http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal eduhealth, Volume 13, No 02, 2022
E-ISSN., P-ISSN. 2087-3271

The Effect of Environmental Sanitation on the Risk of Acute Diarrhea in Children in Indonesia

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ARTICLE INFO

Keywords:
Diarrhea, Childern, Indonesia, Sanitation, Environment

ABSTRACT

Diarrhea is the second leading cause of death in children in Indonesia and 100,000 children under five die from diarrhea every year. The incidence of diarrhea in Indonesia reaches 6 million cases/year with every 756 cases there are 36 deaths. According to WHO (World Health Organization) it is estimated that there are 4 billion cases that occur worldwide with a total of 2.2 million deaths, most of which are children under 5 years of age. Acute diarrhea is caused by several factors, one of which is environmental factors such as lack of awareness of hygiene and sanitation. The method used in this study is a literature review by looking for articles related to the relationship between environmental sanitation and the incidence of diarrhea in children in Indonesia. The results showed that there was a relationship between environmental sanitation and the incidence of acute diarrhea in Indonesia.

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1. INTRODUCTION

Diarrhea is an endemic disease with potential for Extraordinary Events (KLB) which is still the main cause of death in the world. This disease is characterized by an increase in the frequency of bowel movements more than 3 times a day accompanied by changes in the shape and consistency of stools that are soft or even liquid. According to the CDC (Center for Disease Control) in prolonged cases, diarrhea can cause reduced fluids in the body which results in severe dehydration, diarrhea can also have a negative impact on the growth of children and can even result in death.

According to WHO (World Health Organization) there are an estimated 4 billion cases worldwide with a total of 2.2 million deaths, most of which are children under 5 years old. Data on the incidence of diarrhea in the world shows that there are 1.7 billion cases with as many as 5–10 million deaths each year. In 2016 as many as 5.7 million children under the age of 5 died and as many as one in four cases died from diarrhea. Based on the National Health Survey, it shows that diarrhea is the second leading cause of death in children under five in Indonesia and as many as 100,000 children under five die from diarrhea every year. The incidence of diarrhea in Indonesia reaches 6 million cases per year with every 756 cases there are 36 deaths.

There are 3 types of diarrhea based on the length of time they occur, namely chronic diarrhea, persistent diarrhea and acute diarrhea. Acute diarrhea comes on suddenly and lasts less than 14 days (without intermittent stopping for more than 2 days). Acute diarrhea is caused by several factors, one of which is environmental factors such as lack of awareness of hygiene and sanitation.

Environmental sanitation is a way and effort to monitor and control the environment that is harmful to human health. Environmental sanitation plays a very important role in creating healthy homes and as a support for preventing environment-based diseases such as diarrhea in children. A clean environment is one of the factors in reducing the incidence of diarrhea. This environment includes the provision of drinking water, garbage disposal, feces and waste management. Poor environmental sanitation can reduce the quality of the community's living environment, pollute drinking water sources for the community and increase disease transmission. Therefore, the role of a good environment is important in reducing the incidence of diarrhea in children.

Based on the UNICEF 2015 and WHO reports regarding sanitation facilities, there are 2.4 billion people in the world who still use poor sanitation facilities. According to the 2018 Indonesia Health Profile report, the percentage of households with access to sanitation has not met the target of the Ministry of Health's strategic plan. Based on the report, it shows that the environmental conditions in several regions in Indonesia still do not meet health requirements. Therefore, it is necessary to study whether the occurrence of diarrhea is related to bad environmental conditions and unhealthy habits

2. METHOD

The method used in this research is literature review. The focus of the research was to determine the relationship between environmental sanitation and the incidence of acute diarrhea in children in Indonesia. In conducting this research, the researchers searched for articles with a maximum span of 10 years back on the Google Schoolar platform using the keywords: environmental sanitation, diarrhea, children.

3. RESULTS AND DISCUSSION

Based on the results of the author's analysis, there are 14 literatures used in this study. This literature review describes published evidence regarding the relationship of environmental sanitation to the incidence of acute diarrhea in children in Indonesia.

The Relationship between Environmental Sanitation and Diarrhea in Children

Poor environmental conditions are one of the factors that increase the incidence of diarrhea due to the health status of an environment, which includes housing, sewage disposal and clean water supply. This can cause major environmental health problems because it can cause outbreaks of diarrheal diseases and affect public health conditions. Many factors directly or indirectly drive the occurrence of diarrhea, namely agent, host, environment and behavior factors. The environmental sanitation factor is the most dominant factor causing diarrhea, namely the source of drinking water, the physical quality of the water, the ownership of the latrine, and the type of floor, these two factors interact together with human behavior.

Based on Indonesia's 2019 health profile, it states that good sanitation is an important element that supports human health. Sanitation is related to environmental health which affects the degree of public health. Poor sanitation conditions will have a negative impact on many aspects of life, starting from the decline in the quality of the community's living environment, contamination of drinking water sources for the community, increased incidence of diarrhea and the emergence of several diseases. Environmental sanitation conditions, according to research by Siti Hastia & Tarianna Ginting in 2019, there is a relationship between environmental sanitation conditions and the incidence of diarrhea. Similar to research conducted by David Siahaan et al (2020), in line with research conducted by Musyfiqul Ibad et al (2021) which states that the level of risk of diarrhea in Indonesia is affected by poor environmental sanitation.

Relationship between Clean Water Use and Diarrhea in Children

According to the Ministry of Health of the Republic of Indonesia, clean water sanitation facilities are buildings and equipment that provide and distribute water to the community. Clean water facilities must meet health requirements, so that they do not experience contamination so that good water quality can be obtained in accordance with health standards. Clean water sanitation facilities include the facilities used, construction requirements, and minimum distance from pollutant sources. The sources of water that can be used by the community include rainwater, groundwater, seawater, springs and surface water (dug wells).

