



Evaluation of Knowledge and Practice Among Mothers of Children Under 5 with Acute Diarrhea in Vietnam

Thang Ngoc Pham¹, Tan Ngoc Tan Nguyen¹, Thanh Yen Huynh¹, Thai Quoc Duong², Gai Thi Le¹, Duc Long Tran¹

¹ Faculty of Medicine, Can Tho University of Medicine and Pharmacy, Can Tho, Vietnam

² Faculty of Medicine, Nam Can Tho University, Can Tho, Vietnam

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Abstract

Introduction: Inadequate knowledge and poor practices of mothers in the prevention and care of children with acute diarrhea (AD) contribute to serious complications and increased mortality rates in children. This study was conducted to assess the knowledge and practices of mothers in the prevention and management of diarrhea in children under 5 years old in Vietnam.

Methods: A cross-sectional descriptive study was conducted among 100 mothers. Mothers were interviewed using a standard questionnaire and data were analyzed using SPSS v20.

Results: The average age of the mothers was 30.5 (5.9) years. 90% had adequate knowledge and 91% recognized the signs of dehydration. Most were aware of the severe and dangerous signs. Only 27% were doing good practice for taking care children with AD. Only 30% of mothers were able to prepare ORS correctly.

Conclusions: Although 90% of mothers possess sufficient knowledge regarding the management and prevention of childhood AD, the practical application of this knowledge is much lower.

Introduction

Acute diarrhea (AD) continues to be a major cause of morbidity and mortality in children under 5 years old in developing countries, despite global efforts to improve treatment and care.¹ AD are responsible for an estimated 1.3 million deaths each year, with the majority occurring in resource-limited countries. It accounted for 25% of the causes of death in children in Africa and Southeast Asia.^{2,3} Most cases of AD are caused by viral infections, with rotavirus being the most common pathogen.^{4,5}

The factors believed to be associated with diarrhea in children are thought to involve interactions among socio-economic, environmental, and behavioral variables.¹ The identified risk factors include young age, malnutrition, early breastfeeding removal, seasonal variations, low maternal educational levels, lack of water supply, improper water storage practices, inadequate hand hygiene and poor sanitation.

Recent studies suggest that maternal knowledge and practices related to the management of AD in children remain suboptimal, with reported rates ranging from approximately 50% to 70%.⁶⁻⁸ Another study found that 45% of mothers were unaware of any signs of dehydration and demonstrated low adherence to ORS use (4%), even though 66.5% were aware of ORS.⁹ In the treatment of AD, early

Correspondence

Duc Long Tran,
Faculty of Medicine,
Can Tho University of Medicine and
Pharmacy,
Can Tho city 90000,
Vietnam.
Email: tdlong@ctump.edu.vn



recognition of dehydration and timely rehydration via oral routes can significantly reduce mortality rates in children with AD.¹⁰ Inadequate knowledge of guardians in managing and preventing the disease lead to severe dehydration at high levels and ultimately to death in children with AD.¹¹ Therefore, we conducted this study with the primary objective of assessing the knowledge and practices of mothers in the prevention and management of AD in children under 5 years old in Vietnam.

Methods

This cross-sectional descriptive study was conducted from January 2024 to October 2024 at the Department of Gastroenterology, Can Tho Children Hospital, a central hospital in the Mekong Delta region of Vietnam. Mothers with children under 5 years old who were diagnosed with AD lasting less than two weeks and who consented to participate were included in the study. Mothers with physical abnormalities such as inability to hear or speak, or those with mental health issues, were excluded from the study. Using the Cochran formula (1), the sample size needed for this study was determined to be $n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$ 94 participants, taking into account a 95% confidence level, a Z1-Alpha / 2 value of 1.96, a margin of error (d) of 0.1 and a type I error probability of 10%. The percentage of moms with poor practice (p) was assessed to be 0.58 based on data from a previous study.⁶ Thus, a total of 100 mothers were included. Data were collected through face-to-face interviews and observations after obtaining informed consent from the mothers. A structured questionnaire, developed based on a comprehensive review of the literature, was used for data collection.^{6,7,12} The questionnaire included three sections. The first section had demographic details. The second section gathered data on the mothers' knowledge assessment on areas of disease prevention and care for children with AD. The third section collected data on mothers' diarrhea management practices (Five items). The mothers' caregiving practices were assessed through interview and observations, focusing on their ability to prepare ORS, manage the child's nutritional needs, recognize signs that require medical attention, and provide appropriate fluids during diarrhea episodes. Each correct answer received a score of 1, incorrect answer a score of 0. The score range was 0-23 for the knowledge section and 0-12 for the practice section. Individuals who scored above the mean value were considered to have adequate knowledge or good practice.¹³ Data were coded and analyzed using SPSS for Windows version 20. Categorical variables were presented as frequencies and percentages, while continuous variables were expressed as means and standard deviations for normally distributed data, or as medians (with minimum and maximum values) for non-normally distributed data. The data were analyzed using Chi-square tests. The study was approved by the Scientific Council

of Can Tho University of Medicine and Pharmacy (Approval number 23.105.SV/PCT-HĐĐĐ Date 25th December 2023).

