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The Relationship of Mother's Knowledge, Attitude, and Behavior Regarding Diarrhea with the Number of Diarrhea Toddlers Taken to the Health Facility

Irin[1], Angela Kurniadi[2]

[1]School of Medicine & Health Sciences, Atma Jaya Catholic University of Indonesia, North Jakarta, Indonesia

[2]Department of Public Health Science, School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia, North Jakarta, Indonesia

*Corresponding author: Angela Kurniadi, e-mail: angela.kurniadi@atmajaya.ac.id

Abstract

Introduction: Diarrhea is the second major cause of death in toddlers in developing countries, including Indonesia. The study aims to determine the relationship between knowledge, attitudes, and behavior of mothers regarding prevention and treatment of diarrhea with the number of toddlers taken to the health facility.

Methods: A cross-sectional study was involving 120 mothers who have a child with a history of diarrhea and were recruited using a simple random sampling method. Data were collected using demographic and diarrhea-related questionnaires. Fisher-Exact test was used to analyze data in univariate and bivariate with p-value ≤ 0,05 as the level of significance.

Results: Most of the mother's knowledge, attitudes, and behavior regarding diarrhea were considered fairly good, with the percentage reaching 70,8%; 66,7%; 70,8%, respectively. However, knowledge, attitude, and behavior regarding giving ORS were low. There was a significant relationship between the attitude and behavior of the respondents with the number of diarrhea toddlers taken to health facilities (p = 0,010; p = 0,000), but there was no significant relation with the respondents' knowledge (p = 0,065).

Conclusions: The attitude and behavior of mothers regarding diarrhea significantly affect the number of diarrhea toddlers taken to the health facility. Although the overall knowledge, attitude, and behavior of the mother were considered fairly good, but the knowledge, attitude, and behavior regarding giving ORS were low.

Keywords: knowledge – attitudes – behavior - diarrhea – toddlers - health facilities

INTRODUCTION

Diarrhea is the second major cause of death worldwide in children under 5 years old. Globally, approximately 1.7 billion cases of diarrhea in children are found annually and kill 525,000 children under five.[1] Indonesia is a developing country with a high incidence of diarrheal disease. The diarrhea morbidity rate in Indonesia is the highest in ASEAN, with a 195 per 1,000 population ratio.[2] The diarrhea mortality rate in children under five in Indonesia is still relatively high. According to

World Health Organization (WHO)[1], diarrhea-related death in children under five in Indonesia are as much as 6%. Diarrhea-related death cases are caused mainly by its complications, one of which is dehydration.[3] This high morbidity and mortality rate makes diarrhea becomes an economic burden for the patient's family and the health system.[4]

Jakarta, the capital city of Indonesia, also has a pretty high prevalence of diarrhea. Based on estimates in 2016, there were 243.000 people suffering from diarrhea from approximately 10 million residents of Jakarta. One of the areas with exceptionally high cases of diarrhea in children under five is North Jakarta, which reaches 20% of the total cases of diarrhea in children under five in Jakarta.[5] Those high prevalence shows the importance of prevention and early management of cases of diarrhea.

The high prevalence of diarrhea in children under five is not only determined by environmental hygiene factors, especially water, but it is also determined by the knowledge, attitudes, and behavior of the mother who is the most responsible person for the children's health. Good knowledge about diarrhea can foster good maternal attitudes and behavior so that it can either prevent diarrhea or provide diarrhea management appropriately and as early as possible.[6] One of the early treatment efforts and prevention of diarrhea complications in children is to take the child with diarrhea to a the health facility. It is important for a mother to seek appropriate help ("health-seeking behavior") so that toddlers with diarrhea can be given appropriate treatment to prevent further complications.[7]

In Indonesia, the act of taking babies with diarrhea to the health facility is still low. It may be due to the mother's knowledge, attitude, and behavior about diarrhea. Therefore, the objective of the present study is to examine the relationship between knowledge, attitudes, and behavior of mothers regarding diarrhea with the number of mothers who bring their diarrhea toddlers to the health facility.

METHODS

Study Design

A cross-sectional study with descriptive-analytical approach was carried out at Papanggo village, Tanjung Priok sub-district, North Jakarta in January-March 2019.

Subject and Sampling Method

This study involved 120 mothers with toddler and were taken using simple random sampling technique. The inclusion criteria in this study were all mothers who have children under five who have experienced diarrhea. While the exclusion criteria were 1) mothers refused to participate in the study and 2) mothers could not read or communicate.

