

## Conference Paper

# Identification of Environmental Factors of Toddlers Diarrhea Cases in the North Buton Regency

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## Abstract.

Diarrhea is a disease that has become a world health problem, especially to infants in developing countries which can lead to death. There are many risk factors causing diarrheal disease in infants and toddlers in Indonesia. One of the risk factors of diarrheal disease is environmental factors which include clean water facilities, sanitation, latrines, and wastewater disposal channels. This research is a descriptive study using data from the Indonesian Government Agencies. Diarrhea case data was obtained from the North Buton District Health Office and Southeast Sulawesi Provincial Health Office from 2016 to 2020. The number of diarrhea cases during the last 5 (five) years tends to decrease. The percentage of families with access to proper sanitation facilities (healthy latrines) during the last 5 (five) years has increased. The percentage of villages that implement Community Based Total Sanitation (CBTS) has increased over the last 5 years. This decrease is directly proportional to the increase in the percentage of families with access to proper sanitation facilities (healthy latrines) and the percentage of villages that implemented CBTS.

**Keywords:** Diarrhea, Healthy Latrine, CBTS, North Buton Regency

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## 1. INTRODUCTION

Diarrhea is defecation with unformed stools or liquid with frequency of more than 3 (three) times in 24 hours. If it lasts less than 2 weeks, it is called acute diarrhea. If diarrhea lasts 2 weeks or more, it is classified as chronic diarrhea [1,17,18]. Diarrhea is an endemic disease that has the potential to cause Extraordinary Events and contribute to mortality in Indonesia, especially in children under five. Diarrhea in children under five is a disease that becomes a world health problem, especially in developing countries and if it is not handled properly it can lead to death [2].

Diarrheal disease is the leading cause of under-five mortality [3]. Diarrhea is the second killer disease of infants under five years (toddlers) in Indonesia after pneumonia [2]. The prevalence of diarrhea in Indonesia based on the results of Riskesdas (Basic

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Health Research) data in 2018 decreased by 6.2 percent. The data in 2013 was 12.3 percent [4]. Despite the decline, diarrhea remains the highest cause of under-five mortality among other diseases.

There are many risk factors that cause diarrheal disease in infants and toddlers in Indonesia. One of the risk factors for diarrheal disease is environmental factors which include clean water facilities, sanitation [5], latrines [6],[7], and Wastewater Sewerage. Several studies have found that poor environmental sanitation has an effect on the occurrence of diarrhea [2]. The dominant environmental factors in the spread of diarrhea in children are the disposal of feces and drinking water because they are related to the spread of diarrheal disease [6]. [6] Owning a latrine is one of the risk factors related to the diarrhea in children under five [7]. There is a partial relationship between clean water supply, latrine ownership, and Wastewater Sewerage with diarrhea in children under five [8]. Poor sanitation is the cause of the large number of E.coli bacteria contamination in clean water consumed by the community. E.coli bacteria indicate the presence of human feces contamination [9].

According to Riskesdas data 2018, the prevalence of diarrhea in children under five in Southeast Sulawesi Province is 5.6 percent [4]. The morbidity of diarrhea in toddlers is 843 per 1000 population [10]. The number of diarrhea cases in North Buton Regency during the last five years has decreased [10]. This study aims to identify environmental factors in the management of diarrheal disease prevention in North Buton Regency.

## 2. METHODOLOGY OF THE STUDY

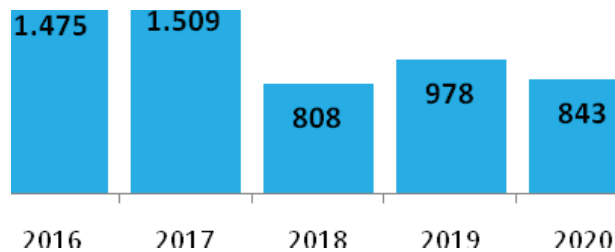
Buranga is the capital city of North Buton Regency. It is one of the regencies in Southeast Sulawesi Province whose territory located in the northern part of Buton Island and consists of small islands scattered around the area. North Buton Regency is located south of the Equator at latitudes 40 06 'to 50 15' south latitude, and from west to east 1220 59' east longitudes to 1230 15' east longitudes.

This research is a descriptive study using secondary data from the Indonesian Government Agencies. Diarrhea case data is secondary data obtained from the North Buton District Health Office and the Southeast Sulawesi Provincial Health Office from 2016 to 2020. The results of the study are presented in an image format as follow.

