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THE IMPACT OF AUDIOVISUAL MEDIA-BASED HEALTH EDUCATION ON CHILDREN'S KNOWLEDGE OF TUBERCULOSIS

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ABSTRACT

Tuberkulosis (TB) masih menjadi masalah kesehatan global. TB tidak hanya menyerang orang dewasa tetapi juga anak-anak. Terapi TB pada anak masih ditemukan mengalami kegagalan, yaitu: pengobatan yang tidak tepat, kegagalan pengobatan, dan penghentian pengobatan sehingga diperlukan edukasi yang tepat. Penelitian ini bertujuan untuk mengetahui dampak pendidikan kesehatan berbasis media audiovisual terhadap pengetahuan anak tentang tuberkulosis. Penelitian ini merupakan penelitian pra eksperimen dengan rancangan *one group pre-test post-test.* Populasi dalam penelitian ini sebanyak 60 siswa. Data dianalisis menggunakan uji statistik *paired t-test*. Hasil penelitian menunjukkan bahwa terdapat dampak yang signifikan antara sebelum dan sesudah diberikan pendidikan kesehatan berbasis media audiovisual (p-value = 0,001). Responden yang memiliki pengetahuan baik sebelum intervensi sebanyak 23 orang (38,3%) meningkat menjadi 58 orang (96,7%) setelah intervensi, sedangkan responden yang memiliki pengetahuan cukup sebelum intervensi sebanyak 33 orang (55%) menurun menjadi 2 orang (3,3%) setelah intervensi. Tidak ada responden yang termasuk dalam kategori kurang pengetahuan setelah dilakukan intervensi. Hasil ini menunjukkan bahwa pendidikan kesehatan dengan media audiovisual memiliki pengaruh terhadap pemahaman anak tentang tuberkulosis. Disarankan kepada tenaga kesehatan untuk memberikan pendidikan kesehatan berkelanjutan tentang TB pada anak menggunakan media audiovisual guna meningkatkan kewaspadaan terhadap ancaman tuberkulosis.

Keywords : Anak-anak; Audiovisual; Pencegahan TB; Pengetahuan

ABSTRACT

Tuberculosis (TB) continues to be a global health concern. TB does not only harm adults, but also children. Treatment of TB in children often fails due to incorrect therapy, treatment resistance and discontinuation of treatment. Therefore, proper education is required. This study aimed to determine the impact of audiovisual media-based health education on children's knowledge of tuberculosis. This study was a pre-experiment with one group pre-test post-test design. The population in this study was 60 students. Data were analysed using the paired t-test statistical test. The results showed that there was a significant difference between before and after being given audiovisual media-based health education (p-value = 0.001). The number of respondents who had good knowledge before the intervention was 23 people (38.3%) increasing to 58 people (96.7%) after the intervention, while respondents who had sufficient knowledge before the intervention were 33 people (55%) decreasing to 2 people (3.3%) after the intervention. No respondents were included in the category of lacking knowledge after the intervention. These results indicate that health education with audiovisual media impacts children's knowledge of tuberculosis. It is suggested that health professionals provide continuous education about TB in children using audiovisual media to raise awareness of the threat of tuberculosis.

Keywords: Audiovisual; Children; TB prevention; Knowledge

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INTRODUCTION

Tuberculosis remains a global concern due to its high mortality rate, especially in developing countries. It is caused by the infection of Mycobacterium tuberculosis. Currently, tuberculosis is regarded as a serious health threat that requires urgent attention. According to the 2022 Global Tuberculosis Report, an estimated 10.6 million people worldwide had tuberculosis in 2021 (WHO, 2022). About 11% of children under the age of 15 were affected, while 56.5% of female and 32.5% of male were also diagnosed with the disease. In 2021, the number of tuberculosis cases, regardless of HIV status, did not exceed 1.6 million. Tuberculosis is the leading cause of death globally.

Indonesia is one of the countries with most affected by tuberculosis. In Indonesia, the number of TB cases among children increased significantly from 42,187 cases in 2021 to 100,276 cases in 2022, or more than 200 cases (RI, 2023). The most common case of tuberculosis among children is found in Java Island. The Health Department of Central Java shows that in 2022, there were 14.242 cases of tuberculosis in children, with a 21% fatality rate. The diagnosis of tuberculosis in children is challenging because of the variety of symptoms and the lack of signs and symptoms. Thus, to prevent and disrupt the chain of TB disease in children, elementary school students received education based on audiovisual media.

