

Association of Mother's Behavior with Diarrhea in Toddler (6-23 Months) in Public Health Center, Tasikmalaya District

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Abstract: Diarrhea is still a public health problem in Indonesia, with a high prevalence of cases. Mother's behavior is a determinant factors related to diarrhea. The purpose of this study was conducted to determine the relationship between Mother's behavior and the incidence of diarrhea in toddlers aged 6-23 months at Ciawi Public Health Center, Tasikmalaya District. The research design used case control study. Sample was 39 cases and 39 controls calculated using EpiInfo. The sampling technique used purposive sampling. Respondents consisted of mothers of toddlers aged 6-23 months from the case and control groups. The research instruments used questionnaires. Statistical analysis using chi square test. Most respondents have primary school education level (39.7%) and work as housewives (97.4%). The result showed that there was a statistically significant between mother's behavior and the incidence of diarrhea in toddler with p value 0.031; and OR value 3.321). They're necessary to collaborate between health workers at the Ciawi Health Center and mothers of toddlers to improve the behavior of mothers in diare prevention.

1 INTRODUCTION

Diarrhea is defined as loose stools more than three times a day (WHO, 2017). The cause of diarrhea is a bacterial infection due to stimulation of the intestinal mucosa by toxins, such as *E. coli* or *V. cholera* 01 toxins (Kementerian Kesehatan Republik Indonesia, 2010). Diarrhoeal disease is a leading cause of mortality and morbidity, and mostly results from contaminated food and water sources (WHO, 2017).

According to UNICEF (2017), the prevalence of diarrhea in children under five in the world is 8%. Riskesdas data 2018 (Riskesdas, 2018) in Indonesia showed that the prevalence of diarrhea in children under five is still high at 11%, has increased from the results of Riskesdas in 2013 (2.4% of prevalence). Several provinces in Indonesia have higher prevalence of diarrhea. The provinces that have a high prevalence of diarrhea in children under five include North Sumatra, Papua, Aceh, Bengkulu, West Nusa Tenggara, West Kalimantan, West Sumatra, West Java, Banten and Central Sulawesi. Of the 10 provinces, West Java province is the eighth province that has the prevalence of diarrhea in children under five above the national prevalence of 12.84%.

Based on the 2018 Riskeddas Results in West Java Province, there are several cities/districts with the prevalence of diarrhea in children under five above the average prevalence of West Java. One of them is Tasikmalaya Regency with a prevalence of diarrhea in toddlers of 12.96%. The incidence of diarrhea in toddler most often occurs in toddlers with an age range of 12-23 months.

Diarrhea in toddlers can lead to fatal consequences such as death and malnutrition. Death in children under five can occur due to weight loss and infection. In addition, death in infants can also be caused by dehydration. When diarrhea, toddlers will experience changes in the form of stools that are more liquid which can increase fluid expenditure. Increased fluid loss also occurs in the intestine, along with electrolyte expenditure. As a result, severe dehydration occurs in toddlers which can end in death (Murno et al, 2011).

Another consequence that can be caused by diarrhea is malnutrition. Diarrhea and malnutrition have a two-way relationship. Diarrhea can lead to malabsorption and maldigestion which can reduce the intake of nutrients. This is what can cause malnutrition in children with diarrhea. On the other hand, children with malnutrition are also often caused by diarrhea (Black et al, 2008). According to WHO

(2017), the age most susceptible to diarrhea is the age of children 0-59 months.

According to H. L. Blum (Shi et al, 2019), there are 4 factors that affect the degree of public health, such as consisting of environmental factors, behavioral factors, genetic factors and health services. The mother's behavior is very important. Because mothers are the closest people to toddlers, both when eating, bathing, and playing, mothers are more involved (Hendrastuti, 2019). Behavioral factors consist of maternal parenting (Syam et al, 2020), exclusive breastfeeding, hand washing habits, use of milk bottles (Tina et al, 2016), and drinking water storage (Hendrastuti, 2019).

Another mother's behavior is related to drinking water treatment. Drinking water consumed must be safe and does not contain E.coli bacteria. According to Purwaningsih (2014), the mother's behavior in boiling water has an OR of 2.62. In addition to the above variables, a variable that can cause diarrhea is the behavior of using the latrine. The behavior of using latrines according to Lidiawati's research (2016), is also a risk factor for diarrhea in children under five (OR = 4.52). This shows that toddlers with poor stool management are 4.52 times more at risk of developing diarrhea compared to toddlers with good stool management and are thrown into the latrine.