Based on the Regulation of the Minister of Health Number 492 of 2010 concerning Requirements for the Quality of Drinking Water, drinking water is water that goes through a processing process or without a processing process that meets health requirements and can be drunk directly. The drinking water consumed by the community needs to be stipulated with requirements for the quality of drinking water so that it does not cause health problems. Water as an environmental component is said to have

potential and become a transmission medium if there are disease agents in it. According to the Indonesian Ministry of Health in 2000, water plays an important role, especially in the transmission of diarrheal diseases, water can enter through the mechanism of water-borne disease, namely diseases that are transmitted directly through water containing pathogenic germs.

In this study it was found that there was a relationship between the use of clean water and the incidence of diarrhea in children in Indonesia. This is in line with research which obtained results based on statistical analysis with the chi square test and it is known that there is a significant relationship between the provision of clean water and the incidence of diarrhea in children because in research conducted by Ivan and Kartini (2019) it showed a p value = 0.004 smaller than α (0.05). This means that there is an influence between the condition of clean water facilities and the incidence of diarrhea. Same with research conducted by Meri Lidiawati (2016) and Novita et al (2018). This research is also in line with research conducted by Nur Hamdani et al (2022) which shows a p value = 0.014 <0.05, which means that there is a significant relationship between the physical quality of clean water and the incidence of diarrhea. The worse the physical quality of the water, the more germs that cause disease, especially infectious diarrhea. diarrhea-causing bacteria such as salmonella, shigella, E. Coli and yersina. The physical quality of water really influences the incidence of diarrhea in toddlers (Yazika & Andre (2019).

Relationship between use of latrines and diarrhea in children

According to the Ministry of Health of the Republic of Indonesia in 1996, a latrine is a place for disposing of human waste which is usually called a latrine/latrine/WC (water closed). Human feces contain large amounts of viruses or bacteria. Feces that are disposed of in the open can be used by flies, which play a role in transmitting the disease, will lay eggs and reproduce, then these flies land on human food. Disposal of human feces is an important part of environmental sanitation. Improper disposal of feces can cause contamination of soil and water supply sources and can provide opportunities for vectors to reproduce. According to the STBM 5 Pillars Guide for the community, a healthy latrine is a latrine that meets building criteria and health requirements. The health requirements in question are not causing the spread of materials that are harmful to humans due to feces disposal and can prevent carrier vectors from spreading disease to users and the surrounding environment. Healthy latrine facilities can be classified into sharing/communal latrine, semi-permanent healthy latrine (JSSP), and permanent healthy latrine. Sharing/communal latrines are latrines that are shared in the community (users of more than one family). The percentage of families with access to proper sanitation facilities (healthy latrines) in Indonesia in 2019 is 87.81%.

From an environmental health point of view, proper disposal of feces is the most prioritized health need. Improper and careless disposal of feces can result in contamination of water, soil, or become a source of infection, and will pose a health hazard, because diseases classified as waterborne diseases will spread easily. Without a latrine, the faeces will be open and easily accessible to vectors that cause diarrheal diseases.

This study proves that there is a significant relationship between latrines and the incidence of diarrhea. Where the proportion of diarrhea incidence is higher due to unclean latrines. This is in line with research by Meri Lidiawati (2016), Yazika & Andre (2019), and Ivan and Kartini (2019) which produced statistical analysis with the chi square test showing a value (p value <0.005) so that it is known that there is a significant relationship between the use of latrines at home with the incidence of diarrhea, and in line with research conducted by Kasman and Nuning (2018) with the results of statistical tests using a cross-sectional approach, the causal variable found that there was a significant relationship between latrines ownership and the incidence of diarrhea.

Relationship between Garbage Disposal and Diarrhea in Children

The effect of biological waste, especially organic waste that easily decomposes is a medium for microorganisms to live, this process will lead to the formation of an odor that attracts several disease vectors and disturbing animals. The term sanitation also refers to the maintenance of hygienic conditions through waste management and wastewater treatment.

The habit of disposing of trash in the wrong place is also a risk factor for the emergence of various disease vectors. Garbage is one of the causes of environmental imbalance. If it is disposed of by just stacking it, it will cause odors and gases that are harmful to human health. Then, the tradition of throwing garbage into rivers can lead to rapid siltation, flooding can also pollute surface water sources due to the decomposition of the waste. The existence of garbage disposal that is not done properly will result in poor sanitation, the problem of garbage disposal itself is a problem that must be overcome to prevent diarrhea.

Based on research conducted by Meri Lidiawati (2016) with the chi square test for the relationship between waste disposal at home and the incidence of diarrhea in children, the p value (0.000) is smaller than the value α (0.05) meaning that there is a relationship between waste disposal at home with the incidence of diarrhea in children. Researchers also found that most of the respondents littered. This is contrary to research conducted by Ivan & Kartini (2019). The results of bivariate analysis showed that there was no relationship between the condition of garbage disposal facilities and the incidence of diarrhea in children (pvalue = 0.077). It is also stated that waste is not the cause of disease, but as a condition or a medium for growth and development of disease bacteria/parasites and vectors of several diseases.

4. CONCLUSION

Based on the literature study that has been carried out, 14 articles were identified which were reviewed with results showing that there is a relationship between environmental sanitation such as the use of clean water, use of latrines, and disposal of garbage with the incidence of acute diarrhea in children in Indonesia.

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