



Preventing Pulmonary Tuberculosis in Children By Empowering The Kids Cadres

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<p>Track Record Article</p> <p>Accepted: 18 September 2023 Revised: 10 August 2023 Published: 20 September 2023</p> <p>How to cite : Ashar, Y. K., Wahyudi, & Siregar, P. A. (2023). Preventing Pulmonary Tuberculosis in Children By Empowering The Kids Cadres. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 5(4), 1631–1641.</p>	<p style="text-align: center;">Abstract</p> <p><i>According to World Health Organization (WHO) Pulmonary tuberculosis (pulmonary TB) is an infectious disease caused by tuberculosis germs (Mycobacterium tuberculosis). This disease is still a global health problem. It is estimated that one third of the world's population has been infected with pulmonary TB, where the majority of pulmonary TB sufferers are of productive age (15-50 years). Pulmonary TB is chronic and is typically characterized by the formation of granulomas and tissue necrosis. Pulmonary TB can be transmitted through the air, when someone with active TB in the lungs coughs, sneezes or talks. The research method used in this research is quasi experimental research with a one group pretest-posttest research design. The location of the research was in Aceh Singkil Regency. The research was carried out from July to December 2023. The research sample was 30 representatives of junior high school students based on school recommendations. The research results showed that 23 (38.3%) respondents had knowledge about eating nutritious food, and 25 (83.3%) respondents had the attitude that if they were suffering from TB, they would go to the health center. The conclusion is that students' knowledge and attitudes have increased by being given Toss TB training, especially knowledge about TB being caused by heredity and consuming nutritious food.</i></p> <p>Keywords: <i>Knowledge, Management, Attitudes, Children's Pulmonary Tuberculosis</i></p>
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INTRODUCTION

Tuberculosis (TB) is an infectious disease that can cause the 13th largest number of deaths in the world with 10 million people suffering from TB worldwide with a prevalence of 86% (WHO, 2020). In 2018, Indonesia had the highest TB case rate in the world with 969 ribmeu cases and 93 thousand deaths per year after India. This is equivalent to 11 deaths per hour (Indonesian Ministry of Health, 2020b). Based on the 2018 Basic Health Research (Riskesdas) report, the prevalence of TB in Indonesia increased by 0.42% (Ministry of Health of the Republic of Indonesia, 2018).

Mycobacterium tuberculosis (M.tb) bacteria, which causes tuberculosis, can spread to human organs through the lymph nodes and bloodstream. Tuberculosis bacteria spread through the air. If pulmonary TB is not prevented and treated quickly it can cause severe respiratory problems and even death (Ministry of Health of the Republic of Indonesia, 2020). TOSS TB, also known as "Find, Treat Until Heal", is one of the government programs dealing with tuberculosis in Indonesia. TOSS TB is a campaign or movement that aims to find and find symptoms of tuberculosis in the community, treat tuberculosis appropriately and quickly, and

monitor tuberculosis treatment until it is cured (Ministry of Health of the Republic of Indonesia, 2016).

In 2023, the TOSS TBC target in tackling TB incidents and TB deaths in Indonesia will decrease by 90%. The TOSS TB program also increases public knowledge about tuberculosis and how to prevent it, so that it can form a society that cares about tuberculosis. TOSS TB education for cadres aims to increase cadres' knowledge about tuberculosis and encourage tuberculosis patients to follow treatment until they recover completely (Pamela Sari et al., 2019).

Tuberculosis or commonly abbreviated as TB is a chronic disease caused by infection with the *Mycobacterium Tuberculosis* complex which is transmitted through sputum (droplets) from TB sufferers to other susceptible individuals (Ginanjar, 2008). The *Mycobacterium Tuberculosis* bacteria is a tubercle bacillus which is a slender, thin, acid-resistant rod or often called BTA (acid-resistant bacteria). It can be straight or bent and is about 2-4 μm long and 0.2–0.5 μm wide and joins to form a chain. The size of these bacteria depends on environmental conditions.

