, 2015).

## 2. Research Method





This research is experimental research with the research design used being a quasi experimental study with a pretest posttest group with control design. The research was conducted at State Middle Schools in Makassar City which were chosen deliberately or purposively sampling. This design uses a comparison group (control). Below is the research design as follows:

Treatment Group: X1 P0 X2

Control Group: X3 P1 X4

Figure 3.1 Research Design

Information :

- a. X1: Pretest to collect initial data regarding knowledge and attitudes before being given health promotion using the media.
- b. P0: Providing health promotion about TB disease to junior high school students using media.
- c. X2: Posttest final data collection regarding knowledge and attitudes after given health promotion using the media.
- d. X3: Initial pretest regarding previous knowledge and attitudes health promotion using leaflet media.
- e. P1: Providing health promotion about TB disease to junior high school students using leaflet media.
- f. X4: Posttest final data collection regarding changes in knowledge and attitude after health promotion using leaflet media.

### 3. Results And Discussions

#### a. Result

This research was conducted to determine the effect of health promotion through the media on junior high school students' knowledge about TB disease in Makassar City Public Middle Schools with the results of data processing and analysis as follows:

##### 1. Univariate Analysis

- a. Student Characteristics





The analysis used to describe the frequency distribution of each research variable using descriptive statistics, namely age, gender and knowledge of students at Makassar City State Middle School is as follows:

Table 1  
 Student Characteristics Based on Age and Gender  
 in the Intervention and Control Groups

Variable	Intervention (n=35)		Control (n=35)	
	Frequency (F)	Percent (%)	Frequency (F)	Percent (%)
<b>Age</b>				
11 years old			1	2,9
12 years old	15	42,9	11	31,4
13 years old	20	52,1	21	60,0
14 years			1	2,9
15 years			1	2,9
<b>Gender</b>				
Man	14	40,0	14	40,0
Woman	21	60,0	21	60,0

Table 4.1 shows that the age of students in the intervention group was mostly (52.1%) aged 13 years and most (60.0%) were female, while in the control group almost all (31.4%) students aged 13 were female. the majority (60.0%) were women.

Table 2  
 Description of Students' Knowledge About TB Disease in the Intervention Group Before and After Being Given Health Promotion Through Media

No	Knowledge Question Items about Tuberculosis (TB)	Before (%)		After (%)	
		False	True	False	True
1.	Definition of tuberculosis (TB)	17,1	82,9	2,9	97,1
2.	Causes of tuberculosis (TB)	22,9	77,1	11,4	88,6
3.	Tuberculosis (TB) can be transmitted through	5,7	94,3	2,9	97,1





4.	Tuberculosis (TB) disease	8,6	91,4	2,9	97,1
5.	is a disease	2,9	97,1	5,7	94,3
6.	Frequent general symptoms	85,7	14,3	11,4	88,6
7.	Indicated by TB sufferers	11,4	88,6	0	100,0
8.	Incubation period for TB disease	51,4	48,6	2,9	97,1
9.	If your tuberculosis disease is advanced then it will	77,1	22,9	2,9	97,1
10.	experienced further, it will be found	14,3	85,7	0	100,0

The results of the study found that of the 10 knowledge question items, the most incorrect answers were found in questions number 2 and 6, namely about the causes of TB and the incubation period for TB disease. However, there was a change after the wrong answer treatment was given to a decrease in question number 2 from previously 22.9% to 11.4% and question number 6 from previously 85.7% to 11.4%. In question number 8 there was an increase from 48.6% correct to 97.1% as well as in question number 9 from 22.9% to 97.1% correct.

Table 3  
 Description of Students' Knowledge About TB Disease in  
 the Control Group Before and After

No	Knowledge Question Items about Tuberculosis (TB)	Before (%)		After (%)	
		False	True	False	True
1.	Definition of tuberculosis (TB)	40,0	60,0	8,6	91,4
2.	Causes of tuberculosis (TB)	11,4	88,6	0	100,0
3.	Tuberculosis (TB) can be transmitted through	8,6	91,4	0	100,0





4.	Tuberculosis (TB) disease	8,6	91,4	2,9	97,1
5.	is a disease	25,7	74,3	5,7	94,3
6.	Frequent general symptoms	97,1	2,9	60,0	40,0
7.	indicated by TB sufferers	11,4	88,6	0	100,0
8.	Incubation period for TB disease	62,9	37,1	28,6	71,4
9.	Tuberculosis disease	80,0	20,0	65,7	34,3
10.	experienced further, it will be found	11,4	88,6	5,7	94,3

