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THE EFFECT OF DENGUE HAEMORRHAGIC FEVER EDUCATION ON THE KNOWLEDGE OF ELEMENTARY SCHOOL STUDENTS

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ABSTRACT
Indonesia is a tropical country, with one typical endemic disease, dengue fever (DHF). This infectious disease occurs due to the bite of Aedes Aegypti and Ades Albopictus mosquitoes. The Yogyakarta Health Office in 2022 explained that dengue data until November 2022 there were 2,027 cases of dengue, the number was divided in various areas of the city of Jogjakarta. Sleman is the district with the 3rd highest number of DHF cases in Yogyakarta with 289 cases. The Ministry of Health (2023) explained that until the fourth week, the number of dengue cases in Indonesia reached around 710 cases starting in 2023. To determine the effect of dengue fever education on students' knowledge. This type of research is quantitative research with quasi quasi-experimental design pre and post-test without a control group. The sampling technique used in this study was total sampling with a sample size of 76 students at SD Negri Pokoh 1. The research instrument used was a questionnaire about the level of knowledge of dengue fever. This research instrument was tested for validity and reliability with expert judgement and obtained a value of 0.925. The statistical test used was the Wilcoxon test. This study showed that most of the respondents were male out of 76 students at Pokoh 1 Elementary School. The average value of students' knowledge about Dengue Fever before education is 71.78. The average value of students' knowledge after Dengue Fever education is 83.36. There is an effect of Dengue Fever education on the knowledge of Pokoh 1 Elementary School students.

Keywords: dengue; education; fever; students

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INTRODUCTION

Indonesia is a tropical country, with DHF (Dengue Hemorrhagic Fever) being one of the endemic diseases that often becomes an extraordinary event and needs special attention from all parties (Satoto et al., 2020). This infectious disease occurs from the bite of the Aedes Aegypti and Ades albopictus mosquitoes and can occur at any time of the year (W.-H. Wang et al., 2020). DHF is known as an epidemic disease that is widespread throughout the community due to its rapid spread in an area, although it can occur throughout the year, the mosquito that causes DHF breeds more often during the rainy season (Harapan et al., 2019). Mosquitoes that cause dengue fever love to breed in humid situations, such as puddles, water reservoirs, and clotheslines that have not dried (Utama et al., 2019). Dengue often causes Extraordinary Events (KLB) which have a high mortality rate (Tsheten et al., 2021). One of the reasons for this is that people's attitudes and knowledge about environmental hygiene and how to prevent the disease are still low. Around October to March, when the temperature

drops and rainfall increases, the humidity of the air also increases, this situation increases the development of mosquitoes that cause dengue fever (Satoto et al., 2020; Tsheten et al., 2021). These factors are critical for mosquito survival and breeding, influencing population abundance and richness. Weather factors also have a positive influence on the spread of vectors, populations, and the increase in dengue cases. Such situations should be sensitized in the community. Every citizen needs to increase their awareness of the occurrence of this disease outbreak.

The Special Province of Yogyakarta, known as the city of students, especially Sleman Regency, has a large number of students from elementary school to university level. The spread and transmission of DHF needs to be watched out for, especially in Sleman District which has the largest population in Yogyakarta. The number of school-age students in Sleman District consisting of elementary, junior high, and high school students is 142,706 children (Harapan et al., 2019; Utama et al., 2019). Schools in 2022 and 2023, are one of the potential locations where dengue haemorrhagic fever can be transmitted to children. Aedes mosquitoes, the vector of dengue fever, actively bite school children and other school residents from morning to night (Tsheten et al., 2021; W.-H. Wang et al., 2020). The school environment has the potential to spread dengue fever mosquitoes, a large number of potential breeding sites for dengue vectors such as water reservoirs in bathrooms that are on average not closed and rarely cleaned become breeding sites for Aedes aegypti mosquito larvae.

