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# The Influence of Clean Water Sources on Toilet Ownership and Waste Processing With Diarrhea Disease Incidence in Toddlers

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***Abstract*** *Background:Diarrhea is still a health problem and a cause of death in toddlers. Lack of attention to clean water sources, toilet ownership, and waste management can lead to high rates of diarrhea. An initial survey conducted at the Enarotali Health Center from March 2023 to October 2023, the number of diarrhea cases was 78 with a percentage of 47.43%. Objective: to determine the relationship between clean water sources, toilet ownership, and waste management with the incidence of diarrhea in toddlers in the Enarotali Health Center work area. Method: This study is quantitative with a cross-sectional approach conducted at the Enarotali Health Center, Paniai Regency from April to June 2024. Sample selection using the Random Sampling technique was 78 people. Data processing was carried out using SPSS version 16. Results: The results of the study showed that there was a relationship between clean water sources, toilet ownership, and waste management with the incidence of diarrhea in toddlers with a significant value of p-value = 0.00 (p-value = <0.05). Conclusion: There is a relationship between clean water sources, toilet ownership, and waste management with the incidence of diarrhea in toddlers. Suggestion: Researchers hope that mothers of toddlers at the Enarotali Health Center can get clean water sources, healthy toilet ownership, and good and proper waste management to prevent cases of diarrhea in toddlers.*

***Keywords :*** *Clean Water, Toddlers, Diarrhea, Healthy Toilets, Waste Management.*

## 1. INTRODUCTION

Diarrhea is one of the main causes of morbidity and mortality, causing more deaths in early childhood after the neonatal period. One in nine deaths in children is caused by diarrhea, making it the second leading cause of death in children under 5 years of age in the world. Globally, of all causes of death in children, diarrhea accounts for 15% or 1,600 deaths every day in children under five years of age. In Africa and South Asia, four-fifths of all deaths in children under five (82%) are caused by diarrhea (WHO, 2020).

Pathogenic factors that cause diarrhea are through the fecal-oral route, meaning it enters the mouth due to consuming drinks and food or using objects contaminated by feces, for example hands or food containers that are washed using contaminated water. Clean water sources that are contaminated by feces are caused by people who are accustomed to disposing of waste carelessly or toilets that do not meet health requirements, and well buildings as clean water for some people also do not meet health requirements. This is what can ultimately be a determining factor in the occurrence of diarrhea (Simatupang, 2014).

Diarrhea is more common in developing countries compared to developed countries. This is due to several factors including the lack of drinking water that is suitable for consumption, lack of awareness of hygiene and sanitation and poor nutritional status and public health status. Around 2.5 billion people still have inadequate sanitation facilities and 1 billion people do not have access to safe drinking water (UNICEF, 2018).

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The high incidence of diarrhea is caused by several factors, namely inadequate provision of clean water, water contaminated by feces, lack of sanitation facilities (unhygienic disposal), poor personal and environmental hygiene, storage of undercooked food and storage of cooked food at inappropriate room temperatures (Mafazah, 2013).

According to the World Health Organization (WHO), 842,000 deaths in low- and middle-income countries are caused by inadequate water, hygiene, and sanitation, representing 58% of total deaths caused by diarrhea and 1.5% of the total burden of disease. Apart from individual risk factors, 520,000 deaths are caused by unsafe and inadequate drinking water, 297,000 deaths are caused by inadequate handwashing, and 280,000 deaths are caused by poor sanitation. In addition to socioeconomic and age, important risk factors for diarrhea in low-income countries are inadequate drinking water, poor hygiene, and sanitation (WHO, 2020).

UNICEF on sanitation and drinking water worldwide states that more than 663 million people still lack access to safe drinking water and 159 million people depend on surface water for community water consumption. In some countries in the world, regional disparities in water access are still very large. Around 79% of people depend on unsafe drinking water and 93% depend on surface water especially in rural areas. The situation with poor water quality and high risk exposure to diseases such as diarrhea is a major concern (UNICEF, 2020).

According to Indonesian statistical data in 2020, it is known that as many as 18% of Indonesian households rely on their drinking water from surface water sources such as springs, rivers, ponds, and lakes which are susceptible to contamination (Riskesdas, 2020).

