

**THE EFFECTIVENESS OF POSTER-BASED EDUCATION IN
IMPROVING KNOWLEDGE OF DENGUE FEVER (DF) PREVENTION
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Payung Negeri Pekanbaru, Indonesia.***Corresponding author: ylandayola2@gmail.com****Abstract**

Dengue Hemorrhagic Fever (DHF) is an infectious disease that remains a public health problem in Indonesia. One strategy for preventing DHF is to increase public awareness- particularly among elementary school-aged children-by providing health education through posters. This study aims to determine the effectiveness of poster-based education in improving knowledge of Dengue Hemorrhagic Fever (DHF) prevention among sixth- grade students at SDN 167 Pekanbaru. This study employed a quantitative method me with a pre-experimental design using a one-group pretest-posttest design. The study population consisted of all 38 sixth-grade students at SDN 167 Pekanbaru, with total sampling used for sample selection. Data were collected using a knowledge questionnaire administered before (pretest) and after (posttest) the educational intervention using posters. Data analysis was conducted using univariate and bivariate methods. The bivariate analysis used the Wilcoxon Signed-Rank Test because the data did not meet the assumption of normality. The results showed that there was an increase in students' knowledge levels after receiving the educational intervention using posters. The results of the Wilcoxon Signed-Rank Test showed a significance value of $p = 0.000$ ($p < 0.05$), indicating a statistically significant difference between knowledge levels before and after the intervention. Thus, education using posters was proven effective in improving knowledge of Dengue Fever (DF) prevention among sixth-grade students at SDN 167 Pekanbaru.

Keyword: : Dengue Hemorrhagic Fever, posters, knowledge, health education, elementary school students.

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus and transmitted through the bites of *Aedes aegypti* and *Aedes albopictus* mosquitoes. This disease remains a major public health problem worldwide, particularly in tropical and subtropical regions. The World Health Organization (WHO) reports that the incidence of dengue has increased significantly over the past few decades, from 505,430 cases in 2000 to more than 14.6 million cases in 2024. In addition, it is estimated that approximately 100-400 million dengue infections occur each year, and more than half of the world's population is at risk of contracting the dengue virus [1].

Indonesia is one of the countries where dengue fever is endemic in the Southeast Asian region. According to the 2023 Indonesia Health Profile, dengue fever cases are still found in nearly all provinces and tend to increase, particularly during the rainy season. The high incidence of dengue fever indicates that this disease remains a public health issue requiring sustained control efforts through promotive, preventive, curative, and rehabilitative approaches. In addition to increasing morbidity and mortality rates, dengue fever also impacts community productivity and places a burden on the healthcare system[2].

One effective measure for preventing dengue fever is to increase public knowledge about the causes, modes of transmission, signs and symptoms, and preventive measures for the disease. Good knowledge will encourage the adoption of preventive behaviors, such as

implementing Mosquito Breeding Site Eradication (PSN) through the 3M Plus campaign and practicing Clean and Healthy Living Behaviors (PHBS). Therefore, health education is a key strategy in raising public awareness starting from school age[3].

Elementary school-aged children are an ideal target group for health promotion because they are at a stage of cognitive development that allows them to understand health information well. In addition to being recipients of information, elementary school students can also serve as agents of change capable of relaying health information to their families and surrounding communities [4] To make health messages more easily accepted by students, educational media that is engaging, simple, and appropriate for children's characteristics is needed.

One of the most widely used health promotion tools is the poster. Posters convey information through a combination of images, colors, and engaging text, thereby increasing the target audience's attention, understanding, and retention of the health messages presented [5]. Previous research has shown that the use of posters effectively increases students' knowledge regarding the symptoms, causes, and prevention measures for Dengue Hemorrhagic Fever [6]. Additionally, posters are considered practical, easy to understand, and can be read repeatedly, thereby reinforcing students' understanding of the presented material[7].

Based on the results of initial observations conducted at SDN 167 Pekanbaru, there are still students who do not fully understand dengue fever prevention, such as the importance of maintaining environmental hygiene, regularly draining water containers, and identifying breeding sites for the *Aedes aegypti* mosquito. Furthermore, according to a report from the Pekanbaru City Health Department, the area surrounding SDN 167 Pekanbaru is classified as a region with a relatively high incidence of dengue fever, while the health education materials used at the school remain limited, resulting in suboptimal dissemination of information regarding dengue fever prevention [8].

Based on this description, effective health education media are needed to improve students' knowledge regarding dengue fever prevention. Therefore, this study aimsto analyze the effectiveness of education using posters in improving knowledge of dengue fever prevention among sixth-grade students at SDN 167 Pekanbaru.

RESEARCH METHODS

This study is a quantitative study with a pre-experimental design using a one-group pretest-posttest design. The study aimed to determine the effectiveness of education using posters in improving knowledge of Dengue Hemorrhagic Fever (DHF) prevention among sixth-grade students at SDN 167 Pekanbaru. The respondents' knowledge levels were measured twice: before (pretest) and after (posttest) the intervention, which consisted of education using posters.

The study was conducted at SDN 167 Pekanbaru in October 2025. The population for this study consisted of all sixth-grade students at SDN 167 Pekanbaru, totaling 38 students. Total sampling was used, meaning the entire population served as the study sample.