## 3. RESULT OF THE STUDY

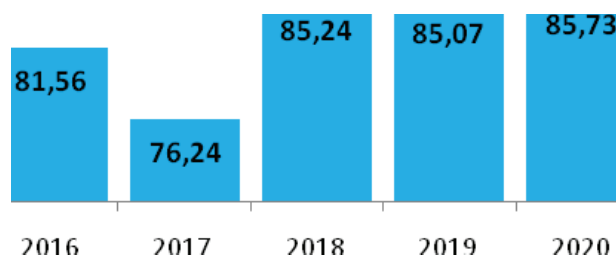
### 3.1. General Description of Diarrhea in the North Buton Regency in 2016-2020.

The number of diarrhea cases during the last 5 (five) years tends to decrease. The highest number of diarrhea cases occurred in 2017 as many as 1.509 cases and the lowest number of diarrhea cases occurred in 2018 as many as 808 cases (Figure 1).



**Figure 1:** Number of Diarrhea cases in the North Buton Regency from 2016 to 2020.

The Figure 1 showed Diarrhea Prevention Management based on Environmental management. The percentage of families with access to proper sanitation facilities (healthy latrines) for the last 5 (five) years continues to increase. This means that the high percentage illustrates the increasing number of latrine ownership that meets health requirements (Figure 2).

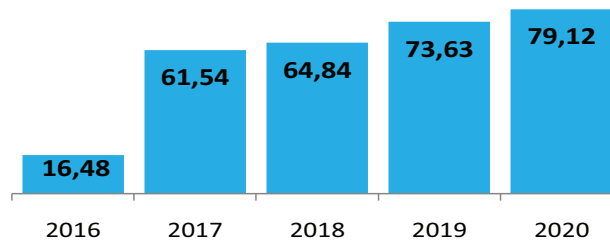


**Figure 2:** Percentage of Families with Access to Adequate Sanitation Facilities (Healthy Latrine) 2016 to 2020.

The percentage of villages that implement Community Based Total Sanitation has continued to increase over the last 5 years. This percentage illustrates the increasing number of villages implementing CBTS (Figure 3). CBTS is an approach to change hygienic and sanitary behavior through community empowerment by triggering [11].

## 4. FINDINGS

The quality of environmental health is one of the factors that bring the greatest public health condition. Environmental health aspects include clean water facilities, proper basic sanitation and waste management. If there is an imbalance of environmental



**Figure 3:** Number of villages Implement Community-Based Total Sanitation (CBTS).

health factors, it will have an impact on individual health conditions and can cause environmental-based diseases such as diarrhea.

In the prevention of diarrheal diseases, environmental-based countermeasures are important things to do b considering that one of the factors that cause diarrheal disease is environmental sources. In this response, the percentage of drinking water facilities with low and moderate risk, the percentage of ownership of healthy latrines, the percentage of villages that implement Community-Based Total Sanitation (CBTS) and the percentage of Stop Open Defecation can provide an overview of the high and low incidence of diarrhea cases.

The description of the decrease in the number of diarrhea cases over the last 5 years with the increasing percentage of families with access to proper sanitation facilities (healthy latrines) it is directly proportional. The possibility of decreasing the number of diarrhea cases in the North Buton Regency is caused by the increasing percentage of access to healthy latrines. Research conducted by Rohma N et al. (2017) found that there was a significant relation between the use of healthy latrines and the diarrhea cases in children under five [12],[13]. Another study also found that the condition of family latrines was a risk factor associated with the incidence of diarrhea in children under five [14].

In addition to the increasing percentage of families with access to proper sanitation, environmental-based community activities can also have an effect on decreasing the number of diarrhea cases in the North Buton Regency. This can be seen in the description of the decreasing number of diarrhea cases over the last five years and the increasing percentage of villages implementing CBTS. In the implementation of CBTS, there are 5 (five) pillars of environmental-based activities that become indicators in its implementation. Several studies found that there was a significant relationship between CBTS aspects, namely there was a relationship between stopping open defecation, household food, there was a relationship between household waste management, and there was no relationship between household wastewater management and the occurrence of diarrhea in children under five [15]. Another study also found that the

implementation of the five pillars (CBTS) will facilitate efforts to improve access to better public sanitation so that in the long term it can reduce morbidity and mortality caused by poor sanitation [16,19,20].

## 5. CONCLUSION

Many environmental factors are involved in the management of diarrhea control and identified as environmental factors related to the management of diarrhea in children under five in North Buton Regency in the management of diarrhea prevention, including Healthy Latrine and Community-Based Total Sanitation (CBTS). Families with Access to Adequate Sanitation Facilities (Healthy Latrine) and the increasing percentage of villages that implement Community-Based Total Sanitation in the North Buton Regency may be the cause of the decreasing number of cases of diarrheal disease

## 6. AUTHOR CONTRIBUTION

The authors have contributed on this research.

## 7. ACKNOWLEDGMENTS

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