

The Effectiveness of Demonstrating Handwashing Practices on Hand Hygiene Behavior Among School-Age Children in Tango Molas Village

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ABSTRACT

Demonstrating handwashing with soap under running water can reduce or even eliminate pathogens that cause infectious diseases. Hand hygiene refers to the act of cleaning hands using soap and rinsing under running water or using alcohol-based hand sanitizers. This study aimed to determine the effectiveness of handwashing demonstrations on hand hygiene behavior among school-age children in Tango Molas Village. The study used a quantitative method with a quasi-experimental design, specifically a control group pre-test–post-test approach. The control group consisted of students from SDI Rewung, while the intervention group consisted of students from SDI Kengko. The results of the Wilcoxon test on hand hygiene behavior in both groups (pre- and post-test) showed that the p-value in the experimental group was 0.001, indicating a statistically significant improvement in hand hygiene behavior among school-age children in Tango Molas Village.

Keywords: Demonstration, Hand Hygiene, Hand Washing, School-Age Children

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INTRODUCTION

School-age children are a group that is highly vulnerable to infectious diseases. One of the common infections affecting this group is diseases transmitted through the hands. Pathogens from sources such as human and animal feces or body fluids (e.g., nasal mucus) that come into contact with hands can serve as a medium for introducing bacteria and viruses into the human body (1).

Poor lifestyle habits among children, particularly the lack of proper hand hygiene, can increase the risk of such infections. Common illnesses caused by unclean hands include diarrhea and acute respiratory infections (ARIs) (2). These infections can lead to higher rates of school absenteeism and have a negative impact on children's overall health and development (3).

Handwashing with soap under running water has been shown to reduce and even eliminate the pathogens responsible for infectious diseases (4). Developing the habit of washing hands with soap can reduce the incidence of infectious diseases such as diarrhea and ARIs by up to 50%, which is equivalent to saving approximately 1 million children globally from infectious diseases each year (5).

Hand hygiene, or handwashing, refers to the activity of cleaning hands using soap and rinsing with running water, or by using alcohol-based hand sanitizers. It is considered a fundamental technique essential for the prevention and control of infections transmitted via hands (6).

Health demonstrations are educational activities aimed at individuals, groups, or communities to increase knowledge about health. These activities help individuals transition from being unaware to informed, and from being unable to independently address health problems to being capable of doing so through hands-on practice (7).

In schools, handwashing demonstrations are designed to change children's handwashing behavior in order to promote better health outcomes (8). Hand hygiene education techniques that incorporate interactive elements—such as demonstrations, visual aids, and games—are often more effective in capturing children's attention and fostering behavioral change (9).

METHODS

This research was conducted in Tango Molas Village, specifically at SDI Kengko as the intervention group and SDI Rewung as the control group, from March 1 to March 16, 2024. The study employed a quantitative research method with a quasi-experimental design using a control group pre-test–post-test approach. The total population was 227 students, and a sample of 38 students was selected using stratified random sampling.

This study aimed to evaluate the effectiveness of handwashing demonstrations in improving hand hygiene behavior among school-age children.

RESULTS AND DISCUSSION

The results of this study revealed that in both the experimental and control groups, the number of male students was lower than the number of female students. In the experimental group, there were 8 male students (42.1%) and 11 female students (57.9%), while in the

Table 1. Characteristics of Respondents

Characteristic	f	%
Experimental Group		
Gender		
Male	8	42.1
Female	11	57.9
Age		
7-9 years	10	52.6
10-12 years	9	47.4
Control Group		
Gender		
Male	9	47.4
Female	10	52.6
Age		
7-9 years	8	42.1
10-12 years	11	57.9

Table 2. Wilcoxon Test Results of Hand Hygiene Behavior in the Pre-Test and Post-Test of the Experimental and Control Groups

Variables	Mean	Min-Max	<i>p-Value</i>
Experimental Group			
Pre-test	2.16	1-4	0.001
Post-test	5.68	5-6	
Control Group			
Pre-test	2.26	1-5	1.000
Post-test	2.21	1-5	

control group, there were 9 male students (47.4%) and 10 female students (52.6%). The higher number of female respondents may be attributed to the higher birth rate of girls in Tango Molas Village. According to data from the Central Bureau of Statistics of East Manggarai Regency in 2020, the female population was 146,842, while the male population was 142,994 (10).

