

## THE EFFECT OF AUDIOVISUAL MEDIA ON STUDENTS' KNOWLEDGE OF PREVENTION AND CONTROL OF DENGUE VECTORS AT SDN 105312 SAWIT REJO

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### Abstract

Dengue fever is still a significant public health problem in Indonesia. DHF prevention efforts require the active role of the community, especially elementary school students. One effective way to increase knowledge about DHF is by using audiovisual media. This study aims to determine the effect of audiovisual media on students' knowledge about dengue vector prevention and control at SDN 105312 Sawit Rejo. The research method used was an experimental design "One-Group Pretest-Posttest Design" with a sample of 50 students in grades IV and VI selected using total sampling technique. Data were collected through questionnaires and analyzed using the Wilcoxon Signed Rank Test non-parametric test. The results showed a significant increase, namely before the intervention, most students were in the category of poor knowledge (50%) and after the intervention, almost all students (98%) were in the category of good knowledge. The Wilcoxon test results resulted in a p-value of 0.000 ( $p < 0.05$ ), which indicates a significant effect of audiovisual media on increasing students' knowledge about the prevention and control of dengue vectors.

**Keywords:** Dengue Fever, Vector Prevention, Audiovisual Media

### Introduction

Dengue Hemorrhagic Fever (DHF) is still a serious public health problem in Indonesia. The disease, which is caused by the dengue virus and transmitted through the bite of the *Aedes aegypti* and *Aedes albopictus* mosquitoes, continues to cause a significant number of illnesses and deaths every year (Kemenkes RI, 2022).

The geographical conditions and tropical climate in Indonesia provide an ideal environment for the breeding of dengue vector mosquitoes, so this disease can affect anyone, regardless of age. Dengue fever is one of the infectious diseases that has become a public health problem in Indonesia, including in North Sumatra Province. The high incidence of dengue fever is often associated with a lack of public knowledge, especially among school children about the prevention and control of this disease vector (Kemenkes RI, 2022).

The number of dengue cases in Indonesia until the 11th week of 2024 has reached 35,556 cases with a total of 290 deaths. Meanwhile, the highest number of cases and deaths due to dengue outbreaks was found in the West Java area with a total of 10,428 cases and 94 deaths (Direktur Pencegahan dan Pengendalian Penyakit Menular).

Deli Serdang is one of the districts in North Sumatra Province that faces serious health problems related to Dengue Hemorrhagic Fever (DHF). Deli Serdang recorded the highest number of dengue cases in this province, namely 1,326 cases. This figure shows the high prevalence of dengue fever

caused by the dengue virus and transmitted through the bite of *Aedes aegypti* and *Aedes albopictus* mosquitoes (Badan Pusat Statistik Provinsi Sumatera Utara, 2020).

Efforts to overcome dengue fever require the active role of all levels of society, including elementary school students. Health education about dengue needs to be provided from an early age so that students have enough knowledge to protect themselves and play an active role in efforts to prevent and control this disease. Good knowledge about dengue, including how it is transmitted, symptoms, and prevention efforts, is an important factor in shaping clean and healthy living behaviors that can prevent dengue transmission (WHO, 2023). Primary school students are in an age group that is vulnerable to infectious diseases such as dengue because they are often exposed to environments that support the development of vector mosquitoes (UNICEF, 2019).

The method of delivering health information has a crucial role in increasing student knowledge. The use of interesting and interactive learning media can increase the effectiveness of the learning process. One of the learning media that has great potential in increasing student knowledge is audiovisual media. Audiovisual media, such as animated videos and short films, can present information in a more interesting, easy-to-understand, and deep impression on students. Audiovisual media has the ability to convey messages visually and auditorily, so that information is easier to understand and remember (Arsyad, 2020).