Although school-aged children, the ages of 5-12, have prominent characteristics such as having a high curiosity, highlighting talents in learning, they also have a resistance that is vulnerable to health problems (Purba et al., 2022). Children are accustomed to socializing in the home, school, and play environments, thus requiring them to be able to behave in a clean and healthy lifestyle (PHBS) and avoid disease and even death. Surveillance data showed that school students are at high risk of contracting TB. Schools are the most common gathering places reported as places of community-based TB transmission (Yanti et al., 2022). TB can easily spread among students and trigger the spread of TB in schools (Yanti et al., 2022).

Tuberculosis is a curable disease, its treatment is complex and prolonged, requiring considerable commitment from the patient (Addo et al., 2022). The cause of TB transmission is that patients do not have knowledge about the causes, transmission and duration of TB treatment (Lolong et al., 2021). One effort that can be made to increase knowledge is through health education. Health education in an effort to increase knowledge about tuberculosis can use digital literacy (Holst et al., 2021) such as audiovisual media. To prevent and disrupt the chain of TB disease in children, health education can be provided through audiovisual media (Yanti et al., 2022). School-age children and adolescents in developing countries are age groups that are in great need of health education. Hence, it is highly recommended to provide health education and socialization to these age group (Shapu et al., 2020).

Efforts to improve students' knowledge and attitudes can be accomplished by providing interventions in the form of education. Health education is one form of effort that can be implemented to improve individual and community understanding physically, socially and environmentally regarding the occurrence of tuberculosis in children (Chakaya, 2021). Therefore, researchers conducted audiovisual media-based health education to determine its impact on tuberculosis knowledge in children.

RESEARCH METHODS

This study was conducted using a pre-experimental approach with a one group pre-test-post-test design without a control group. The population in this study consisted of students from grades IV, V and VI at SDN Gedawang 01 Semarang who met the inclusion criteria, which are the ages of 10-13, in a good health and willing to follow the whole research process. A simple random sampling technique was used, resulting in a sample of 60 respondents. Subjects were given a pre-test questionnaire followed by health education with animated video about TB, and a post-test questionnaire after being given a 5-minute animated video about TB created by the researcher. The questionnaire used in this study was an article on TB prevention in children (Muawizah, 2021)with a validity value of 0.628 and reliability of 0.744. Data were analysed using *paired t-test*. Data processing using SPSS 22. This research complies with ethical standards set by the Health Research Ethics Committee of the Semarang Ministry of Health Polytechnic and has passed the ethical test with number 0659/EA/KEPK/2024.

RESULTS AND DISCUSSION

Respondent Characteristics

The total number of respondents in this study was 60, and the characteristics were gender and age. The percentage of respondents with these characteristics is presented in Table 1.

Table 1. Respondent Characteristics

No.	Variables		n	%
1	Gender	Male	29	48.3
		Female	31	51.7
2	Age	10 years	12	20
		11 years old	16	26.7
		12 years old	25	41.7
		13 years old	7	11.7

Table 1 shows that most respondents identified as female, with 31 individuals (51.7%) while 29 individuals (48.3%) identified as male. In terms of age, most respondents were 12 years old, totalling 25 individuals (41.7%), followed by 11 years old with 16 individuals (26.7%), 10 years old with 12 individuals (20%), and 13 years old with seven individuals (11.7%).

Overview of the Level of Knowledge About Tuberculosis in Elementary School Children

Knowledge about tuberculosis encompasses several aspects, including understanding its causes, symptoms, and prevention methods. Respondents' answers were categorized into three levels: not adequate, adequate, and good. A score of 76-100% indicates good knowledge, 56-75% indicates adequate knowledge, and below 56% indicates not adequate knowledge.

Table 2. Overview of Elementary School Children's Knowledge About Tuberculosis

Variables	Minimum Score	Maximum Score	Mean	SD	n
Knowledge					
Pre-Test	50	100	73.17	12.28	60
Post-Test	70	100	90.83	8.49	60

Table 2 shows that the result of the Pre-Test taken by the respondents was 73.17 in average and the Post-Test was 90.83 in average.