This situation needs to be understood by all levels of society. Behavior to prevent the breeding of mosquitoes that cause dengue fever needs to be done to control this disease. One of the ways that can be done is by eradicating mosquito nests through activities known as 3M Plus (Murugesan & Manoharan, 2020; Utama et al., 2019). 3 M Plus is a simple component of Clean and Healthy Living Behaviour (PHBS) that can be done every day but has a significant impact on controlling and eradicating larvae/larvae before they develop into adult mosquitoes. 3M Plus activities include draining water storage areas such as bathtubs, toilets, and drums at least once a week, tightly closing water storage areas such as water barrels and jars to eliminate mosquito nests, and reusing old items that can hold water but are potential breeding grounds for dengue-carrying mosquitoes (Satoto et al., 2020; W.-H. Wang et al., 2020). Pluses are additional activities that can help control mosquito development such as changing water in flower vases, changing bird drinks, repairing damaged gutters and sewers, cleaning places that can hold water such as banana fronds, bathtubs, other water reservoirs, keeping larvae-eating fish, using mosquito repellent, applying larvicide powder, using or mosquito traps, and using plants such as lavender, lemongrass, and others to repel mosquitoes (Murugesan & Manoharan, 2020; W.-H. Wang et al., 2020).

These efforts can be made if all levels of society understand and have sufficient knowledge of how to control dengue fever. Knowledge can be acquired by the community by receiving information formally or informally. Formal knowledge is obtained through the official education process according to the level suggested by the government with a curriculum that has been regulated and officially recognized by the government (Badudin et al., 2022; Desty & Arumsari, 2022). While receiving information can be owned through structured counseling activities, reading and searching for information independently, for example by utilizing existing internet media. The researcher conducted a preliminary study on 10 April 2023 at SD Negeri Pokoh 1, Wedomartani Sub-district, Kapanewon Ngemplak, Sleman Regency, to determine students' knowledge using the interview method. The interview method with the school obtained the result that there has never been education about Dengue Fever for students at the school. Interviews with 10 students resulted in 2 out of 10 students knowing

what DHF is and 2 out of 10 students knowing the causes of DHF and 10 out of 10 students did not know what DHF prevention was and not knowing what 3M Plus was and not knowing what the symptoms of DHF were. DHF data from the Yogyakarta Health Office 2022, for the past 1 year, Sleman is the district with the 3rd highest number of DHF cases in Yogyakarta with 289 cases and one person has died due to DHF. Interview results from the Ngemplak 2 Puskesmas, on 14 June 2023, obtained data on DHF in Wedomartani Sub-district in 2017 as many as 8 people, in 2018 2 people, in 2019 as many as 19 people, in 2020 as many as 17 people, in 2021 as many as 35 people and in 2022 from January - August as many as 14 people. Based on the preliminary study, it is crucial to conduct health education programs in the community to enhance knowledge about preventing dengue fever. The targeted community for this study is elementary school students. The aim is to educate children early on to become health advocates and adopt clean and healthy living habits to prevent and control dengue fever.

METHOD

The type of research used by researchers is quantitative research with a quasi-experiment design pre and post-test without a control group. The sampling technique used in this study was total sampling with a sample size of 76 students of Pokoh 1 State Elementary School. The data collection process was carried out in May 2023. The data collected in this study was students' knowledge about dengue fever prevention, namely knowledge before and after health education activities that had been provided by the research team. The learning media used videos on how to prevent dengue fever. Knowledge data was collected using a questionnaire developed by the research team and has been tested for validity and reliability with an expert judgment approach, with the result being 0.925. Data collected were analyzed univariately and bivariately. Univariate analysis used frequency distribution and central tendency while bivariate used the Wilcoxon test.

RESULTS

Table 1.
Characteristics of Respondents (n=76)

Characteristics of students	f	%
Gender		
Male	41	53,9
Female	35	46,1

Table 1 explains that most respondents were male. Before conducting bivariate analysis, researchers conducted a normality test first with the results in Table 2. The results of the normality test in this study became the basis for researchers to determine bivariate analysis to determine the effect of health education on student knowledge.