Based on environmental observations, the environment around SDN 105312 Sawit Rejo has several characteristics that need to be considered in the context of dengue prevention. Although there are already trash cans available to sort organic waste, canned bottles and crackle plastic, as well as paper, newspapers, cardboard, and books, the number of trash cans is limited (only three units) and its inappropriate location can be an obstacle in maintaining the cleanliness of the school environment optimally. In addition, waterlogging around schools is a risk factor that needs to be watched out for, because it can be a breeding ground for *Aedes aegypti* mosquitoes. The location of the school adjacent to a field overgrown with grass and trees also needs to be a concern, because it can be a hiding place for mosquitoes. Therefore, this study aims to determine the influence of audiovisual media on students' knowledge about the prevention and control of dengue vectors at SDN 105312 Sawit Rejo.

## **Method**

This study is a quantitative research with an experimental design "One-Group Pretest-Posttest Design". The research was carried out at SDN 105312 Sawit Rejo with a population of all students in grades IV and V totaling 50 people. The sampling technique used is total sampling. The variables studied consisted of independent variables, namely the use of audiovisual media, and dependent variables, namely knowledge about the prevention and control of dengue vectors. Data collection was carried out through observation sheets, while the research instrument used was a questionnaire. The data collection technique was by interviewing respondents using a questionnaire. The data was analyzed using the non-parametric Wilcoxon Sign Rank Test.

## Results

### Univariate Analysis

**Table 1. Frequency Distribution Based on Respondent Characteristics**

Category	N	%
<b>Gender</b>		
Male	21	42
Female	29	58
<b>Age</b>		
9 year	7	14
10 year	28	56
11 year	15	30
<b>Class</b>		
Class IV	22	44
Class V	28	56
<b>Total</b>	50	100

Table 1 shows the characteristics of the respondents that out of a total of 50 respondents, the majority are female, namely 29 people (58%), while male 21 people (42%). Based on age category, the 10-year-old age group dominated with a total of 28 people (56%), followed by the 11-year-old group with 15 people (30%), and the 9-year-old group was the least with only 7 people (14%). Respondents were also divided into two class levels, namely class IV with 22 people (44%) and class V which was slightly more, namely 28 people (56%).

**Table 2. Frequency Distribution Per Item of Student/I Knowledge Questions Before and After Counseling**

Knowledge Questions					True				Wrong			
					Pre	%	Post	%	Pre	%	Post	%
Apa	which	Intended	With	Fever	47	94	50	100	3	6	0	0
Dengue Bleeding (DHF)?												
What is the name of the mosquito that is the vector					44	88	47	94	6	12	3	6
DBD?												
When is the Aedes aegypti mosquito usually active					16	32	44	88	34	68	6	12
Bite?												
Apa	color	distinctive	body	Aedes	27	54	37	74	23	46	13	26
mosquito aegypti?												
What is 3M Plus?					16	32	22	44	34	68	28	56
What are the additional steps of 3M Plus?					21	42	37	74	29	58	13	26
What to do if you find					23	46	41	82	27	54	9	18
Where is puddling around the house?												
What are the signs of a person getting dengue?					36	72	44	88	14	28	6	12
Why dengue vector prevention is important					21	42	37	74	29	58	13	26
Done?												

What to do if there are members family affected by dengue?	29	58	50	100	21	42	0	0
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From the table above, there was a significant increase in the level of knowledge of students related to Dengue Hemorrhagic Fever (DHF) after being given intervention or education. In table 2, it can be seen that from each item of the knowledge question, there is an increase in the value from pretest to posttest for the correct category, while after the posttest there is a decrease in the value from pretest to posttest for the wrong category.

Table 3 shows that the results of the pretest and posttest have significant differences. In the results of the pretest, students were balanced for the poor and good categories, namely 25 students (50%). Meanwhile, when after being given the intervention and conducting a posttest, the students dominated more as many as 49 students (98%) in the good category for the level of knowledge.

