



A Community's Knowledge and Attitude in Recognizing Symptoms and Diarrhea Management in Children

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Abstract

Background: Diarrhea is the world's second-biggest cause of death among children. Children suffer from severe dehydration due to the lack of understanding of treating diarrhea properly. **Objective:** This study aimed to assess the level of community knowledge and attitudes toward the treatment of diarrhea in children. **Methods:** This was an observational, cross-sectional study conducted in a community in Gresik, Indonesia, in 2019. A Likert scale questionnaire, consisting of 10 items on knowledge and five on community attitudes on diarrhea management in children, was used to collect data. **Results:** One hundred and seven participants responded to the survey, and 89.72% were women. 'Respondents' mean age was 41.84 ± 11.27 years with various levels of education. It was found that the community had good knowledge of diarrhea management in children, as shown by the finding that 84.11% of the participants provided the correct answers. About 87.85% of the participants were aware of the signs and symptoms of diarrhea in children. However, there is still a shortage of understanding about managing diarrhea properly, particularly when identifying the necessary medicine. About 89.72% of the participants demonstrated a "positive" attitude in diarrhea management, while approximately 78.51% agreed that children with diarrhea should be given oral rehydration. **Conclusion:** The knowledge about recognizing signs and symptoms of diarrhea in children was good, while the knowledge about diarrhea management needed to be improved. Overall, the respondents had a positive attitude about diarrhea management in children.

Keywords: attitude, children, diarrhoea, knowledge, medication use

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INTRODUCTION

Diarrhea is a typical symptom of gastrointestinal infections caused by bacteria, viruses, and protozoa (WHO, 2017). It is defined as loose or liquid feces occurring at least three times per day or more frequently than the individual's regular frequency (UNICEF & WHO, 2009).

Diarrhea is the second-biggest cause of death in children globally, claiming the lives of 525,000 children under the age of five each year (UNICEF & WHO, 2013; WHO, 2017). Based on UNICEF's data in 2017, about 6% of Indonesian children's deaths under five years are caused by diarrhea (UNICEF, 2018). Diarrhea in children is a serious concern because it could result in malnutrition, electrolyte imbalance, and death because of dehydration (Cotran *et al.*, 1999).

Dehydration in diarrhea occurs when there is an insufficient replenishment of water and electrolytes (sodium, chloride, potassium, and bicarbonate) in the stool, thereby causing a deficit of water and electrolytes (WHO, 2005; Cajacob & Cohen, 2016). Dehydration can be preventable by providing an oral rehydration solution to the patient; this simple method can be used at home and prevents death caused by dehydration by more than 90% (WHO, 2005).

Mothers' knowledge is a crucial factor in children's diarrheal dehydration (Christy, 2014). Improved community knowledge about diarrhea in children is one approach that can help to prevent child mortality from diarrhea (UNICEF & WHO, 2009). In developing countries, a lack of information about diarrhea in children leads to inadequate prevention and management (Bhatnagar *et al.*, 2010). Mothers with sufficient diarrhea knowledge can prevent and protect their children from dehydration, malnutrition, and mortality due to diarrhea (Sulisnadewi *et al.*, 2012). Improved knowledge on how to treat diarrhea in children may help to reduce morbidity and mortality (Rehan *et al.*, 2003). Therefore, the objective of this study was to examine community knowledge and attitudes toward symptoms recognition and the use of medications in the treatment of diarrhea in children. In addition, the relationship between sociodemographic characteristics and community knowledge and attitude was investigated.

MATERIALS AND METHODS

Materials

Participants who filled the informed consent were asked to fill out the questionnaires. The questionnaires had three sections:

1. Socio-demographics: age, gender, level of education, occupation, and diarrhea history of their children.
2. Knowledge of diarrhea in children: which consisted of ten questions on a 3-point Likert scale about the knowledge of signs, symptoms, treatment, and the use of medication for diarrhea in children. One point was given for 'do not know,' two points for a 'false' answer, and three points for a 'true' answer. The scores ranged from 33% to 100%, the participants were categorized as 'good' if they had scored above 66.67%, and 'poor' if they had a score of less than 66.67%.
3. Attitude toward managing diarrhea in children: five statements on a 5-point Likert Scale were given for the attitudes toward managing diarrhea in children. The scores ranged from 1 point for 'strongly disagree' to 5 points for 'strongly agree.' The scores were 20% to 100%, and participants were categorized as 'positive' if they scored above 60.00%.

