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Community Service Report

Empowering Handwashing Behavior with Soap in Early Childhood at Kindergarten

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ABSTRACT

Handwashing with soap (HWWS) is a fundamental component of Clean and Healthy Living Behavior that plays a crucial role in preventing infectious diseases, particularly among early childhood populations. However, the implementation of proper handwashing behavior in kindergarten-aged children remains limited due to insufficient knowledge, skills, and habitual practices. This community service activity aimed to improve HWWS behavior among children aged 5–6 years through a media-based health empowerment approach at TK Negeri Bonto, Sinjai Tengah District. A participatory health education method was applied, incorporating demonstrations, hands-on practice, and interactive learning using a six-step handwashing puzzle. Behavioral evaluation was conducted using a pre-test and post-test observational design. The results demonstrated a significant improvement in children's handwashing behavior following the intervention, indicated by an increased proportion of children classified in the good behavior category and the elimination of poor behavior classification. Statistical analysis using the Wilcoxon test revealed a significant difference between pre- and post-intervention behaviors ($p < 0.05$). These findings suggest that media-based empowerment interventions are effective in enhancing handwashing behavior among early childhood students and have the potential to support sustainable healthy behavior practices within school settings.

1. Introduction

Handwashing with soap is one of the most effective and essential preventive behaviors in reducing the transmission of infectious diseases, particularly among early childhood populations. Children aged 5–6 years are highly vulnerable to infections due to their frequent contact with contaminated surfaces and their still-developing immune systems. Previous studies have consistently demonstrated that proper CTPS behavior significantly reduces the incidence of diarrhea

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and acute respiratory infections in children (Freeman et al., 2019; Luby et al., 2018; McMichael, 2019). Therefore, instilling proper handwashing behavior from an early age is a critical public health priority.

Despite its importance, the practice of CTPS among young children remains suboptimal, especially in rural areas and settings with limited sanitation facilities. Reports from global and national institutions indicate that a considerable proportion of children do not practice proper handwashing due to lack of awareness, inadequate facilities, and insufficient behavioral reinforcement. Behavioral studies have identified several determinants influencing CTPS practices, including knowledge, environmental factors, habitual patterns, and the effectiveness of educational approaches used in schools (Rabbi & Dey, 2020; Schmidt et al., 2019; Tanner & Freeman, 2021). These findings highlight the need for targeted interventions that address both cognitive and behavioral aspects of hygiene practices.

Schools serve as strategic settings for health promotion interventions, particularly for shaping lifelong health behaviors among children. School-based interventions have been shown to be more effective when they incorporate active learning methods, such as demonstrations, participatory activities, and interactive media (Alberts et al., 2020; Grover et al., 2019; Kaur et al., 2021). These approaches enable children to engage directly in the learning process, facilitating better understanding and retention of health-related behaviors. In early childhood education, learning through play is especially important, as it aligns with children's developmental characteristics and enhances motivation and engagement.

In addition to teaching methods, the use of attractive and interactive educational media plays a significant role in promoting behavioral change. Educational games, such as CTPS puzzle media, can stimulate both cognitive and motor development while reinforcing the correct sequence of handwashing steps. Previous studies have shown that puzzle-based learning effectively improves children’s understanding and practice of hygiene behaviors (Rahmawati et al., 2021; Judah et al., 2020). Furthermore, behavior change theories emphasize that visual stimuli, repetition, and positive reinforcement are essential components in establishing new habits (Dreibelbis et al., 2019; Scott & Curtis, 2019).

Although various studies have explored school-based hygiene interventions, there remains a gap in implementing structured, media-based empowerment programs tailored specifically for early childhood settings in rural Indonesian contexts. Many existing programs focus primarily on knowledge dissemination rather than integrating behavioral practice through interactive media. Therefore, this study introduces a novel approach by combining participatory health education with puzzle-based media to enhance CTPS behavior among preschool children.

Based on these considerations, this article aims to describe the outcomes of a community service activity designed to improve CTPS behavior among children aged 5–6 years in TK Negeri Bonto, Sinjai Tengah District. The intervention emphasizes active participation, visual learning, and behavioral reinforcement as key strategies to establish sustainable hygiene practices among young children.

2. Method

This study employed a community service approach using a school-based health empowerment model to improve CTPS behavior among early childhood students. The design utilized a one-group pre-test and post-test approach without a control group to assess behavioral changes before and after the intervention.

The activity was conducted at TK Negeri Bonto, located in Sinjai Tengah District, Sinjai Regency, Indonesia, in January 2026. The site was selected based on preliminary observations indicating that CTPS practices among children were not optimally implemented and had not yet become habitual behavior.

The participants were children aged 5–6 years enrolled in the kindergarten. All children who met the inclusion criteria participated in the study. Inclusion criteria included being within the specified age group, present during the intervention, and receiving approval from the school. Children with health conditions that prevented participation in practical activities were excluded from the evaluation.

The intervention consisted of several stages, including preparation, implementation, practice, and evaluation. During the preparation stage, coordination with school authorities was conducted, educational media were developed, and observation instruments were prepared. The implementation stage involved delivering health education through demonstrations, guided practice, and interactive puzzle-based learning. Children were introduced to the importance of CTPS, critical times for handwashing, and the correct six-step procedure using visual media.

In the practice stage, children were asked to perform CTPS directly under the supervision of facilitators and teachers. The participatory approach ensured active engagement and aligned with early childhood learning principles that emphasize visual, motor, and kinesthetic experiences.