**Table 3. Distribution of Frequency of Students' Knowledge Before and After Counseling**

Variable	N	%
<b>Pre-test Knowledge</b>		
Not Good	25	50
Good	25	50
<b>Post-test Knowledge</b>		
Not Good	1	2
Good	49	98

### Bivariate Analysis

Table 4 explains that the findings of the data normality test use a non-parametric test, namely Wilcoxon with the Kolmogorov method. The reason for using Kolmogorov-smirnov is because the number of samples is above >50, while the shapiro-wilk itself is used for samples below <50. In this study, because the number of samples is exactly 50, the data normality test is carried out with both methods.

The results of the analysis showed that the significance value of the variable of knowledge level in the pretest and posttest was 0.000. This value indicates that the data is not normally distributed, due to the significance value ( $p < 0.05$ ). Therefore, this study uses the Wilcoxon nonparametric test to analyze the difference between pretest and posttest.

The Wilcoxon Signed Rank Test yielded an Asymp. Sig. (2-tailed) value of 0.000, which is smaller than the significant value of ( $\alpha = 0.05$ ) or ( $p < 0.05$ ). These findings show that there is a significant influence of the use of video media on increasing students' knowledge about the prevention and control of dengue vectors at SDN 105312 Sawit Rejo.

**Table 4. Data Normality Test**

Variable	Kolmogorov-Smirnov	Information	Shapiro-Wilk	Information
<b>Knowledge</b>				
Pretest	0.000	Abnormal	0.000	Abnormal
Post-test	0.000	Abnormal	0.000	Abnormal

**Table 5. The Effect of Audiovisual Media on Students' Knowledge of Dengue Vector Prevention and Control at SDN 105312 Sawit Rejo**

	Mean	Std. Deviation	p-value
Pretest Knowledge	56.00	18.626	0.000
Post-test Knowledge	79.80	12.629	

Table 5 shows a significant difference between the average level of students' knowledge about the prevention and control of dengue hemorrhagic fever (DHF) vectors before and after using audiovisual media at SDN 105312 Sawit Rejo.

The results of the pretest showed an average level of knowledge of students of 56.00 with a standard deviation of 18.626. After the intervention using audiovisual media, the post-test results showed an increase in the average knowledge to 79.80 with a standard deviation of 12.629. The average increase in knowledge is 23.80. This result was obtained from the findings of a non-parametric test using the Wilcoxon test where the number of p-values obtained was 0.000.

This result illustrates that the p-value is less than a significant level ( $p < 0.05$ ). Thus, it can be interpreted that there is an influence of audio-visual media on the level of students' knowledge about the prevention and control of dengue vectors at SDN 105312 Sawit Rejo.

## Discussion

This study aims to analyze the effect of providing education through audiovisual media on increasing students' knowledge about Dengue Hemorrhagic Fever (DHF). Based on the results of the study, there were significant changes in the level of knowledge of students before and after being given education. This is reflected in the distribution of data obtained through pretest and posttest tests.

In this study, it was found that providing education through audiovisual media about dengue prevention can significantly increase student knowledge. Before being given education, the level of knowledge of students was in the category of sufficient as many as 25 students (50%), while after being given education, the majority of students were in the good category of 49 students (98%). This shows a significant increase in the level of student knowledge with a p-value of  $< 0.05$ .

The results of this research are in line with the research (Lubis, 2024) where the results of knowledge and attitudes before the intervention through audiovisual media were in the adequate category, namely 57 children (76%), while after the most interventions were in the good category, namely 69 students (92%), with a p value of  $< 0.05$ .

Based on the results of the Wilcoxon statistical test, a p-value ( $p=0.000$ ) was obtained which showed that counseling with the help of audiovisual media had a significant influence on increasing the level of students' knowledge about the prevention and control of Dengue Hemorrhagic Fever (DHF) vectors at SDN 105312 Sawit Rejo. This is more effective than counseling without audiovisual media support.

From the data obtained, before counseling using audiovisual media (pretest), the majority of students showed a poor level of knowledge with an average score of 56.00 and a standard deviation of 18.626. However, after the intervention was administered through audiovisual media (posttest), there was a significant increase in the level of knowledge of the students, with the average score being 79.80 and the standard deviation of 12.629.

