

## A Hospital Based Observational Assessment of the Reluctant Use of ORS by Mothers of Children Under-5 Years

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### Abstract

**Aim:** The present study was conducted to identify the gap between knowledge and practices of ORS use and treatment practices during diarrhoea of under 5 children by their mothers.

**Methods:** A cross-sectional study was conducted among mothers of children under 5 years who suffered from diarrhoea within two weeks before study in field-practice areas of Urban Health Training Centre and Rural Health Training Centre, Shree Narayan medical Institute and Hospital, Saharsa, Bihar for the period of 6 months. Total 200 participants included in the study.

**Results:** Majority of mothers in present study were educated up to secondary level in both rural (40%) and urban areas (42%). Most of the mothers in both areas were home makers (89%), followed by labours (8.5%). Job was doing only by 5 mothers and only in urban area. According to modified BG Prasad classification of socioeconomic status, majority of family (42%) belong to class IV. The result showed that mostly mothers (37.5%) knew that hand washing should be done before preparation of ORS. This knowledge was more in rural area (40%) than urban area (35%). The mothers of rural (20%) and urban area (15%) knew about the correct proportion of water and ORS for making solution. Only 14% mothers knew that 50-100 ml (1/4-1/2 cup) of ORS to children of <2 year and 100-200 ml to the children of  $\geq 2$  year should be given at a time. Out of total 11% mothers knew that ORS use in diarrhoea is life saving and it prevents the dehydration. Only 5% mothers were fully aware about the preparation and use of ORS.

**Conclusion:** The knowledge regarding use and preparation of ORS solution for management of diarrhoea was found to be inadequate in this study. Though most mothers are aware that it is useful, most are not aware of its proper preparation and use.

**Keywords:** diarrhea, ORS, children

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### Introduction

Diarrhea continues to be one of the leading killers of children in low-income and middle-income countries, with approximately 1.9 million childhood

deaths attributed to diarrhea disease annually. [1] This is despite the availability of oral rehydration therapy (ORT), which prevents death from

dehydration and is considered one of the most cost effective child survival interventions. [2,3] Diarrhea case management entails administering oral rehydration solution (ORS), recommended home fluids or increased fluids, and continued feeding. [4] Alarming, analysis of demographic and health survey data collected during 1998–2003 suggests reductions in the proportion of children less than three years of age with diarrhea receiving ORT in many sub-Saharan African and Asian countries, with results from surveys carried out in Kenya and Nigeria showing a 32% decrease in ORT use. [5] Global trends in diarrhea management during 1986–2003 also indicate a decrease in continued feeding in children with diarrhea. [5]

In India, diarrhoea is the second most common cause of death in under-five children, responsible for 13% of all deaths. [7,8] It is responsible for 1.5 billion episodes of diarrhoea annually. Almost 1.5-2.5 million deaths are estimated to occur annually in children under-five years of age. [9] Infection due to bacteria, virus and parasites are the most common causes of diarrhoea. [6] Low socio-economic status (SES), inadequate breastfeeding, malnutrition, poor sanitation and poor hygiene practices of the mother, poor maternal literacy, the presence of under-five sibling in the family, low birth weight, young age, are associated with a higher incidence of diarrheal diseases in young children. [10,11]

In the last two decades, the mortality due to diarrhoea in children under 5 years has reduced. This reduction may be due to correct diarrhoeal management as per standard treatment guidelines recommended by WHO. [9] Two recent advancements in managing diarrhoeal disease have drastically reduced the mortality of children dying due to diarrhoea. They are oral rehydration solution (ORS) containing lower concentrations of glucose, salt and success

in using zinc supplementation. [12] Timely management of the children with ORS has substantially declined the morbidity and mortality from acute infectious diarrhea. [13]

Despite of the extensive efforts made to promote ORS for last several decades, its knowledge has increased but utilization reached only 50.6% (NFHS-4) which is unsatisfactory. Further, diarrhoea treatment practices are not evidence based, as shown by the widespread prescription of unnecessary drugs including antibiotics. We need to rework out strategies and bridge the existing gap between information and knowledge and action by communities at ground. Hence current study was conducted to identify the gap between knowledge and practices of ORS use and treatment practices during diarrhoea of under 5 children by their mothers.

### Methods

A cross-sectional study was conducted among mothers of children under 5 years who suffered from diarrhoea within two weeks before study in field-practice areas of Urban Health Training Centre and Rural Health Training Centre, Shree Narayan medical Institute and Hospital, Saharsa, Bihar for the period of 6 months.

### Sample size

Total 200 participants included in the study was calculated by sample size formula;  $4pq/L^2$ , where  $p$  = ORS usage percentage (56.2%) in NFHS-4 of Rajasthan<sup>8</sup> and  $L$  = allowed error of the prevalence and Allowed error is 10%.

### Selection criteria

Mothers of children had history of dysentery or history of diarrhoea >2 weeks before study and not willing to participate were excluded from study. Stratified random sampling technique was used to obtain desired sample size (100 from UHTC and 100 from RHTC) from the register maintained by ASHA at

Anganwadi centre in respective areas. Before study approval was taken, verbal consent was taken from all the participants.

