



THE EFFECTIVENESS OF CLEAN AND HEALTHY LIVING BEHAVIOR IMPLEMENTATION ON THE PREVENTION OF HELMINTHIASIS USING AUDIOVISUAL METHODS AMONG SIXTH-GRADE STUDENTS AT SDN PERWIRA II BEKASI

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Abstract

Intestinal worms are one of the infectious diseases that remain a health problem among elementary school children, especially in environments with suboptimal sanitation and hygiene practices. This condition can affect children's health status, growth, and learning abilities, thus requiring preventive measures through effective and easy-to-understand health education. One preventive measure that can be taken is to provide health education on Clean and Healthy Living Behaviors (PHBS) through audiovisual media as a means of conveying information that is easily understood by elementary school students. According to the World Health Organization (WHO) in 2023, around 1.5 billion people worldwide are still infected with intestinal worms. In Indonesia, the prevalence of intestinal worms in children is still high, ranging from 30% to 90%, and is related to the low implementation of PHBS. This study aims to determine the effectiveness of implementing PHBS in preventing intestinal worms using audiovisual methods in sixth-grade students at SDN Perwira II Bekasi in 2025. Method this study employed a quantitative approach with a pre-test and post-test design without a control group involving 50 students (N = 50) using a total sampling technique. Data were analyzed using the Wilcoxon test. Result the mean knowledge score increased from 56.40 to 82.60, and the mean attitude score increased from 58.20 to 84.10. The Wilcoxon test results showed a p-value of $0.000 < 0.05$, indicating a significant effect of PHBS implementation using audiovisual methods on the prevention of helminthiasis. Discussion the results showed that education on Clean and Healthy Living Behavior (PHBS) delivered through audiovisual media significantly improved students' knowledge and attitudes. Before the intervention, students' understanding and attitudes toward PHBS were not optimal; however, after the educational intervention, positive changes toward the adoption of clean and healthy living behaviors were observed. Audiovisual media proved effective because it presents information in a concrete, engaging, and easily understood manner for elementary school-aged students. These findings confirm that audiovisual-based PHBS education has the potential to support the prevention of helminthiasis in school environments..

Keywords: Audiovisual Method, Elementary School Students, Helminthiasis, PHBS

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INTRODUCTION

Helminthiasis is a parasitic infectious disease that remains a public health problem and is closely related to environmental living conditions (CDC, 2019; Dhina, 2022). One form of helminthiasis is intestinal worm infection transmitted through soil, known as soil-transmitted helminths (STH) (Situmorang P dkk., 2023). Worm species included in this group are roundworms (*Ascaris lumbricoides*), whipworms (*Trichuris trichiura*), and hookworms (*Ancylostoma duodenale* and *Necator americanus*) (Azizy et al., 2022). The occurrence of helminth infections is strongly associated with individual sanitation conditions (Ghodeif & Jain, 2023). Factors such as the habit of wearing footwear, washing hands with soap, and trimming nails regularly play an important role in preventing the transmission of this disease (Hartati et al., 2021).

Public health efforts are carried out through environmental improvement and behavioral changes, particularly through the implementation of Clean and Healthy Living Behavior (PHBS). Low public awareness in implementing PHBS contributes to the emergence of helminthiasis. This disease predominantly affects children, causes nutritional disorders, and impacts growth, learning ability, and work productivity in adulthood (Sapalas Rian et al., 2022)

According to WHO (2023), soil-transmitted helminth (STH) infections remain a global public health problem, especially among school-aged children. These infections are commonly found in tropical and subtropical regions with poor sanitation, with the main worm species including *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworms. Globally, approximately 1.5 billion people or 24% of the world's population are infected with STH, including 876 million children who require preventive treatment, with the highest prevalence reported in Africa, the Americas, China, and East Asia. WHO emphasizes the importance of mass deworming programs in areas with prevalence above 20% as a disease control strategy.