Regarding the age variable, students aged 7–9 years were more prevalent in the experimental group, totaling 10 students (52.6%), while the control group included 8 students (42.1%) in this age category. For the 10–12 years age group, the control group had a higher number of students, namely 11 students (57.9%), compared to 9 students (47.4%) in the experimental group. This

Table 3. Mann-Whitney Test Results of Hand Hygiene Behavior in the Post-Test of the Experimental Group and the Control Group

Group	Min-Max	Mean	<i>p-Value</i>
Experimental	5-6	28.84	0.001
Control	1-5	10.16	

distribution occurred due to the use of an attendance-based method in respondent selection. However, during the research process, it was found that several respondents did not meet the exclusion criteria. As a result, new respondents were selected to replace those who did not meet the criteria. Age is known to influence an individual's cognitive abilities, with older children generally demonstrating better comprehension and critical thinking skills (11).

The Wilcoxon test results in the experimental group showed a p-value of 0.001 (<0.05), indicating that the alternative hypothesis (H1) is accepted. This means there is a significant difference in the average scores between the paired samples. In contrast, the control group had a p-value of 1.000 (>0.05), suggesting no significant change in hand hygiene behavior, likely due to the absence of handwashing demonstrations.

The Mann-Whitney test results for handwashing behavior among school-age children in Tango Molas Village showed a mean rank of 28.84 in the experimental group and 10.16 in the control group. The post-test comparison between the two groups yielded a p-value of 0.001, indicating a significant difference. These findings are consistent with previous studies, which have shown a notable improvement in students' handwashing behavior after receiving demonstrations (12).

Demonstrations provide visual and practical guidance, making it easier for children to understand and retain proper handwashing techniques. A study conducted in Indonesia found that students who received handwashing demonstrations exhibited greater improvements in knowledge, attitudes, and skills compared to those who only received verbal instruction (13). Specifically, the demonstration group showed a more significant increase in proper handwashing practices, underscoring the effectiveness of practical learning in skill development.

Interactive demonstrations also enable real-time feedback, allowing students to immediately correct their techniques. An interventional study in Mysuru, India, utilized visual aids and hand imprints to highlight areas commonly missed during handwashing. After the demonstrations, the average percentage of missed hand areas significantly decreased, reflecting improved thoroughness and technique (14).

Furthermore, engaging demonstrations can foster long-term behavioral changes. A study using the "A Germ's Journey" educational resources found that interactive activities—such as songs and visual aids—significantly improved children's understanding of germ transmission and hand hygiene. These improvements were maintained over a one-month follow-up period, demonstrating the lasting impact of well-designed educational interventions (15).

Demonstrations can also promote enthusiasm and motivation among students. When children see their peers actively participating and receiving positive reinforcement, they are more likely to imitate proper hand hygiene practices. This peer influence can cultivate a culture of cleanliness and

health awareness within the school environment (16).

LIMITATIONS

The post-intervention follow-up period was limited, which may not sufficiently capture the long-term retention of knowledge or the sustainability of behavior changes in hand hygiene practices. Additionally, the impact on reducing infections, school absenteeism, and academic performance may not be fully represented within the study timeframe.

RESEARCH ETHIC

This study was conducted in accordance with ethical standards for research involving human participants. Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Health Sciences, Universitas Katolik Indonesia Santu Paulus Ruteng. Prior to participation, all respondents and their guardians were informed about the purpose, procedures, potential benefits, and risks of the study.

Informed consent was obtained from the parents or legal guardians of all student participants. Participation in the study was entirely voluntary, and participants were assured of their right to withdraw at any time without any negative consequences. Confidentiality and anonymity were maintained by ensuring that all data were coded and no personal identifiers were used in the analysis or reporting of results.

CONFLICT OF INTEREST

The author declares that there are no potential conflicts of interest.

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CONCLUSION

Children's handwashing behavior is influenced by their level of knowledge, which can be significantly improved through demonstrations and educational interventions. The more frequently school-age children in Tango Molas Village receive demonstrations on proper handwashing practices, the better their hand hygiene behavior becomes.

Demonstrations are an effective method for enhancing hand hygiene among school-aged children. By offering visual, interactive, and engaging instruction, demonstrations help improve knowledge, correct handwashing techniques, and promote long-term behavioral change. Implementing such educational strategies in schools can contribute to better health outcomes and help reduce the transmission of infectious diseases.

It is hoped that the participants will apply the hand hygiene knowledge gained through this study in their daily lives and share this information with others to help prevent the spread of infections transmitted via hands. Further research is recommended, with improved timing and scheduling to optimize participant engagement and data collection.

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