

The Relationship between Environmental Sanitation and the Incidence of Diarrhea in Toddlers in Kotakaler Public Health Center 2024

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ABSTRACT

Diarrhea is the second leading cause of death in children under five and causes 525,000 under-five deaths each year. Sanitation is an effort to ensure and improve the health of the residential or urban environment. The purpose of this study was to determine the relationship between environmental sanitation (water supply and solid waste management) with the incidence of diarrhea in toddlers in the work area of the UPTD Puskesmas Inpatient Kotakaler Sumedang Regency in 2024. The type of research used is quantitative analytic with a cross sectional approach. The sample in this study amounted to 78 respondents. Data analysis using the chi-square test. The sampling technique used was simple random sampling technique. Data collection was done by distributing questionnaires, and data analysis using the chi-square test. The results showed that there was a relationship between the provision of clean water with the incidence of diarrhea in toddlers with a p value = 0.003, and there was a relationship between solid waste management with the incidence of diarrhea in toddlers in the work area of the UPTD Puskesmas inpatient Kotakaler with a p value = 0.004. Therefore, the Puskesmas needs to consider efforts to improve health promotion, especially to mothers who have toddlers to behave healthily



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1. INTRODUCTION

Diarrhea Diarrhea is the second leading cause of death in children under five and causes 525,000 deaths each year. Most diarrhea patients who die are dehydrated or lose large amounts of fluid and also due to contaminated food and water sources. With 780 million people lacking access to improved drinking water and

2.5 billion lacking improved sanitation, infectious diarrhea is widespread throughout the developing world (WHO, 2022).

According to WHO, low access to sanitation is one of the causes of diarrhea. This is in accordance with Bloom's theory which states that the degree of public health is determined by environmental factors, behavior, health services, and heredity factors (Hastia & Ginting, 2019). Environmental sanitation is an effort to prevent disease through controlling environmental risk factors, both physical, chemical, biological and social that become the chain of sources of transmission, exposure and contamination of the occurrence of diseases and health disorders (Decree of the Minister of Health, 2021).

Diarrhea in toddlers can be influenced by host factors, agent factors, and environmental factors (B & Hamzah, 2021). The most important environmental factors to the spread of diarrhea disease are the disposal of feces and drinking water facilities because related to diarrhea which is an environment- based infectious disease. Parental education and income also influence the occurrence of diarrhea in children. The higher the education of parents, the more knowledge and information obtained about diarrhea disease. Higher parental income encourages to build adequate environmental sanitation facilities in accordance with health requirements (Azmi et al., 2019).

Based on data from the Indonesian Ministry of Health, the prevalence of diarrhea in 2018 was 37.88% or around 1,516,438 cases in toddlers. The prevalence increased in 2019 to 405 or around 1,591,944 cases in toddlers (Directorate General of P2P, Indonesian Ministry of Health, 2020). Based on data from the 2020 Indonesian Health Profile, infectious diseases, especially diarrhea, are a contributor to deaths in the 29-day - 11-month age group. Just like the previous year, in 2020, diarrhea is still a major problem that causes 14.5% of deaths. In the toddler group (12 - 59 toddlers), deaths due to diarrhea amounted to 4.55%. Based on Komdat Kesmas data for the period January - November 2021, diarrhea caused 14% of post neonatal deaths. In 2022, the coverage of services for diarrhea patients at all ages is 35.1% and for children under five is 26.4% of the target set (Ditjen P2P Kemenkes RI, 2022).

2. METHOD

This research method uses quantitative analytics with a cross sectional approach. The sample in this study were 78 respondents with the sampling technique in this study was probability sampling. With this type of research is simple random sampling. Data analysis using the chi-square test. Data collection in this study was carried out using a questionnaire distributed to respondents. This study aims to determine whether there is a relationship between environmental sanitation as an independent variable and the incidence of diarrhea in toddlers as a dependent variable.

3. RESULTS AND DISCUSSION

3.1. Results

A. Univariate Analysis

Univariate analysis in this study describes the distribution of respondent characteristics variables (gender, and age of toddlers) and the incidence of diarrhea.

