

**Research Article**

# Sanitation and Diarrheal Diseases in the Coastal Areas of the Abeli District in Kendari City

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**Abstract.**

In 2019, in the coastal areas of the Abeli District, 275 toddlers suffered from diarrhea. In 2020, 132 toddlers experienced diarrhea. There were 220 sufferers in 2021 and 192 sufferers in January-September of 2022. This study aimed to describe the areas where diarrheal disease was prevalent in the coastal regions of Abeli district, Kendari City, in 2022. The study used a survey based on the health report data of Abeli Public Health Center in 2022. In addition, patients with diarrhea at the Abeli Public Health Center were also studied. The data was presented in the form of graphs and narratives. It was concluded that there was no relationship between the incidence of diarrhea and latrines. All latrines in the area met the requirements. There was a relationship between diarrhea and the Wastewater Sewer (WWS). This was because many WWSs still did not meet the standard requirements, which increased the risk of diarrhea among toddlers.

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**Published** 26 May 2023

Publishing services provided by  
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Selection and Peer-review under the responsibility of the ICASI Conference Committee.

**Keywords:** Sanitation, Diarrhea, Coastal Area

## 1. Introduction

Basic sanitation is one of the most important things in achieving a degree of health, in which the existence of basic sanitation affects the spread of disease. The scope of basic household sanitation includes the availability of latrines, clean water supply, waste management, and sewerage [1].

Diarrhea is the expulsion of feces with a soft to liquid consistency with a frequency of three or more stools in one day. Diarrhea can cause fever, abdominal pain, decreased appetite, fatigue and weight loss. Diarrhea can cause a sudden loss of fluids and electrolytes, which can lead to various complications such as loss of body fluids, hypovolemic shock, organ damage and even coma [2]

The three dominant factors that can cause diarrhea are clean water facilities, excreta disposal, and waste. These three factors will interact with bad human behavior. If

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environmental factors do not meet health requirements due to bacterial contamination, supported by unhealthy human behavior such as unhygienic waste disposal, poor personal and environmental hygiene, and improper preparation and storage of food, it can cause diarrhea [3].

According to the World Health Organization (WHO) estimates as many as 2.5 million deaths each year due to diarrheal diseases. The main cause is bacteria. The main cause is bacteria [4]. Based on the Indonesia Health Profile in 2020, diarrhea was an endemic disease in Indonesia and was also a potential disease of extraordinary events and often accompanied by death [5]. In 2020, the coverage of services for diarrhea sufferers of all ages was 44.4% and 28.9% for toddlers from the set target [6].

The Southeast Sulawesi Provincial Health Office noted that the incidence of diarrhea in Southeast Sulawesi Province had reached 39,913 or 53.72% of the estimated cases, higher than the previous year's 35,864 cases (44.77% of the estimated cases). Cases throughout the year and potentially increase when the rainy season arrives. During the rainy season, the incidence of diarrhea usually increases. In flood-prone areas, the number of diarrhea sufferers will definitely increase. In Kendari City, the number of diarrhea sufferers cases in toddlers is 31.58% [7]. Based on Abeli Public Health Center data, the number of diarrhea sufferers in toddlers in 2019 was 275 toddlers, or 100% of the number of detection targets, and 132 toddlers, or 15.22% of the number of detection targets in 2020. Moreover, there were 220 sufferers in 2021 and 192 sufferers of diarrhea in toddlers from the detection targets in January-September 2022 [8].

Cases of diarrheal disease that occur in the community are also in the spotlight. In addition to diseases that the government must watch out for, such as cancer, heart disease, and even Covid-19, diarrheal diseases also need attention, given the increasing number of cases. People who live in areas near the sea interact more with water compared to other people or people who live in areas near rivers. Therefore, cases of diarrheal disease are very vulnerable to occur in people who live around the coast [9]. in Abeli District. Abeli District is a coastal area directly opposite Kendari Bay, consisting of 7 villages. These three villages are coastal areas directly adjacent to the sea, namely Talia village, Lapulu village, and Poasia village.

The results of previous studies showed that the incidence of diarrhea in toddlers was 52 (68.4%), while those who did not experience diarrhea in toddlers were 24 (31.6%). This study has a significant relationship between healthy latrine facilities, clean water

sources, waste management facilities, sewerage facilities, and the incidence of diarrhea in toddlers.

A study on the relationship between basic sanitation and the incidence of diarrhea among toddlers in Durian Village, Pantai Labu District, Deli Serdang Regency, by Henny Arwina Bangun stated that the incidence of diarrhea in children aged 0-4 in this village had a relationship with basic sanitation conditions that did not meet the requirements. Improvement of basic sanitation can be carried out in collaboration between the community, village government, village midwives, Public Health Center, and the health office. Then, a study by Yazika Rimbawati and Andre Surahman stated that there was a relationship between the physical quality of water belonging to a house floor type of latrine and the incidence of diarrhea in toddlers.