Prior to the distribution of the questionnaires, validity and reliability testing were performed. The questionnaires' validity was examined using Spearman's method, and the results were confirmed to be valid (significance level 5%). After testing using Cronbach's alpha, the questionnaires exhibited high reliability for knowledge (0.787) and attitude (0.759).

Method

This observational, cross-sectional study was conducted in a community in Gresik, Indonesia, in 2019. The Health Research Ethics Committee at the Faculty of Public Health, Universitas Airlangga, Indonesia, authorized the study's protocol with the number of ethical approval of 217/EA/KEPK/2020. This study used purposive sampling. The sample size was calculated using Slovin's formula with a minimum sample of 83 participants. Participants included in this study were parents who could read, write, and communicate in Indonesian and had at least one child minimally aged 18 years old. The participants received information sheets about this study and had no intervention from researchers to fill in the questionnaires.

SPSS was used to analyze the data received from the questionnaires. Sociodemographic data were then analyzed using descriptive statistics. Finally, a Spearman correlation test was employed to assess the association between variables, with a p-value of 0.05 was regarded as statistically significant.

RESULTS AND DISCUSSION

The validity of the questionnaire was verified on 30 respondents before it was used in the survey. Cronbach’s alpha was used to examine the reliability tests after the validity score was acquired using Spearman's method. This study's questionnaire was confirmed to be statistically valid (significance level < 5%) and had 'high' reliability for knowledge (0.787) and attitude (0.759).

One hundred and seven participants gave their consent to participate in the survey. The characteristics are presented in Table 1. Females made up 89.72% of the respondents. Their ages varied from 17 to 70 years old (with a mean age of 41.84 + 11.27). Most of the participants were housewives (81.31%) and had a senior high school diploma (30.84%). Of all participants, 52.34% had children with no recent history of diarrhea, and the last time their children had diarrhea was more than one year ago (69.35%).

Figure 1 depicts the participants' level of knowledge regarding diarrhea in children. The findings revealed that the community had a good understanding of the definition of diarrhea, with 87.85% of participants correctly defining diarrhea as more frequent and loose/watery stools. This result was higher than that found in other studies done in Bandung, Indonesia (60%), Northwest Ethiopia (65.4%), and Pakistan (72%), but lower than the study conducted in Diredawa, Eastern Ethiopia (92.5%) (Mumtaz *et al.*, 2014; Kosasih *et al.*, 2015; Desta *et al.*, 2017; Workie *et al.*, 2018). This variation could be

related to various sociodemographic factors and access to diarrhea information from health facilities or the media (Desta *et al.*, 2017; Workie *et al.*, 2018).

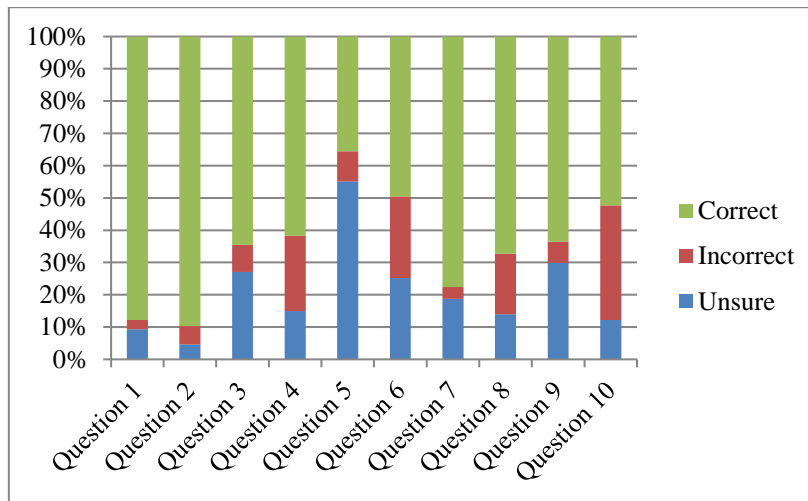
A study in Surabaya, Indonesia, found that the typical clinical characteristics of acute diarrhea in children were vomiting (72.67%) and fever (59.33%) (Imanadhia *et al.*, 2019). The majority of the respondents (89.72%) also know about the symptoms following diarrhea. Abdominal pain, fever, and vomiting may also follow diarrhea caused by infections (NIDDKD, 2021).

