

## A Study of Knowledge, Attitude, and Practices of Using ORS and Zinc among Mothers of Acute Watery Diarrhea Patients in Pediatric Outpatients Department of 250 Bed General Hospital, Jamalpur

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### Abstract

### Original Research Article

**Introduction:** Diarrhea is a loose-waterly stool and is the second leading cause of death among children under five years. Oral rehydration solution and Zinc supplementation are cost-effective, easy to get, and are used to prevent dehydration among acute watery diarrhea (AWD) patients. The aim of the study was to investigate the Knowledge, Attitude, and Practices of Using ORS and Zinc among Mothers of Acute Watery Diarrhea Patients in the Paediatric Outpatients Department of 250 Bed General Hospital, Jamalpur. **Methods:** This prospective cross-sectional study was conducted in the Paediatric Outpatients Department of 250 Bed General Hospital, Jamalpur from 01-01-2021 to 30-06-2021 on 188 mothers (N=188) who brought their babies suffering from AWD. Questions were based on knowledge about diarrhea, ORS use, and Zinc supplementation. The data analysis was performed using Statistical Package for the Social Sciences (SPSS) Version 25.0 and the level of statistical significance was set at  $p < 0.05$ . **Result:** All the mothers were mainly between the ages of twenty-five to thirty-four years. The majority of mothers belonged to the lower socio-economic class. Around four-fifths of the mothers (148, 78.7%) strongly knew about preparing ORS and most of the mothers (83, 44.1%) used ORS every time. Around two-fifths of the mothers (75, 39.9%) strongly believed that ORS can prevent dehydration & twenty-four mothers (24, 12.8%) strongly agreed that Zinc supplementation help in the treatment of diarrhea. The majority of the mothers (119, 67.2%) did not wash their hands every time while preparing ORS during AWD. **Conclusion:** This study reveals that there is still a lack of knowledge regarding the management of diarrheal disease among mothers. Approaches should be necessary to implement the acceleration of Govt. programs and to educate mothers about the importance of using ORS and Zinc supplementation.

**Keywords:** Diarrhea, Oral Rehydration Solution (ORS), Zinc supplementation, Knowledge, Attitude, Practice.

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## INTRODUCTION

Acute watery diarrhea (AWD) is the second foremost reason for death among children, mostly under five years old [1]. Diarrhea is alone responsible for killing around 6.5 lakh children every year [1, 2]. Every year, the average kid in underdeveloped nations suffers from three or more episodes of diarrheal illness, accounting for 4 billion cases [3, 4]. The World Health Organization (WHO) defines diarrhea as three or more loose or watery stools per day or more frequent passes than is usual for any person [5]. The diarrheal disease mostly results from ingestion of harmful germs in water and food, however, in some cases, short episodes of diarrhea may result from eating poisonous substances,

difficulty digesting food, or physiological intolerance of certain foods [5]. Prevention is necessary by maintaining good hygiene, adequate diet, sufficient health facilities, breastfeeding, and immunization. Death from diarrheal diseases occurs due to excessive loss of water and essential minerals. Death can be minimized in most cases by an oral rehydration solution (ORS) [4]. ORS is a kind of fluid replacement used to prevent and treat dehydration, especially in the case of AWD, and is a mixture of salts and sugar in appropriate measure [6]. ORS does not halt diarrhea, but it replaces the lost fluids and necessary salts, enhancing rehydration and decreasing risks. ORS is a successful therapy for 90-95 percent of AWD children [7]. ORS is safe for children

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and AWD can be treated at home. Mothers are usually the major caregivers of children under 2 years old. ORS can be made at home by adding six teaspoons of sugar, and half a teaspoon of salt to one liter of clean safe water. One can use molasses instead of sugar [8, 9]. Zinc supplementation is a critical new intervention for treating episodes of diarrhea in children. To diminish the adversities of diarrheal infections, prevent additional instances for two to three months, and considerably reduce morbidity, the UNICEF and WHO advise daily 20 mg zinc supplementation for 10 to 14 days for children with AWD and 10 mg per day for babies less than six months [10]. The Food and Drug Administration has determined that a dosage of 40 mg of zinc is safe, but too much zinc supplementation can impair the body's ability to process and absorb other vital minerals including iron, magnesium, and copper, lower HDL levels, and weaken immunity [11]. Sometimes community health education is of utmost necessity for effective case management during AWD. A proper education system can be provided based on an effective understanding of obtaining knowledge, attitude, and practices of the mothers about the use of ORS and Zinc supplementation. Some studies observed that the majority of mothers are unaware of the importance of ORS and Zinc supplementation [11, 12]. This study was planned to determine the knowledge, attitude, and practice of using ORS and Zinc supplements among the mothers of AWD patients.