1) Incidence of Diarrhea

Tabel 1 Distribution of Diarrhea Events in Toddlers in the Work Area of UPTD Puskesmas Inpatient Kotakaler Sumedang Regency in 2024

Variables	Frequency	Percentage
Incidence of Diarrhea		
Diarrhe	60	77%
No Diarrhea	18	23%
Total	78	100%

Based on the table, it is known that of the 78 respondents, the majority of toddlers who experienced diarrhea with a distribution of 60 respondents (77%).

Tabel 2 Distribution of Clean Water Supply in the Work Area of UPTD Puskesmas Inpatient Kotakaler Sumedang Regency in 2024

Variables	Frequency	Percentage
Clean Water Supply		
Not Eligible	46	59%
Eligible	32	41%
Total	78	100%

Based on table, it is known that out of 78 respondents, the majority of clean water supply does not meet the requirements with a distribution of 46 respondents (59%).

Tabel 3 Distribution of Solid Waste Management in the Work Area of UPTD Puskesmas Inpatient Kotakaler Sumedang Regency in 2024

Variables	Frequency	Percentage
Solid Waste Management		
Good	35	45%
Bad	43	55%
Total	78	100%

Based on the table shows that out of 78 respondents, the majority had poor solid waste management with a distribution of 43 respondents (55%).

Tabel 4 Results of the Relationship between Clean Water and the Incidence of Diarrhea in Toddlers in the Working Area of the Kotakaler Health Center, Sumedang Regency

Clean Water	Incidence of Diarrhea				Total		P value
	No Diarrhea		Diarrhea				
	F	%	F	%	F	%	
Eligible	5	35,7	9	64,3	14	100	0,003
Not Eligible	23	35,9	41	64,1	64	100	
Total	28	35,9	50	64,1	78	100	

Based on the table shows that the p value = 0.003 which is smaller than the value (<0.005), then there is a significant relationship between the provision of clean water with the incidence of diarrhea in toddlers in the working area of Puskesmas Kotakaler Sumedang Regency. Due to the results there is a significant relationship then H_0 is rejected and H_a is accepted. The majority of toddlers who experience diarrhea with clean water supply do not meet the requirements with a frequency of 41 respondents (64.1%).

Tabel 5 Results of the Relationship between Solid Waste Management and the Incidence of Diarrhea in Toddlers in the Working Area of the Kotakaler Health Center, Sumedang Regency

Solid Waste Management	Incidence of Diarrhea				Total		P value
	No Diarrhea		Diarrhea				
	F	%	F	%	F	%	
Good	19	44,2	24	55,8	43	100	0,004
Bad	9	25,7	26	74,3	35	100	
Total	28	35,9	50	64,1	78	100	

Based on the table shows that the p value = 0.004 which is smaller than (<0.005), there is a significant relationship between solid waste management and the incidence of diarrhea in toddlers in the working area of Puskesmas Kotakaler Sumedang Regency. Due to the results there is a significant relationship then H_0 is rejected and H_a is accepted. The majority of toddlers who experience diarrhea with poor solid waste management category with a frequency of 26 respondents (74.3%).

3.2. Discussion

The results showed that this study the majority of toddlers who experienced diarrhea events with a frequency of 60 toddlers (77%), while toddlers who did not experience diarrhea events with a frequency of 18 toddlers (23%). Diarrhea is one of the common health problems in Indonesia, especially in infants and children. Diarrhea is the occurrence of disturbances in the defecation cycle. The characteristic of diarrhea is the high frequency of defecation in a day, namely 3 times or even more (Setyawan & Setyningsih, 2021). The results showed that this study i the majority of respondents whose clean water supply met the requirements with a frequency of 32 respondents (41%) while the provision of clean water did not meet the requirements with a frequency of 46 respondents (59%). Water is a vital need for humans, animals, and plants. The provision of water on the earth's surface is very uneven, this is due to geological factors or soil structure. In addition, weather factors (rainfall, temperature, humidity, and wind speed) and topographical factors (mountainous areas, coastal areas and islands and desert areas) are also influential. For drinking purposes

(including for cooking) water must have special requirements so that the water does not cause human diseases including diarrhea.