The proportion of diarrhea cases handled in Papua Province in 2020 was 58.9%, an increase compared to the proportion in 2019, which was 53.2%. This shows that discovery and reporting must continue to be improved, cases found and handled in government and private health care facilities have not all been reported. Based on gender, the proportion of diarrhea cases handled in women is greater than in men, which is 55.8%. This is because women are more likely to be associated with risk factors for diarrhea, which is transmitted through the oral vecal route, especially related to clean water facilities, and PHBS food presentation methods.

Based on data from the Paniai Regency Health Office throughout the period December 2022 to August 2023, there were 788 cases of diarrhea with a percentage of 10.3%. The initial survey was conducted at the Enarotali Health Center from March 2023 to

October 2024 with a population of 370 people with a percentage of 47.43% (Paniai Regency Health Office 2023 and 2024).

Based on data obtained from the Enarotali Health Center, the number of toddler families who implement clean and healthy water sources is 59 people with a percentage (69.2%), and there are 24 people who do not have a clean water source with a percentage (30.8%). While toddler families who have healthy latrines are 65 with a percentage (16.7%) and do not have latrines, namely 13 people (83.3%). While toddler families who have waste disposal facilities are 21 people with a percentage (25.6%) and do not have waste disposal facilities are 58 people with a percentage of 74.3% at the Enarotali Health Center in 2024.

Based on the background that has been stated above, the researcher is interested and wants to research the Influence of Clean Water Sources, Toilet Ownership and Waste Processing on the Incidence of Diarrhea in the Work Area of the Enarotali Health Center, Paniai Regency.

## 2. METHOD

This study is an analytical study using a cross-sectional research design, namely collecting data simultaneously on the independent variables of healthy toilet ownership factors, hand washing behavior and knowledge and the dependent variable (incidence of diarrhea in toddlers) at the same time (point time approach). This study was conducted at the Enarotali Health Center, Paniai Regency, Central Papua. The population in this study was 370 people with a sample of 78 people. The instrument to be used is a questionnaire containing the problem or theme being studied so that it shows the relationship or influence in the study and the scale (Nursalam, 2014). The types of data used are primary data and secondary data.

Univariate analysis is an analysis that focuses on the depiction or description of the data that has been obtained. Describes the distribution and frequency of each independent variable and dependent variable, so that a picture of the research variables can be obtained.

## 3. RESULTS AND DISCUSSION

### Research result

1. Research Location Overview

This research was conducted at the Enarotali Health Center, Paniai Regency, Central Papua Province. The research was carried out for 2 months starting from April to May 2024.

Enarotali Health Center is located in the capital city of Paniai Regency, geographically a mountainous area with high humidity and air temperature resulting in high rainfall, while the valley morphological unit is located around Lake Paniai. The weather and climate in the Enarotali Health Center Working Area are type A which is very wet with rainfall between 2500 to 4000 mm per year. The air temperature is between 270C to 340C in lowland and valley areas, while in mountainous areas the air temperature is influenced by altitude where every 100 m increase from sea level the air temperature decreases by an average of 0.600C. For areas around the lake the temperature ranges from 100C-300C.

The boundaries of the Enarotali Health Center Work Area. The north borders the Yatamo Epouto District, the south borders the Yagai District, Kebo District and Aweida District, the west borders the Muye District, West Paniai District and Ukauwo District, the east borders the Bibida District. The population based on the 2023 village population data is known that the population in the Enarotali Health Center work area is 17,692 people.

2. Respondent Characteristics

Respondent characteristics are the criteria that will be given to research subjects so that the source of information in the research or experiment can be directed appropriately and according to expectations, in this case it also depends on the use of the type and research method (Amirin, 2019).

a. Toddler Age

Toddlers are the period after birth until before the age of 59 months, consisting of newborns aged 0-28 days, infants aged 0-11 months, and toddlers aged 12-59 months. The health of infants and toddlers is very important to pay attention to because during this period their physical and mental growth and development are very fast. Health efforts for infants and toddlers include nutritional management and referrals, growth and development monitoring, immunization, rehabilitation and long-term care for chronic/rare diseases, parenting patterns and development stimulation, and provision of a healthy and safe environment.