This increase indicates that the use of audiovisual media in counseling, such as videos that tell about the importance of dengue prevention and control measures, attracts more attention to students than conventional lecture methods. This media helps students understand the material more clearly and enthusiastically, so that information is easier to understand and apply in daily life.

These results were also supported by the frequency distribution of knowledge question items, which showed a significant increase in the correct category on the posttest compared to the pretest. In addition, the majority of students on the posttest (98%) are in the category of good knowledge.

As shown in table 2 in the results, there was a significant increase in the level of knowledge of students related to Dengue Hemorrhagic Fever (DHF) after being given intervention or education. Before the intervention, the majority of students already had a fairly good basic understanding, such as in the question about the definition of dengue, where 94% of students answered correctly, and after education it increased to 100%. The understanding of mosquitoes as a vector of dengue also increased from 88% to 94%, while the awareness of the active time of *Aedes aegypti* mosquitoes experienced a significant jump from 32% to 88%.

In the question related to the characteristics of mosquito body color, the correct answer increased from 54% to 74%, although further improvement is still needed. Understanding of the 3M Plus concept shows a small increase from 32% to 44%, signaling the need for emphasis is more on education. Meanwhile, the understanding of 3M Plus's additional steps, actions if finding puddles, and signs of dengue has increased significantly, reaching 74%, 82%, and 88% correct answers after education, respectively. The most perfect improvement was seen in the question of what steps to take if a family member has dengue, where the correct answer increased from 58% to 100%.

Overall, this educational intervention is effective in improving students' understanding of dengue, although some points, such as the 3M Plus concept, still need further attention.

## Conclusion

From the research that has been conducted by the researcher, it can be concluded that the majority of respondents are female, with a total of 29 respondents (58%). Based on the distribution of the frequency of students' knowledge before (pretest) and after (posttest) education, the majority of respondents in the pretest were in the category of sufficient knowledge, namely 25 respondents (50%), and the majority of respondents during the posttest experienced a significant increase and were in the good category, namely 49 respondents (98%).

Based on the data normality test using the Wilcoxon non-parametric test, the mean value in the pretest was 56.00 with a standard deviation of 18.626. Meanwhile, in the posttest, a mean value of 79.80 and a standard deviation of 12.629 were obtained. A significant difference between the average level of pretest and posttest knowledge shows the positive influence of the use of audiovisual media in improving students' knowledge about the prevention and control of dengue vectors. In accordance with the p value of  $< \alpha$  (0.05), this result shows that audiovisual media has a significant effect on students' knowledge about the prevention and control of dengue vectors at SDN 105312 Sawit Rejo.