The results showed that the majority of respondents in this study had good solid waste management with a frequency of 35 respondents (45%) while solid waste management was in the bad category with a frequency of 43 respondents (55%). According to the Environmental Services Program (2011) the key to the success of cleaning and waste management programs lies in selection. Without selection, waste management becomes difficult, expensive and has a high risk of polluting the environment and endangering health.

From the results of this study it is known that most of the respondents' clean water supply does not meet the requirements, namely 46 respondents (59%), while those who meet the requirements are 32 respondents (41%). Based on the results of statistical tests using chi-square, the p value is 0.003 because the p value < 0.05 then H_0 is rejected, and H_a is accepted, meaning that there is a significant relationship between the provision of clean water with the incidence of diarrhea in toddlers in the working area of Puskesmas Kotakaler Sumedang Regency. This study is in line with the results of previous research conducted by Yuni Harmila Siregar (2021). The results of the chi-square test show that $p = 0.00 < 0.05$, so it is concluded that there is a significant relationship between clean water provision and the incidence of diarrhea in toddlers.

According to the researcher, there are other factors that affect the results of this study that are not related, such as data and research methodology that can also affect the results of the study. For example, if the data used is inaccurate or the research sample is not representative of the results of the study, it may affect the results of the study resulting in no relationship. Although the majority of respondents had a clean water supply that met the requirements, it is possible that the provision of clean water is not balanced with good sanitation practices. For example, if eating utensils are not clean toddlers can get infections even though clean water is available. The quality of water may not always meet the required health standards.

Based on the results of the study, it is known that most of the respondents' solid waste management is in the bad category, namely 43 respondents (55%), while in the good category, 35 respondents (45%). Based on the results of statistical tests using chi-square, the p value is 0.004 because the p value < 0.05 , so H_0 is rejected, and H_a is accepted, meaning that there is a significant relationship between solid waste management and the incidence of diarrhea in toddlers in the working area of the Kotakaler Health Center, Sumedang Regency.

This study is in line with previous research conducted by Ai Siti Rohimah (2020) showing that the p value of $0.045 < 0.05$ means that there is a relationship between the condition of the trash can with the incidence of diarrhea in toddlers in the working area of Pamulihan Health Center, Sumedang Regency.

According to researchers, poor solid waste management can lead to accumulation of waste, which becomes a breeding ground for disease vectors such as flies and rats. This is associated with an increase in diarrheal diseases, especially in children under five. However, if sanitation in the area is good and the waste management system is well managed in an area, the level of diarrhea in children under five does not increase.

4. CONCLUSION (10 pt)

Based on the results of research and discussion of the relationship between environmental sanitation and the incidence of diarrhea in toddlers in the work area of the UPTD Puskesmas Inpatient Kotakaler Sumedang Regency, it can be concluded as follows:

1. The incidence of diarrhea in toddlers in the work area of the UPTD Puskesmas Kotakaler from 78 respondents obtained the number of toddlers who did not have diarrhea as many as 18 people (23%) and toddlers who had diarrhea as many as 60 people (77%).
2. Based on table 4.1, it is known that out of 78 respondents who have qualified clean water supply, 32 respondents (41%) and unqualified clean water supply are 46 respondents (59%).
3. Based on table 4.1, it is known that out of 78 respondents who managed solid waste in the good category were 35 respondents (45%) and solid waste management in the bad category were 43 respondents (55%).
4. There is a significant relationship between the provision of clean water and the incidence of diarrhea in toddlers in the working area of UPTD Puskesmas Kotakaler. This is obtained from the results of the study p value = 0.003.
5. There is a significant relationship between solid waste management and the incidence of diarrhea in toddlers in the working area of UPTD Puskesmas Kotakaler. This is obtained from the results of the study p value = 0.004.

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