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Effect of Ovitrap Media Making on Dengue Fever Vector Control at X State Elementary School in Cengkeh Turi

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ABSTRACT

Dengue fever is a potentially deadly disease, especially for children, caused by Dengue virus infection spread by mosquito bites from Aedes aegypti and Aedes albopictus. In an effort to prevent this disease, the manufacture of ovitrap media has an important role as a method of mosquito vector control, by reducing the mosquito population through the capture of mosquito eggs, so as to minimize the risk of spreading DHF. This study's objective was to raise students' knowledge in controlling dengue hemorrhagic fever (DHF) vectors through ovitrap media. This study used a quantitative method with a one group pre test-post test design approach. A total sampling technique was employed in the sampling process of 60. Data analysis used univariate and bivariate analysis. Data analysis technique using paired simple-test. Before counseling, students' knowledge obtained an average of 9.0833 and after counseling obtained an average of 23.0500. It can be inferred from the study's findings that there is an influence of making ovitrap media on vector control of Dengue Fever (DHF). This can be seen with a P-value of 0.000 <0.05 which reflects the value of the difference before counseling and after counseling. Making ovitrap media is one of the effective ways. Thus, this counseling is expected to increase students' knowledge in mosquito vector control, especially mosquitoes that cause dengue fever.

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INTRODUCTION

The infectious disease known as dengue fever (DHF) is brought on by the Dengue virus and is spread by the bite of an Aedes aegypti or Aedes albopictus mosquito.The role of these vectors is significant in spreading the disease, especially during the rainy season when stagnant water becomes an ideal breeding ground for mosquitoes. Based on various studies, health advertisements and environmental conditions influence the spread of DHF, while mobility and population density are also important factors in increasing cases of the disease (Ministry of Health of the Republic of Indonesia, 2020). DHF, Alternatively referred to as Dengue Hemorrhagic Fever (DHF), is a Dengue virus infection that has become one of the challenges in public health. DHF cases are still often found in various tropical and subtropical countries, which are generally endemic or epidemic (Anggraini et al., 2021) .

One way to break the chain of Aedes Aegypti mosquito breeding is by taking vector control measures, including the mosquito nest eradication movement (PSN). PSN is carried out by implementing 3M Plus, namely draining water reservoirs (TPA), closing water reservoirs (TPA), recycling used goods that can

potentially become mosquito breeding sites, accompanied by other dengue prevention measures (Sawitri & Maulina, 2022) .

In addition, the use of Ovitrap Media is an alternative to increase public knowledge and understanding of the importance of early prevention of dengue fever. The role of health education aims to change behavioral characteristics such that people, groups, or communities behave in a way that is consistent with health principles, and can be carried out through health promotion (Health Promotion) (Sukendra et al., 2021) .

The incidence of Dengue Fever (DHF) has increased significantly worldwide in recent decades. Dengue can be found in many parts of the world, especially within tropical and subtropical regions. The disease has become In more than 100 nations in Africa, the Americas, Southeast Asia, the Eastern Mediterranean, and the Western Pacific, it is endemic. Southeast Asia is the most severely affected region representing about 70% of the global disease burden (WHO, 2023). Up until the seventeenth week of 2024, Indonesia alone had 88,593 cases of dengue fever (DHF), which resulted in 621 fatalities. According to reports, 174 districts/cities in 28 provinces out of 456 districts/cities in 34 provinces experienced DHF-related mortality (Wahdaningsih et al., 2024) .

Binjai City as one of the cities in North Sumatra Province, also faces problems related to Dengue Fever (DHF). One of the factors causing the high population of mosquitoes that cause Dengue Fever (DHF) is the existence of a favorable environment for mosquito breeding, such as stagnant water in rice fields.

Based on BPS data for Binjai City in 2018, Dengue Fever (DHF) is one of the diseases with the highest cases in Binjai City, totaling 279 cases. Based on data from the Kebun Lada Health Center, the number of Dengue Fever cases in 2022 was 20 cases, in 2023 there were 13 cases, and in 2024 there were 68 cases (BPS, 2018).

SD Negeri X Cengkeh Turi is located in an area that has a lot of rice fields, which is a potential place for Aedes aegypti mosquitoes to breed. The presence of rice fields makes this school a vulnerable area for the spread of Dengue Fever (DHF). SD Negeri X Cengkeh Turi, with its geographical condition located around rice fields, is an ideal location for the implementation of ovitrap making training activities. Therefore, it is important for the community, including school students, to have the knowledge and skills to use ovitrap-making training as one of the effective ways to prevent the spread of Dengue Fever (DHF). Based on this background, the purpose of this study is to increase students' knowledge in controlling dengue hemorrhagic fever (DHF) vectors through ovitrap making media.

METHOD

This study used a quantitative method with a one group pre test-post test design approach. The population in this study were students in grades IV, V and VI. The sampling technique used a total sampling technique of 60. This research was conducted at SD Negeri X Cengkeh Turi Village. Data collection was done by pre-test or before counseling and post-test after counseling. The instrument in this study is the method of activities carried out through lecture methods, video viewing, interactive discussions, then continued training in making ovitraps using plastic mineral water bottles as a basis for determining the position of student knowledge about how to make ovitraps. Furthermore, the training of making ovitraps based on the steps that have been demonstrated, and the placement of mosquito traps resulting from the training as an application step of the knowledge that has been shared.

Data analysis using univariate and bivariate analysis. The data analysis technique uses a paired simple-test test with a P-Value <0.05, meaning that there is a value of difference between before the activity and after the activity which indicates an increase in worker health, while if the P-Value> 0.05, it means that there is no value of difference between before counseling and after the activity which indicates no increase in respondent knowledge.

