

THE EFFECT OF ANIMATED VIDEO MEDIA AND DEMONSTRATION METHOD ON KNOWLEDGE AND PRACTICE OF HANDWASHING WITH SOAP AT SDI HABIHOGOR, SIKKA REGENCY

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Abstract

Handwashing with Soap (HWWS) is the most effective measure for preventing infectious diseases; however, the proportion of proper HWWS in East Nusa Tenggara (NTT) is only 21.7%, well below the national figure of 51.1%. This study aimed to analyze the effect of animated video media and demonstration method on HWWS knowledge and practice among students of SDI Habihogor (elementary school), Sikka Regency. A pre-experimental one-group pretest-posttest design was employed, involving all 94 students from grades I-VI as the sample (total sampling). Data were collected using a 13-item HWWS knowledge questionnaire (score 0-13) and a 7-step WHO handwashing practice observation checklist (score 0-7). The intervention consisted of a 4-minute HWWS animated video combined with a live demonstration by the researcher. Bivariate analysis was conducted using the *Wilcoxon Signed Rank Test*. Results showed that the mean knowledge score increased significantly from 6.41 (*pre-test*) to 11.61 (*post-test*), and the mean practice score increased from 2.49 to 6.88. The *Wilcoxon* test yielded $p=0.000$ (<0.05) for both knowledge and practice. There was a significant effect of animated video media and demonstration method on HWWS knowledge and practice among SDI Habihogor (elementary school) students. The combination of both approaches effectively improved students' conceptual understanding and procedural skills.

Keywords: Handwashing with Soap, Animated Video, Demonstration Method, Health Promotion, Elementary School

Introduction

Hand-transmitted infectious diseases, such as diarrhea, intestinal worms, and influenza, pose a serious threat to children's health. The WHO reports nearly 1.7 billion cases of childhood diarrhea annually, with diarrhea killing approximately 443,832 children under five years of age and an additional 50,851 children aged 5–9 years (WHO, 2024). More than 260 million preschool-aged children and 654 million school-aged children live in areas with intense soil-transmitted helminth transmission (WHO, 2023), while 99% of child deaths from influenza-related respiratory infections occur in developing countries (WHO, 2025).

HWWS is the simplest and most effective way to break the chain of infectious disease transmission. Studies show that HWWS education can reduce diarrhea incidence by 23%–40%, reduce school absenteeism due to gastrointestinal illness by 29%–57%, and reduce respiratory infections by 16%–21% (CDC, 2024). Nevertheless, the rate of proper HWWS awareness among residents aged ≥ 10 years in NTT Province reaches only 21.7%, the second lowest nationally (Ministry of Health Republic of Indonesia, 2023).

Sikka Regency is one of the areas facing similar challenges. Approximately 89% of Sikka Regency residents are unaware of proper HWWS, contributing to a childhood diarrhea rate of 24.44% (Regional Development Planning, Research and Innovation Agency of Sikka Regency, 2024). A preliminary observation at SDI Habihogor (elementary school) found that most students were unaware of the correct HWWS steps, existing HWWS facilities were no longer in use, and HWWS education had only been conducted intensively during the COVID-19 pandemic.

Educational interventions involving animated visual media and direct demonstration are considered an appropriate approach for elementary school-aged children. Animated videos are effective at improving students' handwashing knowledge and skills beyond what conventional teaching achieves (Hayat and Faletahan, 2021), meanwhile, the demonstration method has been shown to improve knowledge, attitudes, and skills more effectively than lecture-based methods, with significantly higher final scores ($p < 0.05$) (Polly *et al.*, 2024).

However, research specifically combining animated video media with the demonstration method to evaluate their combined effect on HWWS knowledge and practice, particularly in rural elementary schools such as SDI Habihogor (elementary school), NTT, remains absent. This research gap serves as the basis for the present study, which aims to analyze the effect of animated video media and demonstration method on HWWS knowledge and practice among students of SDI Habihogor (elementary school), Sikka Regency.

Methods

This study used a pre-experimental one-group pretest-posttest design, measuring HWWS knowledge and practice before (*pre-test*) and after (*post-test*) the intervention in the same group without a control group. The study was conducted at SDI Habihogor (elementary school), Kewapante District, Sikka Regency, in March 2026. The study population comprised all students of SDI Habihogor (elementary school). A total sampling technique was used, resulting in all 94 students from grades I–VI being included as respondents.