Table 1 Frequency Distribution of Toddler Age Groups in the Working Area of the Enarotali Health Center, Paniai Regency

| Toddler Age Group | f | % |
|---|---|---|
| 0-6 Months | 16 | 20.5 |
| 7-12 Months | 5 | 6.5 |
| 13-24 Months | 40 | 51.3 |
| 25-36 Months | 17 | 21.7 |

| | | |
|---|---|---|
| **Amount** | **78** | **100.0** |

*Source: primary data 2024*

Based on Table 1 above, the distribution of the toddler age group is mostly in the 13-24 months age group, which is 40 people (51.3%). The lowest age is 7-12 months (6.5%) with 5 people.

b. Gender

Gender is the difference in form, nature, and biological function between men and women that determines the difference in their roles in carrying out efforts to continue the lineage. According to Notoatmodjo (2022) in Sri Yuliani (2018), gender is a biological sign that distinguishes humans based on male and female groups. Gender refers to a person behaving and reflecting an appearance according to their gender..

Table 2 Frequency Distribution of Toddler Gender Characteristics in the Enarotali Health Center Working Area, Paniai Regency

| Gender | f | % |
|---|---|---|
| Man | 20 | 25.7 |
| Woman | 58 | 74.3 |
| **Amount** | **78** | **100.0** |

*Source: primary data 2024*

Based on Table 2 above, the distribution of gender groups is highest in the female group, 58 people (74.3%), while the lowest is in the male group, namely 20 people (25.7%).

c. Mother Toddler Education

The education of mothers of toddlers is the development of the subject's insight into themselves and their surroundings so that their creativity will arise, preserving human values that will guide their life path. Mother's education is said to influence water sources, toilet ownership, and waste management. This is stated in the Millennium Development Golds (MDGs) report book published by the Ministry of Health. The following table describes the education of mothers of toddlers in the Enarotali Health Center Working Area, Paniai Regency.

Table 3 Frequency Distribution of Characteristics of Education of Mothers of Toddlers in the Working Area of the Enarotali Health Center, Paniai Regency.

| Mother's Education | f | % |
|---|---|---|
| SD | 13 | 16.7 |
| JUNIOR HIGH SCHOOL | 14 | 17.9 |

| | | |
|---|---|---|
| High School/Vocational School | 23 | 29.5 |
| College | 11 | 14.1 |
| No school | 12 | 21.8 |
| **Amount** | **78** | **100.0** |

*Source: primary data 2024*

Based on Table 3, it shows that of the 78 mothers of toddlers who were respondents, the highest level of education for mothers of toddlers was mothers whose education reached high school/vocational school, namely 23 people (29.5%) and the lowest level was mothers who had completed tertiary education, namely 11 people (14.1%).

d. Toddler Mother Jobs

Work is a type of position of a person in carrying out an activity or job according to their capacity and expertise (BPS 2019). The work of mothers of toddlers is closely related to the mother's duties in caring for and caring for her toddlers to grow healthily. The following researchers describe the types of work of mothers of toddlers in the Enarotali Health Center Work Area, Paniai Regency.

Table 4 Frequency Distribution of Occupational Characteristics of Mothers of Toddlers in the Work Area of the Enarotali Health Center, Paniai Regency

| Work | f | % |
|---|---|---|
| Private | 8 | 10.3 |
| Honorary | 16 | 20.5 |
| Farmer | 19 | 24.3 |
| Doesn't work | 35 | 44.9 |
| **Amount** | **78** | **100.0** |

*Source: Primary Data, 2024*

Based on Table 4, it shows that the highest number of mothers of toddlers who were respondents in this study were mothers who worked as housewives (IRT), namely 35 people (44.9%) and the lowest number were mothers who worked in the private sector, namely 8 people (10.3%).

3. Univariate Analysis

Univariate analysis is a method for analyzing one variable independently which is carried out with the aim of describing each variable studied (Rahmawati A et al., 2022). The univariate analysis of each variable in this study is listed in the following table:

a. Diarrhea in Toddlers

Diarrhea is a disease characterized by changes in the shape and concentration of stool that is soft to liquid with a frequency of more than five times a day. Diarrhea can be a very acute and dangerous disease because it often causes death if it is treated too late (Pudiastuti, 2011).

Diarrhea is a disease syndrome characterized by changes in stool in the form of liquid or semi-liquid. The water content in the stool is more than usual (normal 100-200 ml per hour of stool) or the frequency of the form and consistency of the stool slows down to liquefy, and the frequency of bowel movements increases from normal to 3 times or more a day. Diarrhea can be interpreted as a condition of defecation with bowel movements more than 4 times in infants and 3 times in children.

