The Relationship of Handwashing Behaviour with Soap and Incidence of Diarrhea Among Students at Elementary School 04 Rantau Utara

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Abstract

Diarrhea can be defined as a condition where a person experiences an increased frequency of defecation, which results in liquid or non-solid faeces. Washing hands with soap is a fundamental and essential technique for preventing and controlling the spread of infectious diseases. Hands are one of the main routes for bacteria to enter and infect the body. Diarrhea is one of the factors causing death, so there must be prevention of diarrhea incidents. This study aimed to analyze the relationship between hand washing behavior using soap and the incidence of diarrhea.This research includes quantitative research analysis using a cross-sectional design. Research activities were conducted at State Elementary School 04 Rantau Utara from February to March 2024. The population studied in this research were all students from Elementary School 268 Negeri 04 Rantau Utara. The sampling technique used was random sampling, which resulted in a research sample of 71 people. The variables examined in this research include hand washing behavior using soap and the incidence of diarrhea.. Data was collected through questionnaires. Data analysis carried out included univariate and bivariate analysis using the Chi-Square test using SPSS version 24 software. Based on the analysis results, a p-value of 0.000 <0.05. This shows that there is a statistically significant relationship between handwashing behaviour using soap and the incidence of diarrhea. This is due to a lack of good and correct hand washing with soap, which causes diarrhoea. Many still need to understand the basic techniques for washing hands with soap properly. Having hand washing facilities and infrastructure will make it easier for children to wash their hands properly so that they can effectively break the chain of bacteria.

Keywords: School Children, Diarrhea, Adequate Facilities, Hand Washing Behavior

INTRODUCTION

Diarrhea is a significant health problem that is of concern throughout the world, including Indonesia. Data from WHO and UNICEF states that every year there are around 2 billion cases of diarrhea throughout the earth and around 1.9 million children under five die from this disease. Most of the deaths, namely around 78%, were observed in developing countries, especially in Africa and Southeast Asia (Reiss et al., 2023).

The 2018 Basic Health Research results recorded a diarrhea prevalence rate of 8% for all age groups and 12.3% in children under five. Meanwhile, in babies, the prevalence of diarrhea was recorded at around 10.6%. In addition, data from the Sample Registration System for that year stated that diarrhoea played a role as the leading cause of death in newborn babies at 7% and around 6% in babies aged 28 days. A report from the Regional Public Health

Commissioner for the period January-November 2021 explains that diarrhea is the cause of infant deaths after birth of around 14% (Mahendra et al., 2019).

Diarrhea is an endemic disease in Indonesia which has the potential to cause extraordinary events and is the leading cause of death in Indonesia, especially among children under five. In 2021, service coverage for diarrhoea patients of all ages will be 33.6%, and under-fives will be 23.8% of the target. Inequality in services between provinces for all ages is 6.7% in North Sumatra and 68.6% in Banten. Meanwhile, it is 3.3% for toddlers in North Sumatra and 55.3% in Banten (Kemenkes RI, 2022). According to the 2022 Indonesian Health Profile, diarrhea is the cause of death in 6.6% of children aged 29 days-11 months and 5.8% in toddlers aged 12-59 months. The 2023 Indonesian Health Survey recorded a prevalence of diarrhea for all ages at 877,531 people. The prevalence of toddler diarrhea is 86,364 people. The number of cases in North Sumatra was 18,138, and 14,055 cases for children aged 0-11 months (Munira, 2023).

Diarrhea can be defined as a condition where a person experiences increased bowel movements followed by the release of liquid or watery stools. Additional symptoms of diarrhea are nausea, vomiting, stomach cramps and even weight loss. Diarrhea occurs because the water content in the stool exceeds normal, causing the frequency of defecation to increase within 24 hours or more than 14 days. Many factors contribute to diarrhea in children, such as poor handwashing habits, eating unhygienic food, and an unhealthy environment around the school. Elementary school-age children must fully understand the importance of washing their hands with soap. They often eat food outside without washing their hands. First, this has an impact on the development of diarrhea (Suyanto et al., 2022)

A healthy and clean lifestyle is an essential pillar in the development of the public health sector. These pillars include a healthy lifestyle, the creation of a clean environment, and the availability of quality health services that are easily accessible to all levels of society. Simple behaviour, such as washing hands with soap, can increase public awareness of the importance of maintaining personal health independently and living cleanly. This is intended to increase public understanding that a healthy and clean lifestyle is essential for personal health and the surrounding environment (Kiranasari & Saelan, 2021).

