

Risk Factors Associated with The Incidence of Diarrhea in Toddlers in The Working Area of The Pamenang Public Health Center

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Abstract

Introduction: Diarrhea is the occurrence of defecation with a more liquid consistency than usual with a frequency of three times or even more within 24 hours. The incidence of diarrhea is related to factors such as water sources, toilet facilities, hand washing behavior, knowledge, and waste management.

Objective: The aim of the study was to determine the risk factors associated with the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, Merangin Regency in 2022. **Method:** Using the chi-square method, the observational analytic case control approach. The sample in the study used a 1:1 ratio with a total sample of 85 cases and 85 control samples. **Result and Discussion:** The results of this study showed that the variable p-value of clean water was 0.001 with OR 0.146, the variable of toilet facilities was p-value 0.003 with OR 0.171, the variable of hand washing behavior was p-value 0.000 with OR 0.159, the mother's knowledge variable was p-value 0.017 with OR 0.292, landfill variable p-value 0.846 with OR 1.078. **Conclusion:** It can be concluded that there is a correlation between clean water sources, toilet facilities, hand washing behavior, mother's knowledge, and the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center.

Keywords: Toddler Diarrhea; Clean Water Sources; Latrine Facilities; Hand Washing Behavior; Mother's Knowledge; Garbage Disposal;

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Introduction

According to the World Health Organization (WHO) diarrhea is an occurrence of bowel movements with a more liquid consistency than usual with a frequency of three times or even more within 24 hours. Diarrhea is caused by infection with microorganisms which include bacteria, viruses, parasites, protozoa, and is transmitted by faecal-oral means (Yanti & Akhri, 2021). Diarrhea can attack various age groups, but in general diarrhea is more dominant in the toddler group. This is because toddlers' immune systems are still weak and susceptible to bacteria that cause diarrhea (Yasin et al., 2018). Based on the Indonesian Ministry of Health, the prevalence of diarrhea in toddlers in 2018 was 37.88% or around 1,516,438 cases. Whereas in 2019 the prevalence of diarrhea in children under five increased with 1,591,944 cases (Directorate General of P2P, Ministry of Health RI, 2020). Jambi Province in 2020 based on Jambi Province Health Profile for 2020 the most cases were in Merangin Regency, namely 6,653 cases (14 ,34%). The lowest case was Sungai Full City with 732 cases (1.58%) (Dinas Kesehatan Provinsi Jambi (2020)

Many factors encourage the occurrence of diarrhea in infants. Both from behavioral factors and from environmental factors. These factors include unclean living behavior in the family, poor sanitation, bacterial contamination in food and drinks. One of the bacteria that can contaminate food and drinks is E-coli bacteria. If someone consumes food or drink that is contaminated with E-coli bacteria, it will cause symptoms such as nausea, abdominal pain, vomiting and diarrhea. This condition will have a more severe impact if it occurs in toddlers.

Method

This research is an observational analytic study with a case control design. This research was conducted in the working area of the Pamenang Health Center, Merangin Regency. This research was conducted from January to May 2023. The population in this study were all diarrhea sufferers in toddlers from January to December 2022. The sample for this study was 85 respondents with a 1:1 ratio between the case and control groups with a total of 170 samples.

This study used a purposive sampling technique. The inclusion criteria in this study were mothers under five who had diarrhea and were recorded in the Pamenang Health Center register book, lived in the working area of the Pamenang Health Center, were willing to be respondents. Analysis of the data used in this study was carried out descriptively, namely distributing frequencies and percentages using the SPSS program.