Table 5 Frequency Distribution of Toddlers Suffering from Diarrhea in the Working Area of the Enarotali Health Center, Paniai Regency

| Diarrhea in Toddlers | f | % |
|---|---|---|
| No diarrhea | 22 | 28.2 |
| Diarrhea | 56 | 71.8 |
| **Amount** | **78** | **100.0** |

*Source: primary data 2024*

Based on Table 5 above, out of 78 respondents, more toddlers experienced diarrhea.a total of 56 toddlers (71.8%). While toddlers who did not experience diarrhea were 22 people (28.2%).

4. Bivariate Analysis

Bivariate analysis was conducted to determine the influence of clean water sources, toilet ownership and waste processing on the incidence of diarrhea in toddlers in the Enarotali Health Center work area, namely:

a. Clean Water Source

The following table shows the results of the chi-square analysis presented in Table 4.6, which indicates a significant influence between ownership of clean water sources and the incidence of diarrhea in toddlers.

Table 6 Analysis of the Relationship between Clean Water Sources and Diarrhea Incidence in the Enarotali Health Center Working Area, Paniai Regency.

| Clean Water Source | Diarrhea Incident | | | | Total | | p-value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | | | |
| | f | % | f | % | f | % | |
| No | 4 | 5.1 | 20 | 25.6 | 24 | 30.8 | 0.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Yes | 52 | 66.7 | 2 | 2.5 | 54 | 69.2 |
| **Amount** | **56** | **71.8** | **22** | **28.2** | **78** | **100** |

*Source: Primary Data 2024*

The results of the chi-square analysis presented in Table 4.6 indicate a significant influence between ownership of clean water sources and the frequency of diarrhea in toddlers. This is revealed through the p-value obtained, which is 0.00 (p-value <0.05).

b. Ownership of a toilet

The following table shows the results of the chi-square analysis presented in Table 4.7, which indicates a significant influence between toilet ownership and the incidence of diarrhea in toddlers.

Table 7 Analysis of the Relationship with Toilet Ownership in the Enarotali Health Center Working Area, Paniai Regency.

| **Ownership of Toilets** | **Diarrhea Incident** | | | | **Total** | | **P-value** |
|---|---|---|---|---|---|---|---|
| | **Yes** | | **No** | | | | |
| | **f** | **%** | **f** | **%** | **f** | **%** | |
| No | 3 | 3.8 | 11 | 14.1 | 14 | 17.9 | 0.00 |
| Yes | 53 | 68.0 | 11 | 14.1 | 64 | 82.1 | |
| **Amount** | **56** | **71.8** | **22** | **28.2** | **78** | **100** | |

*Source: primary data 2024*

Hchi-square test resultsin Table 7 shows that there is a significant influence between toilet ownership and the incidence of diarrhea in toddlers. This is indicated by a p-value of 0.00 (p-value <0.05).

b. Waste Processing

The following table shows the results of the chi-square analysis presented in Table 4.8, which indicates a significant influence between waste processing and the incidence of diarrhea in toddlers.

Table 8 Analysis of the Relationship with Waste Management in the Enarotali Health Center Work Area, Paniai Regency

| **Waste Processing** | **Diarrhea Incident** | | | | **Total** | | **P-value** |
|---|---|---|---|---|---|---|---|
| | **Yes** | | **No** | | | | |
| | **f** | **%** | **f** | **%** | **f** | **%** | |
| No | 35 | 44.9 | 21 | 26.9 | 56 | 71.8 | 0.00 |
| Yes | 21 | 26.9 | 1 | 1.3 | 22 | 28.2 | |
| **Amount** | **56** | **71.8** | **22** | **28.2** | **78** | **100** | |

*Source: primary data 2024*

Chi-square test resultsin Table 4.8shows that there is a significant influence between good waste management and the incidence of diarrhea in toddlers. This is indicated by a p-value of 0.00 (p-value <0.05).

**Discussion**

**The Relationship between Clean Water Sources and the Incidence of Diarrhea in Toddlers in the Work Area of the Enarotali Health Center, Paniai Regency**

Based on the results of the cross-tabulation of this study, there is a relationship between clean water sources and the incidence of diarrhea in toddlers, this is indicated by a significant value of 0.00 (p-value = <0.05). This means that there is a closeness between the relationship between clean water sources and the incidence of diarrhea in toddlers at the Enarotali Health Center, Paniai Regency.