The subdistrict of Ciawi, is an area with a high prevalence of diarrhea in the district of Tasikmalaya, with the cases in 2019 are 765 toddlers or 71.83% and 694 cases in 2020 (Ciawi Health Center, 2020). The numbers of cases in the Ciawi Health Center are still relatively high compared to other diseases with an average of 82 visits per month. The highest diarrhea visits throughout 2020 came from toddlers aged 6-23 months, which was 33.1% of the total visits.

The high incidence of diarrhea in children under five in the subdistrict of Ciawi needs attention to be studied more deeply. With the hope that there will be no fatalities caused by diarrhea in toddlers. Therefore, by looking at the data and the results of the initial survey on the behavior of mothers.

2 METHODS

This study uses a case-control design. The population is toddlers aged 6-23 months at the Ciawi Health Center. A case was defined as ≥ 3 loose stools per day in a child who presented to the Ciawi Health Center (Puskesmas) for medical care in the last two months (January-February 2021). The control sample is a neighbor of the cases and has the same sex as the

cases and had no diarrheal illnesses. Samples were taken purposively based on the inclusion criteria.

Respondents are mothers or families who take care of toddlers and live in one house. The independent variables are mother's behavior (boiling water before drinking, wash hands with soap after defecation, unsafe disposal of stool's children/use the latrine). Respondents are mothers or people who take care of toddlers and live in the same house. The sample inclusion criteria are to have a complete address and contact number so that they can be found, and are willing to be respondents.

Sample is calculated using EpiInfo for case-control studies, with reference OR from Lidiawati's (2016) study. The number of samples for each group is added by 10% so that the total number of cases are 39 and the control are 39. The research instrument is a questionnaire. Data collection through interviews with respondent and data analysis using chi square tests using SPSS.

3 RESULTS

3.1 Characteristic of Samples

The majority of samples, both cases and controls, were male (66.7%) and female were 23.3%.

3.2 Characteristic of Respondents

Table 1: Univariate Analysis.

Variables	Category	Case (n=39)	Control (n=39)
Mother's education level	Finished Elementary	17(43,6)	14(35,9)
	Finished Junior High School	15(38,5)	14(35,9)
	Finish Senior High School	6 (15,4)	7 (17,9)
	Finished College	1 (2,6)	4 (10,3)
Profession	Housewife	39 (100)	37(94,8)
	Employee	0 (0,0)	1 (2,6)
	Entrepreneur	0 (0,0)	1 (2,6)
Mother's age	Mean : 31 yo (6,9 SD) Min : 18 Max : 50		
Boiling water before drinking	No	6 (15,4)	1 (2,6)
	Yes	33(84,6)	38(97,4)
Washing hands with soap	No	13(33,3)	14(35,9)
	Yes	26(66,7)	25(64,1)

after defecation				
Children stool disposal	Unsafe	24(61,5)	19(48,7)	
	Safe	15(38,5)	20(51,3)	
Mother's behavior category	Poor	18(46,2)	8 (20,5)	
	Good	21(53,8)	31(79,5)	

The education level of the majority in the case group was elementary school graduates (43.6%). While in the control group, the education level that became the majority consisted of two types, namely elementary school graduates and junior high school graduates. Both have the same percentage of (35.9%). The type of work that became the majority in the two groups was housewives with a percentage (100% and 94.9% respectively).

The mean ages of mother are 31 years old. The total of 84.6% of the case group used boiling boiled drinking water, as many as 66.7 mothers washed their hands with soap after defecating, as many as 61.5% of mothers in the case group carried out unsafe children's stool disposal. The behavior of mothers in the poor category in the case group are 46.2% while in the control group are 20.5%. The behavior of mothers in the good category in the case group amounted to 53.8% and in the control group amounted to 79.5%.

3.3 Bivariate Analysis

Table 2: Bivariate Analysis between Mother's Behavior and Incidence of Diarrhea.