The behaviour of washing hands using soap supports clean and healthy living and can prevent infectious diseases such as diarrhea. Washing hands can improve health, even though people often consider it normal. Based on observations, school children still need to pay more attention to washing their hands with soap, especially at school. Students tend to immediately consume food purchased around the school without washing their hands first, even though they

previously played outside the classroom. These bad habits have an impact and contribute to the occurrence of diarrhoea in students. In other words, the behavioural pattern of students who eat food directly after playing without washing their hands first increases the incidence of diarrhea among themselves (Faidah & Irawan, 2021).

Washing hands is a basic technique that is very important in preventing and controlling the spread of infection. One of the main ways bacteria can enter the body is through the hands. This is because hands often carry germs and transfer pathogens from one person to another through direct or indirect contact (Ernida et al., 2021). Hands also often come into direct contact with the mouth and nose. Washing hands using soap and water is one of the hygiene/sanitation measures by cleaning hands using water and soap. In this way, these activities can achieve a level of hand hygiene and break the chain of spread of germs/microbes that cause disease. In short, washing hands with soap is a vital sanitation effort to achieve cleanliness and stop the transmission of disease through germs (Sagune et al., 2021).

The occurrence of diarrhoea is caused by various factors, one of which is explained by Lawrence Green's theory. This theory states that handwashing behaviour with soap is influenced by psychosocial factors such as attitudes and the availability of sanitation facilities. Support from health workers also plays a role in establishing healthy living behaviour, including preventing the transmission of diseases such as diarrhea. Lawrence Green's theory is relevant to explaining the relationship between washing your hands with soap and the incidence of diarrhoea from a psychosocial perspective, where social and environmental factors influence the formation of handwashing behaviour with soap that helps prevent disease (Mahendra et al., 2019).

Habits that do not apply hygienic principles, such as not washing hands before and after eating and after outdoor activities, can hurt people's health. One of them is increasing the risk of developing diseases related to low levels of clean and healthy living behaviour, such as diarrhea. In other words, bad habits in washing hands can be a contributing factor to diseases such as diarrhoea because it lowers personal and environmental hygiene standards (Harahap et al., 2020).

Data from the 2023 Indonesian Health Survey shows that the number of diarrhea cases in North Sumatra was 18,138 cases (Munira, 2023). The behaviour of Elementary School 04 Rantau Utara students who rarely wash their hands before and after eating, have long and dirty nails, and forget to wash their hands after playing puts them at risk of bacterial contamination when buying snacks without paying attention to hand hygiene. Although the school has four facilities for washing hands, several students have recently been infected with diarrheal disease.

This indicates that students' healthy living behaviour and hand hygiene still need to be improved even though the facilities are available.

METHODS

This research is a quantitative analysis using a cross-sectional design to determine the relationship between risk factors (independent) and their impacts (dependent). Data is collected simultaneously to study the relationship between the two. The research location was carried out at Rantau Utara 04 Elementary School in February-March 2024. The population was 268 students at the school. The sampling technique uses random sampling, namely where each member of the population has the same opportunity to be selected as a sample, where a sample of 71 samples out of 268 is obtained (Vionalita, 2020). Data collection methods in this research include primary data collection and secondary data. Primary data is student data at State Elementary School 04 Rantau Utara, which was obtained directly by researchers.