Table 2.
Normality Test of Age, Pre and Post-Health Education Knowledge about Dengue Fever (n=76)

Variable	p*
Age	0,000
Knowledge Score Before Health Education	0,000
Knowledge Score After Health Education	0,000

***** Kolmogorov-Smirnov Test

Table 2 shows the results of the Normality Test of the three variables that are not normally distributed, based on the results of the normality test, then to determine the mean value of numerical data on age, pre and post-knowledge, researchers use the median value. Bivariate

analysis in this study used the Wilcoxon test which can be seen in table 4.

Table 3.
Characteristics of Respondents Based on Age, Pre and Post-Health Education Knowledge Score about Dengue Fever at Pokoh 1 State Elementary School (n=76)

Variable	Median	Nilai Minimal	Nilai Maksimal
Age	9,00	7	11
Knowledge Score Before Health Education	75,00	40	90
Knowledge Score After Health Education	85,00	65	100

Table 3, the mean age is 9 years, with a minimum age of 7 years and a maximum age of 11 years. The mean result of students' pre-test knowledge was 75.00, with a minimum knowledge score of 40 and a maximum score of 90. The mean result of students' post-test knowledge was 85.00, with a minimum score of 65 and a maximum score of 100. This shows that most students understand correctly about Dengue Fever disease and how to prevent it in order to avoid Dengue Fever disease.

Table 4.
Analysis of Dengue Fever Education using video (n=76)

Variable	f	p
Pre-Test dan Post-Test	76	0,000

Table 4 shows that the p value is 0.000, which means that there is an effect of Dengue Fever education on the knowledge of SD N Pokoh 1 students.

DISCUSSION

Based on the results showed that the respondents were mostly male, 53.9%, with an average age of 9 years. The minimum age for entering public primary school is 7 years old (Ernayanti et al., 2019; Suwarti et al., 2019; Wulandari et al., 2020). The respondents of this study were students of SDN N 1 Pokoh from grade 3 to grade 5. These characteristics were chosen by the research team, with the hope that students at that age are adaptive to the activities carried out, namely in addition to actively participating in health education, they are also able to independently fill out questionnaires given twice before and after the activity. This questionnaire aims to measure knowledge before and after health education. The results of univariate analysis of knowledge before being given education showed that the average value of student knowledge was 75, with the lowest value being 40 and the highest value being 90. Whereas after health education was given, the average value of knowledge became 85.00, with the lowest value being 65 and the highest value being 100. Health education is an integral part of the education curriculum in primary schools. The aim is to provide students with knowledge, skills, and understanding of the importance of maintaining their health (Capritasari & Arifiyah, 2022; Simanjorang et al., 2021; M. Wang & Fang, 2020).

Health education is useful in the process of changing healthy attitudes based on self-awareness in individuals, groups, or communities to maintain and improve health (Putra et al., 2022; M. Wang & Fang, 2020). Health education helps students to understand how the human body works and what makes them sick (Dewi & Caesar, 2022; Harini et al., 2019; Widiawati & Merdekawati, 2023; Wirata & Ballena, 2021). Through health education,

students are taught about the importance of a healthy lifestyle, such as a balanced diet, regular exercise, adequate sleep, and staying away from bad habits at a young age. They will also understand the risks associated with an unhealthy lifestyle. This study provides health education on dengue fever and how to prevent it. Dengue fever prevention behaviors covered in this health education material are about how to do 3M plus. Students who have been given health education are expected to become agents of reform in their respective families.

Low knowledge can have an impact that will affect attitudes and behaviors in the prevention of Dengue Fever so it is very risky for Dengue Fever cases in school children (Badudin et al., 2022; Simanjorang et al., 2021). Prevention efforts can be made in order to avoid the dangers of Dengue Fever, one of which is by educating about Dengue Fever (Murugesan & Manoharan, 2020; Utama et al., 2019; W.-H. Wang et al., 2020). Primary school students who have been provided with health education on dengue learned how to prevent diseases through simple actions such as proper handwashing and environmental hygiene. They came to understand that these actions can prevent diseases and keep them healthy. Environmental hygiene behaviors that can prevent or control dengue fever include draining water storage containers, tightly closing water storage containers, and recycling items that can still be used.

