

Mothers' levels of knowledge of self-medication of diarrhea for under-five children in Kaliwates, Jember

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ABSTRACT

Diarrhea is the fifth-highest cause of death in under-five children worldwide, and it is preventable. Mild diarrhea can be treated by self-medication. In this case, mothers have an important role in handling diarrhea in children. This study aims to determine the level of mothers' knowledge self-medication in diarrhea to treat under-five children in Kaliwates District, Jember. This study used an observational study design with a cross-sectional approach. The data were collected in 11 integrated healthcare centers in 3 community health centers in Kaliwates District. The research respondents were 348 mothers. Before being distributed, the questionnaire was tested to explore its validity and reliability. This questionnaire was employed to assess the mothers' level of knowledge of self-medication for infants. The data were analyzed statistically using the Chi-square test and Fisher Exact. The results showed that the mothers have a sufficient of knowledge level self-treatment of diarrhea for infants. There is a significant relationship between age, recent education, employment, family income, number of children, number of adult family members, information sources, and educational experience ($p < 0.05$). This study suggests the importance of providing interventions to improve mothers' knowledge of self-medication of diarrhea.

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1. Introduction

Diarrhea is the fifth-highest cause of death in under-five children globally. The mortality rate is 70.6 per 100,000. It is estimated that there were 1,105,406,865 cases of diarrhea or 1.75 events per child toddler in 2016 (Troeger et al., 2018). In Indonesia, diarrhea is one of the endemic diseases, potentially becoming an extraordinary event and leading to death. The extraordinary outbreak of diarrhea occurred 21 times in 2017 with 1,725 patients and 34 deaths. Therefore, its case fatality rate was 1.97% or more than expected, namely lower than 1%. The incidence of diarrhea in all ages in East Java Province was 604,779 with a service coverage of 57.01. The scope of diarrhea services in toddlers is 38.83. This figure is slightly lower than the national coverage of 40.07 and makes East Java Province left behind compared to the other 11 provinces (Kementerian Kesehatan Republik Indonesia, 2018). Diarrhea cases in Jember Regency have received serious attention from the local government. The number of diarrhea cases of all ages is above 50,000, and more than half of the number was dominated by toddlers (Dinkes Jember, 2015).

The incidence of diarrhea can be prevented and overcome. WHO and UNICEF issued a document containing a plan of global action to reduce diarrhea incidence and mortality in children up to 2025 (World Health Organization; Unicef, 2013). Parents, especially mothers, play an important role in overcoming diarrhea. Mild diarrhea can be handled by self-medication. Self-medication refers to self-treatment to handle health problems with mild symptoms, including diarrhea (Bennadi, 2014).

Instead of providing benefits, haphazard self-medication sometimes brings counterproductive results. The appropriate behavior of self-medication can be influenced by the level of knowledge. This



study aims to determine the mothers' knowledge levels of self-medication of diarrhea for infants in Kecamatan Kaliwates, Jember.

2. Materials and Methods

This study received approval from the Commission on Health Research Ethics, the Faculty of Dentistry, Universitas Jember (UNEJ) with the number of 280/UN25.8/KEPK/DL/2019. This research employed an observational design with a cross-sectional approach. The population of this research was 3,683. The inclusion criterion was mothers who had infants aged ≤ 5 years old and never suffering from diarrhea. This study involved 348 respondents obtained using the Krejcie and Morgan formulas. The calculation formula is as follows:

