

The Effects of Improper Household Waste Management by Mothers on the Genesis of Diarrhea in Toddlers

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Abstract

Diarrheal diseases involve changes in the form and concentration of the stool, which softens until melted, and increased frequency of bowel movements (three or more daily). In 2014, the district health offices in West Aceh received reports of 1,071 cases of diarrhea in infants, while the sub-district of Puskesmas Meureubo received reports of 70 cases of diarrhea in infants. The purpose of this study was to determine the effects of improper waste management by the mother on the incidence of diarrhea in children under five in Puskesmas Meureubo. This type of research is an analytic survey with a cross-sectional approach. The research sample was a total of 70 mothers whose children had diarrhea. The data was analyzed using univariate, bivariate and multivariate analyses.

The results indicated that the mothers' actions and knowledge were related to the incidence of diarrhea in infants ($p < 0.05$). The results of multivariate testing indicated a strong relationship between the mothers' knowledge of improper waste management on the incidence of diarrhea in infants (Exp β 38.123). The health department should play an active role in improving health in the form of community outreach for environmental improvements to reduce diseases, especially diarrhea in infants.

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Introduction

Diarrhea is a communicable disease with high morbidity and death rates. Diarrhea is soft to liquid excrement that occurs more often than usual (three times or more a day) and may produce symptoms of dehydration, fever, nausea and vomiting, anorexia, weakness, paleness, sunken eyes, dry mucous membranes, decreased urine output, and so forth.¹ This infectious disease is influenced by several factors such as the environment, the causative agent of the disease, and a host. Diarrheal disease is still a public health problem that is important because it is the third leading contributor to morbidity and mortality of children in various countries including Indonesia. Each child had an episode of diarrhea attacks on average 3.3 times per year. Approximately 80% of deaths occur in children

aged less than two years. One step in the achievement of the WHO in child mortality is lowered into two-thirds from 1990 to 2015.

Based on household health surveys, mortality studies, and health research from year to year, it is known that diarrhea remains a major cause of infant mortality in Indonesia. The main cause of death from diarrhea is the lack of proper governance both at home and at health facilities. Meeting the goal of decreasing deaths due to diarrhea will require governance that is fast and precise. The World Health Organization (WHO) estimates that 4 billion cases of diarrhea occurred in the world in 2007 and 2.2 million of those individuals died, mostly children under the age of five.² WHO also noted that infectious diseases such as diarrhea (18%), pneumonia (14%), and measles (5%) are some of the causes of death of children under five in Indonesia.³ Based on the health profile of Indonesia in 2011, the number of diarrhea patients increased to 8,443 cases in 2010 with outbreaks in 15 provinces and as many as 209 people dying from diarrhea. In 2011, diarrhea outbreaks occurred in 11 provinces with 4,204 cases and as many as 73 deaths, resulting in a

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case fatality rate (CFR) of 1.74%. In 2012, diarrhea affected as many as 5,870 people. Diarrhea preventive measures include maintaining environmental hygiene and personal hygiene, breastfeeding and providing nutrition continuously, and immunization.¹

According Nwadiaro et al,⁴ one of the risk factors of diarrhea in infants is the mothers' lack of knowledge about personal hygiene, whether it concerns the mother and her toddler or the cleanliness of the household environment. Lindawati⁵ states that the mother's education is one of the keys to changing the culture and improving comprehension in family health care. A sanitary home environment can the proper disposal of debris and dirt to avoid contamination that can damage the health of the family or, in this case, the toddler.⁶ Child mortality due to diarrhea in the province of Aceh was 62/1000 live births in 2011 and decreased to 52/1000 live births in 2012 before falling to 48/1000 live births in 2013.⁷ Although the incidence of diarrhea has decreased, mortality from diarrhea should be monitored because the incidence of diarrhea is a potential occurrence of extraordinary events. The incidence of diarrhea remains a major cause of illness and death in humans. The data obtained showed that the number of cases of diarrhea in children under five in the West Aceh district is still high, despite the drop annually. Specifically, there were 1,455 cases of diarrhea in infants in 2012, 1,224 cases in 2013, and 1,071 cases in 2014. For the territory of District Health Clinics Meureubo, the number of infants with diarrhea was 212 in 2012, 171 in 2013, and only 70 in 2014.⁸