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Figure 1. Ovitrap

Ovitraps were made from used mineral bottles and lined with black palstic bags, filled with water and included brown sugar and yeast, ovitraps were placed in classrooms, especially mosquito breeding places, such as under tables, chairs, corners of rooms, corners of outside chairs and other potential places. One ovitrap was installed class.

RESULTS

1. Univariate Analysis

Table 1. Respondent Characteristics

Gender	**Frequency (f)**	**Percentage (%)**
Male	25	41,7
Female	35	58,3
Age	**Frequency (f)**	**Percentage (%)**
10 Years	18	30
11 Years	20	33,3
12 Years	22	36,7
Class	Frequency (f)	Percentage (%)
Class 4	20	33,3
Grade 5	20	33,3
Grade 6	20	33,3
Total	**60**	**100**

In table 1, the characteristics of male gender respondents were 25 students (41.7%) and female gender were 35 students (58.3%). In characteristics based on age 10 years as many as 18 students (30%), age 11 years as many as 20 students (33.3%), and age 12 years as many as 22 students (33.7%). In characteristics based on grade 4 as many as 20 students (33.3%), grade 5 as many as 20 students (33.3%), grade 6 as many as 202 students (33.3%).

Table 2. Knowledge before and after counseling for students

Student Knowledge	***Mean***	***Std. Deviation***	***Min-Max***
Pre-Test	9.0833	5.12981	4-24
Post-Test	23.0500	.99673	21-24

Based on table 2, student knowledge before being given counseling obtained an average of 9.0833 with std. deviation 5.12981, and from 24 questions obtained min-max 4-24. After being given counseling, the average is 23.0500 with a std.deviation of .99673, and from 24 questions, the min-max is 21-24. This shows an increase in students' knowledge about making ovitraps in tackling or controlling the aedes aegypti vector which causes dengue hemorrhagic fever (DHF).

2. Bivariate Analysis

Table 3. Effect of Counseling on Student Knowledge

Student knowledge	***Mean***	***SD***	***SE***	***P-Value***	**N**
Pre-Test *Post-Test*	13.9667	5.30100	.68436	0,000	60

Based on table 3, the average pre-test and post-test is 13.9667 with a std. deviation of 530100 and a std. error of .68436. Based on the results of statistical tests using the paired simple t-test test, the P-value is 0.000 <0.05, which indicates the value of the difference between before and after counseling. This shows the influence of counseling on students' knowledge about making ovitraps in tackling or controlling the aedes aegypti vector which causes dengue hemorrhagic fever (DHF).

One effective method is the use of ovitraps as a tool to reduce mosquito breeding sites. Ovitrap is a simple device designed to monitor and control mosquito populations by trapping the eggs of female mosquitoes. It is usually a water-filled container equipped with materials that attract mosquitoes to lay eggs, such as filter paper or plywood (Rokhmat et al., 2024) . Ovitraps work by creating an environment that resembles a mosquito's natural breeding habitat, which attracts mosquitoes to lay their eggs inside the device. Once the eggs are captured, the next step is to destroy or remove them before they hatch into larvae, thus effectively controlling the mosquito population. This method is known to be environmentally friendly and can be used as part of a sustainable mosquito control strategy (Amir et al., 2024) .

The ovitrap-making process involves a few key steps: preparing a dark container, such as a tin can or plastic bottle, and then filling the container with clean water mixed with an attractant solution, such as biological solution or infusion of dried leaves. Next, add a medium for egg attachment, such as filter paper or small plywood, which is placed on the surface of the water. The prepared ovitrap is then placed in strategic locations that are potential breeding grounds for mosquitoes, such as shaded areas or near stagnant water (Liziawati M et al., 2023) .

Figure 2. Class atmosphere during counselling

Increasing students' knowledge of mosquito control is an important step in preventing the spread of diseases, especially Dengue Fever (DHF). In this case, the manufacture of ovitrap media plays a significant role, not only as an effective vector control method, but also as an educational tool that can increase students' understanding of the importance of mosquito control as a disease vector (Zubaidah et al., 2021) .

Figure 3. Group Photo

Before counseling, the students' knowledge obtained an average of 9.0833 and after counseling obtained an average of 23.0500. Based on the results of statistical tests obtained a P-value of 0.000 <0.05 which indicates the value of the difference between before counseling and after counseling. This indicates the influence of the counseling conducted regarding the making of ovitrap media on vector control of dengue hemorrhagic fever (DHF) at SD Negeri X Clove Turi.

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In line with research conducted by Prasetyo et al. (2022) examined the effect of ovitrap-making education on community knowledge about mosquito control. This study showed that active participation in ovitrap making not only increased people's understanding, but also influenced their behavior in maintaining environmental hygiene.

Therefore, considering its effectiveness in attracting female mosquitoes to lay eggs and preventing the development of larvae into adult mosquitoes, ovitrap media has a significant role in mosquito population control as one of the strategic measures in efforts to prevent the spread of Dengue Fever (DHF).

CONCLUSION

Based on the results of the study, it can be concluded that there is an effect of making ovitrap media on vector control of Dengue Fever (DHF). This can be seen with a P-value of 0.000 <0.05 which indicates the value of the difference before counseling and after counseling. Increase students' knowledge in vector control as an effort to prevent diseases, especially dengue fever. Making ovitrap media is one of the effective ways. Ovitrap media making is one of the effective methods in controlling mosquito populations, especially the Aedes aegypti vector, as a preventive measure in the prevention of vector-based diseases such as Dengue Fever (DHF). Thus, this counseling is expected to increase students' knowledge in controlling mosquito vectors, especially mosquitoes that cause dengue fever.

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