In Indonesia, the prevalence of helminthiasis among children aged 1–12 years remains high and varies widely, ranging from 30% to 90%. Data indicate high prevalence rates in several regions, such as Sumatra (78%), Kalimantan (79%), Sulawesi (88%), West Nusa Tenggara (92%), and West Java,

reaching 90%. The high incidence of helminthiasis is closely related to low socioeconomic conditions and poor environmental sanitation, making the strengthening of clean and healthy living behaviors and health interventions essential steps to reduce helminthiasis prevalence (Birokrasi, 2025; Hartati et al., 2021).

Clean and Healthy Living Behavior (PHBS) is an important effort to improve public health status, especially among children who are vulnerable to various infectious diseases. Based on data from the Basic Health Research (Riskesmas) of the Indonesian Ministry of Health, PHBS implementation in Indonesia has continued to increase, from 11.2% in 2007 to 39.1% in 2018. Nevertheless, these figures indicate that the majority of the population has not yet fully implemented PHBS properly. Some indicators, such as the use of clean water and mosquito larvae eradication, have shown positive results; however, handwashing with soap, fruit and vegetable consumption, and physical activity remain low (Kemenkes RI, 2021).

Meanwhile, based on the West Java Provincial Health Profile 2024, the level of PHBS implementation in the region reached 69.9%, showing an increase compared to the previous year, although it is still below the national target of 75%. This condition illustrates that public awareness of maintaining cleanliness and health still needs improvement. The West Java Provincial Government continues to strengthen PHBS education and habituation programs through cross-sectoral activities such as School Health Units (UKS), integrated health posts (posyandu), and health campaigns in schools (Nasution, 2023).

Specifically in Bekasi City, based on the 2020 Health Profile, of 769,691 households, only 60.13% had implemented PHBS properly, reflecting a decrease of 1.77% from the previous year. This decline was influenced by the impact of the COVID-19 pandemic, which hindered educational activities and field data collection by health officers. In addition, to date, there are no definite or accurate data related to the prevalence of helminthiasis in Bekasi City, as no health survey has been conducted specifically to examine this condition (Dinkes, 2020). Therefore, further research is needed to provide a clear picture of environmental health conditions and PHBS implementation, particularly in

relation to helminthiasis prevention among elementary school-aged children..

Health problems resulting from low implementation of Clean and Healthy Living Behavior (PHBS) are still common and can cause various diseases, such as helminthiasis, diarrhea, and acute respiratory infections, which are particularly experienced by school-aged children and may have long-term impacts. Considering that schools are the primary environment where children spend most of their time, school-based health education becomes an important strategy for shaping healthy behaviors through the School Health Program (UKS). However, PHBS implementation in schools is generally limited to appeals and slogans without structured education. Therefore, more effective educational interventions are needed, one of which is through audiovisual methods. Hence, this study was conducted to examine the effectiveness of audiovisual-based PHBS implementation in preventing helminthiasis among sixth-grade students at SDN Perwira II Bekasi in 2025.

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Study Design and Location

This study employed a pre-experimental design with a one-group pretest–posttest approach. The research was conducted at SDN Perwira II Bekasi in December 2025, including the preparation stage, initial measurement (pretest), delivery of PHBS educational intervention using audiovisual media, and final measurement (posttest) (Anantasia, 2025).

Population and Sample

The study population consisted of all sixth-grade students at SDN Perwira II Bekasi. The sampling technique used was total sampling; therefore, all sixth-grade students were included as research samples, with inclusion criteria being students who were willing to participate and completed the intervention process (Sugiyono, 2020; Wibowo, 2021)

Instruments

The research instruments consisted of a knowledge questionnaire and an attitude questionnaire related to Clean and Healthy Living Behavior (PHBS) and helminthiasis prevention, adapted from previous research instruments and adjusted to the study objectives. The knowledge

questionnaire was in the form of multiple-choice questions with one correct answer to measure students' understanding of PHBS concepts, personal hygiene, environmental hygiene, and helminthiasis prevention efforts. The attitude questionnaire was structured as closed statements using a Likert scale to assess students' attitudes toward PHBS implementation. In addition to questionnaires, the intervention media consisted of audiovisual media based on PowerPoint containing educational videos used to deliver the material. This media presented a combination of short text, images, and educational videos, making it easier for students to understand the material in an engaging and memorable way (Valenza, 2020)

Procedure

The research procedure began with obtaining research permits and approval from the school, as well as providing research information to respondents. After that, respondents were asked to complete the pretest questionnaire to measure their initial level of knowledge and attitudes toward PHBS. Next, an intervention was conducted in the form of health education regarding PHBS and helminthiasis prevention using audiovisual media. After the intervention, respondents were given a posttest using the same questionnaire to assess changes in knowledge and attitudes. All collected data were then checked for completeness and consistency before data processing and analysis.