Poor sanitation and unhygienic conditions are important risk factors for diarrhea.⁹ The disposal of garbage and filth contributes to the poor quality of the environment and will have an impact on the occurrence of family health problems, especially among children under five.³ The lack of sewerage is another factor of illness in this case of diarrhea in infants.¹⁰ Environmental health is part of the foundations of modern public health that encompasses all aspects of human beings in relation to the environment, which is bound to a variety of ecosystems.³ The environment is everything that surrounds the outer conditions of humans or animals that can cause the transmission of the disease. A home environment that does not meet health requirements may lead to the occurrence of

various types of disturbances. Some diseases that may arise related to the family toilet water supply, waste disposal, and wastewater disposal such as skin infections, pharyngitis, scarlet fever, and several other diseases.¹¹ Based on the above, the researchers wanted to see if the incorrect management of household waste by the mother could affect the incidence of diarrhea in infants.

Materials and methods

This study used secondary data, and data was also be captured through interviews and observations. This type of research was an analytic survey with a cross-sectional approach. The study population was all mothers who had children diagnosed with symptoms of diarrhea being treated at the District Health Clinics Meureubo West Aceh district. Because the total population was less than 100, the research sample was the total population.¹¹ Therefore, the sample was made up of 70 mothers who had children who visited the clinic with symptoms of diarrhea.

Criteria for inclusion in this study were mothers who had children (aged birth to five years) diagnosed with symptoms of diarrhea at the District Health Clinics Meureubo in 2014. Exclusion criteria were mothers who did not have toddlers diagnosed with diarrhea and mothers whose children were diagnosed with diarrhea but who were unwilling to be interviewed. This research was conducted in July–September 2015. The variables to be measured were the actions and knowledge of the mother. The data was analyzed using univariate, bivariate and multivariate analyses.

Results

Table 1 reveals that the greatest proportion of infants had moderate diarrhea (61.04%), while only 38.06% had mild diarrhea. The results in Table 1 also present the incidence of diarrhea by sex, with 62.86% being girls and 37.14% being boys. Further result reveals that 52.86% of household waste was dumped carelessly while 47.14% of household waste was managed by burning. Therefore, we can conclude that household waste management still needs improvement.

Table 3 shows that the mother's knowledge and actions show significant relationship. This means that knowledge and action are related to the mother's improper household waste management with the incidence of diarrhea in infants. Table 4 reveals the results of statistical tests of knowledge and action against the mother's improper household waste management with toddler diarrhea occurrence. The results of logistic regression tests with $p < 0.05$ (95% CI: 3.645 to 252.379) indicate a strong relationship between the actions of the mother in the management of domestic wastewater with the incidence of diarrhea in infants. Similarly, Table 4 shows that there is a very strong relation between maternal knowledge of the improper disposal of domestic wastewater with the incidence of diarrhea in infants, $p < 0.05$ (4.524 to 321.242).

Criteria	Total	%
Types of diarrhea (based on dehydration level)		
Moderate	43	61.04
Mild	27	38.06
Sex		
Male	26	37.14
Female	44	62.86
Household Waste Management		
Burned	33	47.14
Arbitrary disposal	37	52.86

Table 1 Distribution of toddlers attacked by diarrhea.

Variable	Category	Total	p value	OR	95% CI
Action	Good	27	0.002	5.610	1.956 – 16.094
	Bad	43			
Knowledge	Good	25	0.000	7.438	2.487 – 22.242
	Bad	45			

Table 2. Distribution of waste management knowledge and action by mothers.

Variable	Category	p value	95% CI
Action	Good	0.001	3.645 – 252.379
	Bad		
Knowledge	Good	0.000	4.524 – 321.242
	Bad		

Table 3. Relationship of knowledge and action on improper household waste management by mother.

