

# The Relationship Between Clean Water Sanitation And Maternal Behavior Towards The Incidence Of Diarrhea In Toddlers At The Lahusa Health Center, Lahusa District, South Nias Regency In 2020

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**ABSTRACT**

Diarrheal disease is still one of the main causes of pain and death, especially in toddlers. Some of the most dominant factors that cause diarrhea are the means of providing clean water and fecal discharge, where these two factors can interact with human behavior. This research is a quantitative study with a cross-sectional study design. The sample in this study was toddlers aged 10-59 months, totaling 90 respondents. The data used in this study are secondary data from related agencies and primary data obtained through interviews and observations. From the results of the study, 35.6% had diarrhea and 64.4% did not have diarrhea. Then from the bivariate results with a  $\alpha$  of 5% two variables were obtained related to the incidence of diarrhea in toddlers, namely the use of a latrine with a p-value of 0.024 and the habit of washing hands p-value 0.050. Meanwhile, the variables of clean water sanitation facilities (pv 0.082) and cooking water (pv 1,000) have no meaningful relationship with diarrhea. Suggestions that can be given are to increase public knowledge about diarrheal diseases by conducting counseling related to diarrhea and PHBS, as well as increasing cooperation and communication between the puskesmas and the community so that it is easier for the public to get information about the importance of health.

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**1. Introduction**

According to the World Health Organization (WHO), no less than one billion episodes of diarrhea occur every year worldwide, 25-35 million of which occur in Indonesia (Zein, 2011). In Indonesia, diarrheal disease is one of the main public health problems, this is due to the high rate of diarrheal pain which causes many deaths, especially in toddlers.

Diarrheal disease can be caused by several factors. According to Sander (2005), the causes of diarrhea can be from inadequate availability of clean water, water polluted by feces, lack of hygiene facilities, unhygienic stool disposal, individual hygiene and a poor environment, and improper food preparation and storage.

Of the several factors that exist, this disease is directly related to the environment and individual behavior, where the two interact with each other. If environmental factors are unhealthy because they are polluted with diarrhea germs and accumulate with unhealthy human behavior as well, then diarrhea transmission can easily occur (Ministry of Health RI, 2015). Lahusa Subdistrict is one of the sub-districts of South Nias Regency. Diarrhoea sufferers in Lahusa District until mid-2020 experienced an increase of 10% from the previous year (Puskesmas Lahusa, 2020).

This is evidenced by the recap of data on the top 10 diseases in the Lahusa health center in 2020 (Puskesmas Lahusa, 2020). From this data, it was obtained that the highest number 2 diarrheal disease case was found in the Lahusa Health Center area, Lahusa District, South Nias Regency in 2020. Puskesmas Lahusa is one of the puskesmas in the South Nias Regency area. Based on data from the Lahusa Health Center, diarrhea cases in toddlers throughout 2020 were 206

patients, while in 2020, starting from July to August, there were already 33 toddlers affected by diarrhea. (Profile of Puskesmas Lahusa, 2020).

## 2. Method

### 2.1. Research Design

This research was conducted using a descriptive analysis design with a cross sectional approach.

### 2.2. Research Place and Time

This study uses a quantitative approach with the form of a cross-sectional study design, where independent variables and dependent variables are observed at the same time (one time). This design is used because it is easy to implement, simple, saves time, and the result can be obtained quickly (Notoatmodjo, 2010).

### 2.3. Population and Sample

The population in this study was all toddlers aged 12-59 months who were in the Lahusa Health Center area, Lahusa District, South Nias Regency, were 90 toddlers.

### 2.4. Analysis Techniques

Primary data were obtained directly from the results of interviews using questionnaires and direct observations to respondents regarding clean water sanitation facilities and maternal behavior towards the incidence of diarrhea. Data obtained from various sources, such as the results of previous research, the results of literature studies, reports and documents from various agencies related to the topic under study such as Puskesmas..

## 3. Results and Discussion

### a. Analisis Univariat

The results of the study on the incidence of diarrhea in toddlers were obtained from interviews with respondents. The variable incidence of diarrhea in toddlers is categorized into two, namely diarrhea and non-diarrhea.