Data Analysis

The obtained data were analyzed using a computer-based statistical program. Data analysis was conducted in several stages, namely univariate and bivariate analyses. Univariate analysis was used to describe the characteristics of each research variable, including students' knowledge and attitudes toward Clean and Healthy Living Behavior (PHBS) and helminthiasis prevention before and after the intervention (Sugiyono, 2020).

Before conducting bivariate analysis, the data were tested for normality using the Kolmogorov–Smirnov and Shapiro–Wilk tests. The results of the normality tests indicated that the data were not normally distributed; therefore, the analysis of differences between pretest and posttest scores was performed using the non-parametric Wilcoxon Signed Rank Test (Senjaya et al., 2022).

RESULT AND DISCUSSION

Tabel 1. Frequency Distribution of Respondents' Characteristics

Characteristics	Frequency	Percentage
Class		
VI.A	25	50.0
VI.B	25	50.0
Total	50	100.0
Gender		
Male	24	48.0
Female	26	52.0
Total	50	100.0
Age		
10 years	27	54.0
11 years	18	36.0
12 years	5	10.0
Total	50	100.0

Based on the analysis of respondent characteristics in Table 1, this study involved 50 sixth-grade students of SDN Perwira II Bekasi, consisting of 24 male students (48%) and 26 female students (52%). The respondents came from classes VI A and VI B in equal numbers, with 25 students (50%) in each class. The majority of respondents

were 10 years old (54%), followed by those aged 11 years (36%) and 12 years (10%), indicating that the respondents were in late elementary school age and were appropriate to receive Clean and Healthy Living Behavior (PHBS) education as an effort to prevent helminthiasis.

Tabel 2. Frequency Distribution of Knowledge

Knowledge	Frequency	Percentage
Pre Test		
Good	0	0
Moderate	7	14.0
Poor	43	86.0
Total	50	100.0
Post Test		
Good	36	72.0
Moderate	14	28.0
Poor	0	0
Total	50	100.0
Attitude	Frequency	Percentage
Pre Test		
Good	5	10.0
Moderate	36	72.0
Poor	9	18.0
Total	50	100.0
Post Test		
Good	37	74.0
Moderate	13	26.0
Poor	0	0
Total	50	100.0

Based on Table 2, prior to audiovisual-based PHBS education, most students had a low level of knowledge, namely 86.0% (43 students), while 14.0% (7 students) were in the moderate category, and none had good knowledge. In terms of attitude, the majority of students were in the moderate category at 72.0% (36 students), followed by the poor category at 18.0% (9 students), and the good

category at 10.0% (5 students). After the intervention, a significant improvement occurred, as indicated by 72.0% (36 students) reaching the good knowledge category and 28.0% (14 students) in the moderate category, as well as 74.0% (37 students) in the good attitude category and 26.0% (13 students) in the moderate category, with no students remaining in the poor knowledge or attitude categories.

Tabel 3. Normality Test

	Tests Of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Knowledge Pre-test	.207	50	.000	.894	50	.000
Knowledge Post-test	.189	50	.000	.916	50	.002
Attitude Pre-test	.178	50	.000	.930	50	.006
Attitude Post-test	.135	50	.024	.971	50	.256

Tabel 4. Wilcoxon Test

Test Statistics		
	Knowledge Post-test-Attitude Pre-test	Attitude Post-test - Attitude Pre-test
Z	-6.173 ^b	-5.258 ^b
Asymp. Sig. (2-tailed)	.000	.000

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.

