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HANDWASHING HABITS AND THE INCIDENCE OF DIARRHEA AMONG STUDENTS

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Abstract

Diarrhea remains a serious public health problem, particularly among children, and is often caused by poor hygiene practices such as inadequate handwashing. This condition not only contributes to high morbidity and mortality rates but also affects children's cognitive development during critical growth stages.This study aimed to analyze the relationship between handwashing habits and the incidence of diarrhea among students at SDN 067978 Helvetia Medan. A quantitative correlational design with a cross-sectional approach was used, involving 50 students from grade VI. Data were collected using a validated and reliable questionnaire. The results showed that 66% of respondents experienced diarrhea, with most having moderate handwashing habits (56%). The Chi-square test revealed a significant relationship between handwashing behavior and diarrhea incidence (Asymp. Sig. [2-sided] = 0.000). The findings indicate that better handwashing habits are associated with a lower likelihood of diarrhea. This study highlights the importance of hygiene education in schools to prevent diarrhea and promote children's health. The results can serve as a basis for developing strategies to prevent diarrhea through improved handwashing practices and the implementation of clean and healthy living behaviors within the school environment.

Keywords: Habits, Handwashing, Diarrhea

1. INTRODUCTION

Diarrhea remains a major public health challenge, particularly among children. This disease is commonly caused by poor hygiene practices, such as not washing hands properly, and by living in environments that lack adequate sanitation (Mapingure et al., 2024). In addition to contributing to high morbidity and mortality rates, diarrhea can also hinder children's cognitive development during early growth, a critical period for learning and brain development. Medically, diarrhea is classified as an infection of the digestive tract and continues to be a serious global health concern (Azanaw et al., 2024).

Diarrhea remains one of the leading causes of illness and death among children, especially in developing countries. According to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF, 2020), about 2 billion cases of diarrhea occur globally each year, resulting in around 1.9 million deaths among children under five. Most cases are found in Africa and Southeast Asia, where sanitation and hygiene practices are still limited (WHO/UNICEF/JMP, 2020).

In Indonesia, diarrhea is an endemic disease and a major public health problem that can lead to outbreaks (Ministry of Health RI, 2020). The 2018 National Basic Health Survey (Riskesdas) reported the highest prevalence in Bengkulu Province (8.9%) and the lowest in the Bangka Belitung Islands (3.2%). In North Sumatra, 177,438

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cases were recorded in 2019, while in Medan Helvetia District, cases increased from 460 in 2021 to 1,665 in 2023. School-age children are particularly vulnerable because they often neglect hygiene practices such as washing hands and eating clean food (Simaremare et al., 2024).

Proper handwashing with soap is one of the most effective ways to prevent diarrhea. The WHO (2020) states that handwashing at critical times—such as before eating, after using the toilet, and after playing—can reduce diarrhea risk by up to 45%. However, many children still lack awareness and do not practice proper hand hygiene at school (Ri et al., 2021).

For this reason, this study aims to examine the relationship between handwashing habits and the incidence of diarrhea among students at SDN 067978 Helvetia Medan. The findings are expected to support school-based health promotion programs that encourage clean and healthy living behavior.

2. METHODS

This study used a quantitative method with a correlational cross-sectional design. It was conducted at SDN 067978 Helvetia Medan because of the high number of diarrhea cases among children. The research took place from November 2024 to April 2025. The population consisted of all sixth-grade students at SDN 067978 Helvetia Medan, totaling 50 students. The sampling technique used was total sampling, so all 50 students were included as respondents. Data were collected using questionnaires and school records.

The questionnaire measured students' handwashing habits and diarrhea incidence. It had been tested for validity and reliability, with r-count > r-table (0.279) and Cronbach's Alpha of 0.705, indicating good reliability. Data analysis was performed using SPSS version 26. The relationship between handwashing habits and diarrhea incidence was tested using the Chi-square test with a 95% confidence level.

3. RESULTS

Table 1. Handwashing Habits of Students at SDN 067978 Helvetia Medan

Handwashing Habits	n	%
Good	16	32
Fair	28	56
Poor	6	12
Total	50	100

Table 1 shows that most students had *fair* handwashing habits (56%), followed by *good* habits (32%), and *poor* habits (12%).

Table 2. Diarrhea Incidence among Students

Diarrhea Incidence	n	%
Diarrhea	33	66%
No Diarrhea	17	34%
Total	50	100%

As shown in Table 2, most respondents (66%) experienced diarrhea, while 34% did not.