## OBJECTIVE

### General Objective

- To investigate the Knowledge of Using ORS and Zinc Among Mothers of Acute Watery Diarrhea Patients
- To investigate the Attitude towards Using ORS and Zinc Among Mothers of Acute Watery Diarrhea Patients
- To investigate the Practices of Using ORS and Zinc Among Mothers of Acute Watery Diarrhea Patients

## METHODS

This prospective cross-sectional study was conducted at the Pediatric Outpatients Department of 250 Bed General Hospital, Jamalpur from 01-01-2021 to 30-06-2021 on 188 mothers (N=188) who brought their babies suffering from AWD. Informed written consent was taken from each participant. A pre-formed semi-structured questionnaire was used during data collection. The questionnaire is consisting of three sections designed to assess the knowledge, attitude, and practice and a section for socio-demographic characteristics. Questions were based on knowledge about diarrhea, ORS use, and Zinc supplementation. Mothers who were educated filled out the questionnaire by their self and for those who are illiterate; their questionnaires were filled out by the researcher. The study coordinators performed random checks to verify data collection processes. Completed data forms were

reviewed, edited, and processed for computer data entry. Frequencies, percentages, and cross-tabulations were used for descriptive analysis.  $\chi^2$  test was used to analyze statistical significance. The data analysis was performed using Statistical Package for the Social Sciences (SPSS) Version 25.0. The level of statistical significance was set at  $p < 0.05$

### Inclusion Criteria

- Mother of the patients with AWD.

### Exclusion Criteria

- Mother is unwilling to participate in the study.
- Mother of the patients with AWD along with a sign of severe dehydration.
- Mother of the patient with a critically ill child with AWD with a sign of organ failure.

## RESULTS

A total of one hundred eighty-eight (188) mothers were included in this study and returned completed giving a response rate of 100%. All the respondents were mothers and they (108, 57.4%) were mainly between the ages twenty-five to thirty-four years. About half of the mothers (89.47.3%) completed the primary level of education and about half of the study population (89, 47.3%) was housewives. The majority of mothers' (182, 96.8%) monthly income was less than one thousand. Around four-fifths of the mothers (148, 78.7%) strongly knew about preparing ORS. Around half of the mothers (90, 47.9%) who belonged to rural areas knew about the preparation of ORS, and around two-fifths of illiterate mothers (43, 22.9%) knew about preparing ORS. Around three-fourths of mothers (142, 75.5%) knew about the preparation of ORS whose monthly income was less than one thousand. Most of the mothers (83, 44.1%) used ORS every time during AWD. The majority of the mothers (86, 45.7%) knew about Zinc supplementation during AWD of a child & fifty-six mothers (56, 29.8%) didn't know anything about the use of Zinc supplementation during AWD of a child. Most of the mothers (151, 80.3%) used to give milk to their children. Few mothers (39, 20.7%) stopped breastfeeding during AWD. Sixty-one mothers (61, 32.4%) found the information on three rules and danger signs of diarrhea from more than one source of media and seventy mothers (70, 37.2%) didn't find out anything from the media. One-fourth of the mothers (47, 25.0%) got the information about Zinc supplementation from television & one hundred five (105, 55.9%) mothers didn't hear anything about Zinc supplementation from any source. Around two-fifths of the mothers (75, 39.9%) strongly believed that ORS can prevent dehydration, thirty mothers (30, 16.0%) believed that ORS could stop loose motion and twenty-four mothers (24, 12.8%) agreed that Zinc supplementation help in the treatment of diarrhea & one mother (1, 0.5%) counted on that Zinc supplementation increase digestive power. About half of the mothers (101, 53.7%) used ORS every time & ten mothers (10, 8.4%) never or rarely

used ORS. Among seventy-seven of the study population, forty-four mothers (44, 23.4%) used ORS most of the time during AWD whose ages were between twenty-five to thirty-four. Among the study population (n=69), forty mothers (40, 57.9%) from urban areas practiced washing hands while having diarrhea, among seventy mothers thirty-one (31, 44.2%) of them washed hands during AWD who completed primary level. The

majority of the mothers (80, 67.2%) did not wash their hands every time while preparing ORS during AWD in rural areas. Among one hundred eighty-eight mothers, around one-fourth of the mothers (48, 25.5%) practiced giving Zinc supplementation during AWD & around four-fifth of the mothers used to give milk to their children during AWD.