This research found that of the 10 knowledge questions, the most wrong answers were obtained in questions number 6, 8, and 9, namely about the incubation period for TB disease, steps in cough etiquette, and TB disease being more risky. However, after being given the leaflet media, there was a change in the percentage of students' knowledge about TB disease before and after. In question number 6, the number of errors decreased from 97.1% to 60.0% and the number of correct numbers increased from 2.9% to 40.0%. in question number 8 the number of errors increased from 62.9% to 28.6% and the number of correct numbers from 37.1% to 71.4%. Likewise, in question number 9, the number of errors was from 80.0% to 65.7%, the number of correct was 20.0% to 34.3%. Average Knowledge in the Intervention Group and Control Group This analysis was carried out to determine the average knowledge of students about TB disease before and after being given health promotion using media in the intervention group while in the control group using leaflet media. The average knowledge value can be seen in the table below:

#### b. Bivariate Analysis

Bivariate analysis was carried out to see the effect of health promotion





on junior high school students' knowledge about TB disease before and after being given media and leaflets.

Based on the data normality test using the Kolmogorov-Smirnov test, the data obtained was not normally distributed so that the dependent test carried out was the Wilcoxon test. Meanwhile, the independent test used was the Mann Whitney test, carried out to find out which group had the most influence on junior high school students' knowledge about TB disease in Makassar City State Middle Schools in 2020.

Table 4

The Effect of Health Promotion on Students' Knowledge About TB Disease Before and After Being Given Media and Leaflets

Group	Mean Rank		P*
	Before	After	
Intervention	42,33	50,33	0,00 0
Control	20,67	28,67	0,03 6
P**	0,003	0,000	

P\* t test dependent P\*\* t test independent The table above shows that there was an increase in knowledge scores with a mean rank for the intervention group of (50.33) while the control group was (28.67) with a difference in mean rank of (21.66). The results of statistical tests obtained a value of (p= 0.000) for the intervention group while the value obtained for the control group was (p=0.036). From these results, it can be concluded that the media has more influence in increasing students' knowledge about TB disease compared to leaflet media.

## b. Discussion

The discussion will describe the homogeneity of respondents, the meaning of research results and compare them with related theories or previous research, as well





as discussing the results that have been described in accordance with the research objectives.

At the beginning before the research, the intervention group and control group were homogeneous. Researchers chose SMP Negeri 15 Makassar City as the intervention group because it is a community health center area with the highest TB cases based on data from the Makassar City Health Service. Meanwhile, SMP Negeri 17 served as the control group because the locations of the SMPs were far apart. This was intended so that control group respondents were not exposed to research information in the intervention group so that it did not affect the knowledge of control group students. According to the school, the intervention group and control group had never received information about TB disease from anywhere before the research was conducted.

The discussion of the research results was carried out to determine student characteristics, students' knowledge about TB disease at Makassar City State Middle Schools and the influence of the media on students' knowledge about TB disease at Makassar City State Middle Schools.

#### 1. Characteristics of Middle School Students in Makassar City

Characteristics of students in this study based on age, some (52.1%) were 13 years old in the intervention group, while in the control group almost all (31.4%) students were 13 years old. This is in line with research (Noviana & Fuadi Rahman (2013), which states that the characteristics of junior high school students aged 11-15 years are the period when a person's character is formed, trust in friends and high curiosity. The gender in this study was mostly 60.0% female in the intervention and control groups, the same as in Handayani's research , (2014) the number of women was 88.6% who stated that gender differences did not interfere with the course of the research, so that the final objective of determining the influence of media on knowledge between the intervention group and the control group could be achieved.

#### 2. Knowledge of Middle School Students in Makassar City





This research shows that of the 10 knowledge question items in the intervention group, the highest number of incorrect answers were found in questions number 2 and 6, namely about the causes of TB and the incubation period for TB disease, while in the control group of the 10 question items, the highest number of incorrect answers were obtained in question number. 6, 8, and 9, namely about the incubation period for TB disease, steps in cough etiquette, and the risk of TB disease. This is because the ability to think between one student and another varies so that there are differences in the way of understanding the information provided by the researcher.

Students' knowledge in the intervention group through the media before being given health promotion (pretest) had an average score of (7.20). After being given health promotion (posttest) the average score increased (9.63). Meanwhile, in the control group using leaflet media at the time (pretest) the average value was (6.37) and at the time (posttest) the average value was (7.80). This shows that the average knowledge of students in the intervention group is higher compared to the control group.

In line with research conducted by Noviana & Faudi Rahman (2013), there is an average difference between the experimental class and the control class. It can be concluded that the average score of students in the class that uses the learning model with the help of teaching aids is 72.644. The results of this research are supported by research conducted by Apria (2019) which proves that there has been an increase in the average learning outcomes of students who use the model assisted by image media reaching (80.68) while the average score for classes taught using the direct instruction learning model assisted by image media. reached the average (75.28).