TABLE 1  
FREQUENCY DISTRIBUTION OF DIARRHEA INCIDENCE IN TODDLERS AGED 10-59 MONTHS  
IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Diarrhea	Frequency	Percentase (%)
Diarrhea	32	35,6
No Diarrhea	58	64,4
<b>Amount</b>	<b>90</b>	<b>100</b>

Based on table 1. From the results of the analysis of the picture of the incidence of diarrhea in toddlers, it was obtained that out of 90 toddlers, 32 toddlers (35.6%) had diarrhea and 58 toddlers (64.4%) did not have diarrhea. From the table, it can be seen that more respondents whose toddlers do not have diarrhea.

TABLE 2  
DISTRIBUTION OF TODDLERS ACCORDING TO CLEAN WATER SANITATION FACILITIE USED IN THE  
LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Clean Water Sanitation Facilities	Frequency	Percentase (%)
Dug Well	6	6,7
Pump Well	81	90,0
PDAM	3	3,3
Etc	0	0,0
<b>Amout</b>	<b>90</b>	<b>100</b>

From table 2. it can be known that most respondents use pump well means. Based on the table above, out of 90 respondents, 6 respondents used clean water facilities for dug wells (6.7%) and 3 respondents used PDAM facilities (3.3%). Meanwhile, the condition of clean water facilities in this study is the physical condition of clean water facilities in the home where toddlers live

TABLE 3  
DISTRIBUTION OF TODDLERS ACCORDING TO THE CONDITION OF CLEAN WATER SANITATION FACILITIES IN THE LAHUSA PUSKESMAS AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Clean Water Sanitation Facilities	Frequency	Persentase (%)
Not eligible	42	46,7
Qualify	48	53,3
<b>Amount</b>	<b>90</b>	<b>100</b>

Based on the results of the study in table 3. it is known that the condition of clean water sanitation facilities in the Keranggan Puskesmas Area is 42 facilities (46.7%) that are not qualified, while 48 (53.3%) are qualified facilities.

TABLE 4  
DISTRIBUTION OF TODDLERS ACCORDING TO WATER COOKING TREATMENT IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Boil Water	Frequency	Persentase (%)
Not	34	37,8
Yes	56	62,2
<b>Amount</b>	<b>90</b>	<b>100</b>

Based on table 4, it can be seen that out of 90 respondents, as many as 56 respondents (62.2%) cooked water to boil before consumption, while 34 respondents (37.8%) did not cook the water to boil before consumption

TABLE 5  
DISTRIBUTION OF TYPES OF LATRINES USED BY RESPONDENTS IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Type of Latrine	Frequency	Persentase (%)
Pond latrine	6	6,7
Goose Neck Latrine	84	93,3
<b>Amount</b>	<b>90</b>	<b>100</b>

Based on table 5. It can be seen that out of 90 respondents, as many as 6 respondents (6.7%) still use the empang latrine type, while 84 respondents (93.3%) have used the gooseneck type of latrine

TABLE 6  
DISTRIBUTION OF TODDLERS ACCORDING TO THE USE OF LATRINES IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Type of Latrine	Frequency	Persentase (%)
Not eligible	56	62,2
Qualify	34	37,8
<b>Amount</b>	<b>90</b>	<b>100</b>

Based on table 6. in the variable above, there were 56 (62.2%) unqualified latrines while 34 latrines were eligible (37.8%)..

TABLE 7  
DISTRIBUTION OF TODDLERS ACCORDING TO HANDWASHING HABITS IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Hand Washing Habits	Frequency	Persentase (%)
Not	49	54,4
Yes	41	45,6
<b>Amount</b>	<b>90</b>	<b>100</b>

Based on the results of the table above, 49 respondents (54.4%) did not wash their hands using soap before/after activities, while 41 respondents (45.6%) washed their hands using soap before/after activities.