The research instrument used was a questionnaire on knowledge of Dengue Hemorrhagic Fever (DHF) prevention, consisting of 12 questions. The questionnaire underwent validity and reliability testing before being used in the study. The intervention was carried out through health education using posters containing information on the definition of DBD, its causes, modes of transmission, signs and symptoms, and prevention efforts through Mosquito Breeding Site Eradication (PSN) using the 3M Plus campaign. After the presentation of the material, the respondents were given the same questionnaire again as a posttest to determine changes in their knowledge levels following the intervention.

Data analysis was performed using univariate and bivariate methods. Univariate analysis was used to describe the respondents' characteristics and their knowledge levels before and after the intervention. Bivariate analysis was conducted using the Wilcoxon Signed-Rank Test with a 95% confidence level ($\alpha = 0.05$). This test was chosen because, based on the results of the normality test, the data were not normally distributed; therefore, a nonparametric test was used to determine differences in knowledge levels before and after the educational intervention using posters.

RESEARCH RESULTS

Tabel 1. Frequency Distribution of Respondents by Gender Among 6th-Grade Students at SD Negeri 167 Pekanbaru

	Frequency	Valid Percent	Cumulative Percent
Valid Male	19	50.0	50.0
Female	19	50.0	100.0
Total	38	10.0	

Source: Primary data

Tabel 2. Descriptive Statistics of Knowledge Scores Before and After Education

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 pre test	4,21	38	1,510	.245
post test	8,76	38	1,567	.254

Source: Primary data

Based on Table 1, the average knowledge score of students before receiving education using posters was 4.21. After receiving education, the average knowledge score increased to 8.76. These results indicate an increase in students' knowledge regarding dengue fever prevention following the intervention. Based on Table 1, it was found that the majority of respondents-63 respondents (70.0%)-already practiced handwashing with soap.

Tabel 3. Shapiro-Wilk Normality Test Result

Variabel Test	Statistic	p-value	Notes
Pretest	0,940	0,040	Not Normal
Posttest	0,950	0,088	Normal

Source: Primary data

The results of the normality test indicate that the pretest data are not normally distributed ($p=0.040$), whereas the posttest data are normally distributed ($p=0.088$). Therefore, the analysis continued using the Wilcoxon Signed-Rank Test. Based on Table 2, it is evident that the majority of respondents have a high level of knowledge regarding handwashing with soap, totaling 55 respondents (61.1%)

Tabel 4. Resulted of The Wilcoxon Signed-Rank Test

Comparision	Calculated Z	p-value
Pretest-posttest	-5,280	0,000

Source: Primary data

The results of the Wilcoxon Signed-Rank Test showed a p-value of 0.000 ($p < 0.05$), indicating a significant difference between knowledge scores before and after the poster-based

education intervention. These results suggest that poster-based education is effective in improving students' knowledge of dengue fever prevention.

DISCUSSION

The study results show that education using posters is effective in improving students' knowledge regarding the prevention of Dengue Hemorrhagic Fever (DHF). This is demonstrated by an increase in the average knowledge score from 4.21 on the pretest to 8.76 on the posttest, as well as the results of the Wilcoxon Signed-Rank Test, which showed a p-value of 0.000 ($p < 0.05$).

This increase in knowledge indicates that posters are capable of effectively conveying health information to elementary school students. Posters are a visual medium that combines images, colors, and text, thereby capturing students' attention and facilitating their understanding of the information provided. These characteristics make posters a suitable health promotion medium for school-aged children.

These findings align with a study by Nasir [6], which reported that the use of posters can improve students' knowledge regarding dengue fever prevention. Research [9] also shows that visual educational media are effective in enhancing students' understanding of infectious disease prevention. These consistent results strengthen the evidence that posters are an effective health education tool for improving the knowledge of school-aged children.

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According to the theory of knowledge proposed by Notoatmodjo [10], knowledge is acquired through sensory processes, particularly through the senses of sight and hearing. In this study, posters provided visual stimuli that helped students understand and recall information regarding the causes, symptoms, modes of transmission, and prevention efforts for dengue fever. Additionally, Lawrence Green's PRECEDE- PROCEED theory, as cited in Irwan's research, explains that health education media serve as enabling factors that play a role in enhancing individual knowledge[11].

This study has several limitations, namely the absence of a control group, a relatively small number of respondents, and the fact that it only measured knowledge without assessing changes in attitudes and behavior. Nevertheless, the results indicate that posters can serve as an effective health promotion tool to enhance elementary school students' knowledge of dengue fever prevention.

CONCLUSION

Health education using posters has proven effective in increasing knowledge of dengue fever (DF) prevention among sixth-grade students at SDN 167 Pekanbaru. The average knowledge score increased from 4.21 on the pretest to 8.76 on the posttest, with the results of the Wilcoxon Signed-Rank Test showing a p-value of 0.000 ($p < 0.05$). These findings indicate that posters can be utilized as an effective health promotion tool in elementary school settings. Schools are encouraged to optimize the use of posters as a health education tool, while future research is recommended to assess the impact of posters on attitudes and behaviors regarding DBD prevention by including a control group and a larger sample size.

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