Tuberculosis is an infectious disease caused by germs from the *Mycobacterium* group, namely *Mycobacterium tuberculosis*. There are 4 stages of the natural course of the disease. These stages include exposure, infection, illness and death.

Exposure stage, exposure to infectious TB patients is a condition for infection. Once infected, there are several factors that determine whether a person will become infected, become sick and possibly die from TB. The opportunity for increased exposure is related to the number of infectious cases in the community, the opportunity for contact with infectious cases, the level of infectiousness of the phlegm of the source of infection, the intensity of the cough of the source of infection, the closeness of contact with the source of infection, the length of time in contact with the source of infection, and environmental factors such as the concentration of germs in the air (ventilation, Ultra violet light, and air filtration).

In the infection stage, the body's immune reaction will occur 6-14 weeks after infection. There are two reactions, namely local and general. The immunological reaction (local) is that TB germs enter the alveoli and are captured by macrophages and then an antigen-antibody reaction takes place. An immunological reaction (general) is a positive Tuberculin test result (delayed hypersensitivity). Lesions generally heal completely, but germs may remain alive in the lesion (dormant) and one day they can become active again. Spread via the bloodstream or lymph can occur before healing of the lesion.

In the disease stage, only about 10% of those infected with TB will become sick with TB. The risk factors for becoming sick with TB depend on the concentration/amount of germs inhaled, the length of time since infection, age, level of endurance, and a person's body. In the death stage, 50% of TB patients without treatment will die. Risk factors for death due to TB are caused by late diagnosis, inadequate treatment, poor initial health conditions or comorbidities (Pangistu, 2019).

Health education about TB disease is one of the steps taken to prevent the spread of TB. Health education is basically the dissemination of health-related information to the public, organizations or individuals. By providing health education, tuberculosis transmission can be controlled (Syaripi et al., 2018). Health cadres play a big role in TB prevention efforts; In fact, the effectiveness of TB control depends on the work of health cadres in the community. The importance of cadres in stopping the spread of TB is based on a number of reasons. This research shows that age, gender, education, occupation, monthly salary, number of years as a cadre, level of expertise, or exemplary behavior do not influence cadre performance. Several factors, such as the prevalence of rural vs. urban areas, public knowledge and concerns about a disease, in this case TB, and the lifestyle of local people, can influence this (Ratnasari, Yunianti & Marni, 2020).

Searching for and identifying TB symptoms in the community, providing effective therapy, and monitoring the progress of TB treatment until cure is achieved are all stages followed by TB TOSS. Comprehensive, integrated and synergistic program concepts and tactics to eradicate TB.

METHODS

The type of research used in this research is quasi experimental research with a one group pretest-posttest research design. This research will be conducted in Aceh Singkil Regency. The reason for choosing the research location was because of the high number of TB cases of 117 cases. This research is planned to be carried out from July to December 2023. The research subjects and participants are students of junior high school Negeri 1 Aceh Singkil, junior high school Negeri 2 Aceh Singkil, junior high school Negeri 3 Dharma Caraka, junior high school Private Bintang Laut, junior high school Private, junior high school Darma Kasih Aceh Singkil, junior high school Swasta Aceh Singkil Hope, as many as 2.472 students. The research sample was 30 representatives of junior high school students based on school recommendations.

The research instrument used a closed questionnaire containing questions about knowledge, attitudes, actions and skills in preventing and controlling pulmonary TB in children. This research will use quantitative analysis by looking at frequency and percentage distributions. The statistical test used is the Dependent t Test with the help of JASP version 16 computer software. Before the Dependent t Test is carried out, the Shapiro Wilk normality test is carried out with the aim of finding out the distribution of data in the variables that will be used in the research is normally or not normally distributed, if the data not normally distributed then use the Wilcoxon Test.

