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THE RELATIONSHIP BETWEEN MOTHERS' HANDWASHING HABITS AND THE INCIDENCE OF DIARRHEA IN TODDLERS IN SIDOWAYAH VILLAGE

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ABSTRACT

Diarrhea is a health problem in toddlers that is influenced by various factors, one of which is the mother's handwashing habits. The habit of washing hands using soap and running water is an important effort in preventing the transmission of microorganisms that cause diarrhea. This study aims to analyze the relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers in Sidowayah Village. The study used an observational analytical design with a case-control approach. The study sample consisted of 68 respondents consisting of 34 case groups (toddlers with diarrhea) and 34 control groups (toddlers without diarrhea) selected using a proportional random sampling technique. Data on mothers' handwashing habits were obtained through questionnaire interviews that had been tested for validity and reliability, while data on diarrhea incidence were obtained from the Panekan Community Health Center register. Data analysis was carried out univariately and bivariately using the Chi-square test with a 95% confidence level ($\alpha = 0.05$). The results showed that most mothers had handwashing habits that did not meet the requirements, namely 42 respondents (61.8%), while those who met the requirements were 26 respondents (38.2%). The results of the Chi-square test showed a significant relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers ($p = 0.006$; OR = 0.205; 95% CI = 0.070-0.598). It was concluded that mothers' handwashing habits are associated with the incidence of diarrhea in toddlers, so increasing education regarding handwashing with soap is necessary as an effort to prevent diarrhea.

Keywords: Mother's hand washing habits; diarrhea incidence; case-control study

INTRODUCTION

Diarrhea remains a public health problem contributing to high morbidity rates among toddlers. This disease is closely related to environmental sanitation, personal hygiene, and clean and healthy lifestyles. According to the 2024 East Java Health Profile, the detection rate for diarrhea in toddlers has reached 442.1% of the target. In Magetan Regency, the number of diarrhea cases in toddlers in 2023 was recorded at 10,402, then decreased in 2024 to around 1,588 cases. Nevertheless, diarrhea remains a health problem that requires attention due to its relatively high incidence (WHO, 2024).

Panekan Community Health Center is a health care facility that plays a role in promotive, preventive, curative, and rehabilitative efforts in Magetan Regency. Based on data from Panekan Community Health Center, in 2023, there were 41 toddlers with diarrhea in Sidowayah Village out of a total of 246 toddlers. In 2024, the number of toddlers increased to 279 toddlers with 25 cases of diarrhea, but the target for case detection has not been achieved. The latest data from 2025 shows a further increase to 47 cases of diarrhea in toddlers in Sidowayah Village, thus indicating that diarrhea remains a health problem that requires special attention (Panekan Community Health Center).

The incidence of diarrhea in toddlers is influenced by various factors, one of which is the mother's personal hygiene, particularly handwashing. Improper handwashing can increase the risk of diarrhea-causing microorganisms being transmitted through the fecal-oral route. According to Bloom's theory, health behavior is influenced by knowledge, attitudes, and actions, including proper handwashing as part of the mother's parenting style. Previous research has also shown that maternal handwashing behavior is associated with the

incidence of diarrhea in toddlers, making handwashing with soap an important effort in preventing diarrheal disease (Panekan Community Health Center).

Based on the high incidence of diarrhea among toddlers in Sidowayah Village and the importance of handwashing as a preventative measure, this study aims to analyze the relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers in Sidowayah Village. The results are expected to serve as a basis for improving health promotion, particularly regarding the implementation of clean and healthy living behaviors among mothers with toddlers, thereby minimizing the incidence of diarrhea (Panekan Community Health Center).

MATERIALS AND METHODS

This study is an observational analytical study with a case-control design that aims to analyze the relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers in Sidowayah Village. The study was conducted in July 2026 involving 68 respondents consisting of 34 case groups (toddlers with diarrhea) and 34 control groups (toddlers without diarrhea), respondents were selected using a proportional random sampling technique with a ratio of 1: 1. The independent variable in this study is mothers' handwashing habits, while the dependent variable is the incidence of diarrhea in toddlers. Data on mothers' handwashing habits were obtained through interviews using questionnaires that have been tested for validity and reliability, while data on diarrhea incidence were obtained from the Panekan Community Health Center register. Data were analyzed univariately to determine the frequency distribution of each variable and bivariately using the Chi-square test with a significance level of 95% (a = 0.05) to determine the relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers (Primary data and Panekan Community Health Center).