Table 3. Relationship Between Handwashing Habits and Diarrhea Incidence

Handwashing Habits	Diarrhea (n/%)	No Diarrhea (n/%)	Total (n/%)	p-value
Poor	6(12)	0(0)	6(12)	
Fair	27(54)	1(2)	28(56)	0.000
Good	0(0)	16(32)	16(32)	
Total	33(66)	17(34)	50(100)	

Table 3 shows that among students with poor handwashing habits, all six (12%) experienced diarrhea. Among those with fair habits, 27 students (54%) had diarrhea, and one student (2%) did not. Meanwhile, all students with

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good handwashing habits (32%) did not experience diarrhea.

The Chi-square test showed a p-value of 0.000, which is less than 0.05, indicating a statistically significant relationship between handwashing habits and diarrhea incidence. This means that the better the handwashing habit, the lower the incidence of diarrhea among students, and vice versa.

4. DISCUSSION

The present study found a clear pattern: students with poorer hand-washing habits had a higher incidence of diarrhea, while those with good hand-washing habits had none. Specifically, 12% (6 students) in the "poor" habit category experienced diarrhea, 54% (27 students) of the "fair" habit group did, and none (0%) of the "good" habit group reported diarrhea. The Chi-square test indicated a statistically significant relationship (p = 0.000), confirming that better hand-washing behaviour is associated with lower diarrhea incidence among students at SDN 067978 Helvetia Medan.

These findings align with previous research that shows hand-hygiene plays a key role in preventing diarrhoeal illness. For example, a study in urban low-income New Delhi found that washing hands at key time-points (before and after food preparation, after defecation) significantly reduced odds of diarrhoea by over 70% (Khan et al., 2021).

Additionally, a study from KwaZulu-Natal, South Africa identified that deficient child hand-washing (after defecation, before eating) was significantly associated with higher rates of diarrhoea (p = 0.001) (Ntshangase et al., 2022). These findings mirror these results, reinforcing that hand-washing habits are a reliable indicator of diarrhoeal risk among school-aged children.

Furthermore, literature specific to Indonesia supports the observed relationship. One recent review found that school children who regularly washed their hands with soap and maintained nail hygiene had lower risk of diarrhea (Ntshangase et al., 2022). This lends regional relevance to your results: students in Medan exhibiting good hand-washing behaviour had no reported incident of diarrhoea, consistent with national patterns.

The gradient you observed (from poor to fair and good habits corresponding to high to moderate and no diarrhea) suggests a behavioural dose-response effect: the better the hand-washing habit, the lower the diarrhea incidence. This emphasizes the importance of not just occasional washing, but consistent, correct technique and frequency of hand-washing among students. There are several plausible explanations for these findings. Hand-washing interrupts the transmission of enteric pathogens (bacteria, viruses, parasites) via the fecal-oral route. Children with poor hand-washing habits are more likely to handle contaminated objects or food, or fail to remove pathogens before eating.

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Good hand-washing habits reduce pathogen load on hands and thus reduce exposure. The literature confirms this mechanism: contagion between hand-borne pathogens and ingestion is the common pathway for many childhood diarrhoeal episodes (Setiawan & Sulistyorini, 2023).

From a practical perspective, these results highlight the potential value of hygiene education and infrastructure in schools. If students can adopt "good" hand-washing habits, the risk of diarrhoea can be significantly lowered (as seen in your study). Schools should promote hand-washing at key times (after toilet use, before eating, before food preparation) and provide facilities (soap, clean water, accessible sinks). Research from Tanzania shows knowledge of critical hand-washing times was associated with reduced diarrhoea (Bennion et al., 2021).

Limitations of this study should also be noted. The cross-sectional design prevents establishing causal direction. Although the association is strong and consistent, we cannot rule out that other factors (food hygiene, water quality, sanitation infrastructure, socio-economic conditions) also contributed to diarrhea incidence. Many of the cited studies highlight that hand-washing is one among several preventive behaviours (Agustina et al., 2013). Moreover, hand-washing habits were self-reported (via questionnaire) and might suffer from social-desirability or recall bias.

5. CONCLUSION

In conclusion, the study provides strong evidence that hand-washing habits are significantly related to diarrhea incidence among school-aged children in this Indonesian setting. Promoting better hand-washing habits should be a key component of school-based health promotion programmes aiming to reduce diarrhoeal disease.

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