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THE RELATIONSHIP CONDITION OF THE LATRINE TO THE INCIDENCE OF DIARRHEA IN BASTIONG KARANCE VILLAGE IN 2022

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ABSTRACT

Diarrhea is a bowel movement with an abnormal frequency (increased) and a mushy or liquid consistency of stools. One of the factors causing diarrhea is a latrine that does not comply with health requirements. This study aims to determine the relationship between the condition of the latrine, the type of latrine, the cleanliness of the latrine, and the quality of the latrine with the incidence of diarrhea in Bastiong Karance Village. Type of quantitative research with analytical observational research with a Case-Control approach.The population in this study was the entire community as a case group (diarrhea sufferers) and a control group (not diarrhea sufferers) in Bastiong Karance Village and the total sample was 88 respondents determined by purposive sampling technique. The analysis was carried out using the Chi-Square test with a data analysis application. The results of this study showed that there was no relationship between the condition of the latrine (p = 0.671), the type of latrine (p = 0.494), the cleanliness of the latrine (p = 0.241), and the quality of the latrine (p = 0.483) with the incidence of diarrhea. It is recommended for sanitarian officers at the Kalamata Health Center to continue to provide counseling on the importance of using latrines that are by health requirements so that in some coastal areas whose latrines do not meet the requirements, namely cemplung latrines, they can be replaced with latrines health requirements. The community always maintains the cleanliness of the latrine and always pays attention to the fecal disposal site so that it remains comfortable, and safe and maintains sanitation. And people in parts of the region still use cemplung latrines so that they can replace them with gooseneck latrines. Other researchers are expected to conduct further research on the relationship, attitudes, knowledge, and actions toward the incidence of diarrhea.

KEYWORDS: Diarrhea, Latrine Condition, Latrine Type, Latrine Hygiene, and Latrine Quality.

BACKGROUND

Diarrheal disease is the second leading cause of death in children under five years of age and is responsible for the deaths of 370,000 children in 2019 (WHO, 2019). Diarrhea is a bowel movement with an abnormal frequency (increased) and a mushy or liquid consistency of feces (Katiandagho, 2019). Diarrhea ranked third with 7.4% of deaths. In total, environmental-based diseases accounted for 33% or one-third of the total deaths of all age groups (Rahman, 2015). Based on data and information from the Indonesian Health Profile in 2019, it shows that the number of diarrheal pain in Indonesia is still quite high. The rate of diarrhea pain for all ages is 270/1000 population while in toddlers it is 843/1000 population (Ministry of Health RI, 2020). Diarrheal Disease is an endemic disease in Indonesia and a potential disease of KLB (Extraordinary Events) which is often accompanied by death. Basic Health Research shows that Diarrheal Disease is the number one cause of death in infants (31.4%) and toddlers (25.2%), while in the all-age group it is the fourth cause of death (13.2%) (Ditjen P2PL, 2012).

Data from the North Maluku Provincial Health Office in 2014 that cases of diarrhea handled were reported by as many as 21,528 (86.5%) sufferers or 12,076 (2.7%) of the total estimated number of sufferers. Basic Health Research of North Maluku Province in 2018 recorded a 5.39% prevalence of diarrhea based on the diagnosis of health workers and symptoms.Thus there is an increase in the number of people with diarrhea. Data from the Ternate City Health Office in 2018 there were 3,439 (1.54%) cases of diarrhea in all age groups and 2,023 (9.7%) cases of diarrhea in toddlers. Data from the Kalumata Health Center in 2021 shows the incidence of diarrhea in Bastiong Karance Village with a total of 77 cases.

Based on data from STBM (total sanitation of community communities) in North Maluku in 2020 there was access to Permanent Healthy Latrines (JSP) in as many as 149,020 households, access to Semi-Permanent Healthy Latrines (JSSP) in as many as 23,747 heads of families and access to BABS (Open Defecation) as many as 57,705 heads of families. STBM (Total Sanitation with Community Communities) data in 2020 in Ternate City there is access to permanent healthy latrines (JSP) as many as 35,678 heads of families, access to semi-permanent healthy latrines (JSSP) as many as 6,103 heads of families and access to BABS (Open Defecation) as many as 125 heads of families.STBM data in 2020 in Bastiong Karance there is access to permanent healthy latrines (JSP) for as many as 609 heads of families, access to semi-permanent healthy latrines (JSSP) for as many as 26 heads of families, and access to BABS (Open Defecation) as many as 5 heads of families (Ministry of Health RI, 2020).