Table 3. Overview of Respondents According to the Category of Children's Knowledge About Tuberculosis

No.	Knowledge Category	n	%
1	*Pre Test*		
	- Not adequate	4	6.7
	- Adequate	33	55
	- Good	23	38.3
2	*Post Test*		
	- Adequate	2	3.3
	- Good	58	96.7

After grouping the respondents, the distribution of their knowledge during the pre-test showed that most fell into the sufficient category with 33 individuals (55%). In the good category, there were 23 individuals (38.3%), while the remaining 4 individuals (6.7%) were in the less category. During the post-test, the majority of respondents fell into the good category, with 58 individuals (96.7%), while only 2 individuals (3.3%) were in the sufficient category.

The data in Table 3 shows that, before treatment, the level of correct knowledge was only 38.3%. This increased by 58% after treatment through education with animated videos. These results indicate that using animated videos for education can enhance respondents' knowledge.

Table 4. Differences in Average Knowledge of Children About Tuberculosis

Variables	Mean	SD	*p-value*	n
Knowledge				
Pre-Test	73.17	12.28	0.001	60
Post-Test	90.83	8.49		

The analysis revealed an average knowledge score about tuberculosis among elementary school children during the pre-test, with 60 respondents scoring 73.17% and a standard deviation of 12.28. The lowest score was 50%, while the highest was 100%. During the post-test involving 60 respondents and utilising audiovisual media, the average knowledge score increased to 90.83% with a standard deviation of 8.49%. Results from the paired T-Test showed a p-value of 0.001, less than 0.005, indicating a significant impact in knowledge before and after the health education intervention using audiovisual media. This demonstrated a significant impact of the treatment on the participants' knowledge scores.

Characteristics of Respondents at SDN Gedawang 01 Semarang City

The study results indicated that most respondents were female, totalling 31 people (51.7%), while the remainder were male. This shows that boys and girls had equal opportunities in the study and received the same health education. The participation of both genders also suggests that health information shared through any media, including audiovisual formats, can be accessed by all children, regardless of gender.

Based on age distribution, the majority of respondents were 12 years old (41.7%), which was the highest age, followed by 10 years old (20%) as the lowest age. Elementary school age is a crucial period for children to learn and develop a basic understanding of health. At this age, children can be taught the importance of clean and healthy living behaviour to prevent diseases, including tuberculosis. School age is the ideal time to instil good habits and beliefs about clean and healthy living, so that it can form positive behaviour that continues into adulthood (Suryani et al., 2020). Studies also show that age affects the way children process information and form knowledge (Sari et al., 2021).

The use of media in education activities can help visualize complex information and make it easier for children to remember the material presented (Novasyari, 2022). Audiovisual media also allows information to be delivered in a more interesting and interactive way, thereby increasing student participation and understanding. The results of the study conducted by (Giannakos et al., 2016) showed that educational videos can have a significant impact on increasing health awareness and knowledge, including on topics such as tuberculosis.

Children's Knowledge Before Being Given Audio Visual Media-Based Health Education
The results of the study showed that the knowledge of 60 respondents, most of them was in the adequate category, namely 33 people (55%), good knowledge of 23 people (38.3%) and not adequate of 4 people (6.7%). This shows that respondents were quite aware of efforts to prevent and transmit tuberculosis in elementary school children. Respondents had adequate knowledge because they received health education from visits to the local Health Center.

The local health center provides health education using lecture methods and leaflets for elementary school children. Health education related to the definition, signs and symptoms, prevention efforts and transmission of TB was delivered during the visit to the Health Center.so that students already know enough about tuberculosis. This is in line with research conducted by Yanti that using audiovisual media through the lecture method can improve knowledge, attitudes and behavior in preventing TB so that it can help the national TB control program.(Yanti et al., 2022).

This study aligns with research showing that 34.5% of respondents had a good level of knowledge before receiving health education (Sari et al., 2021) . Similarly, another study indicates that 26.7% of respondents had a good level of knowledge before education using video media (Purba et al., 2022).

Children's Knowledge After Being Given Audio Visual Media-Based Health Education
After conducting health education based on audiovisual media, there was an increase in good knowledge reaching 58 people (96.7%) and only 2 people (3.3%) had sufficient knowledge. This shows that health education based on audiovisual media regarding tuberculosis in elementary school children was effective, and the materials presented by the speakers were positively received by the respondents. Health education aims to improve students' knowledge and skills to live a healthy lifestyle, especially in the school environment.