Students who have been given health education on how to prevent dengue fever are expected to become skilled in health-related decision-making, such as how to evaluate the risks and benefits of various options they face on a daily basis. This will help them make wiser health-related decisions (Murugesan & Manoharan, 2020; W.-H. Wang et al., 2020). The results of this study indicate that there is an effect of health education on the knowledge of elementary school students. The health education method using a visualization approach using video media was effective as evidenced by the increase in the average score, minimum score, and maximum score of students after being given health education. Respondents seemed focused on paying attention to the video that was being shown. For health education for primary school students is better to use video visualization because video visualization has a number of advantages that can strengthen understanding (Budiarti et al., 2020; Curran & Hollett, 2023). Video visualization can explain complex health concepts in a way that is simpler and easier for children to understand, through animation, students can see how the dengue disease process occurs and how to take health measures to prevent dengue fever. Children learn through multiple senses, including sight and hearing (Ernayanti et al., 2019; Nughroho et al., 2022; H. Wang et al., 2023). The video blends these two senses well, providing a more complete learning experience. This can help students with various learning styles, including visual and auditory, to understand the material more easily. Videos are often more engaging than conventional teaching. Children tend to be more interested in watching videos with interesting images and animations than listening to lectures or reading long texts, thus this method can increase their interest in learning about health.

Based on the theory of health education is an effort of persuasion or learning to the community willing to take action to maintain and improve health. Changes in health maintenance and improvement that occur should be based on knowledge and awareness through the learning process produced through health education. During the Dengue Fever educational video screening, respondents were very orderly and focused on understanding the video shown. After that, some respondents also actively asked several things that they did not understand after the video was shown. The increase in knowledge post-test results occurs because students get new things that they have never known before, namely learning

using video media, this is in line with research conducted by, who said that there was an increase in the results of the pre-test with post-test results using video in learning media because students get new learning in receiving material.

The results of bivariate analysis on SD N Pokoh 1 student showed that there was an effect of Dengue Fever education with a p-value of 0.000. Audio-visual media is media that combines sound and images (Ernayanti et al., 2019; Karlina & Setiyadi, 2019; Marlena et al., 2019; Muyassaroh & Ardhana, 2022). Audio-visual media is media or tools made and used to communicate in the teaching and learning process, the information process, and the counseling process that can be seen and heard (Nicolaou et al., 2019; Olagbaju & Popoola, 2020; Stevi & Haryanto, 2020; Suwarti et al., 2019). The functions of the media are as follows: help facilitate learning for students and facilitate educators, provide more real experiences (the abstract becomes concrete), attract greater student attention (the course of learning is not boring), all the senses of students can be activated, the weakness of one sense can be balanced by the strength of the other senses (Olagbaju & Popoola, 2020; Stevi & Haryanto, 2020; Yulianto et al., 2023). The health concept of the disease journey from mosquito bites to sickness may be abstract to children's understanding. Videos can help illustrate these concepts in a way that is concrete and easy to understand. The video shown in this study clearly shows how the virus in the dengue mosquito enters through the mosquito bite, is carried into the bloodstream, and then disrupts the body's functions to cause symptoms of illness. The video also shows how the mosquito breeds and how to prevent mosquitoes from becoming numerous. This real-life situation or scenario allows students to see how health measures play a role in their daily lives, for example, they can see the characters in the video doing 3M plus activities as one of the ways to control mosquito breeding.

Animated videos are suitable for elementary school children's learning because the advantages of videos are increasing interest in learning, conveying a sense of pleasure during the learning process, conveying more real illustrations, and the presence of sound and moving images makes it easy for students to understand the material (Murugesan & Manoharan, 2020; H. Wang et al., 2023; Wulandari et al., 2020). The videos delivered by the research team can be easily replayed if needed, allowing teachers to repeat the material or provide further understanding of the topic if students require it.

CONCLUSION

The results of this study concluded that there was an increase in student's knowledge about how to prevent Dengue Fever after being given health education through video media. This is because, with video media, the material presented is more interesting, the material is easier to understand, and the material conveyed through moving images and sound is also more concise so that it is easy to understand.

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