$$S = \frac{X^2 \cdot N \cdot P(1-P)}{d^2(N-1) + X^2P(1-P)} \quad (1)$$

The description of aforementioned formula s indicated the number of Samples, while N is number of Population; and X^2 is indicated of confidential level = 95% (1.96). P indicated the proportion of the population (0.5) and d indicated as Precision. The samples were collected using the *proportional random sampling* technique. The samples of this study were 11 integrated healthcare centers from 3 public health centers of Kecamatan Kaliwates. Moreover, this study involved 86 respondents from 3 integrated healthcare centers of Mangli Public Health Center, 191 respondents from 6 integrated healthcare centers of Kaliwates Public Health Center, and 71 respondents from 2 integrated healthcare centers of Jember Kidul Public Health Center. The questionnaire was employed to collect the data and designed by the researcher referring to literature on self-medication of diarrhea. The questionnaire comprised of questions about sociodemographic characteristics and 20 multiple-choice questions about knowledge. A correct answer was scored 1 and a wrong answer was scored 0. The questionnaire was tested on 30 respondents and met the eligible validity and reliability. The validity type in this research referred to the *face validity* that measured the respondents' understanding of the questions in the questionnaire. The respondents declared that they understood all the questions. The reliability value of the questionnaire was 0.724. The knowledge of the respondents was categorized into good (correct answers above 75%), sufficient (correct answers of 55-75%), and less good (correct answer below 55%). Furthermore, the data were analyzed statistically using the *Chi-square and Fisher Exact* tests to investigate the relationship between the two variables.

3. Results and Discussion

3.1. Knowledge Levels of Self-Medication of Diarrhea

The cumulative results of the mothers' knowledge obtained through the questionnaire were processed and are presented in the form of frequency distribution tables and percentages. The majority of the respondents are categorized as having sufficient knowledge (41.7%) as depicted in Table 1. The majority of mothers (145 respondents or 41.7%) have a sufficient level of knowledge. Meanwhile, 127 respondents (36.5%) have a less good level of knowledge. In other words, only 76 respondents (21.8%) have a good level of knowledge while 272 respondents (78.2%) have sufficient and less good levels of knowledge. Therefore, the score of each question should be detailed. The mothers' good knowledge was categorized in 6 questions, sufficient knowledge was categorized in 11 questions, and less good knowledge was categorized in 3 questions. The average correct answer on all questions is 67.2%. Therefore, the mothers are considered to have a sufficient knowledge level of self-medication of diarrhea. A similar study was conducted by (Nur, 2013) who discovered that most mothers had a sufficient knowledge level of diarrhea management for under-five children. Respondents' knowledge of the question items is presented in Table 2.

There are 6 questions with a good category, 11 questions with a sufficient category, and 3 questions with a less good category. On average, the questions are categorized sufficient with correct answers of 67.2%. This study divided 20 questions into four major groups: (1) the definition and etiology of diarrhea, (2) limitation of self-medication of diarrhea, (3) therapeutic self-medication of diarrhea, and (4) diet in self-medication of diarrhea. In the first question group, the mother showed good knowledge of the definition of diarrhea, but they had insufficient knowledge of the etiology of diarrhea. Moreover, 95.4% of the mothers gave the correct answer on the question of the definition of

diarrhea, by indicating liquid bowel movements occurring more than three times a day. Diarrhea refers to a change in stool consistency, increased frequency of defecation, or watery defecation for at least three times in 24 hours (Thapar & Sanderson, 2004; World Health Organization, 2013). Most of the respondents have insufficient knowledge of the etiology or causes of diarrhea. Insufficient knowledge of the causes of diarrhea is probably associated with the use of antibiotics as self-medication of diarrhea. The majority of acute diarrhea is caused by a virus so that it does not need antibiotics (Elliott & Dalby, 2004). Approximately 41.7% of the mothers gave incorrect answers to the questions of the etiology of diarrhea. A similar study by (Dusak et al., 2018) discovered that most of the mothers had insufficient knowledge of the causes of diarrhea.

Table 1. Respondents' Levels of Self-Medication Knowledge of Diarrhea

Knowledge	Frequency	Percentage (%)
Better (correct answers >75%)	76	21.8
Sufficient (correct answers 55-75%)	145	41.7
Less good (correct answers <55%)	127	36.5
Total	348	100