Mother's Behavior	Incidence of Diarrhea				p	OR (CI:95 %)
	Case		Control			
	n	%	n	%		
Poor	18	46,2	8	20,5	0,031	3,321 (1,22-9,03)
Good	21	53,8	31	79,5		
Total	39	100	39	100		

Bivariate analysis showed that from 26 respondents with poor maternal behavior, 18 toddlers (46.2%) suffered from diarrhea and as many as 8 toddlers (20.5%) did not suffer from diarrhea. Meanwhile, out of 52 respondents with good maternal behavior, 21 toddlers (53.8%) suffered from diarrhea and 31 toddlers (79.5%) did not suffer from diarrhea. Chi square test found that there was a significant relationship with p value 0.031 (<0.005) and has OR 3.321. This means that mothers with poor behavior have a 3.321 times higher risk of having a toddler

with diarrhea compared to mothers who have good behavior.

4 DISCUSSION

The behavior of mothers in this study consisted of several indicators, consist of the behavior of boiling water before drinking, washing hands after defecating, and childrens stool disposal. Boiling is the most commonly used reported Household Water Treatment (HWT) method globally. The reported use of boiling is particularly widespread in many Asian nations, including China, which is 85% of rural residents report boiling drinking water, 16 as well as an estimated 95% in Mongolia and 91% in Indonesia and Vietnam (Rosa & Clasen, 2010; Cohen & Colford, 2017).

Hand washing promotion in communities prevents one quarter of diarrhea episodes with a higher effect size when soap was provided free of cost (Ri et al., 2015; Edward et al., 2019). The standard practices for hand washing include before feeding a child, after defecating, or handling a child who has defecated and before cooking (Curtis, Scott & Cardosi, 2005). Specific times of hand washing have shown different outcomes of diarrhea episodes, as in a trial in rural Bangladesh where hand washing after defecation with and without soap had significantly higher odds of less diarrhea, but not before feeding a child, or after cleaning a child who had defecated (Luby et al., 2018). Human feces are the main source of diarrheal pathogens. They are also the source of shigellosis, typhoid, cholera, all other common endemic gastro-enteric infections, and some respiratory infections: just one gram of human feces can contain 10 million viruses and one million bacteria. While the routes are numerous, they all emanate from one source: feces. While secondary measures, which is food handling, water purification, and fly control, may have an impact, far more important are the primary barriers – sanitation and handwashing – after fecal contact. These barriers prevent fecal pathogens from reaching the domestic environment in the first place (Curtis, Scott & Cardosi, 2005).

The habit of washing hands reflects the quality of health. Mother's actions hand washing is often neglected and sometimes due to situations and conditions where there are no washing facilities hand. For example, mothers and toddlers eat snacks then don't wash your hands first the reason is because there are no washing facilities available (Pandean, 2016).

According to the World Health Organization (WHO), a child's stool is considered to be disposed of safely when the child uses the toilet/latrine; the faeces is put/rinsed in the toilet/latrine or buried. On the contrary, the disposal of faeces is considered unsafe if the faeces are put/rinsed in a drain/ditch, thrown in the garbage, left or buried in the open (WHO/UNICEF, 2006; Bawankule et al., 2017).

The research of Taosu and Azizah (2013) in Bena Village, East Nusa Tenggara, showed that there is a significant relationship between the behavior of housewives and the incidence of diarrhea in toddlers. The behavior of housewives consisted of washing hands before eating, washing hands after defecating, washing milk bottles, boiling drinking water and exclusive breastfeeding. The results are also in line with research by Marissa, Oktavia (2013) in Semarang and Riza (Riza et al, 2018). The study showed that there is a significant relationship between maternal behavior and the incidence of moderate dehydration in toddlers (p value 0.010) and the Odd Ratio has 4,7.

The incidence of diarrhea in toddlers aged 6-23 months in the Ciawi Health Center area mostly (46.2%) occurred in mothers who had poor behavior. In this study, two aspects of behavior that are still not good in the research population are hand washing with soap after defecation and safe disposal of toddler stool. There is a need for health interventions through information communication and education to mothers. One of these activities can be done through weighing children under five (Posyandu) which are carried out regularly every month.

5 CONCLUSIONS

This study concluded that there was a significant relationship between maternal behavior and the incidence of diarrhea in children aged 6-23 months in the Ciawi Health Center (p value 0.031) and (OR=3.321). In an effort to control the incidence of diarrhea in toddlers 6-23 months, it is necessary to collaborate between health workers at the Ciawi Health Center and mothers of toddlers to improve the behavior of mothers of toddlers. The thing that can be done is to intensify counseling to mothers of toddlers in each posyandu about diarrhea prevention behavior in toddlers.

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