TABLE 8  
ANALYSIS OF THE RELATIONSHIP BETWEEN CLEAN WATER SANITATION FACILITIES AND THE INCIDENCE OF DIARRHEA IN TODDLERS AGED 10-59 MONTHS IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Clean Water Sanitation Facilities	Diarrhea in Toddlers				Amount		P-value
	Diarrhea		No Diarrhea		N	%	
	N	%	N	%			
Not eligible	19	45,2	23	54,8	42	100	
Qualify	13	27,1	35	72,9	48	100	0,082
<b>Total</b>	<b>32</b>	<b>35,6</b>	<b>58</b>	<b>64,4</b>	<b>90</b>	<b>100</b>	

From table 8. it was found that respondents with the condition of clean water sanitation facilities that did not meet the requirements and experienced the incidence of diarrhea in their toddlers as many as 19 respondents (45.2%), while respondents with conditions of clean water sanitation facilities who met the requirements and experienced diarrhea incidence in their toddlers were 13 respondents (27.1%). The results of the chi square test showed that there was no relationship between clean water sanitation facilities and the incidence of diarrhea in toddlers aged 10-59 months in the Lahusa Health Center Area, Lahusa District in 2020, because the P-value was 0.082.

TABLE 9  
ANALYSIS OF THE RELATIONSHIP BETWEEN WATER COOKING BEHAVIOR AND DIARRHEA INCIDENCE IN TODDLERS AGED 10-59 MONTHS IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Water Cooking Behavior	Diarrhea in Toddlers				Amount		P
	Diarrhea		No Diarrhea		n	%	
	N	%	N	%			
Not	12	35,3	22	64,7	34	100	<b>1,000</b>
Yes	20	35,7	36	64,3	56	100	
Total	32	35,6	58	64,4	90	100	

Based on table 9, it is known that respondents who did not cook their water and experienced diarrhea in their toddlers were 12 respondents (35.3%), while respondents who cooked their water and experienced diarrhea incidence in their toddlers were 20 respondents (35.7%). The results of the statistical test showed that the P-value was 1,000, which means that at 5% there was no relationship between water cooking behavior and the incidence of diarrhea in toddlers aged 10-59 months in the Lahusa Health Center Area, Lahusa District in 2020.

TABLE 10  
ANALYSIS OF THE RELATIONSHIP BETWEEN LATRINE USE BEHAVIOR AND THE INCIDENCE OF DIARRHEA IN TODDLERS AGED 10-59 MONTHS IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Toilet Use Behavior	Diarrhea in Toddlers				Amount		P
	Diarrhea		No Diarrhea		n	%	
	N	%	N	%			
Not eligible	25	44,6	31	55,4	56	100	<b>0,024</b>
Qualify	7	20,6	27	79,4	34	100	
Total	32	35,6	58	64,4	90	100	

From table 10, it is known that respondents with latrine conditions that are not qualified and experienced the incidence of diarrhea in their toddlers were 25 respondents (44.6%), while respondents with latrine conditions who were qualified and experienced diarrhea incidence in their toddlers were 7 respondents (20.6%). The results of the chi square test showed that there was a relationship between the use of latrines and the incidence of diarrhea in toddlers aged 10-59 months in the Lahusa Health Center Area, Lahusa District in 2020, because the P-value was 0.024.

TABLE 11  
ANALYSIS OF THE RELATIONSHIP BETWEEN HANDWASHING HABIT BEHAVIOR AND DIARRHEA INCIDENCE IN TODDLERS AGED 10-59 MONTHS IN THE LAHUSA HEALTH CENTER AREA, LAHUSA DISTRICT, SOUTH NIAS REGENCY IN 2020

Perilaku Kebiasaan Cuci Tangan	Diarrhea in Toddlers				Amount		P
	Diarrhea		No Diarrhea		N	%	
	N	%	N	%			
No	22	44,9	27	64,7	49	100	<b>1,050</b>
Yes	10	24,4	31	64,3	41	100	
Total	32	35,6	58	64,4	90	100	

Based on table 11. it was known that respondents who did not habitually wash their hands with soap before / after carrying out their activities and experienced diarrhea in their toddlers were 22 respondents (44.9%), while respondents who practiced the habit of washing hands with soap before / after doing their activities and experienced diarrhea events in their toddlers as many as 10 respondents (24.4%). The results of statistical tests show that the P-value value is 0.050, which means that at 5% there is a relationship between the habitual behavior of washing hands with soap before / after carrying out activities with the incidence of diarrhea in toddlers aged 10-59 months in the Lahusa Health Center Area, Lahusa District in 2020.