Notoatmodjo (2012), stated that knowledge is the result of knowing and occurs after someone senses a certain object. Sensing occurs through the five human senses, namely sight, feeling, smell, taste and touch. Knowledge can be obtained, among other things, through education, both curricular, non-curricular and extracurricular. Knowledge can also be obtained from other people's knowledge, such





as hearing, seeing directly and through communication tools such as television, radio, books and so on (Notoatmojo, 2012).

A high sense of desire can influence students in getting information about tuberculosis so that it can be prevented. Increased knowledge is not absolutely obtained from formal education alone, but can be obtained through non-formal education (Notoatmodjo, 2012).

### 3. The Influence of Media on Students' Knowledge About TB Disease in Public Middle Schools in Makassar City

The results of statistical tests obtained a value ( $p=0.000$ ) in the intervention group using media and a value ( $p=0.036$ ) in the control group using leaflet media. So  $p = \text{value} < 0.05$ , meaning there is an influence of health promotion using media and leaflets. In this study, an independent test was carried out using Mann Whitney to find out which group had the most influence on students' knowledge about TB disease so that the average score obtained for the intervention group using media was 9.63, while the average score for the control group using leaflet media was 9.63. 7.80, which means that health promotion with the media is more influential than leaflet media on students' knowledge about TB disease in Makassar City State Middle Schools.

In line with the research of Noviana & Faudi Rahman, (2013), data analysis in the t test using SPSS tools showed that the Sig. (2-tailed) value for the experimental class and control class was  $<0.05$ , meaning there was an average difference between the experimental class and the control class. control. Thus it can be concluded that the learning model is effectively used in geometry material. This is in line with Apria's (2019) research, the results of the calculations obtained calculated 2.786 and table 2.004 at a significant level of 0.05 calculated  $>$  table ( $2.786 > 2.004$ ) thus it can be seen that  $H_0$  is rejected while  $H_1$  is accepted. From this calculation, it shows that there is an influence of the learning model assisted by image media on the science learning outcomes of class IV MIN 10 Bandar Lampung.





Supported by research by Mutiarani Hidayat & Waryana, (2018) after being given counseling using 10.78 leaflets and video media.

The research results show ( $p=0.002$ ), meaning that video media is more influential than leaflet media.

Leaflet media is a form of conveying information and health messages through folded sheets. The information content can be in the form of sentences or images, or a combination (Macfoedz and Suryani, 2008). However, the weakness of leaflets lies in the limited information conveyed and their use is only visual (Rokhmawati, 2015).

As technological advances increase, it demands a person's creativity in using media and the more creative a person is in dealing with the form of promotional media used, the more effective it will be and can meet the target. Herwandannu, (2018). Media is an arrangement of word boxes like a crossword puzzle game, thereby increasing accuracy and making students think critically, because students are required to look for the most appropriate answers and must be observant in looking for answers that are already in the word boxes on the worksheet (Noviana, 2019). This game teaches students how to understand TB disease. The advantage of this game is that it is easy to play and encourages students not only to play but also requires students to learn with their peers. The steps in this method are: first, the facilitator delivers material that is appropriate to the objectives to be achieved, namely about TB disease. After that, the facilitator divides into several groups, as a learning process by discussing or working together. Then the facilitator distributes media sheets according to the instructions. Then students answer the questions by circling the letter of the answer that is considered correct in the box vertically, horizontally.

#### 4. Conclusion

The conclusions of the research entitled the influence of health promotion through the media on students' knowledge about TB disease in Makassar City State Middle Schools, are:





1. Characteristics of respondents based on age in the intervention group, mostly 13 years old and mostly female, while in the control group almost all students were aged 13 and mostly female.
2. Description of the increase in students' knowledge scores before and after being given health promotion through the media with a knowledge value (mean = 9.63) and health promotion through leaflet media with a knowledge value (mean = 7.80).
3. There is a difference in the average knowledge of students before and after being given media with a knowledge value ( $p = 0.000$ ).
4. There is a difference in the average knowledge of students before and after being given leaflet media and the knowledge value ( $p = 0.036$ ).
5. Media is more influential than leaflet media. This means that there is an influence of health promotion through word square media on students' knowledge about TB disease in Makassar City State Middle Schools.

### **Compliance with ethical standards**

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### **Disclosure of conflict of interest**

This research collaboration is a positive thing for all researchers so that conflicts, problems and others are absolutely no problem for all writers.

### **Statement of informed consent**

Every action we take as authors is a mutual agreement or consent.

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