Results

100 mothers with children hospitalized for AD at the Department of Gastroenterology, Can Tho Children Hospital, were included in the study. The demographic variables of the study participants are presented in Table 1.

Table 1: General characteristics of participants (N = 100)

Variables		Frequency	Percentage
Maternal age (Years)	≤ 25	25	25
	> 25	75	75
	Mean (SD)	30.5 ± 5.9	
Number of children	1- 2	83	83
	3 - 4	17	17
	> 4	0	0
Living area	Rural	71	71
	Urban	26	26
Mother's education level	Under high school	76	76
	College, University, Postgraduate	24	24
Mother's occupation	Worker	26	26
	Homemaker	46	46
	Trader	6	6
	Farmer	13	13
	Other	9	9
Type of milk	Breast milk	14	14
	Formula milk	11	11
	Both types of milk	75	75

The mother's knowledge regarding AD and regarding disease prevention has been presented in Tables 2 and 3. Table 4 illustrates the practices of mothers caring for AD and Table 5 represents the relation between knowledge and practices of caring mothers.

Table 2: Knowledge of mother for caring acute diarrhea in children (N = 100)

Variables		Frequency	Percentage
Correct definition of AD	Yes	95	95
	No	5	5
Recognizing signs of dehydration*	Consciousness	80	80
	Thirst	77	77
	Sunken eyes	20	20
	Skin pinch test	6	6
	Unknown	9	9
Sources of information about diarrhea*	Doctor	42	42
	Social media	28	28
	Relative or friends	18	18
	Previous experience	18	18
Causes of diarrhea*	Teething	4	4
	After vaccination	6	6
	Virus infection	47	47
	Contaminated food	46	46
	Unknown	16	16
Primary treatment*	Antibiotic	55	55
	Anti-diarrheal	36	36
	Rehydration	8	8
	Herbs	2	2
	Unknown	23	23
Knowing about Oral Rehydration Solution (ORS)	Yes	45	45
	No	55	55
Comparing the effectiveness of rehydration using intravenous fluids (IVF) and oral rehydration solution.	IVF better	58	58
	ORS better	19	19
	Unknown	23	23

* Multiple response question

Table 3: Knowledge of mother on preventing acute diarrhea in children (N = 100)

Variables			Frequency	Percentage
Washing the bottle immediately after feeding (N = 86)		Yes	84	97.67
		2	2.33	
Boil the bottle once within 24 hours (N = 86)		Yes	81	94.19
		5	5.81	
Reheat the food before feeding (N = 82)		Yes	77	93.9
		5	6.1	
Rotavirus vaccination		Yes	64	64
		36	36	
Washing hand with soap	Before preparing the meals	Yes	93	93
		No	7	7
	After clean up the stool	Yes	96	96
		No	4	4
Using boiled water		Yes	96	96
		4	4	
Exposure to AD children		Yes	19	19
		81	81	
Type of water using at home River water Rainwater Filtered water		Boiled water	35	35
		2	2	
		14	14	
		49	49	

Table 4: Practices of mothers in caring for children with diarrhea (N = 100)

Variables		Frequency	Percentage (%)
Types of liquids for children with AD to prevent rehydration*	Milk	46	46
	Water	79	79
	ORS	8	8
The amount of liquid for children with AD	More than usual	84	84
	As usual	12	12
	Less than usual	4	4
Mothers know how to prepare ORS	Yes	30	30
	No	70	70
Recognize the red flags signs*	Lethargy	91	91
	Increase number of defecations	80	80
	Blood in faeces	36	36
	Vomiting	34	34
	Fever	42	42
	Loss of appetite	17	17
Diet for children with AD	As usual	60	60
	Less than usual	30	30
	Only salt porridge	10	10

* Multiple response question

Table 5: The relationship between knowledge and practices with various factors (N = 100)