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Result and Discussion

Tabel 1
Subject of Characteristic Result

Variable	Incidence of Diarrhea				Total	
	Case		Control		n	%
	n	%	n	%		
Age						
<30 th	52	61,17	53	62,35	105	61,76
>30 th	33	38,82	32	37,64	65	38,23
Education						
ES	9	10,58	7	8,23	16	9,41
JHS	25	29,41	8	9,41	33	19,41
SHS	38	44,70	64	75,29	102	60
College	13	15,29	6	7,05	19	11,17
Worked						
Civil servants	8	9,41	3	3,52	11	6,47
Self employed	1	1,17	-	-	1	0,58
Farmer	2	2,35	-	-	2	1,17
Housewife	74	87,05	82	96,47	156	91,76

Based on table 1 it can be seen characteristics of the respondents are aged <30 years as many as 105 people (61.76%). The most recent education was high school graduation, 102 people (60%), the most jobs were housewives, 156 people (91.76%). Clean water sources that do not meet the requirements are 150 respondents (88.2%), toilet facilities that do not meet the requirements are 152 houses (89.4%), hand washing behavior that does not meet the requirements is 141 respondents (82.9%), knowledge 150 respondents (88.2%) lack mothers and 137 respondents (80.6%) lack landfills

Table 2
Bivariate Results

Clean water source	Incidence of Diarrhea				Total		p-value	OR (95% C1)
	Diarrhea		No diarrhea					
	n	%	n	%	n	%		
Not eligible	68	80	82	96,5	20	88,2	0,001	0,146 (0,41-0,520)
Qualify	17	20	3	3.5	150	11,8		
Total	85	100	85	100	170	100		

Based on table 2 it is known that the group of cases that do not meet the requirements is 80%. Obtained p-value 0.001 and OR 0.146. Which means there is a relationship between clean water sources and the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, and clean water sources that do not meet the requirements have a risk factor for occurrence 0.146 times higher with a 95% CI value of 0.41-0.520.

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Table 3

Bivariate Result

Toilet Facilities	Incidence of Diarrhea				Total		p-value	OR (95% C1)
	Diarrhea		No diarrhea					
	n	%	n	%	n	%		
Not eligible	70	82,4	82	96,5	152	89,4	0,003	0,171 (0,047-0,614)
Qualify	15	17,6	3	3,5	118	10,6		
Total	85	100	85	100	170	100		

It is known that the group of cases that did not meet the requirements was 82.4%. Obtained p-value 0.003 and OR 0.171. Which means there is a relationship between latrine facilities and the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, and latrine facilities that do not meet the requirements have a 0.171 times higher risk factor with a 95% CI value of 0.47-0.614.

Table 4

Bivariate Result PCT

Handwashing behavior	Incidence of Diarrhea				Total		p-value	OR (95% C1)
	Diarrhea		No diarrhea					
	n	%	n	%	n	%		
Not eligible	61	71.8	80	94,1	141	82,9	0,000	0,159 (0,057-0,440)
Qualify	24	28.2	5	5.9	29	17,1		
Total	85	100	85	100	170	100		

It is known that the group of cases that do not meet the requirements is 71.8%. Obtained p-value 0.000 and OR 0.159. Which means there is a relationship between hand washing behavior and the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, and hand washing behavior that does not meet the requirements has a risk factor for incidents 0.159 times higher with a 95% CI value of 0.057-0.440.

Table 5

Bivariate Result Knowledge

Handwashing behavior	Incidence of Diarrhea				Total		p-value	OR (95% C1)
	Diarrhea		No diarrhea					
	n	%	n	%	n	%		
Not eligible	61	71.8	80	94,1	141	82,9	0,000	0,159 (0,057-0,440)
Qualify	24	28.2	5	5.9	29	17,1		
Total	85	100	85	100	170	100		

The p-value is 0.017. With this it can be interpreted that there is a relationship between hand washing behavior and the incidence of diarrhea in toddlers. With an OR value of 0.292 with a 95% CI of 0.101-0.843, so respondents with less knowledge are at risk of 0.292 times the incidence of diarrhea greater than respondents with sufficient knowledge

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Table 6
Bivariate Result TPS

Landfills	Incidence of Diarrhea				Total		p-value	OR (95% C1)
	Diarrhea		No diarrhea					
	n	%	n	%	n	%		
Less	69	81	68	80	137	80,9	0,846	1,078 (0,504-2.306))
Enough	16	19	17	20	33	19,4		
Total	85	100	85	100	170	100		

The p-value is 0.846. With this it can be interpreted that there is no relationship between hand washing behavior and the incidence of diarrhea in toddlers. Respondents who did not meet the requirements had a 1.078 times greater risk of suffering from diarrhea compared to respondents who met the requirements.