**Table 1: Distribution of study population based on Socio-Demographic Characteristics (N=188)**

Characteristics	(N, %)
<b>Residence</b>	
Urban	79,42%
Rural	109,58%
<b>Age(year)</b>	
15-24	52,27.7%
25-34	108,57.4%
35-44	18,9.6%
>44	10,5.3%
<b>Mean Age</b>	27.89±7.14
<b>Education</b>	
Illiterate	64,34.0%
Primary	89,47.3%
SSC/Dakhil	22,11.7%
HSC/Alim	10,5.3%
Graduate and above	3,1.6%
<b>Occupation</b>	
Unemployed	83,44.1%
Service	7,3.7%
Daily Labor/Small Business	9,4.8%
Household Worker	89,47.3%
<b>Monthly Income</b>	
<1000	182,96.8%
1000-3000	2,1.1%
>3000	4,2.1%

**Table 2: Distribution of study population based on Knowledge about diarrhea (N=188)**

Knowledge of Preparing ORS	(N, %)	
Yes	148,78.7%	
No	40,21.3%	
<b>Knowledge of Preparing ORS based on Socio-Demographic status</b>		
<b>Residence</b>	<b>Yes</b>	<b>No</b>
Urban	58,30.9%	21,11.2%
Rural	90,47.9%	19,10.1%
<b>Education</b>		
Illiterate	43,22.9%	21,11.2%
Primary	74,39.4%	15,8%
SSC/Dakhil	19,10.1%	3,1.6%
HSC/Alim	9,4.8%	1, 0.5%
Graduate & Above	3,1.6%	0,0.0%
<b>Monthly Income</b>		
<1000	142,75.5%	40,21.3%
1000-3000	2,1.1%	0.0.0%
<3000	4,2.1%	0,0.0%
<b>Frequency of ORS use</b>		
Rarely	6,3.2%	4,2.1%
Most of the time	59,31.4%	18,9.6%
Every time	83,44.1%	18,9.6%

<b>Knowledge about giving Zinc supplementation during AWD</b>	
Yes	86,45.7%
No	46,24.5%
Don't know	56,29.8%
<b>Knowledge about Breastfeeding the child</b>	
Yes	151,80.3%
No	37,19.7%

**Table 3: Distribution of study population based on the Source of Information (N=188)**

<b>Source of Information of Three Rules and Danger signs of Diarrhea</b>	<b>(N, %)</b>
Radio	1,0.5%
TV	27,14.4%
Govt. HW	2,1.1%
NGO HW	3,1.6%
Relatives	8,4.3%
Neighbors	5,2.7%
Doctor	3,1.6%
Unqualified practitioner	1,0.5%
More than one source	61,32.4%
Others	7,3.7%
Don't know about the 3 rules & danger signs of AWD	70,37.2%
<b>Source of Information on Zinc supplementation</b>	
TV	47,25.0%
Newspaper	1,0.5%
Neighbours	2,1.1%
Doctor	8,4.3%
Unqualified practitioner	2,1.1%
More than one source	24,16.6%
Others	3,1.6%
Don't know about giving Zinc supplementation during AWD	99,52.7%

**Table 4: Distribution of study population based on Attitude towards ORS & Zinc Supplementation (N=188)**

<b>Role of ORS in AWD</b>	<b>(N, %)</b>
Prevent dehydration	75,39.9%
Start rehydration	22,11.7%
Stop loose motion	30,16.0%
Make child stronger	8,4.3%
Others	4,2.1%
More than one	42,22.3%
Don't know	7,3.7%
<b>Role of Zinc Supplementation in AWD</b>	
Treatment of Diarrhea	24,12.8%
Prevent dehydration	5,2.7%
Stop loose motion	29, 15.4%
Make child stronger	11,5.9%
Others	17,9%
More than one	2,1.1%
Increase digestive power	1, 0.5%
Don't know	99,52.7%

**Table 5: Distribution of study population based on Practice regarding the use of ORS & Zinc Supplementation during AWD (N=188)**

<b>Frequency of ORS use during AWD of child</b>	<b>(N, %)</b>
Use every time	101,53.7%
Use most of the time	77,41.0%
Never or rarely use	10,5.3%