Based on the results of several studies that are in line such as selviana's research (2015). This shows the value of p-value = 0.000 and OR = 2.723 so that there is a relationship between the condition of the family latrine and the incidence of diarrhea in isolated coastal areas.Results of Putra's research (2017). Shows the value of p-value = 0.025 and OR = 3.229 95% CI (confident interval) = 1236-8438 so that there is a relationship between the condition of the latrine with the incidence of diarrhea in toddlers in the Coastal area of the Tasikmadu Health Center, Karanganyar Regency. And based on the results of Wijaya's research (2012). Shows a p< value of 0.001, OR=9.33, so there is a relationship between the type of latrine and the incidence of diarrhea. Likewise with the results of Pitriyani's research (2019).Shows the p-value = 0.001 and

OR = 5.035, so there is a relationship between the quality of the latrine and the incidence of diarrhea in the work area of the Olak Kemang Health Center. As well as the results of Hutapea's research (2017). Shows a value of p = 0.002 where p ≤ 0.05 with OR = 3.66, so there is a relationship between the cleanliness of the latrine and the incidence of diarrhea in Harapan Lau Meciho Village, Tanah Pinem District, Dairi Regency.

The impact of diarrhea is very influential on toddlers and all ages, namely, dehydration, growth, and development disorders, and even death.Death in toddlers can be caused by improper handling both at home and in health facilities. So, efforts to reduce deaths due to diarrhea need fast and appropriate management (Ministry of Health of the Republic of Indonesia, 2011).

One of the health efforts carried out in the community is the provision of basic sanitation, one of the several basic sanitation facilities in the community is a latrine.Latrines are useful for places to dispose of human waste so that the bacteria in the feces do not meet the environment, then the environment will look beautifully clean so that it has good aesthetic value (Simanjuntak, 2020).

RESEARCH METHODS

This research is quantitative research with analytical observational research with a Case-Control approach. This research was conducted in Bastiong Karance Village. The time study was conducted from April-May 2022. The population in this study was all diarrhoeal disease sufferers recorded at the Kalumata Health Center, which was 77 cases in 2021. The total sample in this study was 88 respondents consisting of 44 cases and 44 controls. The secondary data in this study are data from the Kalumata Health Center related to data on people with diarrheal diseases and the primary data obtained are data directly taken at the time of the study, namely the condition of the latrine, the quality of the latrine, the type of latrine, and the cleanliness of the latrine. The analysis used was univariate and bivariate using SPSS with the Chi-Square test using an alpha value of 0.05.

RESULT AND DISCUSSION

The results of the analysis of the relationship between the condition of the latrine and the incidence of diarrhea are as follows:

Table 1. The Relationship between Latrine Conditions and the Incidence of Diarrhea In Bastion Karance Village in 2022

Latrine Conditions	Diarrhea Status				Total		Statistic Test
	Case		Control				
	n	%	n	%	N	%	
Not Eligible	9	42,9	12	57,1	21	100	**0,671**
Quality	35	52,2	32	47,8	67	100	
Total	**44**	**95,1**	**44**	**104,9**	**88**	**100**	

Based on the results of the study, it can be seen that some houses with latrine conditions that meet the requirements of 88 samples were obtained in the case group (diarrhea sufferers) of 35 houses (52.2%) and the control group (not suffering from diarrhea) of 32 (47.8%). Houses with latrine conditions that were not eligible in the case group (diarrhea sufferers) were 9 houses

(42.9%) and the control group (which did not suffer from diarrhea) was 12 houses (57.1%).The results of the chi-square test obtained a value of p-0.617 > α 0.05, so it was concluded that there was no significant relationship between the condition of the latrine and the incidence of diarrhea. This is because most of the respondents in the case group (diarrhea sufferers) or the control group (do not suffer from diarrhea) already have a latrine with the correct fecal disposal building and by health requirements so that the condition of the latrine does not affect the occurrence of diarrhea.