Table 7
Result Multivariate

Variable	p-value	OR	CI 95%
Clean Water Source	0,005	0,124	0,29 - 0,540
Handwashing Behavior	0,002	0,178	0,061 - 0,522

The multivariate final model shows that the variable sources of clean water and hand washing behavior have a p value <0.05 so that the variable that is significantly related to the incidence of diarrhea in toddlers in the Pamenang Health Center work area is hand washing behavior with a p value = 0.002 with a risk value (OR) 0.178 and CI 0.061–0.522. This means that respondents with hand washing behavior who do not meet the requirements will be at risk of 0.178 times to get diarrhea compared to hand washing behavior that meets the requirements.

From the results of the frequency distribution it was found that there were 82 respondents (96.50%) with clean water sources that did not meet the requirements in the control group and in the case group there were 68 respondents (80%). While clean water sources that met the requirements in the case group were 17 respondents (20%) and in the control group there were 3 respondents (3.50%) who met the requirements.

This research is in line with research conducted by Meutia Nanda et al (2023) which was conducted in the Tangkahan sub-district, Medan Labuhan District in 2022 where the p-value was 0.037 <0.05 so that there was a significant relationship between clean water sources and the incidence of diarrhea (Nanda et al., 2023). In this study similar to that carried out by Nurwinda Saputri (2019) found a relationship between clean water sources and the incidence of diarrhea with a p-value of 0.019 (Saputri, 2019)

From the results of observations in the field, some people living around the river banks still use river water for their daily bathing needs. This is related to the non-fulfillment of health requirements because the river when viewed from the physical conditions looks cloudy, and there is activity of dumping garbage in the river by the surrounding community so that it can have an impact on the emergence of several diseases from pathogenic microbes that develop in the river.

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The availability of clean water facilities that do not meet the requirements will have an adverse impact on health, while diarrhea can be transmitted through water used for daily needs. From the results of the frequency distribution it was found that there were 82 respondents (96.5%) with latrines that did not meet the requirements in the control group and in the case group there were 70 respondents (82.4%). While latrine facilities that met the requirements in the case group were 15 respondents (17.6%) and in the control group there were 3 respondents (3.5%) who met the requirements. Research by Riyanti (2022) in the working area of the Bantar Health Center, Tasikmalaya City, in 2022 stated that there was a relationship between toilet facilities and the incidence of diarrhea with a p-value of 0.00 (PERTIWI, 2022).

This is in line with the research conducted by the author. Other research that is in line with this research is research conducted by Ayuh Pertiwi (2022) in the work area of the Katibung Inpatient Health Center, South Lampung Regency in 2022 with the result that there is a relationship between toilet facilities and the incidence of diarrhea in toddlers in Babatan village (p-value = 0.144) (Ginting & Hastia, 2019)

From the results of the survey at the respondent's house, family latrines were still found that did not meet the requirements, namely latrines without a septic tank where the excrement pits were only made from unplastered/unconcreted dug ground, the latrines were located close to the dug well water. Types of latrines that do not meet the requirements are latrines without a septic tank, and houses that do not have latrines so that when they defecate they defecate in the river.