The second question group addressed the limitation of self-medication of diarrhea in toddlers. Not all diarrhea cases in toddlers can be treated independently. Self-medication can be applied for mild to moderate diarrhea (the inclusion criterion of self-medication of diarrhea). However, it cannot be applied in severe diarrhea because it requires medical treatment from a doctor (the exclusion criterion of self-medication of diarrhea). The exclusion criteria of self-treatment of diarrhea are babies aged <6 months, babies with a severe dehydration condition, babies aged ≥ 6 months with a body temperature $>39^{\circ}\text{C}$, babies with blood and pus in the stool, and two-week diarrhea (Berardi et al., 2009). The second question group showed the average correct answers of 70.78%. Their answers were categorized as sufficient, and almost good. The third question group discussed self-medication of diarrhea in toddlers. Self-treatment of diarrhea aims to prevent dehydration. Half of the respondents answered incorrectly so that the questions items categorized their knowledge as insufficient. The main purpose of self-medication is not to treat the disease because the most dangerous aspect of diarrhea is dehydration, which can lead to poor conditions, even death. In other questions, the respondents showed a sufficient level of knowledge. Self-medication of diarrhea can be done at home by administering an oral rehydration solution and zinc supplements.

Oral rehydration solution is used as the first aid for diarrhea to prevent dehydration. If the toddlers vomit after the administration of oral rehydration solution, the administration should be stopped for 10 minutes; then the administration of one teaspoon oral rehydration solution is continued every 1-2 minutes (Kemenkes RI, 2011). Whereas, zinc therapy is useful in reducing the frequency of liquid bowel movements and the severity of diarrhea. The zinc therapy is done for ten days even though diarrhea has stopped (Cooke, 2010). In addition, (Humrah et al., 2017) revealed a similar result that the majority of mothers had sufficient knowledge of self-medication. This study found that 97 respondents (27.9%) gave wrong answers to the use of antibiotics in diarrhea. As mentioned earlier in the etiology of diarrhea, such a condition occurs because they are correlated. It is postulated that insufficient knowledge of the causes of diarrhea will encourage the mothers to use antibiotics as self-medication. Antibiotic is a potent drug that must be prescribed by doctors and should not be bought without a prescription for self-medication purposes. This should be considered seriously because an antibiotic resistance problem is a threat to public health. A study conducted in China has shown the high use of antibiotics without a prescription in children with diarrhea is 35.12% (Li et al., 2016).

The fourth discussion group examined the diet on self-medication. Breast milk should be administered in children with diarrhea when they are still in the age of breastfeeding. Breastfeeding will improve your immunity and prevent dehydration (Turin & Ochoa, 2014). Unfortunately, almost half of the respondents gave the wrong answers. The community still believes the myth that when children suffer from diarrhea, breastfeeding should be discontinued. This myth is wrong and should be fixed. In addition, more than 50% of the respondents answered incorrectly about the administration of tea on toddlers with diarrhea. The community has a tradition passed through generations that administering bitter tea can stop diarrhea. Although tea is frequently administered to adult patients, it is not recommended to administer in self-medication of diarrhea for toddlers. Tea containing caffeine should be avoided because it can cause fluid secretion and worsen diarrhea (Berardi et al., 2009).

Table 2. Respondents' Knowledge of the Questions

Questions	Correct N (%)	Wrong N (%)	Categories
The Definition of Diarrhea and Etiology of Diarrhea			
The Definition of Diarrhea	332 (95.4%)	16 (4.6%)	Good
Etiology of Diarrhea	164 (47.1%)	184 (52.9%)	Less Good
Limitation of Self-Medication			
Self-Medication of Diarrhea	222 (63.8%)	126 (36.2%)	Sufficient
Types of Diarrhea	250 (71.8%)	98 (28.2%)	Sufficient
Age	197 (56.6%)	151 (43.4%)	Sufficient
Definition of Dehydration	283 (81.3%)	65 (18.7%)	Good
Self-treated Dehydration	212 (60.9%)	136 (39.1%)	Sufficient
Self-Untreated Dehydration	234 (67.2%)	114 (32.8%)	Sufficient
Dysentery	266 (76.4%)	82 (23.6%)	Good
High Fever	289 (83.0%)	59 (17.0%)	Good
Duration Diarrhea	265 (76.1%)	83 (23.9%)	Good
Therapy			
Objectives of Self-Medication	189 (54.3%)	159 (45.7%)	Less Good
Oral Rehydration Therapy	227 (65.2%)	121 (34.8%)	Sufficient
Vomiting in Diarrhea	222 (63.8%)	126 (36.2%)	Sufficient
Therapeutic Zinc Supplements	225 (64.7%)	123 (35.3%)	Sufficient
Length of Zink Therapy	204 (58.6%)	144 (41.4%)	Sufficient
Use of Antibiotics	251 (72.1%)	97 (27.9%)	Sufficient
Diet			
Breastfeeding	201 (57.8%)	147 (42.2%)	Sufficient
Administration of Tea	157 (45.1%)	191 (54.9%)	Less Good
Dietary Restrictions	273 (78.4%)	75 (21.6%)	Good
Means	67.2%	32.8%	Sufficient