However, there was still a lack of knowledge about how to properly provide treatment for diarrhea, particularly when it comes to determining which drug to administer; 35.51% of the participants gave loperamide to their children, with more than half of them (55.14%) were not sure about the administration. Children with acute or persistent diarrhea do not benefit from antidiarrheal medications. Some medications usually have dangerous side effects (WHO, 2005). Loperamide has been linked to severe side effects in children under three, including mortality, ileus, and lethargy. It could be an effective adjunct for oral rehydration and early refeeding in children over three with no or minimal dehydration (Li *et al.*, 2017). The Food and Drug Administration in the United States has approved loperamide in children over two. The National Agency for Drug and Food Control of Indonesia, or BPOM, has approved it for children over four.

Table 1. Socio-demographics participants (n = 107) and its relationship with knowledge and attitudes

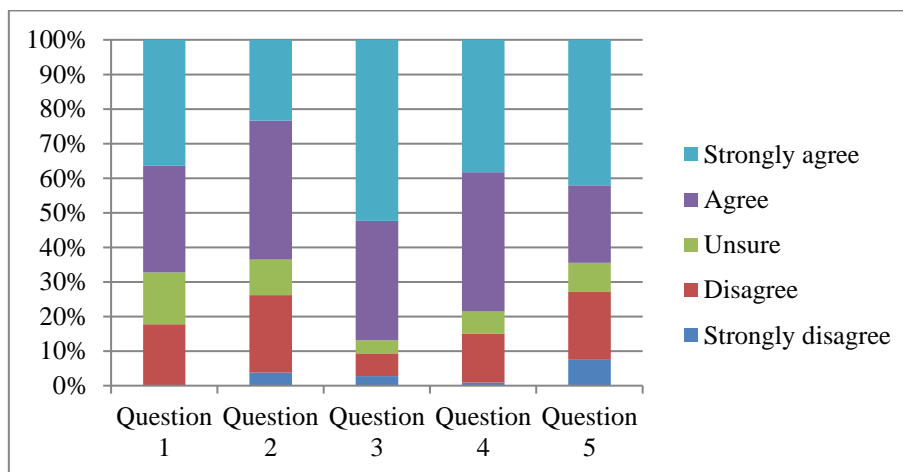
Characteristics	(%)	Correlation with knowledge p-value	Correlation with attitude p-value
Gender			
Male	10.28		
Female	89.72		
Occupation		0.83	0.36
Government employee	0.93		
Private employee	4.67		
Housewife	81.31		
Enterpriser	5.61		
Others	7.48		
Level of Education		0.20	0.43
Drop out of primary school	17.76		
Elementary school	16.82		
Junior high school	27.10		
Senior high school	30.84		
College or higher	4.67		
Others	2.81		
Children's History of Diarrhea		0.18	0.02 ^a
Yes	47.66		
No	52.34		

^ap-value ≤ 0.05 was considered correlated



(Q1) Diarrhea is characterized by more frequent and loose/watery stools; (Q2) vomiting, fever, and abdominal pain usually following the symptoms of diarrhea; (Q3) dehydration is a condition when someone lack fluids and is characterized by less amount of urine; (Q4) oral rehydration solution was only given to children who have severe diarrhea; (Q5) loperamide can be given to children to stop diarrhea; (Q6) green vegetables and fibrous foods can help to stop diarrhea; (Q7) oral rehydration solution is a sugar solution mixed with salts; (Q8) paracetamol can be given to children who have diarrhea followed by fever; (Q9) sunken eyes, wrinkled skin, weakness, not urinating for a long time are signs of severe dehydration; (Q10) diarrhea is not a contagious disease.