Variables		Knowledge		P-Value	Practice		P-Value
		Adequate (N = 90)	Inadequate (N = 10)		Good (N = 27)	Poor (N = 73)	
Age	≤ 25	24 (96%)	1 (4%)	0.248*	5 (20%)	20 (80%)	0.363
	> 25	66 (88%)	9 (12%)		22 (29.3%)	53 (70.7%)	
Mother education	Up to high school	68 (89.5%)	8 (10.5%)	0.755*	20 (26.3%)	56 (73.7%)	0.784
	Higher than high school	22 (91.7%)	2 (8.3%)		7 (29.2%)	17 (70.8%)	
Living area	Rural	64 (90.1%)	7 (9.9%)	0.941*	21 (29.6%)	50 (70.4%)	0.364
	Urban	26 (89.7%)	3 (10.3%)		6 (20.7%)	23 (79.3%)	
Exposure to AD children	Yes	14 (73.7%)	5 (26.3%)	0.008	6 (25.9%)	13 (68.4%)	0.617
	No	76 (93.8%)	5 (6.2%)		21 (25.9%)	60 (74.1%)	
Number of children	≤ 2	75 (90.4%)	8 (9.6%)	0.79*	24 (28.9%)	59 (71.1%)	0.34*
	> 2	15 (88.2%)	2 (11.8%)		3 (17.6%)	14 (82.4%)	

* Fisher's exact test

Discussion

This study assessed the knowledge and practices of Vietnamese mothers with children suffering from AD in Mekong Delta, Vietnam. Our findings revealed that the majority (90%) of mothers had good knowledge of disease prevention and care; however, 73% demonstrated poor practices in preventing and managing AD in children under 5 years old. In a study involving 295 mothers with children experiencing AD, although the rate

of good knowledge was lower (65.2%), the proportion of poor practices was only 58%, which is lower than in our study. This difference may be attributed to factors such as cultural practices, healthcare access, and the higher education level of mothers (above high school) in our study.⁶

When asked about knowledge of disease prevention and care for children with diarrhea, over 90% of mothers reported washing their hands with soap before preparing food and after

handling their child's feces. However, in Assossa, Ethiopia, only 11.7% and 16% of mothers washed their hands before food preparation and after defecation, respectively.¹⁴ Handwashing with soap can reduce the risk of disease by 42 – 47% and prevent nearly one million deaths caused by diarrhea.¹⁵ To encourage people to adopt this practice consistently, we needed time and continuous efforts through health education media. Additionally, when asked about the causes of AD, most mothers identified viral infections (47%) as the primary cause, which is a relatively accurate observation. However, studies in other parts of the world suggest that teething or contaminated water is often considered the main cause of AD.^{16, 17} Only about one-third of participants were aware of and provided their children with the rotavirus vaccine, despite its proven effectiveness in significantly reducing the incidence of rotavirus-associated gastroenteritis in children.¹⁸ This low vaccination rate in our study could be attributed to the fact that in Vietnam, mothers are required to pay for the rotavirus vaccine, which may limit its accessibility.

Additionally, the lack of understanding regarding the role of ORS and the preference for intravenous therapy in diarrhea treatment are notable issues. In reality, the use of antidiarrheal medications in cases of AD can be harmful to children and may lead to serious complications.^{19,20} This highlights the need to strengthen education on the rational use of medications and the importance of rehydration in the treatment of diarrhea in Vietnam.

In our study, the proportion of poor practices in caring for children with AD among participants (73%) was higher than that reported in a study conducted in Nigeria (66.2%).²¹ In our study, most mothers gave their children more fluids than usual (84%), with plain water being the primary choice (79%), followed by milk (46%) and ORS (8%). In contrast, a study conducted in Kenya reported that 70% of mothers provided their children with less fluid during episodes of diarrhea.¹⁷ Additionally, 30% of mothers chose to reduce their children's food intake compared to their usual diet, believing that during AD episodes, the child's intestines are damaged and consuming various foods could prolong the condition. However, this proportion was significantly higher, exceeding 60%, among mothers in Ethiopia.⁶

Additionally, we found that only 30% of parents knew how to prepare ORS. A study by Khazal AA et al found that while the awareness of ORS among mothers was relatively high (66.5%) and the correct preparation of ORS was 93.98%, only 4% of mothers used ORS at home. Additionally, the knowledge and correct preparation of ORS were 70% in Nepal and 76.7% in India.^{12,22} Moreover, the ability to recognize severe signs is also concerning, even among those with higher educational levels. Previously, the subjects interviewed were unaware of what to do and the proper sequence of actions when a child experiences diarrhea.

Our study has certain limitations that need to be acknowledged. First, the study population consisted of mothers of children hospitalized with AD. Therefore, the knowledge may have been influenced by the advice and support from healthcare staff. Second, due to time and resource constraints, the study was unable to thoroughly identify the factors affecting the gaps in the knowledge and practices of the mothers, such as education, economic status, or social environment. Another limitation is the cross-sectional study design, which does not account for changes in the respondents' knowledge and attitudes over time, as well as biases in recall and feedback inherent in it.

Conclusions

Although 90% of mothers possess sufficient knowledge regarding the management and prevention of childhood AD, the practical application of this knowledge is much lower, with only 27% effectively implementing proper care for their children. This highlights the need for additional education and support to help mothers translate their knowledge into actionable steps, ultimately improving the care of children with AD.

Conflicts of Interest: None

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