Discussion

According to Novianti,¹² knowledge is an important factor in determining a person's actions, especially with regard to maternal knowledge related to environmental sanitation. Low maternal knowledge on environmental sanitation will influence the mothers' attitudes and actions on

infant health.¹³ The mother's lack of a good understanding of the prevention and control of diarrhea may increase the chances that dehydration will be more severe, which can cause death in toddlers.¹ Mamady¹⁴ states that women who have an understanding or knowledge of the management of domestic wastewater will develop attitudes and behaviors to prevent and manage diarrhea in children under five so they will not experience severe dehydration, whereas a lack of understanding would create difficulties in preventing the further impact of diarrhea that results from not receiving the full treatment, which could result in dehydration and infant mortality.

Musihb and Gaduu¹⁵ also note that the mother's knowledge of diarrhea prevention procedures will reduce the likelihood of worsening dehydration which could deprive a toddler of fluids and could lead to death. According to Tobin et al.,¹⁶ knowledge is a predisposing factor in a person's behavior. Before someone adopts a new behavior, he or she must know in advance the meaning or benefit of such behavior. Mwambete et al.¹ note that a mother will implement healthy behavior when she knows the dangers and losses that will occur otherwise.

Lindawati⁵ also mentions that the mothers' knowledge of child hygiene and environmental hygiene plays an important role in children's growth both physically and emotionally. Poor cleanliness in children will facilitate the occurrence of disease and diarrhea in children.¹⁷ Therefore, the mother must possess education and knowledge so she can learn how to create a good environment for children's growth, thus improving safety for children.¹⁶ Kasnodiharjo¹⁸ asserts that the mother's actions will affect the infant's health, especially related to environmental health, such as taking out the trash and protecting the environment to maintain good hygiene, so as to cut the transmission of disease that occurs in a dirty environment and to maintain clean and healthy behaviors to avoid being easily infected with the disease.

In a similar statement, Hajar et al.,¹⁹ maintain that the mother's actions are closely linked to the incidence of diarrhea in infants; such actions include proper food storage and washing hands before eating. From the research, Simadibrata et al.,²⁰ also show that the incidence of diarrhea is closely connected with the actions

of the mother; for example, if the mother's actions are healthy or good, it will affect the health of young children. The results are consistent with research conducted by Ottay et al.,²¹ who found that there is a relationship between the actions of the mother and the incidence of diarrhea in infants. Environmental hygiene is one of the most important factors as it has a strong influence on the mother's actions regarding health. The results are consistent with the theory put forward by the Indonesian Republic Health Department²² that the most important habit related to personal hygiene in the transmission of diarrheal germs is hand washing.

Previous study found that washing one's hands with soap, especially after defecating or throwing away the feces of children and before preparing a meal has an impact on the spread of diarrhea.⁴ Some preventative measures that attack the germs should be taken, such as washing your hands with soap before feeding infants and children, ensuring that children and infants avoid hawker stalls, and avoiding foods that are stale, moldy, or contaminated with parasites.²³ Therefore, hand hygiene should receive high priority, although it is often overlooked. Mamady¹⁴ reveals that the habit of throwing garbage in the wrong place is also a risk factor for the occurrence of various vectors of germs. Mamo et al.,²⁴ mentioned that other risk factors that cause diarrhea in toddlers are bins used in construction that are not robust and easily leak; for instance, these may be plastic containers, plastic bags, and garbage cans. Likewise, there are vectors such as insects that can cause diarrhea in infants. Good waste management is important to prevent the transmission of the disease; specifically, garbage should be collected daily and disposed of in temporary shelters.²⁵

Conclusion

The mother's knowledge and action against improper household waste management influences the incidence of diarrhea in infants ($p < 0.05$), whereas the results of multivariate analysis showed that maternal knowledge provides the most powerful influences on improper household waste management with the incidence of diarrhea in infants. Further research will investigate whether the mother's improper household waste management will have an impact on other health disorders.

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