The results of this study are in line with a study conducted by Astawan WJ and Softandi A in 2024 on the Relationship between Drinking Water Quality and the Incidence of Diarrhea in Toddlers in the Masbagik Baru Health Center Work Area. HThe results of statistical analysis using the Chi Square test obtained a probability value (p-value) of 0.00 with a significance level of 0.05. This means that there is a significant relationship between drinking water quality and the incidence of diarrhea in toddlers in the Masbagik Baru Health Center Work Area in 2024. The better the quality of drinking water consumed, the lower the risk of diarrhea.

This very significant association underscores the need for public health interventions to improve access to clean water. Improved infrastructure, provision of water filtration and disinfection facilities, and educational programs on the importance of safe water use are highly recommended. Through these strategies, it is hoped that the incidence of diarrhea can be reduced and the quality of public health in general can be improved. Thus, clean and safe drinking water is one of the main pillars in efforts to prevent diarrhea and other water-based diseases (Astawan WJ & Softandi A, 2024).

The research conducted confirms that the quality of drinking water greatly influences the incidence of diarrhea in families. This is shown by various studies that include analysis of the physical aspects of wastewater drainage channels, drinking water sources, and family sanitation behavior. For example, research by Kasrudin et al. (2022) and Salisa et al. (2022) specifically highlights the direct influence of sanitation infrastructure conditions and water source quality on the risk of diarrhea. The importance of providing adequate sanitation facilities is the focus of Marsella's (2023) research, which links the use of adequate family latrines with a decrease in the incidence of diarrhea. This shows that good sanitation

infrastructure, including clean and adequate latrines, is a crucial element in preventing diarrhea.

Consumption patterns are often used as an indicator to measure the level of welfare. In general, welfare will be achieved if a person can meet the needs of themselves and their families with the income generated. The level of welfare of a society can also be said to improve if income increases and some of that income is used to consume more urgent things such as water. If the amount of water is limited and the quality of water is poor, then the basic need is to buy water or use PDAM with a certain payment rate.

Another study that is in line with the results of this study was conducted by Notoatmodjo in 2011. Clean water is water used for daily needs whose quality meets health requirements and can be drunk if it has been cooked (Ministry of Health, 2010). Water is a component of the environment that is very important for human survival. Water is used to meet daily needs such as drinking, cooking, bathing, washing. While drinking water is water whose quality meets health requirements and can be drunk directly.

Minister of Health Regulation No. 492/Menkes/PER/IV/2010 concerning Drinking Water Quality Requirements, "Drinking water requirements according to the Minister of Health Regulation must be free from inorganic and organic materials". In other words, drinking water quality must be free from bacteria, chemicals, toxins, hazardous waste and so on. Drinking water quality parameters that are directly related to health according to the Minister of Health Regulation are related to microbiology, such as E. coli bacteria and total coliform.

Ideal drinking water should be clear, colorless, tasteless, odorless. Drinking water should also not contain pathogenic germs and any creatures that are harmful to human health. It does not contain chemicals that can change body function, is not corrosive and does not leave sediment on the entire distribution network. Therefore, as part of the safety in the health sector for water consumption from water sources, water quality analysis is needed to determine the level of consumption eligibility and analysis of water consumption needs of the population with the maximum discharge that can be consumed (Herlambang, 2014).

Water sources come from rainwater, surface water and groundwater. In the order of priority, groundwater is generally the first order (Machfoedz, 2004). Groundwater comes from rainwater that experiences percolation or absorption into the soil and undergoes a natural filtration process. This natural filtration process makes groundwater better and purer than surface water (Sumantri, 2013). Clean water sources are facilities that can produce clean water sources such as dug wells, deep wells, rainwater reservoirs, piping systems.

**The Relationship between Toilet Ownership and the Incidence of Diarrhea in Toddlers in the Work Area of the Enarotali Health Center, Paniai Regency**

Based on the results of data analysisit is known that most respondents havetoiletnamely 64 people (82.1%), while respondents who did not have a toilet were 14 people or 17.9%.The results of the chi-square test showed that there was a significant influence between toilet ownership and the incidence of diarrhea in toddlers. This is indicated by a p-value of 0.00 (p-value <0.05).