According to (Widoyono, 2011). Several factors increase the risk of diarrhea such as environmental factors which include waste treatment, sewage channels, and water sources. Improper processing of garbage and sewage channels can cause diarrhea in toddlers, this is due to the vector of flies that perch on the trash or waste and then perch on. In addition, diarrhea can occur if a person uses water that has been well polluted fromthe source, during the trip to the house, or polluted when kept at home. In addition, the habit of washing hands when cooking food or after defecation will make it possible to be contaminated directly.

The results of this study are in line with previous research conducted by Langit (2016) with the results of the chi-square test obtained a value of p-1,000 > α 0.05, it was concluded that there was no significant relationship between the condition of the latrine and the incidence of diarrhea in toddlers in the Rembang Health Center Work Area.

According to Oktariza (2018). The condition of the latrine that does not meet the requirements will pollute the environment from human feces and become a medium of transmission of pathogenic microorganisms that cause diarrhea. These pathogenic microorganisms will move to the cult through various transmission routes such as water, soil, hands, and insects which then contaminate food and drinks or can directly enter through the mouth without food/drink intermediaries.

Table 2. The Relationship Between Latrine Types and the Incidence of Diarrhea in BastiongKarance Village

Type of Latrine	Diarrhea Status				Total		Statistic Test
	Case		Control				
	n	%	n	%	N	%	
Not Eligible	2	2,27	0	0	2	100	**0,494**
Quality	42	48,8	44	51,2	86	100	
Total	**44**	**51,07**	**44**	**51,2**	**88**	**100**	

Based on the results of the study, it can be seen that some houses with eligible types of latrines from 88 samples were obtained in the case group (diarrhea sufferers) of 42 houses (48.8%) and the control group (not suffering from diarrhea) of 44 (51.2%). Respondents with latrine-type homes were not eligible in the case group (diarrhea sufferers) of 2 houses (100%) and no houses in the control group (not suffering from diarrhea).The results of the chi-square test obtained a value of p-0.494 > α 0.05, so it was concluded that there was no significant relationship between the type of latrine and the incidence of diarrhea. This is because most respondents in the case group (diarrhea sufferers) and the control group (not suffering from diarrhea) have used goose

neck-type latrines. Then the type of latrine that does not meet the requirements does not have much effect on the incidence of diarrhea.

The results of this study are in line with Pratama (2013). The results of the chi-square test obtained a value of p-0.207 > α 0.05 this shows that there is no relationship between the type of latrine and the incidence of diarrhea in toddlers in Gunungpati Village, Semarang City.This study is also in line with Istiqomah's (2010) research with the results of the chi-square test obtained a value of p-0.298 > α 0.05, this shows that there is no relationship between the type of latrine and the incidence of diarrhea in toddlers in The Batang Market Village, Brebes District, Brebes Regency.

According to Notoatmodjo (2010), the requirements for sewage that meets health regulations are not to pollute the surrounding soil surface, not to pollute the surrounding surface water, not to pollute the water in the surrounding soil, and the manure should not be exposed so that it can be used as a place for egg-laying flies or breeding other disease vectors.

Table 3. The Relationship Between Latrine Hygiene and Diarrhea incidence in Bastiong Karance Village

Toilet Cleanliness	Diarrhea Status				Total		Statistic Test
	Case		Control				
	n	%	n	%	N	%	
Not Eligible	3	3,40	0	0	3	100	**0,241**
Quality	41	48,2	44	51,8	85	100	
Total	**44**	**51,6**	**44**	**51,8**	**88**	**100**	

Based on the results of the study, it can be seen that some houses with latrine hygiene meet the requirements of 88 samples in the case group (diarrhea sufferers) of 41 houses (48.2%) and the control group (not suffering from diarrhea) of 44 (51.8%). Respondents with latrine conditions that were not eligible in the case group (diarrhea sufferers) were 3 houses (100%) and there were no houses in the control group (did not suffer from diarrhea).The results of the chi-square test obtained a value of p-0.241 > α 0.05, so it was concluded that there was no significant relationship between the cleanliness of the latrine and the incidence of diarrhea. This is because most respondents already have a latrine with a clean condition, there are no dirt or garbage insidefecal drains and only 3 respondents had latrines where there was garbage and around the building looked dirty, but most of the respondents had latrines that were clean and covered by vectors, so the cleanliness of the latrines did not affect the incidence of diarrhea in BastiongKarance Village.