Based on the data mentioned above, the researcher is interested in conducting a study entitled "The Relationship between the Existence of Basic Sanitation Facilities and the Incidence of Diarrheal Disease among Toddlers in coastal areas of Abeli District, Kendari City."

## 2. Methods

This study was survey research by utilizing the health report data of Abeli Public Health Center in 2022. The researcher involved data on the incidence of diarrhea in toddlers served in the working area of Abeli public health center. This type of data was numerical. The research data was presented in the form of graphs and narratives.

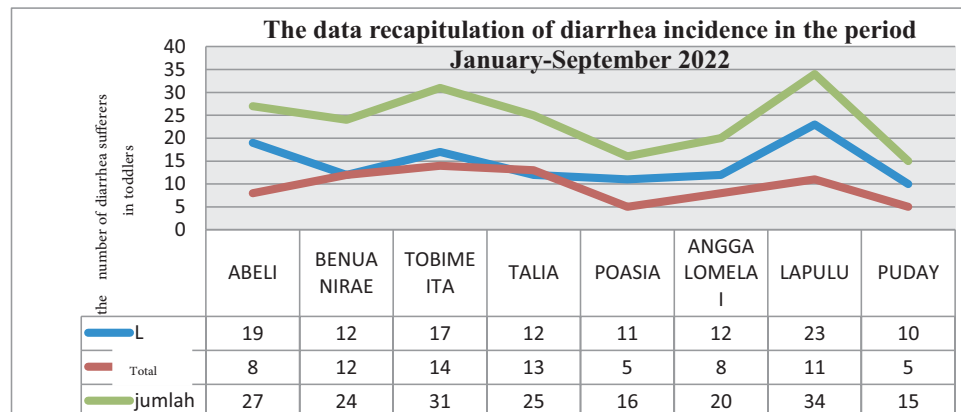
### Results

The results of this study are presented using a bar chart with explanations that can be presented as follows:

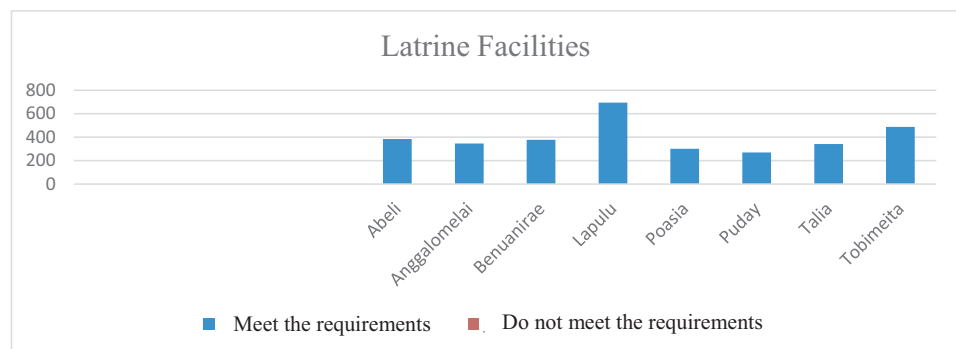
Graph 1 shows the data recapitulation of diarrhea cases among toddlers in Abeli District for the period January-September 2022. From this data, the highest cases occur in Lapulu District, namely 34 cases. While the lowest incidence of diarrhea occurred in Puday village, namely 15 cases in the January-September period of 2022.

Graph 2 shows that family latrine facilities in all urban villages in Abeli District in 2021 meet the requirements and do not meet the requirements for the family latrine indicator.

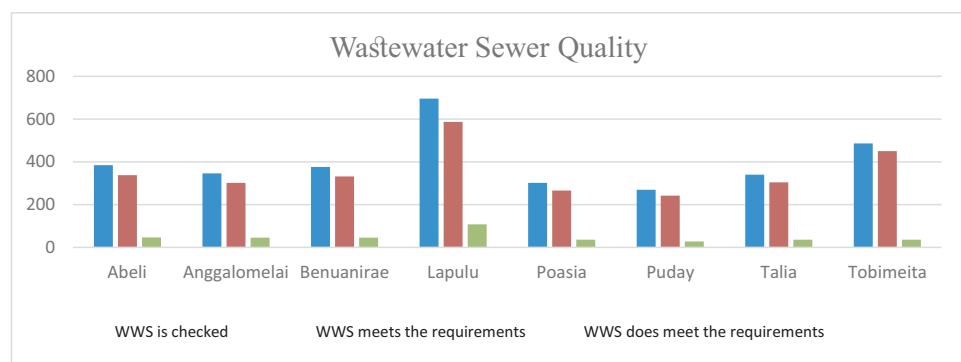
Graph 3 shows that the condition of WWS that meets and does not meet the highest requirements in the Abeli District area is in the Lapulu Village, with a total of 587 who meet the requirements and 108 who do not meet the requirements.