Data Collection

The data collection instrument was a questionnaire that consisted of two parts, demographic and diarrhea-related questions. Demographic data collected include age, education level, and income level. The diarrhea-related questions were used to determine three aspects of the mother's characteristics, which are 1) knowledge, 2) attitude, and 3) behavior. Questions about the mother's knowledge include the definition of diarrhea, the etiology of diarrhea, the dangers of diarrhea if not treated immediately, the necessity of treating diarrhea, and how to administer oral rehydration therapy (ORS). Questions assessing mother's attitudes include promptness in treatment, the necessity of giving ORS, the act of taking children to the doctor immediately, breastfeeding. and feeding continuation. Questions asking on mother's behaviors include complete immunization, type of food given, how to wash milk bottles, and giving ORS. In addition, this questionnaire also records the respondents' environmental health in the form of drinking water sources, defecation facilities, and residential density.

Researchers will visit mothers who have been randomly selected. After the researcher explained the study's objectives, mothers who agreed to be respondents in this study were asked to sign an informed consent. Respondents were asked to fill out the questionnaire, then the researcher collected the completed questionnaires on the same day. This research has been approved by the Ethics Research Committee of Atma Jaya Catholic University with ethics number 17/12/KEP-FKUAJ/2017.

Statistical Analysis

Data analysis was carried out using StataSE software version 12 to answer the research objectives and prove the research hypothesis. Data analysis was divided into univariate and bivariate analyses using the Chi-square test to determine the relationship between independent and dependent variables. If the data obtained does not meet the Chi-square test criteria, then the Fisher's Exact test is used for analysis. Statistically significance was defined as a p-value of 0.05 with confidence interval 95%.

RESULTS

One hundred twenty of mothers with toddler who satisfied the inclusion and exclusion criteria were included in this study. The main characteristics of the study population are summarized in Table 1.

Table 1. Respondent's characteristics

Respondents' Characteristics		**n**	**%**
Age	≤ 25	30	25
	26-35	61	50,8
	36-45	29	24,2
	Elem – JHS	52	43,3

Level of education	SHS/Voc Ed	60	50
	Diploma/Bachelor	8	6,7
Respondents' Characteristics		**n**	**%**
Level of income	< UMR	49	40,8
	≥ UMR	71	59,2
Drinking water source	Clean	120	100
	Not clean	0	0
Own defecation facilities	Have	114	95
	Do not have	6	5
Residence density	Dense	86	71,7
	Loose	34	28,3

Note: Elem = elementary school, JHS = junior high school, SHS = senior high school, Voc Ed = vocational education, UMR = regional minimum wages

Based on Table 1, it is known that most of the respondents are in the age range of 26-35 years (50.8%), have a level of education high school/vocational education (50%), and have a family income greater than or equal to regional minimum wage (UMR) which is IDR 3.355.750 (59.2%). Regarding environmental conditions, all respondents have a source of clean drinking water (100%), own defecation facilities (95%), and live in densely populated residences (71.6%).

The distribution of mothers' knowledge, attitudes, and behaviors is summarized in Table 2. It can be seen that the knowledge of mothers regarding diarrhea was 24 mothers (20%) had good knowledge, as many as 85 mothers (70.8%) had fair knowledge, and 11 mothers had poor knowledge (9.2%). The distribution of respondents' attitudes towards children with diarrhea was 35 mothers had good attitudes (29.2%), 80 mothers had fair attitudes (66.7%), and as many as five mothers had poor attitudes. Regarding mother's behavior, most of the respondents had good (27.5%) and fair behavior (70.8%), only two mothers still had poor behavior.

Table 2. Distribution of knowledge, attitude, and behavior of mothers towards children with diarrhea

Variables		**Number (n)**	**Percentage (%)**
Knowledge	Good	24	20
	Fair	85	70.8
	Poor	11	9.2
Attitude	Good	35	29,2
	Fair	80	66,7
	Poor	5	4,2
Behavior	Good	33	27,5
	Fair	85	70,8
	Poor	2	1,7

Table 3 shows that mothers mostly chose to take their children with diarrhea to a certain the health facility, with a total of 73 mothers (60.8%.), and 47 mothers chose self-treatment. Regarding the choice of the health facility, more than a quarter (35%) of respondents chose public health center (puskesmas), followed by 16 mothers who chose clinic (16), and 10.8% of them chose hospital.