Meanwhile, secondary data is student data received from the school. The data collection instrument used was a questionnaire. The behaviour of washing hands with soap is an independent variable; each question item has four categories, namely "always" with a value of 1, "often" with a value of 2, "sometimes" with a value of 3, "never" with a value of 4. The incidence of diarrhea is the dependent variable; each question item has two categories, namely "Yes" with a value of 1 and "No" with a value of 0. Data analysis in this study uses two types of statistics, namely univariate analysis to determine descriptive statistics and bivariate analysis with the Chi-square test to find out whether there is a relationship between the independent variable and the dependent variable using the SPSS Version 24 application.

RESULTS

Frequency Distribution of Respondents

Table 1. Frequency Distribution of Respondent Characteristics (n=71)

Characteristics	Frequency	Percentage (%)
Seks		
Man	29	40,8
Women	42	59,2
Age		
10 years	4	5,6
11 years	39	54,9
12 years	28	39,4
Class		
Grade five	39	54,9
Grade six	32	45,1
Total	**71**	**100**

Based on Table 1, it can be seen that from the total research sample taken at Elementary School 04 Rantau Utara, the number of male students recorded reached 29 people or the equivalent of a percentage of 40.8%. Meanwhile, the number of female students was 42 or 59.2%. Thus, the number of female research respondents exceeds that of male students. Respondents aged 11 years were 39 (54.9%), respondents aged 12 years were 28 (39.4%), and respondents aged ten years were 4 (5.6%). The number of respondents in grade five was 39 people or a percentage of 54.9%. Meanwhile, the number of respondents in grade six was 32 people or a percentage of 45.1%. In other words, the group of respondents at grade six level is the largest group based on the data listed in the table.

Table 2. Frequency Distribution of Respondents Based on Handwashing Behavior with Soap (n=71)

Handwashing Behavior With Soap	Frequency	Percentage %
Bad	49	69.0
Good	22	31.0
Total	**71**	**100,0**

Based on table 2 above shows that bad handwashing behaviour is 49 (69.0%), and good handwashing behaviour with soap is 22 (31.0%).

Table 3. Frequency Distribution of Respondents Based on Diarrhea Incidents (n=71)

Incidence of Diarrhea	Frequency	Percentage %
Diarrhea	52	73.2
No diarrhea	19	26.8
Total	**71**	**100,0**

Table 3 above shows that those who experienced diarrhea were 52 (73.2%), and those who did not experience diarrhea were, 19 (26.8%).

Table 4. Frequency Distribution of Respondents Based on the Relationship between Hand Washing Behavior with Soap and Diarrhea Incidents (n=71)

Hand Washing Behavior	Incidence of Diarrhea				Total		*p-value*	OR (95%CI)
	Diarrhea		No Diarrhea					
	n	%	n	%	n	%		
Less	49	100	0	0.0	49	100	0,000	7.333
Good	3	13.6	19	86.4	22	100		
Total	**52**	**73.2**	**19**	**26.8**	**71**	**100**		

Based on Table 4 above, the odds ratio (OR) represents the greater likelihood of a result or outcome occurring in one group compared to another. An OR value greater than one

indicates that the probability of the outcome is more significant in the related group. The 95% confidence interval (95% CI) describes the range of numbers that covers the estimate of the actual value of the OR with a 95% confidence level. In other words, there is a 95% probability that the actual population OR value is within the specified 95% CI range. In the cases described, the OR value was 7.333, while the 95% CI ranged from 3.456 to 12.021. This means that there is a 95% chance that the actual OR value is between these two values. Thus, the probability of the outcome being studied occurring in one group is 7.333 times greater than in the other group. Because the 95% CI range does not include the number one, the relationship between risk factors and outcomes is statistically significant. This indicates that there is a solid and honest relationship between the two based on the research sample.

DISCUSSION

Hand washing behaviour with soap

Based on the research results, most respondents were considered to have poor handwashing behaviour with soap. Many of them need help understanding how to wash their hands using soap. Washing your hands with soap is more effective because it can remove grease and dirt stuck to your hands (Hasanah & Mahardika, 2020).