These results are in line with research conducted by Purbanova R et.al., in 2024 with the title The Relationship between Environmental Sanitation and the Incidence of Diarrheal Disease.The results of the study showed that there was a relationship between toilet ownership (p-value = 0.000) and the incidence of diarrhea.

A family toilet is a building used to dispose of human feces or waste or filth for a family which is commonly called a toilet or WC. A family toilet consists of a squatting place or a sitting place with a gooseneck or without a gooseneck (cemplung) which is equipped with a waste collection unit and water to clean it. A toilet that meets health requirements is a toilet that meets requirements such as not polluting drinking water sources, the location of the collection hole is 10-15 meters from the drinking water source, is odorless and the feces cannot be touched by insects or rats, is wide enough and slopes/sloping towards the squatting hole so as not to pollute the surrounding soil, is easy to clean and safe for users, is equipped with protective walls and roofs, watertight and colored walls, has sufficient lighting, a watertight floor, good ventilation and water and cleaning tools are available.

The results of the study are also in line with the research of Rokhayati (2024) which states that there is a relationship between toilet ownership and the incidence of diarrhea. Toilets in the yard or plot are associated with the risk of diarrhea in children compared to toilets in the house. The distance of toilet facilities and diarrhea are associated with increased exposure to pathogens near the toilet. Cleanliness around the toilet needs to be emphasized to avoid transmission of pathogens.

Attitude plays an important role in the ownership of healthy toilets. A positive attitude of the head of the family towards healthy toilets will support the construction of healthy toilets. Heads of families who have a negative attitude towards healthy toilets tend to have unhealthy toilets when compared to heads of families who have a positive attitude towards healthy toilets. Attitude is one of the important factors that can influence someone to do something such as building a family toilet that meets the requirements at home so that the use of the toilet can meet the requirements.

According to the researcher's assumption, the large number of negative attitudes from respondents can indicate that they do not understand or know properly about the use of healthy toilets, but they can respond to the negative impacts resulting from the use of unhealthy toilets on health and the environment.

Providing a means of waste disposal (healthy toilets) in the community is not easy because it involves community participation which is closely related to the attitudes and behavior of the community itself. When associated with the use of family toilets, the community's attitude is very dependent on opinions about the habits that have been carried out so far.

A toilet is a building used as a place to dispose of and collect human waste which is usually called a toilet or WC with or without a closet and is equipped with a means of collecting waste/feces so that it does not cause or spread disease and pollute the home environment (Ministry of Health, 2016). Ownership of a toilet in this study is a facility or building used by families to dispose of human feces or waste and is commonly called a toilet/WC that meets health requirements, one of which is by using a goose-neck toilet, a gale toilet and has a waste disposal channel in the form of a septic tank.

The availability of healthy toilets is the ownership of a gooseneck toilet by a family. If in one house there are several families and they use the same gooseneck toilet, then it is said that all the families have a family toilet. Communal toilets (public) are not included in the availability of family toilets because they are usually used by several families who do not live in the same house (Ministry of Health, 2016).

Low toilet ownershipcan cause various impacts on the environment and public health itself, if people have the behavior of defecating not in toilets or*feces*dumped directly into rivers or gardens can cause an unsightly view, produce an unpleasant odor and have an impact on health, such as causing diarrhea (Fitri, EW, & Putri, 2016).

**The Relationship between Waste Management and the Incidence of Diarrhea in Toddlers in the Work Area of the Enarotali Health Center, Paniai Regency**

Based on the data analysis table in this studyIt can be seen that most respondents do not have good waste management, namely 56 people (71.8%), while respondents who have good waste management are 22 people (28.2%). The results of the chi-square test showed that there was a significant influence between good waste management and the incidence of diarrhea in toddlers. This is indicated by a p-value of 0.00 (p-value <0.05).

These results are in line with research conducted by Munawaroh DA et.al., in 2024 with the title Analysis of Environmental Health Risk Factors with the Incidence of Diarrhea

in Toddlers in the Work Area of the Tanon 1 Health Center, Sragen Regency in 2015-2020.The results of the study showed that there was a relationship between toilet ownership (p-value = 0.048) and the incidence of diarrhea.