### 3.1 Discussion

Based on the results of the relationship analysis, it is known that respondents who experience more diarrhea incidence in their toddlers are toddlers with a percentage of unqualified conditions of clean water sanitation facilities, namely 19 respondents (45.2%). Meanwhile, toddlers with a percentage of the condition of clean water sanitation facilities who are eligible and suffer from diarrhea are only 13 respondents (27.1%). The results of the bivariate analysis showed a P-value of 0.082 meaning that in  $\alpha$  5% there was no significant relationship between clean water sanitation facilities and the incidence of diarrhea in toddlers aged 10-59 months.

Based on the results of the analysis of the relationship between drinking water treatment and the incidence of diarrhea, it was found that the absence of a meaningful relationship between drinking water treatment and the incidence of diarrhea can be caused because most of the respondents who did not treat their drinking water by cooking it to boil were respondents who consumed refillable drinking water (gallons). Although people who use refillable water (gallons) do not cook the water first, the refill drinking water depot (gallons) has been carried out a drinking water treatment process using ultraviolet light and filtration (Sandra, 2007).

Based on the results of the study on latrines, it was found that almost some respondents did not have qualified latrines (62.2%), while 34 respondents (37.8%) had qualified latrines. From the results of the chi square analysis, it showed that 44.6% of respondents whose latrines were not eligible had toddlers with diarrhea, while 79.4% of respondents whose latrines were eligible. Based on the results of the bivariate analysis, it showed that there was a significant relationship between the behavior of using latrines and the incidence of diarrhea in toddlers aged 10-59 months with a P-value of 0.024.

Based on the results of research on handwashing habits, it is known that 49 respondents (54.4%) did not wash their hands before / after activities, while 41 respondents (45.6%) washed their hands using before / after doing activities. From the results of the chi square analysis, it showed that 44.9% of respondents who did not wash their hands with soap before / after carrying out activities had toddlers who experienced diarrhea, while 75.6% of respondents who washed their hands with soap before / after doing activities had toddlers who did not experience diarrhea. Based on the results of bivariate analysis, it shows that there is a significant relationship between the habitual behavior of washing hands with soap before / after carrying out its activities, the incidence of diarrhea in toddlers aged 10-59 months with a p-value of 0.050.

## 4. Conclusion

The results of the study on the incidence of diarrhea in toddlers as outlined in the Chapter on Results and Discussion, can be concluded as follows: An overview of the incidence of diarrhea in toddlers aged 10-59 months was obtained that 32 toddlers (35.6%) had diarrhea and 58 toddlers

(64.4%) did not experience diarrhea, so it was concluded that more respondents whose toddlers did not have diarrhea.

The description of clean water sanitation facilities in the Lahusa Puskesmas Area is known that most respondents use pump well facilities (81 people or 90%). Then the condition of the clean water sanitation facilities was 42 facilities (46.7%) that were not qualified, while there were 48 (53.3%) facilities that met the requirements. Description of the behavior of using latrines Known The type of latrine most used by respondents was the type of gooseneck latrine as many as 84 people (93.3%). And the condition of unqualified latrines was 56 (62.2%) latrines while the eligible latrines were 34 latrines (37.8%).

The habitual behavior of washing hands in the Lahusa Puskesmas Area was 49 respondents (54.4%) who did not wash their hands using soap before/after activities, while 41 respondents (45.6%) washed their hands using soap before/after activities. There is no meaningful relationship between the variables of clean water sanitation facilities and water cooking behavior to the incidence of diarrhea in toddlers aged 10-59 months in the Lahusa Puskesmas Area, Lahusa District, South Nias Regency. There is a meaningful relationship between the variables of latrine use and handwashing habits on the incidence of diarrhea in toddlers aged 10-59 months in the Puskesmas Lahusa Area, Lahusa District, South Nias Regency.

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