The results of this study are in line with Nugraheni's (2012) research with the results of the chi-square test p-0.117 < 0.05, it can be seen that there is no significant relationship between latrine hygiene and the incidence of diarrhea in North Semarang District, Semarang City.Lack of hygiene in latrines can be feared to cause the transfer of disease causes to humans carried by vector animals such as flies. Flies are vectors of diarrheal diseases. These flies live a lot and multiply in damp and dirty places.

Diarrheal diseases are caused by germs found in human feces. Germs that get into water or food, hands, cutlery, or cooking utensils, can be ingested causing disease. The most important way to prevent the spread of germs is to throw human waste into the latrine. The latrine must be cleaned frequently, the hole must always be closed (Notoatmodjo S., 2011).

Table 4. Relationship of Latrine Quality with Diarrhea Incidence in Bastiong Karance Village

Latrine Quality	Diarrhea Status				Total		Statistic Test
	Case		Control				
	n	%	n	%	N	%	
Not Eligible	15	57,7	11	42,3	26	100	0,483
Quality	29	46,8	33	53,2	62	100	
Total	**44**	**104,5**	**44**	**95,5**	**88**	**100**	

Based on the results of the study, it can be seen that some houses with qualified latrine quality from 88 samples in the case group (diarrhea sufferers) were 29 houses (46.8%), and the control group (which did not suffer from diarrhea) was 33 (53.2%). Respondents with unqualified latrine quality in the case group (diarrhea sufferers) were 15 houses (57.7%) and the control group (did not suffer from diarrhea) was 11 houses (42.3%).The results of the chi-square test obtained a value of p-0.483 > α 0.05, so it was concluded that there was no significant relationship between the quality of the latrine and the incidence of diarrhea. This is because some respondents already have latrines that are by health requirements.The latrines owned do not pollute drinking water sources, are odorless, and cannot be touched by vectors, the floor is waterproof, easy to clean, and safe to use, but there are some respondents whose latrine buildings do not have a roof so that they can be reached by animals or insects that can spread bacteria that cause diarrhea. In addition, some respondents who are in the latrine building do not have cleaning tools.

The results of this study are in line with Manik's research (2012) with the results of the chi-square test obtained a p-value of 0.702 > α 0.05, it can be seen that there is no relationship between the quality of latrines and the incidence of diarrhea in the community. The results of this research are also in line with Rau's research (2021). The results of the chi-square test obtained a value of p-0.133, so it was found that there was no relationship between the quality of the latrine and the incidence of diarrhea in toddlers in the work area of the Tipo Health Center.

According to Oktariza (2018). The community can also carry out latrine maintenance by always diligently cleaning the latrine floor 2-3 times a week so that the latrine is clean, there is no visible dirt, not allowing puddles on the latrine floor, there are no breeding vectors in the latrine building, there is no scattered garbage, there is enough water available,soap and cleaning tools are available, and immediately repair the latrine if there are damaged parts. In addition, looking at the condition of the respondent's area of residence which is in a rural area with a fairly large area of land, respondents can make a septic tank at a distance of >10 meters from the water source.

CONCLUSION AND RECOMMENDATION

Based on the results above, it can be concluded: There is no relationship between the condition of the latrine and the incidence of diarrhea in BastiongKarance Village (p-value = 0.617), There is no relationship between the type of latrine and the incidence of diarrhea in BastiongKarance Village (p-value = 0.494), There is no relationship between the cleanliness of the latrine and the incidence of diarrhea in BastiongKarance Village (p-value = 0.241), There is no relationship between the quality of the latrine and the incidence of diarrhea in BastiongKarance Village (p-value = 0.483).

Advice for Community health centers of Kalumata to sanitarian staff officers to continue to provide counseling on the importance of using latrines that are by health requirements so that in some areas whose latrines are not yet eligible, they can be replaced with latrines that meet health requirements.For the community, always maintain the cleanliness of the latrine and always pay attention to the fecal disposal site so that it remains comfortable, and safe and maintains sanitation. And people in parts of the coastal area still use cemplung latrines so that they can replace them with gooseneck latrines. Other researchers are expected to conduct further research on the relationship of attitudes, knowledge, actions, and personal hygiene to the incidence of diarrhea.

REFERENCES

Directorate General of P2PL, 2012. Disease Control and Environmental Health Profile 2012.Jakarta: Ministry of Health of the Republic of Indonesia. 2011.