RESULTS

Table 1. Frequency Distribution of Respondents' Knowledge About TB Due to Heredity

TB is caused by heredity	Criteria				Total	
	Pretest		Post Test		N	%
	n	%	n	%		
Wrong	30	50	27	45	57	95
Correct	0	0	3	5	3	5
Total	30	50	30	50	60	100

Based on the results of the table above, it can be seen that from a study that describes TB as being caused by heredity. This data is based on the Pretest results of a total of 30 (50%) respondents' answers, it was found that all of them answered incorrectly. Based on the post test results from a total of 30 (50%) respondents' answers, 27 (45%) respondents answered wrong, 3 (5%) respondents answered correctly.

Table 2. Frequency Distribution of Respondents' Knowledge About Eating Nutritious Foods

Eat nutritious food	Criteria				Total	
	Pretest		Post Test		N	%
	n	%	n	%		
Wrong	8	13.3	7	11.7	14	25
Correct	22	36.7	23	38.3	45	75
Total	30	50	30	50	60	100

Based on the results of the table above, it can be seen that from a study that illustrates Eat nutritious food. This data is based on the Pretest results from a total of 30 (50%) respondents' answers, it was found that 8 (13.3%) respondents answered incorrectly, 22 (36.7%) respondents answered correctly. Based on the post test results from a total of 30 (50%) respondents' answers, it was found that 7 (11.7%) respondents answered incorrectly, 23 (38.3%) respondents answered correctly.

Table 3. Frequency Distribution of Respondents' Attitudes Towards Tuberculosis (TB) and Treatment Seeking Behavior

Variables	N	%
Distance to Yankees		
< 1 km	17	56.7
1-< 3 km	6	20
3-5km	4	13.3
> 5 km	3	10
TB information from officers		
Don't know	11	36.7
Know	19	63.3
TB information from radio		
Don't know	30	100
TB information from TV		
Don't know	20	66.7
TB Information from Magazines		
Don't know	28	93.3
Know	2	6,7
TB Information from Brochure		
Don't know	26	86.7
Know	4	13.3
TB Information from Religious Figures		
Don't know	29	96.7
Know	1	3.3
TB information from Teachers		
Don't know	21	70
Know	9	30
TB Information from Friends		
Don't know	22	73.3
Know	8	26.7
TB information from others		
Don't know	30	100
Health workers		
No	2	6,7
Yes	28	93.3
Pairs		
No	24	80
Yes	6	20
Parent		
No	6	20
Yes	24	80
Child		
No	27	90
Yes	3	10
Brother or sister		
No	21	70
Yes	9	30
Family		
No	23	76.7
Yes	7	23.3
Friend		
No	24	80
Yes	6	20

Variables	N	%
Government Hospital		
No	18	60
Yes	12	40
Private Hospital		
No	22	73.3
Yes	8	26.7
Public health center		
No	5	16.7
Yes	25	83.3
Clinic		
No	21	70
Yes	9	30
Midwife Practice		
No	24	80
Yes	6	20
Hospital/Clinic		
No	17	56.7
Yes	13	43.3
Alternative medicine		
No	26	86.7
Yes	4	13.3
Self-Treatment		
No	27	90
Yes	3	10
Go to alternative medicine		
Yes	5	16.7
No	25	83.3
Self-Treatment		
No	30	100
Left		
No	30	100
Avoid other sufferers		
No	21	70
Yes	9	30
Afraid		
Yes (Negative)	30	100
Startled		
Yes (Negative)	27	90
No (Positive)	3	10
Embarrassed		
Yes (Negative)	21	70
No (Positive)	9	30
Inferiority		
Yes (Negative)	20	66.7
No (Positive)	10	33.3
Sad		
Yes (Negative)	30	100
Hopeless		
Yes (Negative)	23	76.7
No (Positive)	7	23.3