Knowledge is the result of "knowing" after a person senses an object that occurs through the five senses, namely sight, hearing, smell, taste and touch (Notoatmodjo, 2018). The knowledge obtained is the result of "knowing" when given health education based on audiovisual media so that a sensing process occurs for the senses of sight and hearing (Sari et al., 2021).

Good knowledge regarding tuberculosis is an important supporting factor in producing good attitudes and positive behaviour in supporting efforts to prevent and control tuberculosis in Indonesia (Harefa et al., 2023). One of the efforts in the form of health education allows changing of the behaviour of individuals or communities in the health sector, by conducting health education. Health education in efforts to prevent and transmit tuberculosis in elementary school children can be done by disseminating knowledge and instilling beliefs so that it can provide new knowledge that can influence attitudes and behaviour. (Yanti et al., 2022).

The study used interventions in the form of health learning using lecture methods and animated audiovisual media related to tuberculosis for 30 minutes. Health education was carried out using lecture methods and animated video media containing information about tuberculosis and how to prevent it. This study is in accordance with previous studies which showed that after health education based on YouTube and Q&A, the level of respondent knowledge increased by 72.7% (Sari et al., 2021). Other research shows that after health education using video media, there was an increase in knowledge of 56.7% (Purba et al., 2022).

The Impact of Audio Visual Media-Based Health Education on Knowledge of Tuberculosis in Children

Based on the results of the study, it showed that there was an influence of audiovisual media-based health education on knowledge about tuberculosis in elementary school children with a significance value of p = 0.001. The level of knowledge was one of the risk factors for tuberculosis and a factor that influences TB prevention. Knowledge is the basis for taking preventive measures and treating tuberculosis (Sari et al., 2021). The increase in knowledge experienced by students is due to the provision of health education (Purba et al., 2022).

The results showed that the post-test of student health education was higher than the pre-test results, this was due to the use of video media for health education interventions about tuberculosis (Purba et al., 2022). Health education in an effort to increase knowledge about tuberculosis can use digital literacy (Holst et al., 2021). To prevent and disrupt the chain of TB disease in children, health education based on audiovisual media can be provided regarding efforts to prevent and control tuberculosis (Yanti et al., 2022). In addition, Health education with audiovisual media can improve caregiver behavior in preventing tuberculosis in family members (Hartiningsih, 2018).

Health education based on audiovisual animation media is a combination of images, text, animation and video so that it can modify a series of still images into a moving animation. Video media is a type of visual presentation that moves so that it attracts the interest and understanding of the audience in knowledge (Swastika et al., 2024). Health education using audio visual media using a set of tools that can project moving images and sound and the combination of images and sound forms the same character as the original object. Animated audiovisual media is made with the aim of being more interesting and effective for increasing children's knowledge, understanding, attitudes and behaviour related to the prevention, handling and treatment of tuberculosis (Maemunah et al., 2021).

A study by Sari et al. has proven the effectiveness of audiovisual media used as a means of providing health education (Sari et al., 2021). The use of educational videos has been proven to be a comprehensive means of promotion and education to improve health knowledge, attitudes, and behaviour. The results of other studies stated that there is an effect of providing education through animation about Pulmonary TB on the knowledge of children at SDN Merjosari 02 Malang City (Maemunah et al., 2021).

Respondents' knowledge and behaviour in preventing tuberculosis increased after being given education through video recordings (Sartika & Mulyono, 2022). The results of other studies state that conducting counselling using video media has an effect on knowledge about tuberculosis prevention efforts at SD Inpres Bertingkat I Waena (Purba et al., 2022). This shows that tuberculosis health education can have an impact on efforts to prevent and transmit tuberculosis in elementary school children.

CONCLUSION

This study indicates that prior to receiving health education on preventing and transmitting TB in children, 33 respondents (55%) had adequate knowledge. However, after the health education intervention, the number of respondents with good knowledge increased to 58 (96.7%). After the intervention, no respondents fell into the not adequate knowledge category. Health education using audiovisual media effectively improved knowledge about tuberculosis in children.

SUGGESTIONS

This study suggests that using audiovisual media to educate children about tuberculosis should happen simultaneously to prevent its spread and raise awareness of its dangers. Future researchers are encouraged to investigate the effectiveness of audiovisual media in education.

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