Table 3. Data regarding treatment and health facility choice

Variables		**n**	**%**
Treatment choice	The health facility	73	60,8
	Self-treatment	47	39,2
Health facility choice	Public health center	42	35
	Clinic	16	13,3
	Hospital	13	10,8

	Alternative treatment	-	-
	Etc	2	1,7

From the data obtained, it can be observed that among the three groups of age range, the highest percentage of knowledge level was the fair level. A similar pattern was also found among groups of education level and income level, with the fair level dominating. Based on the Fisher's Exact test results, we found a non-significant relationship between age and education level with the level of knowledge with p = 0.588 and p = 0.777, respectively. However, a significant relationship was found between the respondents' income level and the level of knowledge, with a p-value of 0.017 (Table 4).

Table 4. The relationship between respondent's characteristics and level of knowledge

Respondent Characteristics		**Level of Knowledge (%)**			**Total (%)**	**P**
		Good	**Fair**	**Poor**		
Age	≤ 25	4,2	18,3	2,5	25	
	26-35	8,3	37,5	5	50,8	**0,588**
	36-45	7,5	15	1,7	24,2	
Level of education	Elem-JHS	7,5	30,8	5	43,3	
	SHS/Voc Ed	11,7	35	3,3	50	**0,777**
	Diploma/Bachelor	0,8	5	0,8	6,7	
Level of income	< UMR	13,3	24,2	3,3	40,8	**0,017**
	≥ UMR	6,7	46,7	5,8	59,2	

From Table 5, the majority of respondents with fair knowledge, attitudes, and behaviors brought their children to a the health facility. The relationship analysis using the Fisher's Exact test showed no significant relationship between the respondent's knowledge and the number of toddlers with diarrhea taken to the health facility (p = 0.065). However, the attitude and behavior of the respondents had a significant relationship with the number of toddlers with diarrhea taken to the health facility, with p = 0.010 and p = 0.000, respectively.

Table 5. The relationship between the level of knowledge, attitude, and behavior and the number of toddlers with diarrhea taken to the health facility

Variables		**Number of Toddlers Undergoing Treatment**		**Total**	**P**
		At The health facility	**Self-treatment**		
Knowledge	Good	10	10	20	**0,065**
	Fair	42,5	28,3	70,8	
	Poor	8,3	0,8	9,2	

Attitudes	Good	12,5	16,7	29,2	**0,010**
	Fair	44,2	22,5	66,7	
Variables		**Number of Toddlers Undergoing Treatment**		**Total**	**P**
		At The health facility	**Self-treatment**		
	Poor	4,2	0	4,2	
Behavior	Good	5,8	21,7	27,5	**0,000**
	Fair	53,3	17,5	70,8	
	Poor	1,7	0	1,7	

DISCUSSION

World Health Organization (WHO) states that diarrhea is the second major cause of death in children under five in the world. The number of diarrhea cases in Indonesia is among the highest in ASEAN.[1] In 2016, out of around 10 million residents in Jakarta province, 243,000 of them experienced diarrhea. From all cases of toddlers with diarrhea in Jakarta province, the percentage of cases of toddlers with diarrhea in North Jakarta is as much as 20%.[5] Given a large number of cases of diarrhea in North Jakarta and the dangers of it, thus knowledge, attitudes, and behavior of mothers regarding the prevention and management of diarrhea are demanded.

Most of the respondents in this study were in the early adult age group (26-35 years) by 50.8%, junior high school/vocational school graduates (50%), and had income levels above the minimum wage (59.2%). The environmental aspects of respondents were also recorded. The researchers found that all respondents had used clean drinking water sources in this study. Children under five years old who use water from unsafe sources have an eight times higher risk of experiencing diarrhea compared to those who use water from safe sources.[8] Subsequently, almost all respondents (95%) already have their own latrines in their homes. In a survey conducted by Riskesdas (2013), it was found that the fewer households that have their own latrines, the higher the proportion of households practicing open defecation.[9] This poses a high risk of increasing diarrheal disease transmission, considering that the transmission is via faecal-oral route. Another environmental aspect is the occupancy density of the living region. Occupancy density is one of the requirements for housing health. Based on data from the Indonesian Central Statistics Agency (BPS) in 2017, the area of occupancy per capita in Jakarta province was 24.67 m^2.[10] This indicates that Jakarta province is not yet in the dense category (≥ 8 m^2). This data was different from the results of this study, which showed that most of the respondents live in a densely populated category (71.7%). This

difference could be due to the differences in the area of residence used by BPS as a sample with the area of residence used by the researcher.