The results of the normality test in Table 3 showed that knowledge and attitude data were not normally distributed ($p < 0.05$), therefore the analysis was continued using the Wilcoxon Signed Rank Test. The Wilcoxon test showed a significant difference between pre-test and post-test scores for knowledge ($p = 0.000$) and attitude ($p = 0.000$). This confirms that PHBS education through audiovisual media has a significant effect on improving the knowledge and attitudes of sixth-grade students at SDN Perwira II Bekasi..

Discussion

This study aimed to analyze changes in the knowledge and attitudes of sixth-grade students at SDN Perwira II Bekasi after being given Clean and Healthy Living Behavior (PHBS) education using audiovisual media. The pre-test results showed that most students still had suboptimal knowledge and attitudes related to PHBS, particularly in efforts to prevent helminthiasis. As many as 86.0% of students were in the poor knowledge category, and the majority demonstrated moderate to poor attitudes, indicating limited understanding and insufficient

application of clean and healthy living behaviors in daily life..

After the PHBS educational intervention, a clear improvement was observed in both knowledge and attitude aspects. Post-test results showed that 72.0% of students were in the good knowledge category, and no students were found to have poor knowledge. Similar changes were also seen in attitudes, with 74.0% of students categorized as having good attitudes. These findings indicate that audiovisual media are effective in delivering health messages because they combine engaging visual and audio elements, making it easier for students to understand and remember PHBS material.

Statistical analysis using the Wilcoxon Signed Rank Test reinforced these findings, with significant results for knowledge ($Z = -6.173$; $p = 0.000$) and attitude ($Z = -5.258$; $p = 0.000$). These results indicate that PHBS education through audiovisual media has a significant effect on improving students' knowledge and attitudes. Theoretically, this effectiveness is consistent with the cognitive development characteristics of elementary school-aged children, who more easily understand concrete and visual information, as well

as social learning theory, which emphasizes learning through observation and imitation of behavior.

The results of this study are also consistent with previous research showing that health education using audiovisual media is effective in improving the knowledge and attitudes of elementary school children regarding clean and healthy living behaviors. Research conducted by Amalia et al., (2025) explained that providing PHBS education through audiovisual media was able to significantly improve students' understanding and PHBS skills. Audiovisual media are considered effective because they present health information both visually and auditorily, making it easier for students to understand the material and imitate the behaviors shown. Research conducted by Fithri et al., (2022) showed that the use of interactive health promotion media was able to significantly improve PHBS knowledge because it actively involved students in the learning process. Media that combine visual elements and activities have been proven to help students understand health messages more deeply compared to conventional delivery methods.

Furthermore, research conducted by Indraswari et al., (2024) explained that students positive attitudes toward the implementation of Clean and Healthy Living Behavior (PHBS) reflect their ability to understand and assess potential health risks that may arise if personal and environmental hygiene are not properly maintained. These findings are relevant to the results of this study, in which the improvement in attitudes of sixth-grade students at SDN Perwira II Bekasi after receiving PHBS education through audiovisual methods indicates a process of understanding PHBS values as part of efforts to prevent helminthiasis. Nevertheless, as explained in the study by Indraswari et al., (2024) good attitudes do not fully guarantee the prevention of helminthiasis if they are not accompanied by consistent behavioral practices and adequate environmental support. The similarity of these findings further strengthens the conclusion that audiovisual media are an appropriate and effective educational tool for use in the prevention of environmentally based diseases, including helminthiasis.

Overall, the increase in knowledge and changes in students' attitudes after receiving PHBS education indicate that the intervention not only provided theoretical understanding but was also able

to shape positive attitudes that support the sustainable implementation of clean and healthy living behaviors. Audiovisual media create a learning process that is more engaging, interactive, and easy to understand, thereby encouraging students to internalize and apply the learned behaviors in their daily lives.

It can be concluded that PHBS education using audiovisual media has a significant effect on increasing knowledge and changing the attitudes of sixth-grade students at SDN Perwira II Bekasi in efforts to prevent helminthiasis, as statistically proven by a p-value of 0.000 ($p < 0.05$) in the Wilcoxon test

Conflict of Interest

All authors declare that there are no conflicts of interest in this study..

Data and Materials Availability

The research data cannot be shared publicly due to confidentiality agreements with the participants.

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