Study variables included HWWS knowledge, measured with a 13-item multiple-choice questionnaire (score 0–13), and HWWS practice, measured with a checklist observation sheet for 7 WHO/Ministry of Health handwashing steps (score 0–7).

The study implementation consisted of four phases: first, pre-test of knowledge and HWWS practice observation on days 1 and 2 for all 94 students, second, the intervention on days 3 and 4, comprising a 4-minute HWWS animated video, explanation of the 7 HWWS steps, a live demonstration by the researcher, step-by-step guided practice, and a question-and-answer session with corrections, third, post-test of knowledge and HWWS practice observation immediately after the intervention using the same instruments, and fourth, data processing and analysis.

Data were processed through editing, coding, entry, tabulating, and cleaning stages using *IBM SPSS Statistics Version 22*. Bivariate analysis was performed using the *Wilcoxon Signed Rank Test* with a significance level of $\alpha = 0.05$ because the data were not normally distributed.

Results

The study involved 94 students of SDI Habihogor (elementary school), Sikka Regency from grades I to VI. The characteristics of the respondents are presented in table 1.

Table 1. Distribution of Respondent Characteristics of SDI Habihogor Students, Sikka Regency, 2026

Characteristics	N	%
Age		
6	1	1,1%
7	14	14,8%
8	15	16%
9	11	11,7%
10	19	20,2%
11	20	21,3%
12	10	10,6%
13	4	4,3%
Total	94	100%
Gender		
Male	38	40,4%
Female	56	59,6%
Total	94	100%

Source: Primary Data, 2026

Table 1 shows that the highest age group was 11 years old (21.3%), followed by 10 years old (20.2%) and 8 years old (16.0%). There were more female respondents (56 students, 59.6%) than male respondents (38 students, 40.4%). The HWWS knowledge scores before and after the intervention are presented in table 2 below.

Table 2. Distribution of Mean HWWS Knowledge Scores Before and After Intervention

	N	Min	Max	Mean	Standard deviation
Pretest	94	2	12	6,41	2,357
Posttest	94	10	13	11,61	1,157

Source: Primary Data, 2026

Table 2 shows that before the intervention, or during the *pre-test*, the mean student knowledge score was 6.41, while the mean knowledge score after the intervention, or during the *post-test*, was 11.61. This shows an increase in the average knowledge score of students after intervention using animated video media and demonstration methods. The HWWS practice scores before and after the intervention are presented in table 3.

Table 3. Distribution of Mean HWWS Practice Scores Before and After Intervention

	N	Min	Max	Mean	Standard deviation
Pretest	94	1	6	2,49	0,729
Posttest	94	6	7	6,88	0,323

Source: Primary Data, 2026

Table 3 shows that before the intervention, or during the *pre-test*, the mean student practice score was 2.49, while the mean practice score after the intervention, or during the *post-test*, was 6.88. This shows an increase in the average value of students practice after being given intervention using animated video media and coercion methods. The results of the bivariate analysis of the intervention's effect on HWWS knowledge using the Wilcoxon Signed Rank test are presented in table 4.

Table 4. Wilcoxon Signed Rank Test Results for HWWS Knowledge Before and After Intervention

Dependent Variable	Knowledge before		Knowledge after		Difference	P Value
	intervention		intervention			
	N	Mean	N	Mean		
Konwledge of HWWS	94	6,41	94	11,61	5,2	0,000

Table 4 shows that based on the results of the *Wilcoxon Signed Rank* test, a p-value of $0.000 < \alpha$ (0.05) was obtained, so H_0 was rejected, which means that there is an influence of health education through animated video media and demonstration methods on students' practice of HWWS at SDI Habihogor (elementary school), Sikka Regency because it can be seen that there is a difference in the average practice of students about HWWS before and after being given health education through animated video media and demonstration methods. The results of the bivariate analysis of the effect of the intervention on HWWS practices are presented in table 5.

Table 5. Wilcoxon Signed Rank Test Results for HWWS Practice Before and After Intervention

Dependent Variable	Practice before		Practice after		Difference	P-Value
	intervention		intervention			
	N	Mean	N	Mean		
Practice of HWWS	94	2,49	94	6,88	4,39	0,000

Table 5. shows that based on the *Wilcoxon Signed Rank* test, a p-value of $0.000 < \alpha$ (0.05) was obtained, which led to the rejection of H_0 , which indicates that health education using animated video media and demonstration methods significantly influenced students' HWWS practices at SDI Habihogor (elementary school), Sikka Regency, as evidenced by the significant difference in the average value of HWWS practices before and after the intervention.