Based on the table above, it is known that respondents with distance to Yankes < 1 km were 17 (56%) respondents, 1-< 3 km were 6 (20%) respondents, 3-5 km were 4 (13.3%) respondents, and > 5 km as many as 3 (10%) respondents. Of respondents with TB information from officers, it was found that 11 (36.7%) answered they didn't know, and 19 (63.3%) answered they knew. Of respondents with TB information from radio, it was found that a total of 30 (100%) answered they didn't know. Respondents with TB information from TV found that 20 (66.7%) answered they didn't know, while 10 (33.3%) answered they knew. Of respondents with TB information from magazines, it was found that 28 (93.3%) answered they didn't know, while 2 (6.7%) answered they knew. Of respondents with TB information from the brochure, it was found that 26 (86.7%) answered they didn't know, while 4 (13.3%) answered they knew. Of respondents with TB information from religious figures, it was found that 29 (96.7%) answered they didn't know, while 1 (3.3%) answered they knew. Of respondents with TB information from teachers, it was found that 21 (70%) answered they didn't know, while 9 (30%) answered they knew. Of the respondents with known TB information from friends, 22 (73.3%) answered they didn't know, while 8 (26.7%) answered they knew. Respondents with TB Information from Others found that a total of 30 (100%) answered they did not know, Know if you have TB, with whom to discuss it. With Health Workers, 28 (93.3%) respondents answered yes, while only 2 (6.7%) respondents answered no. With a partner, only 6 (20%) respondents answered yes, while 24 (80%) respondents answered no. With younger siblings or older siblings, only 9 (30%) respondents answered yes, while 21 (70%) respondents answered no. With family, only 7 (23.3%) respondents answered yes, while 23 (76.7%) respondents answered no. With Friends, only 6 (20%) respondents answered yes, while 24 (80%) respondents answered no. Know If You Have TB, What Do You Do. To the Government Hospital, 12 (40%) respondents answered yes, while 18 (60%) respondents answered no. To a private hospital, 8 (26.7%) respondents answered yes, while 22 (73.3%) respondents answered no. To the Community Health Center, 25 (83.3%) respondents answered yes, while 5 (16.7%) respondents answered no. To the doctor's practice, 9 (30%) respondents answered yes, while 21 (70%) respondents answered no. To Midwife Practice, 6 (20%) respondents answered yes, while 24 (80%) respondents answered no. To the clinic, 13 (43.3%) respondents answered yes, while 17 (56.7%) respondents answered no. To Alternative Medicine only 4 (13.3%) respondents answered yes, while 26 (86.7%) respondents answered no. With self-medication, only 3 (10%) respondents answered yes, while 27 (90%) respondents answered no. Know if someone in your family suffers from TB, what to do. By going to alternative medicine, 25 (83.3%)

respondents answered no, and only 5 (16.7%) respondents answered yes. With self-treatment, a total of 30 (100%) respondents answered no. By being left alone, 30 (100%) respondents answered no. By Avoiding Other Sufferers, 21 (70%) respondents answered no, and only 9 (30%) respondents answered yes.

Respondents with feelings about suffering from TB were found to have a feeling of fear. A total of 30 (100%) respondents answered yes (negative). Feeling shocked, 27 (90%) respondents answered yes (Negative), and only 3 (10%) respondents answered no (Positive). Having a feeling of shame, 21 (70%) respondents answered yes (Negative), and only 9 (30%) respondents answered no (Positive). Having a sense of low self-esteem, 20 (66.7%) respondents answered yes (Negative), and only 10 (33.3%) respondents answered no (Positive). Having a feeling of sadness, a total of 30 (100%) respondents answered yes (negative). Having a sense of hopelessness, 23 (76.7%) respondents answered yes (Negative), and only 7 (23.3%) respondents answered no (Positive).

DISCUSSION

The source of infection is smear positive TB sufferers, who can infect people around them, especially close contacts. The infectious power of a TB sufferer is determined by the number of germs contained in the sufferer's lungs, the spread of germs in the air which are expelled with phlegm in the form of droplets in the air around the TB sufferer. TB sufferers who contain a lot of germs that can be seen directly with a microscope in their sputum preparations (BTA positive sufferers) are very contagious. Patients whose germs are not found using a microscope in their sputum preparations (BTA negative sufferers) are not very contagious) (Ministry of Health of the Republic of Indonesia, 2005).