Washing your hands with soap is not only useful for keeping your hands clean but is also an effective form of protection against the spread of infection and disease (Tsinallah et al., 2022). This behaviour is essential considering the role of the hands, which often come into contact with one's body or other people, directly or indirectly, through objects or media. Dangers arise if contact is made with dirty hands because it can facilitate the spread of disease by transmitting bacteria, viruses and parasites from one person to another without realizing it (Haryana et al., 2021). Especially at certain times, such as before and after doing activities, eating, defecating/urinating, and processing food (Asda & Sekarwati, 2020).

Good behaviour and awareness regarding implementing hand washing rules must be maintained continuously and consistently. This can be done through regular evaluations to determine whether the rules are still being implemented. Establishing proper handwashing habits early can get children used to living healthy lives. In this way, a clean and healthy lifestyle will be firmly attached to the child's personality from an early age (Resiyanthi et al., 2021).

Diarrhea Occurrence

According to the WHO definition, diarrhea is when a person defecates with a liquid consistency or just water, and the frequency is more than three times a day. One way to break the chain of spreading diarrhoea is to wash your hands with soap before or after activities. Diarrhea can be caused by various factors, one of which is excessive loss of water and electrolytes in the body through defecation (Radhika, 2020). The study results showed that respondents had poor handwashing behaviour with soap, which could cause diarrhoea. An unhealthy environment, along with a lack of clean living habits, can also contribute to the occurrence of diarrheal disease (Fauziyah & Siwiendrayanti, 2023).

Hand washing with soap is one of the most effective ways to prevent diarrhoea and acute respiratory infections (Fitri, 2019). Improper hand washing can cause diarrhoea in respondents. Diarrhea can occur in all age groups, including elementary school children. School-aged children are in their developmental period, so they are vulnerable to experiencing health problems such as diarrhoea (Nurhaedah et al., 2022). School-aged children are still susceptible to digestive diseases such as diarrhoea. Education is needed regarding the correct way to wash hands, the steps needed, and when to wash hands. The aim is for respondents to apply it generously to break the chain of the spread of infectious germs. Hand washing with soap is the easiest way to prevent diarrhea(Ibrahim & Sartika, 2021).

The relationship between hand washing behaviour with soap and the incidence of diarrhoea

Based on the research results after data processing, it can be concluded that these two variables have a relationship where the P-value results are 0.000 < 0.05, so it can be concluded that there is a significant relationship between hand washing behaviour with soap and the incidence of diarrhea. Based on Table 6, OR (Odds Ratio) and 95% Cl (Internal Confidence), with a result of 7.333 in OR, show a greater possibility of an event occurring in one group than in another group. Cl 95% shows the range of numbers that includes the actual OR estimate with a 95% confidence level. So with the OR value of 7.333 and the Cl value of 95%: 3.456-12.021, this means that there is a 95% chance that the actual population OR value is between 3.456 to 12.021, the OR value is 7.333 times more likely to experience the results studied. The 95% Cl range, which does not include the number 1, indicates that the relationship between risk factors and outcomes is statistically significant with an error level of 5%. These results indicate that there is a strong and significant relationship between risk factors and outcomes based on the research sample.

The results of this research are in line with the results of previous research conducted by Kiranasari and Saelan (2021), this research found a statistically significant relationship between handwashing practices and the incidence of diarrhea. This relationship is proven through the Kendall-tau correlation statistical test, which produces a p-value of less than 0.05. In other words, the null hypothesis is rejected, and the alternative hypothesis is accepted. This means there is a link between hand-washing activities and diarrhea in elementary school students in the Karanganyar Regency. This study's findings are consistent with previous research results, which showed a positive relationship between hand-washing habits and a low incidence of diarrhea.