HutapeaSartika Yesenia, 2017. The Relationship between Environmental Sanitation and Diarrhea InHarapan Lau Meciho Village, Tanah Pinem District, Dairi Regency in 2017.

Istiqomah, I. (2010). The Relationship between Home Environmental Factors and Maternal Health Practices with the Incidence of Diarrhea in Toddlers in Pasarbatang Village, Brebes District, Brebes Regency (Doctoral Dissertation, Diponegoro University).

Katiandagho, D., &Darwel, D. (2019). The Relationship between The Provision of Clean Water and Family Latrines with the Incidence of Diarrhea in Toddlers in Mala Village, Manganitu District in 2015. Journal of Independent Healthy, 14(2), 64-78.

Langit, L. S. (2016). The relationship between basic sanitation conditions of the house and the incidence of diarrhea in toddlers in the work area of the Rembang Health Center 2. Journal of Public Health (Undip), 4(2), 160-165.

Manik, E. K., Cape, R., &Ambarita, M. P. (2012). Basic Sanitation Conditions With The Incidence Of Diarrhea In The Community.

Ministry of Health RI, 2011. Bulletin of The Data window and Health Information on the Situation of Diarrhea in Indonesia. Retrieved February 16, 2022 from the diarrhea-bulletin.pdf (kemkes.go.id).

Ministry of Health of the Republic of Indonesia. (2020). Community-Based Total Sanitation. Retrieved March 2022, from Community-Based Total Sanitation - STBM in Indonesia (kemkes.go.id).

North Maluku Provincial Health Office. Health Profile of North Maluku Province. 2014. [Cited Oct.242019].Available.from:https://www.depkes.go.id.download/pusdatin/kunjungan.kerja.Maluku.Utara.2014.pdf.

Notoatmodjo S. 2010. Health Research Methods. Jakarta: RinekaCipta

Notoatmodjo S., 2011. Public Health Sciences and Arts. Jakarta: RinekaCipta

Nugraheni, D. (2012). The relationship between the condition of basic sanitation facilities and personal hygiene with the incidence of diarrhea in North Semarang District, Semarang City. Journal of Public Health, Diponegoro University, 1(2), 18723.

Oktariza, M., Suhartono, S., &Dharminto, D. (2018). An overview of the sanitary condition of the home environment with the incidence of diarrhea in toddlers in the Buayan Health Center Work area, Kebumen Regency. Journal of Public Health (Undip), 6(4), 476-484.

Primary, R. N. (2013). The relationship between environmental sanitation and maternal personal hygiene and the incidence of diarrhea in toddlers in Sumurejo Village, Gunungpati District, Semarang City. Journal of Public Health, Diponegoro University, 2(1), 18720.

Putra, A. D. P., Rahardjo, M., & Joko, T. (2017). The relationship between basic sanitation and personal hygiene with the incidence of diarrhea in toddlers in the Tasikmadu Health Center Working Area, Karanganyar Regency. Journal of Public Health (Undip), 5(1), 422-429.

Pitriyani, S., &Pitriyani, P. (2019). Risk Factors for Diarrhea In Toddlers. Contagion: Scientific Periodical Journal of Public Health and Coastal Health, 1(01).

Rau, M. J., & Novita, S. (2021). The Effect of Clean Water Facilities and Latrine Conditions on the Incidence of Diarrhea in Toddlers in the Tipo Health Center Work Area. Preventive: Journal of Public Health, 121), 110-126.

Rahman and St. NurjannatulMa'wa. (2015). Environmental-Based Disease Mapping on Saugi Island, Pangkep Regency. Journal of Health: 2 (1)1- 78.

Simanjuntak, B. M. (2020). Relationship of Family Latrine Condition with The Incidence of Diarrhea. Wijaya Scientific Journal Volume 12 Number 2.

Widoyono. (2011). Tropical Diseases Epidemiology, Transmission, Prevention and Eradication (2nd ed). Jakarta: Erlangga.

Wijaya, Y. (2012). Risk Factors for The Incidence of Toddler Diarrhea Around TPS Banaran, UNNES Campus. Unnes Journal of Public Health, 1(2).

WHO. (2019). Diarrhea. (Online), (https://www.who.int/health-topics/diarrhoea#tab=tab_1). Retrieved February 13, 2022.