Data were collected through direct observation using a structured checklist based on CTPS indicators, including soap use, sequence accuracy, and timing of handwashing. Observations were conducted before and after the intervention. Behavioral outcomes were categorized into three levels: poor, fair, and good.

Data analysis was performed using descriptive and inferential methods. Descriptive analysis presented frequencies and percentages of CTPS behavior. Inferential analysis was conducted using the Wilcoxon signed-rank test with a significance level of $\alpha = 0.05$, as the data were ordinal and not normally distributed.

Ethical considerations were maintained throughout the activity, including obtaining permission from the school, ensuring teacher supervision, and prioritizing children's safety and comfort. The intervention was non-invasive and educational in nature.

3. Results & Discussion

The results of the health empowerment activity in improving CTPS behavior among children aged 5–6 years at TK Negeri Bonto were obtained through pre-test and post-test observations. The distribution of respondent characteristics and behavioral changes is presented in tables located at the end of the article.

The characteristics of respondents showed that most children were aged 5 years, with a higher proportion of males than females. The distribution of respondents based on age and gender is presented in Table 1. This indicates that the participants were within the appropriate developmental stage for behavior formation interventions.

Table 1. *Distribution of Respondents Based on Characteristics*

Respondent Characreristics	**Frequency (n=17)**	**Persentage (100%)**
Age (Year)		
5	9	52,9
6	8	47,1
Gender		
Male	10	58,8
Female	7	41,2

The findings revealed a notable improvement in CTPS behavior following the intervention. Pre-test results indicated that the majority of children were in the fair category, while a small proportion exhibited poor behavior. Children in the poor category generally did not consistently use soap and were unable to perform the six-step CTPS procedure correctly.

After the intervention, post-test results demonstrated a substantial improvement, with most children classified in the good category and no children remaining in the poor category. Children were able to perform CTPS correctly, including proper soap usage, correct sequence, and appropriate timing. The detailed distribution of CTPS behavior before and after the intervention is presented in Table 2.

Table 2. *Distribution of CTPS Behavior Before and After the Intervention among Children Aged 5–6 Years at TK Negeri Bonto*

Behaviour	**Pre-Post Test**				
	Before		**After**		
	n	**%**	**n**	**%**	**P* value**
Kurang	2	11,8	0	0	0,000
Cukup	13	76,5	2	11,8	
Baik	2	11,8	15	88,2	
Total	30	100	30	100	

Statistical analysis using the Wilcoxon test showed a significant difference between pre- and post-intervention CTPS behavior ($p < 0.05$), indicating that the intervention had a meaningful impact on improving children's hygiene behavior.

The improvement of CTPS behavior among children aged 5–6 years after the intervention indicates that a school-based health empowerment approach is effective in shaping health behaviors from an early age. These findings are consistent with previous studies showing that CTPS interventions implemented in school settings have a significant impact on children's behavioral changes (Aziz et al., 2021; Tanner & Freeman, 2021).

The success of this intervention was also influenced by the use of demonstration methods and interactive educational media. The demonstration method allowed children to directly observe and imitate the correct steps of CTPS, enabling the learning process to involve not only cognitive aspects but also psychomotor skills (Kaur et al., 2021; Grover et al., 2019). In addition, the CTPS puzzle media used in this activity served as a visual stimulus that helped children understand the sequence of CTPS steps in a structured manner, as supported by previous studies highlighting the effectiveness of educational game-based media in promoting children's health behaviors (Rahmawati et al., 2021; Judah et al., 2020).

These findings also support behavior change theories, which state that habit formation is influenced by environmental factors, repetition, and positive reinforcement (Dreibelbis et al., 2019; Scott & Curtis, 2019). A supportive school environment, the role of teachers as facilitators, and the active participation of children during the activity were key factors contributing to the success of this health empowerment program. This is in line with previous research indicating that the involvement of school actors strengthens the sustainability of CTPS behavior among children (Schmidt et al., 2019; Slekiene & Mosler, 2020).

Despite the positive outcomes, this activity has several limitations, including the relatively short duration of behavioral evaluation and the absence of long-term follow-up to assess the sustainability of behavior change. Previous studies suggest that behavioral change requires continuous reinforcement to become a lasting habit (Freeman et al., 2019; Contzen & Mosler, 2019). Therefore, further program development is needed by involving parents and integrating CTPS activities into the school curriculum to ensure long-term sustainability.

4. Conclusion

The health empowerment activity conducted at TK Negeri Bonto, Sinjai Tengah District, was effective in improving CTPS behavior among children aged 5–6 years. The findings demonstrated a significant increase in the proportion of children categorized as having good CTPS behavior and the elimination of poor behavior after the intervention. Statistical analysis confirmed a significant difference between pre- and post-intervention outcomes, indicating the effectiveness of the implemented strategy.

The success of this activity was supported by the application of a school-based empowerment approach tailored to early childhood characteristics. The use of puzzle-based educational media provided visual and motor stimulation, enabling children to understand and remember the correct

sequence of CTPS steps more effectively. Additionally, demonstration methods and direct practice facilitated active participation, allowing children to translate knowledge into actual behavior.

The role of teachers as facilitators and role models further strengthened the habituation process. A supportive school environment combined with engaging and participatory learning methods contributed significantly to the development of clean and healthy habits among children. Overall, this study highlights that interactive, media-based health empowerment strategies are practical and sustainable approaches for promoting CTPS behavior in early childhood settings and can contribute to broader public health improvement efforts.

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