There is a relationship between household waste management and diarrhea in toddlers. Based on the results of the study, parents of toddlers with poor waste management are caused by parents of toddlers not throwing away trash every day, not separating organic and inorganic waste, and still littering in the garden and the construction of trash bins is not covered and not waterproof.

Poor waste management is caused by parents of toddlers not knowing that sorting waste, disposing of waste in its place, and poor construction of waste storage can cause diarrhea. The results of this study are in accordance with research by Hamzah B (2012) on the relationship between clean and healthy living behavior and diarrhea in toddlers in Belawa District, Wajo Regency, which shows a relationship between waste management and diarrhea in toddlers in Belawa District, Wajo Regency. From the results of the bivariate test, the p-value = 0.001 was obtained.

Another study conducted by Agung P. M (2016) explains that waste regulation has an influence on community participation. Strict waste regulation makes the community orderly in managing the waste they produce. So far, regulations only exist but in their implementation they are considered lacking, because there are no penalties or fines as a consequence of the implementation of these regulations.

Agung also mentioned that the public does not want to pay the waste levy because in addition to there being no binding fines, the waste facilities are considered still lacking. This problem seems to be a never-ending cycle. The public considers that the waste facilities are lacking, while the cost to meet these waste facilities comes from the waste levy paid by the public every month. Regulations that are not only written but actually implemented are needed to end this cycle.

According to Soemarworto, regulations in this country are still very weak (Riswan et al, 2011). Regulations are often violated, for example, throwing garbage in the river can be easily done without getting real action from law enforcement officers. In fact, it is clearly stated in the law that garbage is the responsibility of all parties including the community. The law that should be a guideline so that life is based on the principles of environmental sustainability has not been running properly. Waste regulations need further attention by implementing fines or penalties that apply in real terms. Regulations that are only written and apply without any witnesses and strict consequences for violators cause the regulations not to

run properly because not all people know and understand the applicable regulations, or maybe know and understand but do not comply with them because there are no strong consequences for violating them.

Waste management should be the responsibility of all parties, both government and society. In reality, waste is still considered a problem that is only the responsibility of the government. The role of society still needs to be improved because so far society has only realized that environmental cleanliness is important but has not practiced it. Waste is managed ideally starting from the smallest scale, namely households. Waste collection and waste sorting are carried out starting from the first source of waste, namely households. The waste is then managed according to its classification.

One way to manage inorganic waste is by recycling. Recycling is one of the key factors of the eco-efficiency concept (Riswan, et.al., 2018). The eco-efficiency concept emphasizes the use of resources effectively and maximally to meet needs so that there are no more resources left to be discarded. One way to recycle plastic waste is to reuse it, make crafts, or fuel.

Organic waste management can be done by composting. The types of waste management in the form of composting and paper recycling have advantages in various dimensions and are most in demand by respondents so that they are in accordance with waste management that involves the community (Yogiesti Viradin, et al., 2021). Waste management in this way can be carried out together by all levels of society. Composting is one of the techniques in waste recycling that should not be forgotten because of its ability to turn organic waste into compost (Firman LS, 2012).

## 4. CONCLUSION

Based on the research conducted, the conclusions of this study are as follows:

a. The results of the study showed that there was an influence between clean water sources and the incidence of diarrhea, with a p-value of 0.00 ($p<0.00$).
b. The results of the study showed that there was an influence between toilet ownership and the incidence of diarrhea, with a p-value of 0.00 ($p<0.00$).
c. The results of the study showed that there was an influence between waste processing and the incidence of diarrhea, with a p-value of 0.00 ($p<0.00$).

## 5. SUGGESTION

a. For Enarotali Health Center

To the Enarotali Health Center, especially the nutrition officers and selected village cadres, that they continue to improve counseling on diarrhea in toddlers to the community so that later the community can be more aware and take preventive measures against diarrhea and provide a little information about using clean water sources, healthy toilets, and carrying out good and correct waste processing.

b. For Respondents

It is hoped that behavioral improvements will be increased. One of them is increasing knowledge about diarrhea, in this case it can be known from cadres and health workers and further improving clean and healthy living, especially taking steps to prevent diarrhea such as washing hands before eating by washing hands.

c. Educational Institutions

The results of this study can be used as reading material and reference for conducting further research, especially related to clean water sources, toilet ownership, and waste management in the community in relation to diarrhea in toddlers.

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