Nutritional status is an important factor in the occurrence of Tuberculosis. The body is able to fight infection if it is accompanied by consuming food in amounts that suit the body's needs. Nutritional status can measure the ability to fight bacterial infections from tuberculosis. If a child has good nutrition, the child is able to prevent the spread of disease in his lungs. On the other hand, malnourished children can suffer from pulmonary tuberculosis because the surface of the cavity is attacked by many bacteria, one of which is tuberculosis bacteria.

There are two important factors in the transmission of pulmonary TB, namely the patient causing the agent and the environment around the patient. Agents in the air are caused by the behavior of sufferers who spit in random places and the irregularity of treatment, environmental factors of sufferers, including a bad housing environment, can transmit TB to

family members. This is all due to the lack of knowledge of TB sufferers and family members of TB sufferers about the dangers and prevention of TB transmission.

From research(Mone et al., 2023)explains that treatment seeking behavior is a person's attempt to overcome the health problems they are experiencing or the illness they are suffering from so that they are cured by visiting a treatment service facility. Treatment seeking behavior is one of the decisions a person will make when facing a health problem, therefore this behavior is closely related to society's perception of the concept of health and illness.

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Treatment seeking behavior that can be carried out, especially in people who are suspected of pulmonary TB, starts from no action or doing nothing, self-treatment, namely self-medication, remedies or traditional treatments such as shamans, chemist shops or buying over-the-counter medicines, and professional treatment or seek treatment at a health care facility.

Treatment behavior and health services are related to responses to illness itself, this can be related to social stigma. Social stigma is very crucial because it can lead to a person's low self-esteem in the eyes of society. The impact of low self-esteem in Tuberculosis sufferers causes patients to behave negatively, namely not maintaining personal hygiene, not implementing cough etiquette, and not complying with the treatment process.

There is a feeling of shame because TB disease is contagious so they tend to close themselves off, don't make eye contact, look down, only answer when asked, feel they are worthless, they also feel avoided and ostracized so they feel embarrassed to often come to the health center.(Hutagalung et al., 2022).

According to research(Listyarini, 2021)The TB control strategy is known as DOTS (Directly Observed Treatment Short-course). The main focus of DOTS is patient discovery and cure, priority is given to infectious type TB patients. This strategy will break the chain of TB transmission and thereby reduce the incidence of TB in the community. The best effort to prevent TB transmission is to find and cure patients through treatment compliance. Current treatment for TB patients is with a Fixed Dose Combination (FDC) package in the form of

CombiPax which has other side effects (Ministry of Health, 2011). To ensure patient compliance with swallowing medication, treatment needs to be carried out under direct supervision (DOT) by a Drug Swallowing Supervisor (PMO) (Ministry of Health, 2016). Dewanty's research (2017) proves that treatment non-compliance is 63.63%. Compliance plays an important role in the treatment process for pulmonary TB sufferers. Patients who do not adhere to treatment generally complain of unpleasant side effects on the body.

The health facilities visited by a small number of respondents apart from the Community Health Center were private health institutions, this was because the distance was closer to the respondent's house and the queues were not too long even though the cost of treatment was more expensive, making respondents prefer private health institutions. However, quite a few respondents still choose the Puskesmas because the treatment period is quite long, namely six months and respondents get free treatment if they go to the Puskesmas. The majority of TB sufferers choose to go to health services, both government and private, in search of health services.

CONCLUSIONS

Students' knowledge increased by being given Toss TB training, especially knowledge about TB caused by heredity and consuming nutritious food and students' attitudes improved when they were given Toss TB training, especially their attitudes about getting information from health workers and their behavior if they had TB, discussing it with health workers.

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