Figure 1. Respondents' knowledge about diarrhea in children



(Q1) I can make an oral rehydration solution by myself; (Q2) I can buy an oral rehydration solution at the nearest pharmacy without a prescription; (Q3) If the diarrhea has been unresolved for more than three days, I will take my children to the physician; (Q4) I will prepare some glasses of oral rehydration solution when my child has diarrhea; (Q5) I will start taking my child to the physician when my child has sunken eyes, wrinkled skin, is weak, and has not urinated for a long time.

Figure 2. Respondents' attitude toward diarrhea in children

Next, more than half of the participants (61.68%) had the wrong answer. They would only provide oral rehydration salts (ORS) to their children when they have severe diarrhea. ORS provision is essential in managing children with diarrhea (WHO, 2005). UNICEF and the WHO recommended fluid replacement begin at home and be given to the child during the diarrhea episode (UNICEF & WHO, 2009). Correct ORS preparation and provision presents sufficient water and electrolytes to correct deficits associated with acute diarrhea (WHO, 2005). The

American Academy of Pediatrics recommends giving ORS to children with mild to moderate dehydration to children who have diarrhea. At the same time, children who have severe dehydration should be treated with intravenous fluids (Boluyt *et al.*, 2006).

Figure 2 describes the participants' attitudes on diarrhea in children. When a child develops diarrhea, most participants had a 'positive' attitude, with 78.51% agreeing that an oral rehydration solution should be given. This result was higher than UNICEF data in 2017 stated that only 36.10% of children under five

years old received ORS. ORS is a cost-effective treatment and reduces symptoms, severity, and diarrhea duration in children (UNICEF, 2018). Moreover, ORS could prevent up to 93% of deaths from diarrhea cases (UNICEF & WHO; 2013).

The participants also responded that if their children's diarrhea lasted more than three days, they would take them to the doctor (86.92%). This attitude is following the rule from WHO that suggests taking the child to a health worker if the child's condition does not improve in three days (WHO, 2005). Another study showed that 52.5% of mothers would bring their child to the physician after two days (Mumtaz *et al.*, 2014).

However, 27.11% of participants disagreed with taking their child to the physician when their child has sunken eyes, wrinkled skin, is weak, and has not urinated for a long time. A child with severe dehydration must be urgently referred to a hospital and given ORS on the way (WHO, 2014). Untreated dehydration can be very dangerous, especially for babies, toddlers, and children, resulting in death (CPS, 2003). Dehydration in children has higher risks and is more life-threatening than in adults because a 'child's body contains a more significant proportion of water (UNICEF & WHO, 2009).

Parents should know about the signs and symptoms of diarrhea and dehydration, how to prevent dehydration at home, and the signs that indicate the children should be taken to a healthcare provider (WHO, 2005). Their knowledge influences mothers' management of diarrhea in their children. Better knowledge results in better management of diarrhea (Herwindasari, 2014). Health education can increase this knowledge through interactive discussions with health workers, adopting technology, and small group discussions (Alfira *et al.*, 2019; Thobari *et al.*, 2021).

CONCLUSION

The respondents had good knowledge of recognizing the signs and symptoms of diarrhea in children. They also had a positive attitude toward diarrhea management in children. However, there was still a lack of knowledge about how to manage diarrhea properly.

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AUTHOR CONTRIBUTIONS

Conceptualization, A.D.P.; Methodology, A.D.P., L.Y.Y; Validation, N.W.; Formal Analysis, N.W.; Investigation, N.W.; Resources, N.W.; Data Curation, B.M.P.; Writing - Original Draft, N.W., B.M.P.; Writing - Review & Editing, N.W., A.D.P.; Visualization, L.Y.Y; Supervision, A.D.P.; Funding Acquisition, A.D.P.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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