Discussion

The Effect of Animated Video Media and Demonstration Methods on HWWS Knowledge

The study showed that there was a difference in the average knowledge of students about HWWS before and after being given health education through animated video media with a combination of demonstration methods so that it can be said that there is an effect of health education through animated video media and demonstration methods on students' knowledge about HWWS at SDI Habihogor (elementary school). The results of the *Wilcoxon Signed Rank Test* statistical test found that all 94 respondents were in the positive rank category with an average of 47.50, which means that all respondents experienced an increase in knowledge scores or their post-test scores were greater than their pre-test scores. Not a single student experienced a decrease or stagnation in knowledge scores after the intervention. The large average positive rank illustrates that the combination intervention provided produced a consistent, even, and meaningful impact across the entire research sample population.

Previous research has shown that an animated video-based hand hygiene education program significantly improved children's knowledge of hand hygiene compared to a control group. In the study, animated videos were used in the first session of the educational

program to explain the relationship between germs and disease, where children acted as "little soldiers" who used handwashing as a "weapon" to defeat germs (Suen and Cheung, 2020). This approach proved effective in building children's interest in the learning process, resulting in a significant increase in their understanding of the HWWS material. The study also confirmed that the use of animated videos designed to suit children's cognitive stages is an appropriate and effective educational strategy for instilling important concepts about hand hygiene.

A previous study, a randomized clinical trial in 180 elementary schools in Bangladesh, found that a skills-based health education (SBHE) intervention that included weekly demonstration sessions by trained teachers resulted in children's handwashing skills and improved hygiene knowledge (Omura *et al.*, 2024). This study found that the group receiving skills-based education (which included demonstrations/hands-on practice) had a significantly greater impact than the group receiving only textual knowledge, thus underscoring the importance of the demonstration component in hygiene education interventions. This study confirms that the combination of animated video media and demonstration methods is a highly effective educational strategy for improving elementary school students' knowledge of HWWS, with an impact that was not only statistically significant but also consistent and equitable across the target population.

The Effect of Animated Video Media and Demonstration Methods on HWWS Practice

Health education through animated video media combined with demonstration methods has been proven to have an effect on students' practices related to HWWS at SDI Habihogor (elementary school), as shown by the difference in the average practice of students before and after being given the health education. Almost all of the 94 research respondents were in the positive rank category, meaning they experienced an increase in practice scores, and only one respondent was in the ties category (*post-test score = pretest -score*), while none experienced a decrease in score. This almost uniform distribution of results, 93 out of 94 students experiencing an improvement in practice, indicated that the combination intervention provided had a strong influence in changing the practical behavior of HWWS in elementary school students.

Previous research has shown that animated interventions combined with direct feedback increase children's self-efficacy and intrinsic motivation for handwashing. Implementation at an early age has been shown to encourage more effective behavior change and foster sustainable habits into adulthood. The same logic applies to the combination of animated videos and demonstrations: when children view the animated procedure, then watch and practice the demonstration live, their self-efficacy in performing handwashing with soap increases substantially (Dangis *et al.*, 2023). This is further

confirmed by research findings that confirm that visual animated instructions displayed during handwashing activities improve the quality of children's handwashing practices, as measured by the duration of soap use, by 62%. This effect appears immediately after the intervention and persists throughout the 42-day intervention phase (Graichen *et al.*, 2024). This evidence directly supports the findings of this study, which found that animated video interventions combined with demonstrations have an impact on handwashing practices.

Conclusion

There was a significant effect of animated video media and demonstration method on the knowledge and practice of HWWS among students of SDI Habihogor (elementary school), Sikka Regency. The mean knowledge score increased from 6.41 to 11.61 and the mean practice score increased from 2.49 to 6.88, with $p=0.000$ (<0.05) for both outcomes based on the *Wilcoxon Signed Rank* test. All students showed improvement in knowledge and nearly all students showed improvement in HWWS practice (93 out of 94 students). The combination of animated video and demonstration method has been proven statistically and clinically effective as a health promotion strategy for elementary school-aged children.

SDI Habihogor (elementary school) should integrate animated video media and demonstration as part of its Clean and Healthy Lifestyle (PHBS) program and strengthen HWWS facilities. Health institutions are encouraged to take an active role through routine health education using innovative media to reinforce HWWS behavior. Future researchers are advised to include a control group, attitudinal and motivational variables, and long-term assessments to measure the sustainability of HWWS behavior following the intervention.

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