3.2. Relationship between Sociodemographic Factors and the Mothers' Knowledge

The sociodemographic characteristics of the respondents were analyzed using the statistical analysis of the Chi-square and Fisher's Exact tests. The results of the statistical analysis are summarized in Table 3.

Table 3. Relationship between Sociodemographic Characteristics and Mothers' Levels of Knowledge

Characteristic	Sociodemographic Factors	Total (n)	Good N (%)	Sufficient N (%)	Less Good N (%)	P-values
Age	17-25	126	18 (14.3%)	55 (43.7%)	53 (42.1%)	0.005*
	26-34	138	42 (30.4%)	59 (42.8%)	37 (26.8%)	
	35-42	84	16 (19%)	31 (36.9%)	37 (44%)	
Marital Status	Married	327	73 (22.3%)	135 (41.3%)	119 (36.4%)	674
	Widow	21	3 (14.3%)	10 (47.6%)	8 (38.1%)	
	Elementary School	74	8 (10.8%)	11 (14.9%)	55 (74.3%)	
Education	Secondary Schools	217	24 (11.1%)	127 (58.5%)	66 (30.4%)	<0.001*
	Higher Education	57	44 (77.2%)	7 (12.3%)	6 (10.5%)	
Occupation	Housewife	201	25 (12.4%)	92 (45.8%)	84 (41.8%)	<0.001*
	Working	147	51 (34.7%)	53 (36.1%)	43 (29.3%)	
Husbands' Occupations	Not Working	13	3 (23.1%)	4 (30.8%)	6 (46.2%)	669
	Working	335	73 (21.8%)	141 (42.1%)	121 (36.1%)	
	> Regional					
Incomes Family	Minimum Wage (>1,760,000)	149	14 (9.4%)	63 (42.3%)	72 (48.3%)	<0.001*
	< Regional Minimum Wage (< 1,760,000)	199	62 (31.2%)	82 (41.2%)	55 (27.6%)	

*Significant (p-value < 0.05)

This study discovered a significant relationship between the respondents' levels of knowledge and sociodemographic factors, such as age, education, occupation, family income, number of children, number of adult family members, sources of information, and education experience ($p < 0.05$). There is a significant relationship between age, education, occupation, family income, number of children, number of adult family members, information sources, and education experience ($p < 0.05$). This finding is consistent with that of (Ghasemi et al., 2013; Kier & Dai, 2018; Novrianda & Yeni, 2014; Patali, 2018; Rajathi et al., 2018; Zicof et al., 2018). Meanwhile, marital status and husbands' occupations do not show significant results on the mother's knowledge level of self-medication of diarrhea for toddlers.

4. Conclusion

This study concluded several points. First, the knowledge of self-treatment of diarrhea for toddlers in Kaliwates District is classified into three categories: good knowledge with 76 respondents (21.8%), sufficient knowledge with 145 respondents (41.7%), and less good knowledge with 127 respondents (36.5%). There is a significant relationship between the mothers' knowledge and age, education, occupation, incomes of the family, number of children, number of adult family members, information source, and education experience. In contrast, marital status and the husbands' occupations do not have a significant relationship with the mothers' knowledge of self-medication of diarrhea for toddlers. This study suggests that the information about self-medication of diarrhea should be delivered to mothers. In addition, this study suggests that further research provides education on diarrhea for mothers to increase their knowledge.

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Competing Interests

The authors disclose no conflict.

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