From the results of the frequency distribution it was found that there were 80 respondents (94.1%) whose hand washing behavior did not meet the requirements in the control group and in the case group there were 61 respondents (71.8%). Hand washing behavior that met the requirements in the case group was 24 respondents (28.2%) and in the control group there were 20 respondents (5.9%) who met the requirements. This research is in line with research by Ilham Setyobudi (2020) with a p-value of 0.000 so that there is a relationship between mother's behavior regarding hand washing and the incidence of diarrhea in toddlers (Setyobudi et al., 2020). Eko Haryanto (2022) with the result that there is a significant relationship between the habit of washing hands and the incidence of diarrhea in toddlers with a p value of 0.000 (Heryanto et al., 2022)

Mother's hand washing behavior is a risk factor that has the greatest influence on the incidence of toddler diarrhea in this study (Rohmah & Syahrul, 2017). Most of the respondents had washed their hands before feeding their children, then some of the respondents had suggestions for a place to wash their hands at home. However, almost all of the respondents were not used to washing their hands with soap, but only with running water. Most of the respondents after defecation were also not used to washing their hands with soap, this was evidenced by the unavailability of soap in the toilets for some respondents.

From the results of the frequency distribution in the less control group category with the number of respondents 80 (94.1%) and in the case group as many as 70

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respondents (82.4%). In the sufficient case group category there were 15 respondents (17.6%) while in the control group there were 5 respondents (5.9%). This research is in line with research conducted by Hetti Marlina et al (2022) the results of the chi-square test obtained a significant p-value of 0.000 (<0.005) so that there is a relationship between mother's knowledge and the incidence of diarrhea in toddlers. In another study, namely research entitled the relationship between mother's knowledge about diarrhea and mother's parenting style with the incidence of diarrhea in toddlers at the working area of the Tanjung Rejo Health Center by Elma Kartika Dewi in 2022, in line with this research, namely there is a relationship between knowledge and the incidence of diarrhea (Pakpahan et al., 2022)

In research with interviews with respondents, namely mothers of toddlers, there are many mothers who do not know if diarrhea is an infectious disease. Then the mother's knowledge regarding diarrhea prevention, the initial symptoms of diarrhea as well as some mothers who are confused and don't know. Based on the research that has been analyzed in this study, mothers with low knowledge are at greater risk of toddlers getting diarrheal disease than mothers who have good knowledge. Problems that arise from the knowledge received half measures will result in the mother not responding well to the knowledge obtained, so that in behaving and acting the mother can still be categorized as lacking.

Respondents with landfills in the less category were the most common in the case group, namely 69 respondents (81%) compared to the control group, namely 68 respondents (80%). Meanwhile, in the sufficient category, there were 16 respondents (19%) in the case group and 17 respondents (20%) in the control group. This research is in line with research by Dian Emiliasari (2022) from the results of the study, 26 people (70.3%) had the bad habit of disposing of garbage, more than 14 people (42.4%) who had good trash disposal habits. The results of the analysis show that there is no relationship between garbage disposal and the incidence of diarrhea at the 23 Ilir Palembang Health Center in 2022 (p value = 0.1000) (Dewi et al., 2022)

Based on research conducted directly through interviews and direct observation of the community in the working area of the Pamenang Health Center, Merangin Regency, the people already have their own trash bins at home which are then collected behind the house and then burned. Because most of the villages in the working area of the Pamenang Health Center are drained by rivers, there are still people who throw garbage into the river, such as in Jelatang Village, the people around the river also use it for daily bathing, and there are even mothers who bathe their toddlers in the river, even though some people also throw garbage in the river. The majority community already has trash bins in their homes but no community does waste sorting so that wet and dry waste is mix together

Conclusion

Based on this study, it can be concluded that there is a relationship between clean water sources, toilet facilities, hand washing behavior and mother's knowledge of the

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incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, Merangin Regency in 2022 and there is no relationship between garbage dumps and the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, Merangin Regency, in 2022.

Then there is the risk factor that has the most influence on the incidence of diarrhea in toddlers in the working area of the Pamenang Health Center, Merangin Regency, in 2022, namely hand washing behavior.

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