This research aligns with research conducted by Resiyanthi (2021), this research proves a significant relationship between hand-washing behaviour and the incidence of diarrhea through statistical analysis of the Chi-Square test. The results of the analysis produced a p-value of 0.000 and a contingency coefficient of 0.534. The p-value obtained (0.000) is smaller than the α value (0.05), so the null hypothesis (Ho) can be rejected. This shows a relationship between hand washing behaviour and the incidence of diarrhoea in elementary school children at Public Elementary School Awan Kintamani, Bangli. Thus, the results of this study are consistent with previous research, which also obtained evidence of a significant relationship between these two variables based on the results of the statistical tests that were carried out.

This research is in line with the results of research conducted by Nainggolan (2022), this research shows a significant relationship between washing hands with soap and the incidence of diarrhea at Public Elementary School 10 Lumban Suhi-Suhi, Samosir Regency. This is based on the alternative Chi-Square test using Mann Whitney, which produces a P value <0.001 (P<0.005). Because the significance value (sig) is smaller than 0.05, the alternative hypothesis (H1) is accepted. In other words, it is proven that there is a significant relationship between washing hands with soap and the incidence of diarrhea in students at this school. The results of this research are consistent with previous research, which also shows a real correlation between related variables based on the statistical tests carried out.

This research is in line with research conducted by Khairani (2024), the statistical test results show a p-value value of 0.001, which is smaller than 0.05. Therefore, it can be concluded that there is a relationship between hand-washing behaviour and the incidence of diarrhoea in children in the Cirimekar Community Health Center working area in 2023. In other words, the research results indicate that there is a trend in the relationship between handwashing habits and the level of diarrheal disease in children in the Cirimekar Community Health Center area in the same year.

The behaviour of washing hands using soap is an indicator of clean and healthy living behaviour at school as a preventive effort to protect oneself from various infectious diseases such as diarrhea. Diarrhea can be prevented by implementing correct hand washing behaviour using soap and implementing it through complete hand washing steps. Therefore, the habit of washing hands with soap should be implemented from an early age to reduce the incidence of diarrhoea (Aprina, 2024). Thus, correct handwashing habits need to be instilled from an early age. There are still incidents of diarrhea in elementary school students, which can potentially reduce their productivity and creativity. Diarrhea in elementary school children is caused by a lifestyle that does not prioritize cleanliness, minimal sanitation facilities, and not being used to washing hands before and after eating and after defecating (Ardiyanti et al., 2020). Student activities at school that come into contact with the environment during play breaks increase the risk of disease transmission. If you are not used to washing your hands on these occasions and before eating, germs can enter through food. By instilling the habit of washing hands regularly, it is hoped that, can suppress infectious diseases such as diarrhea and improve health conditions (Ade et al., 2022)

Washing your hands with soap is a very important health protocol to do regularly, especially after touching surfaces often touched by many people (Widawati et al., 2024). Washing hands is a way to clean hands using water and soap. This behaviour must be taught to children in order to maintain cleanliness. Although this behaviour is not easy to teach to children, it requires habits from an early age. Therefore, practice hand washing behaviour from an early age to avoid diarrhoea (Haryati, 2024). Because when hands are dirty and not washed with soap, disease germs will stick, so when we eat or drink, these germs will enter the human body (Nawalia et al., 2022).

CONCLUSIONS

The number of people who have bad hand-washing behaviour with soap is 49 (69.0%), and the number of those who have good hand-washing behaviour with soap is 22 (31.0%). Respondents who experienced diarrhoea were 52 (73.2%), and those who did not experience diarrhoea were 19 (26.8%). The behaviour of washing hands with soap has a significant relationship with the incidence of diarrhea, with a value of 0.000 < (a=0.05). This is due to the need for better handwashing behaviour with soap and the correct basic techniques for washing hands with soap.

Therefore, with a very significant relationship between handwashing behaviour with soap and the incidence of diarrhea, students who do not wash their hands with soap after playing, urinating/defecating, touching animals, or throwing away trash are at risk of experiencing diarrhea. Therefore, there needs to be outreach and cooperation between schools and teachers to students regarding the importance of washing hands with soap and the correct basic techniques. The aim is for students to be able to apply it well in everyday life to prevent diarrhea.

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