## References

- [1] Abiyoga, A. N. C. P. S. (2021). Pendidikan Kesehatan Mengenai Perawatan Anak Dengan Demam Berdarah Dengue (Dbd) Pada Usia 6-11 Tahun. *Jurnal Pengabdian Masyarakat Ners Wiyata*, 1(1), 51. [https://doi.org/10.35728/pengmas\\_ners\\_wiyata.v1i1.709](https://doi.org/10.35728/pengmas_ners_wiyata.v1i1.709)
- [2] Andriani, D. A. (2020). PENGARUH PENDIDIKAN KESEHATAN DENGAN MEDIA AUDIO VISUAL TERHADAP PENGETAHUAN DAN SIKAP ANAK USIA SEKOLAH TENTANG PENYAKIT DEMAM BERDARAH. 7, 65–72.
- [3] Anisa, A. (2023). Pengaruh Edukasi Kesehatan Melalui Media Video Animasi Terhadap Pengetahuan Dan Sikap Pencegahan Demam Berdarah Dengue Di Sdn Cisarua Kota Sukabumi (Doctoral dissertation, Universitas Siliwangi).
- [4] Anisa, Adi Dwi Susanto, I. S. (2024). Pengaruh Pendidikan Kesehatan Dengan Video Animasi Terhadap Pengetahuan Pencegahan Demam Berdarah Dengue (Dbd) Di Sdn Rancabuaya 1 Kecamatan Jambe Kabupaten Tangerang. *Jurnal Ilmu Kesehatan*, 5(2). <https://doi.org/10.5455/mnj.v1i2.644xa>
- [5] Baitipur, L. N. W. (2018). PENDIDIKAN KESEHATAN MELALUI VIDEO UNTUK MENINGKATKAN PENGETAHUAN DAN PRAKTIK PSN DBD. 3(2), 86–90.
- [6] Dimas Dwi Yoga Saputra, Lundy, F., & Vania Putri Anastisia. (2024). Pencegahan Demam Berdarah Menggunakan Video Animasi terhadap Pengetahuan Siswa SDN Gadang 4 Kota Malang. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 7(4), 941–945. <https://doi.org/10.56338/mppki.v7i4.4835>
- [7] Direktorat P2PM. (2022). Laporan Kinerja Direktorat Jenderal Pencegahan dan Pengendalian Penyakit Menular Tahun 2022. Kemkes, 1–114. <https://e-renggar.kemkes.go.id/file2018/e-performance/1-465827-3tahunan-768.pdf>
- [8] Hapsari, O. D. (2018). Pengaruh Pemutaran Video Animasi Terhadap Pengetahuan Dan Sikap Siswa Dalam Pencegahan Demam Berdarah Dengue (Dbd) Di Sekolah Dasar (Doctoral dissertation, Poltekkes Kemenkes Yogyakarta).
- [9] Lubis, A. S. (2024). Pengaruh Media Audiovisual terhadap Tingkat The Influence of Audiovisual Media on the Level of Knowlegde and Attitude for Good and Correct Handwashing with Soap ( CTPS ) at Yaspenha Primary. 10(September), 377–384.
- [10] Lutfiana, Defitri (2023). Pengaruh Promosi Kesehatan Melalui Media Animasi Terhadap Pengetahuan Dan Sikap Dalam Pencegahan DBD pada Anak Sekolah Dasar Di SD Negeri 1 Payak. Masters thesis, Universitas Jenderal Achmad Yani Yogyakarta.
- [11] Nurramdhani, A., Ernawati, K., Jannah, F., Multi, J., Rizon, E., & Kunci, K. (2022). Pengaruh Penyuluhan DBD Dengan Media Video Terhadap Pengetahuan Mayarakat di Kampung Kesepatan , Cilincing Jakarta Utara The Impact of DHF Counseling via Video Media on Community Knowledge in Kampung Kesepatan , Cilincing , North Jakarta. 9(1), 23–31.
- [12] P2P, K. D. (2023). Tahun 2023. PROFIL DIREKTORAT JENDERAL PENCEGAHAN DAN PENGENDALIAN PENYAKIT, 5(192579), 14–22.
- [13] Sriwiyati, L., Keperawatan, A., & Kosala, P. (2020). MENGGUNAKAN METODE AUDIOVISUAL TERHADAP TINGKAT PENGETAHUAN ANAK. 4, 44–54. <https://doi.org/10.33377/jkh.v4i2.82>
- [14] Syafi, M. (n.d.). Pengaruh Pendidikan Kesehatan Metode Brainstorming dan Video terhadap Pengetahuan tentang Demam Berdarah pada Keluarga di Wilayah Kerja Puskesmas Puger Kabupaten Jember ( The effect of Health Education Brainstorming Method and Video to the Knowledge about. 6(1), 141–146.
- [15] Wirantika, W. R. S. (2020). PENGARUH PENDIDIKAN KESEHATAN TERHADAP PENGETAHUAN DAN PERILAKU SISWA DENGAN PERSEBARAN DEMAM BERDARAH DENGUE (DBD) DI SEKOLAH. 1(6), 427–431.