In this study, most respondents had fair knowledge about diarrhea (70.8%). However, only 17.5% of them who answered correctly for the cause of diarrhea. Many respondents misunderstood food as the main cause behind diarrhea (59.2%). In addition, almost 1/3 of the respondents did not know about the dangers of diarrhea. To prevent further complications of diarrhea, a mother should know what can happen if the diarrhea is not treated properly. Similar results were obtained from a study by Mulyana and Kurniasih[11] which found that the respondents also mainly stated that the cause of diarrhea was consuming instant noodles. This misunderstanding possibly happened because of the faecal-oral transmission of diarrhea. Toddlers have often experienced diarrhea immediately after exposure to the diarrhea pathogens on their food, and this coincidental makes mothers believe that the cause of diarrhea is food. Furthermore, less exposure to accurate health information could also contribute to this misunderstanding.[4]

Regarding attitude and behavior, the majority of respondents were in the fair category (66.7%). Most of them answered questions correctly except about the administration of ORS. Unfortunately, more than half of respondents disagreed that ORS should be given to children experiencing diarrhea (52.5%). These findings are in accordance with the research by Fajrir[12] and Riskesdas[9] which suggested that the use of ORS in Indonesia is still very low. Giving ORS to children who are experiencing diarrhea is important because ORS can prevent dehydration, which is the most common complication of diarrhea in children.[13] The behavior of mothers towards children with diarrhea was also pretty good, excluding how they wash milk bottles. On contrary to our study, there was a study conducted by Sriwahyuni[14] reporting that the respondents who have the same characteristics as this study apparently had negative attitudes (61.1%).

Public health center (puskesmas) have become the most popular the health facility to visit based on the present study (35%). More than half of the respondents chose to visit a certain the health facility to treat their children with diarrhea (60.8%). In parallel to our study, Nurzaini H[55] also reported that as many as 86.1% of mothers agreed that diarrhea babies should be taken for treatment to health services. It can be concluded that respondents have a good health-seeking behavior.

In the present study, it was found that there is a significant relationship between income level and knowledge level (p = 0.017). Income level is one indicator that determines the socioeconomic status of a family. Economic status can broaden the willingness and access to health services, so economic status may affect knowledge.[12] Meanwhile, age and education did not significantly correlate with knowledge level. These results are contradictory to other studies by Famara et al.[4] and Dickson[14] which found a meaningful relationship among those variables. These differences are due to the variety in the number of samples and domicile of the respondents.

Interestingly, a significant relationship was detected between attitudes and behavior with the number of children with diarrhea with diarrhea taken to the health facility with a p-value of 0.010 and 0.000, respectively. Similar results were also obtained from research conducted by Sriwahyuni.[14] However, in contrast with other variables, respondents' knowledge was apparenly have no significant relationship with the number of toddlers with diarrhea taken to the health facility (p = 0.065). This result is not in line with previous research conducted by Arsurya[15] which mentioned a significant relationship between the level of knowledge and the incidence of diarrhea.

Knowledge will affect a person's attitude and then indirectly affect his behavior, or knowledge can directly affect a person's behavior.[16] Based on the results of statistical analysis, these three variables (knowledge, attitude, behavior) have a significant relationship with each other (p<0.05). The results obtained are the same as the research conducted by Arwani[17] and Safitri[18]. The mother's attitude which is built on their knowledge about diarrhea will underlie and encourage the mother towards actions related to diarrheal disease. If the mother feels it is worth doing, then she will carry out the prevention. Therefore, the mother's behavior toward children with diarrhea is strongly influenced by the mother's attitude toward the prevention of diarrhea. Notoatmodjo[47] stated that knowledge is an important domain in shaping one's behavior, behavior is the application of one's knowledge or cognitive.

CONCLUSIONS

In conclusion, it was found that there was a significant relationship between the attitudes and behavior of mothers with the number of children with diarrhea taken to the health facility. However, knowledge was not significantly related to the number of children with diarrhea taken to the the health facility. Although the mother's overall knowledge, attitude, and behavior were considered fairly good, the knowledge, attitude, and behavior

regarding giving ORS were low. Accordingly, it is important to conduct further research with a larger sample population so that the results obtained can be generalized.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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