RESULTS AND DISCUSSION

1. Respondent Characteristic

Table 1 Respondent Characteristic

Characteristics	Case n (%)	Control n (%)
Toddler's mother's age		
20 – 29 years old	14 (41,2)	13 (38,2)
30 – 40 years old	19 (55,9)	20 (58,8)
>40 years old	1 (2,9)	1 (2,9)
Toddler's mother's latest education		
Elementary School	1 (2,9)	0 (0,0)
Junior High School	14 (41,2)	18 (52,9)
High School/Equivalent	16 (47,1)	15 (44,1)
College (D1/S1)	3 (8,8)	1 (2,9)
Toddler Age		
1 years old	5 (14,7)	7 (20,6)
2 years old	13 (38,2)	13 (38,2)
3 years old	5 (14,7)	6 (17,6)
4 years old	6 (17,6)	3 (8,8)
5 years old	5 (14,7)	5 (14,7)

Source : Primary Data, 2026

Based on Table 1, the majority of mothers of toddlers in both the case and control groups were aged 30-40 years, namely 19 people (55.9%) and 20 people (58.8%), respectively. Based on the last education, the

case group was dominated by mothers with high school education or equivalent (47.1%), while the control group was dominated by junior high school education (52.9%). Based on the age of the toddlers, the majority of toddlers in both groups were 2 years old, as many as 13 people each (38.2%). In general, the characteristics of respondents in the case and control groups were relatively similar so that it can be used to compare the relationship of the factors studied with the incidence of diarrhea in toddlers.

Table 2 Incidence Of Diarrhea In Toddlers

Status Of Diarrhea Incidence In Toddlers	Frequency (n)	Percentage (%)
Case	34	50
Control	34	50
Total	68	100

Source : Primary Data, 2026

Based on Table 2, the number of respondents in this study was 68, consisting of 34 respondents in the case group and 34 respondents in the control group. The number of respondents in both groups was equal because this study used a case-control design with a 1:1 ratio, making it easier to compare the studied risk factors for diarrhea in toddlers. Thus, the distribution of respondents between the case and control groups was balanced.

2. The Relationship between Mothers' Handwashing Habits and the Incidence of Diarrhea in Toddlers

Tabel 3 Relationship between Mothers' Handwashing Habits and the Incidence of Diarrhea in Toddlers

Mother's Hand Washing Habits	Case n (%)	Control n (%)	OR (95% CI)	p value
Not Eligible	27 (79,4)	15 (44,1)	0,205 (0,070-0,598)	0,006
Qualify	7 (20,6)	19 (55,9)		

Source : Primary Data, 2026

Based on Table 3, in the case group, most mothers had handwashing habits that did not meet the requirements, namely 27 people (79.4%), while in the control group there were 15 people (44.1%). In contrast, mothers who had handwashing habits that met the requirements were 7 people (20.6%) in the case group and 19 people (55.9%) in the control group. The results of the statistical test showed a p value = 0.006 ($p < 0.05$), so there was a significant relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers. The OR value = 0.205 (95% CI: 0.070–0.598) showed that mothers who had handwashing habits that met the requirements had a smaller chance of experiencing diarrhea in their toddlers compared to mothers whose handwashing habits did not meet the requirements. Thus, good handwashing habits are a protective factor against the incidence of diarrhea in toddlers.

The results of this study align with previous researchers who stated that mothers' handwashing behavior is associated with diarrhea in toddlers. Studies cited in the article, such as those by Novita (2020), Fitriani et al., and Iryanto et al. (2021), explain that handwashing with soap is one of the most effective diarrhea prevention efforts because it can reduce the risk of transmission of bacteria, viruses, and parasites that cause diarrhea. Conversely, mothers who do not practice handwashing at crucial times have the potential to transmit germs to toddlers through food, drink, or direct contact.

According to researchers, many mothers of toddlers still have inadequate handwashing habits, particularly not washing their hands with soap and running water before preparing food or before feeding their toddlers. This condition allows mothers' hands to be contaminated by pathogenic microorganisms that are then transferred to food or directly to the toddler through hand contact. As a result, the risk of disease transmission through the fecal-oral route is higher, which can increase the incidence of diarrhea in toddlers. Conversely, mothers who make it a habit to wash their hands with soap at critical times can break the chain of transmission of diarrhea-causing germs, thereby protecting toddlers from the disease.

CONCLUSION

Based on the research results, it can be concluded that there is a relationship between mothers' handwashing habits and the incidence of diarrhea in toddlers. Most mothers have inadequate handwashing habits, especially at crucial times such as before preparing food and before feeding toddlers. This condition

can increase the risk of contamination by diarrhea-causing germs in toddlers. Therefore, the implementation of good and correct handwashing habits must be improved to prevent diarrhea in toddlers and to support clean and healthy living behaviors within the family environment.

WORDS OF APPRECIATION

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