**Figure 1:** The incidence of diarrhea among toddlers in Abeli District for the period January-September 2022.



**Figure 2:** Family latrine facilities in 2021.



**Figure 3:** Wastewater Sewer (WWS) Quality in 2021.

### 3. Discussion

The Southeast Sulawesi Provincial Health Office noted that the incidence of diarrhea in Southeast Sulawesi Province had reached 39,913 or 53.72% of the estimated cases, higher than the previous year's 35,864 cases (44.77% of the estimated cases). Cases throughout the year and potentially increase when the rainy season arrives. During the rainy season, the incidence of diarrhea usually increases. The number of diarrhea

sufferers in flood-prone areas will definitely increase [7]. In Kendari City, especially the working area of Abeli Public Health Center, the number of cases of diarrhea sufferers among toddlers in 2022 is 275 toddlers or 100% of the number of detection targets. The details are 27 cases in Abeli District, 24 cases in Benuanirae District, 31 cases in Tobimeita District, 25 cases in Talia District, 16 cases in Poasia District, 20 cases in Angalomelai District, 34 cases in Lapulu District, and 15 cases in Punday District [8].

Many factors directly or indirectly drive diarrhea occurrence, namely agent, host, environmental and behavioral factors [10]. Unhealthy home environment is a risk factor for various diseases, especially environmental-based diseases. Diarrheal disease is an environment-based disease that has 3 dominant factors. The main factor is clean water and another factor is the disposal of feces and waste. If these three factors interact with bad human behavior, they will cause diarrheal disease [11]

From an environmental health point of view, human waste is a very important problem. Proper disposal of feces is the most important health need. Improper and indiscriminate disposal of feces can contaminate water and soil or become a source of infection. In addition, this will also pose a danger to health because the disease is classified as a waterborne disease and is easily contagious.

A latrine is a collection of human waste in a place so that it does not cause germs in human waste and interfere with aesthetics [12]. While a healthy latrine is a building used as a place to dispose of and collect human waste (latrine) in the shape of a gooseneck and equipped with a means of holding feces/septic tank so that it does not become a cause or spread of disease [13].

In 2021, Abeli District consisted of 23,964 people and 4,926 Heads of Families. The number of houses with a latrine in the form of a goose neck was 3,197, and all of them met the requirements [14]. This is in accordance with the recommendations of the Ministry of Health of the Republic of Indonesia. All respondents have septic tanks that meet the requirements and have the habit of defecating in their respective homes. The data obtained showed that the data on family latrine facilities were homogeneous. Therefore, the researcher can conclude that there is no relationship between the incidence of diarrhea and healthy latrines among toddlers. Based on observations, most of the availability of family latrines in the respondent's house has met the requirements, such as using a latrine in the shape of a goose's neck and having septic tanks.

Wastewater is residual water discharged from households, industry, and other public places waste and generally contains materials or substances that are very harmful to

human health and disrupt the environment [15]. Efforts that can be made to prevent the transmission of diarrhea is better to make a closed WWS and always maintain the sanitation of the wastewater sewer (WWS) so that there is no puddle of water and becomes a medium for the transmission of diarrheal disease [16]

Based on the requirements of the 2014 Ministry of Health of the Republic of Indonesia, Wastewater Sewer (WWS) meets the requirements if the sewerage does not pollute clean water sources, the channel is made of waterproof material, closed, no odors, smooth and no puddles. Meanwhile, based on observations in the field, the condition of the WWS owned by many people did not meet the requirements, such as not being closed, clogged, and causing puddles of water. Some people also threw their wastewater into the sea, still drained a lot of it into open sewers, and rarely cleaned. This makes it easier for diarrhea to occur due to a lack of awareness of the cleanliness of the surrounding environment [17].

In 2021, Abeli District consisted of 23,964 people and 4,246 houses. The total availability of Wastewater Sewer (WWS) was 4,246. From the availability of Wastewater Sewer (WWS) in the working area of the public health center, 3,197 Wastewater Sewer (WWS) were inspected. The details are 2,818 (66%) of the condition of the Wastewater Sewer (WWS) that meets the requirements and 379 (9%) of the Wastewater Sewer (WWS) that do not meet the requirements [8]. Therefore, the results of this study indicate that Wastewater Sewer (WWS) that does not meet the requirements are at risk of experiencing complaints of diarrhea compared to Wastewater Sewer (WWS) that meets the requirements.

## 4. Conclusion

The highest cases of diarrhea among toddlers in Abeli District occur in Lapulu District, namely 34 cases. Meanwhile, the lowest incidence of diarrhea occurs in Punday Village, namely 15 cases. Based on data at the Abeli Public Health Center, the district's latrines have met the family latrine indicator requirements. However, for the WWS condition data, some of them do not meet the requirements and can cause the risk of diarrhea in Abeli District.

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