<b>Frequency of ORS use during AWD of child &amp; Demographic Characteristics</b>			
<b>Age (Years)</b>	<b>Never or rarely use (n=10)</b>	<b>Use most of the time (n=77)</b>	<b>Use every time (n=101)</b>
15-24	1,0.5%	19,10.1%	32,17%
25-34	9,4.8%	44,23.4%	55,29.9%
35-44	0,0.0%	10,5.3%	8,4.3%
>44	0,0.0%	4,2.1%	6,3.2%
<b>Education</b>			
Illiterate	2,1.1%	30,39.0%	32,31.7%
Primary	5,2.7%	34,44.2%	50,49.5%
SSC/Dakhil	2,1.1%	4,5.2%	16,15.8%
HSC/Alim	1,0.5%	3,1.6%	6,3.2%
Graduate&above	0,0.0%	2,1.1%	1,0.5%
<b>Monthly income</b>			
<1000	9,4.8%	75,39.9%	98,52.1%
1000-3000	0,0.0%	2,1.1%	0,0.0%
>3000	1,0.5%	0,0.0%	3,1.6%
<b>Distribution of study population based on washing hands before preparing ORS</b>			
<b>Residence</b>	<b>Yes, n=69</b>	<b>No, n = 119</b>	
Urban	40,57.9%	39,32.8%	
Rural	29,42.0%	80,67.2%	
<b>Education</b>	<b>n=70</b>	<b>n=118</b>	
Illiterate	13,18.6%	51,43.2%	
Primary	31,44.2%	58,49.1%	
SSC/Dakhil	15,21.4%	7,5.9%	
HSC/Alim	8,11.4%	2,1.7%	
Graduate&above	3,4.3%	0,0.0%	
<b>Monthly income</b>	<b>n=69</b>	<b>n=119</b>	
<1000	63,91.3%	119,100%	
1000-3000	2,2.9%	0,0.0%	
>3000	4,5.8%	0,0.0%	
<b>ORS use</b>	<b>n=69</b>	<b>n=119</b>	
Never or rarely use	0,0.0%	10,8.4%	
Use most of the time	19,27.5%	58,48.7%	
Use every time	50,72.5%	51,42.9%	
<b>Practice giving Zinc supplementation during AWD (N=188)</b>			
Yes	48,25.5%		
No	140,74.5%		
<b>The practice of breastfeeding mothers during AWD (N=188)</b>			
Yes	149,79.3%		
No	39,20.7%		

## DISCUSSION

Diarrhea is one of the leading causes of under-five child mortality worldwide. AWD is a self-limiting disease and in most cases (around 90%) can be successfully treated with ORS and feeding without using the antidiarrheal agent [13-15]. The present study investigated the knowledge, attitude, and practice of mothers toward the hindrance and lacunae of home-based management of AWD in under 2 children. Most of the mothers were in the age group 25-34 years. Around half of the study population (89, 47.3%) had primary education and 34% of patients were illiterate. About two-fifths of the mother (83, 44.1%) was unemployed. The majority of mothers (182, 96.8%) had a monthly income of less than 1000 taka BDT. The distribution of characteristics of the study population was found to be almost similar to the findings of other

studies conducted elsewhere [9, 16-20]. That observation indicates that mothers' education is associated with the child's health as well child's knowledge, attitude, and practice. Socioeconomic status was found significantly associated with mother knowledge, attitude and practice. Those belonging to the upper class had good knowledge, attitude, and practice as compared to those belonging to the lower class. Similarly, several studies concluded that mothers' knowledge, attitude, and practices are significantly associated with education and socio-economic status [19- 22]. This difference might be due to social and cultural factors which have been followed in the family. Several studies showed that the incidence of diarrhea was found to be more among people with low socioeconomic status [21-24]. In the present study, around three-fourths of the study population (148,

78.7%) knew the correct method of ORS preparation. Duggal *et al.*, (2021) found that 81.4% of the study population knew about adequately preparing ORS. The ratio of mothers with adequate knowledge of preparing ORS was higher in mothers from urban areas [20]. In the present study, 47.3% of the mother knew about zinc supplementation during AWD, and around one-fourth of the study population (48, 25.5%) implemented this knowledge in their practical life by giving zinc supplementation to their children during AWD. There was a cross-sectional study conducted in the Children's Hospital, Lahore found zinc use in diarrhea was significantly associated with maternal education. Zinc supplementation practice was better among mothers with higher education and lofty socioeconomic status [20]. In the current study, around four-fifths of the study population knew the continuation of breastfeeding during AWD. Muthulakshmi *et al.*, (2021) found that 92% of the mothers knew they had to continue breast feeding during AWD along with ORS therapy [12]. In the present study, around one-fifth of the mothers (27, 14.4%) came to know about the danger signs of AWD, and one-fourth of the mother came to know about zinc supplementation during AWD through the media. Perhaps, Muthu Lakshmi *et al.*, (2021) mentioned in their study that 90% of the mother got such knowledge through health workers [12]. Sultana *et al.*, (2010) revealed that the study population came to know about AWD and ORS use through media, friends, mothers, and relatives [25]. Around half of the study, population believed that ORS prevents dehydration. Twenty-nine mothers (29, 15.4%) thought zinc prevents loose motion. Muthu Lakshmi *et al.*, (2021) found that 96% of their study population thought ORS helps in managing diarrhea. 98% of mothers felt breastfeeding is essential in AWD along with ORS therapy [12]. In this study, sixty-nine patients (69, 36.7%) wash their hands before preparing ORS. Hence, Asiegbu *et al.*, (2017) said that some study populations disagreed that hand washing before food reduces diarrhea and 6% of mothers were ambiguous about the fact that hand washing after defecation diminished diarrhea incidences [9]. Encouraging hand washing reduces the risk of developing diarrhea and plays a vital role in the prevention of diarrheal diseases in under-five children [26]. World Health Organization and the United Nations Children's Fund advocate the practice of newly formulated ORS that contain low concentrations of glucose and salt as well as Zinc supplementation for fourteen days in the clinical management of diarrhea. [27, 28] Control of diarrhea disease program has relatively succeeded in improving feeding practices during diarrhea. Control of diarrhea disease programs needs extra efforts to the promotion of healthy feeding practices through mass media and training programs for mothers. The present study emphasizes incongruous and incapable knowledge, attitude, and practice of feeding and rehydration in mothers of AWD patients aged less than 5 years in Bangladesh. Knowledge about available services, distance to health facilities, low socioeconomic

status, mothers' perception of illness severity, low household income, and indirect costs of treatment might also be relevant [29]. Mothers who have competent knowledge about the prevention and management of AWD still need to fill up in their attitudes and practices expressly in the rural areas to lessen the child mortalities due to AWD. Community-integrated management of childhood illness strategy advocates awareness among caregivers about the causes and prevention of diarrhea including danger signs and home remedies such as the use of ORS and breastfeeding practice [30]. Several studies have recommended the importance of the education of caregivers in the improved management of diarrhea at home [31-34]. Maternal education is significantly associated with disease epidemiology [35]. ORS forms the cornerstone of diarrhea treatment [36]. Perhaps, the proportion of mothers with appropriate knowledge and practice of rehydration is significantly low in Bangladesh, especially among the poor and illiterate people [35]. Usually, the mother is the primary caretaker of the family and is thus charged with teaching her children proper health and hygiene practices. An illiterate or uneducated mother would take care of her family. Hence, mother with less knowledge about teaching their children proper hygienic practices leads to increase rates of infectious disease among children. Furthermore, continued breastfeeding during AWD significantly reduces the risk of dehydration, mitigates the loss of weight, and promotes increased weight gain. Breastfeeding also reduces the severity, duration, and adverse nutritional consequences of diarrhea [37]. AWD can be prevented and managed with the use of ongoing maternal education on pediatric diarrheal disorders, including face-to-face instruction, books, clips, and posters. Healthcare professionals are also advised to enroll in training programs [38].

#### Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

#### CONCLUSION

The result of the present study denotes that there is still a lack of knowledge regarding the management of diarrheal disease among mothers. This knowledge gap is strongly related to ORS use, zinc supplementation, and breastfeeding practice during AWD. The findings of the study also reflect the attitude and practice of mothers concerning the home-based management of AWD. The solemnity of the dearth of awareness regarding diarrheal disease management staunch the fact that increases the risk of diarrheal episodes among children in poor socioeconomic and living conditions in Bangladesh as mothers are the proximate caregivers in the event of AWD.

#### FUNDING

No funding sources.

**CONFLICT OF INTEREST**

None declared.

**ETHICAL APPROVAL**

The study was approved by the Institutional Ethics Committee.

**RECOMMENDATION**

Eminent emphasis is needed to educate mothers about the method and quantity of oral rehydration fluid. Health education, dispersion of information, and community involvement should be contrived and enforced to spawn positive attitudes and practice toward the better prevention and management of AWD. Strategies should be implemented to accelerate government diarrheal disease programs. Mass campaigns can be also helpful. Mortality due to AWD among children should be put to the notice of the concerned authority. To get robust data, multicenter studies are in great need of policymakers to interpret the demonstrable scenario and to take necessary steps towards mitigating this problem.

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