### Data collection

A predesigned, pretested, semi-structured schedule and ORS packet were used for interview of mothers about the socio-demographic characteristics, knowledge and use of ORS, source of knowledge, feeding practices, treatment of diarrhoea during the diarrhoeal episode and immunization status of children for

measles and vitamin A. After assessing knowledge of mothers, we taught mothers what are the appropriate methods of making and giving ORS to their children to prevent morbidity and mortality resulting from diarrhoea.

### Statistical analysis

The data were entered in Microsoft Excel and analysed by using SPSS 20.0 (trial version). One way ANOVA test is applied for statistical analysis.  $p < 0.05$  was considered as statistically significant.

### Results

**Table 1: Distribution of socio-demographic variables according to area**

Variables		Area of residence		
		Rural n=100	Urban n=100	Total n=200
Age of Children suffering from Diarrhoea	0-6 months	8 (8%)	14 (14%)	22 (11%)
	>6 -24 mths	56 (56%)	44 (44%)	100 (50%)
	>24 mths to <5 yrs	36 (36%)	42 (42%)	78 (39%)
Gender	Female	50 (50%)	52 (52%)	102 (51%)
	Male	50 (50%)	48 (48%)	98 (49%)
Mother education	Illiterate	30 (30%)	12 (12%)	42 (21%)
	Primary	12 (12%)	20 (20%)	32 (16%)
	Secondary	40 (40%)	42 (42%)	82 (41%)
	Senior Secondary	12 (12%)	8 (8%)	20 (10%)
	Graduate & PG	6 (6%)	18 (18%)	24 (12%)
Occupation of Mother	Job	0	5 (5%)	5 (2.5%)
	Home maker	84 (84%)	94 (94%)	178 (89%)
	Labour	16 (16%)	1 (1%)	17 (8.5%)
Socio-economic class (as per Modified BG Prasad classification)	I	0	16 (16%)	16 (8%)
	II	8 (8%)	24 (24%)	32 (16%)
	III	18 (18%)	20 (20%)	38 (19%)
	IV	48 (48%)	36 (36%)	84 (42%)
	V	26 (26%)	20 (20%)	46 (23%)

Majority of mothers in present study were educated up to secondary level in both rural (40%) and urban areas (42%). Most of the mothers in both areas were home makers (89%), followed by labours

(8.5%). Job was doing only by 5 mothers and only in urban area. According to modified BG Prasad classification of socioeconomic status, majority of family (42%) belong to class IV.

**Table 2: Knowledge about ORS use in diarrhea**

Variables		Area of residence		
		Rural n=100	Urban n=100	Total n=200
Knowledge	Not Known	3 (3%)	7 (7%)	10 (5%)
	Hand Washing before preparation	40 (40%)	35 (35%)	75 (37.5%)
	Preparation (proportion)	20 (20%)	15 (15%)	35 (17.5%)
	When to give	7 (7%)	13 (13%)	20 (10%)

	Amount to give	15 (15%)	13 (13%)	28 (14%)
	Life Saving	10 (10%)	12 (12%)	22 (11%)
	Fully aware	5 (5%)	5 (5%)	10 (5%)

Table 2 shows that mostly mothers (37.5%) knew that hand washing should be done before preparation of ORS. This knowledge was more in rural area (40%) than urban area (35%). The mothers of rural (20%) and urban area (15%) knew about the correct proportion of water and ORS for making solution. Only 14%

mothers knew that 50-100 ml (1/4-1/2 cup) of ORS to children of <2year and 100-200 ml to the children of  $\geq 2$  year should be given at a time. Out of total 11% mothers knew that ORS use in diarrhoea is life saving and it prevents the dehydration. Only 5% mothers were fully aware about the preparation and use of ORS.

**Table 3: Assessment of treatment taken during diarrhea**

Variables		Area of residence		
		Rural n=100	Urban n=100	Total n=200
ORS Use	Yes	88 (88%)	85 (85%)	173 (86.5%)
	No	12 (12%)	15 (15%)	27 (13.5%)
Zinc Use	Yes	0	2 (2%)	2 (1%)
	No	100 (100%)	98 (98%)	198 (99%)
Antibiotic Use	Yes	75 (75%)	78 (78%)	153 (76.5%)
	No	25 (25%)	22 (22%)	47 (23.5%)

Table 3 denoting that in present study ORS use was 86.5% and it was more in rural area (88%) than urban area (85%). 12% mothers didn't use the ORS at any time. Use of Zinc tablet was nil in rural area and

negligible (2%) in urban area. Around (76.5%) used the antibiotics in diarrhoea, which was more in urban area (78%) than rural area (75%).

**Table 4: Association between knowledge of ORS used and socio-demographic variables**

Variables		Knowledge of ORS (Hand washing/ preparation/ time/ frequency / lifesaving)			
		Mean	Std. Deviation	F value	p value
Mother education	Illiterate	2.89	1.56	5.674	<0.0001
	Primary	3.06	1.73		
	Secondary	3.65	1.34		
	Senior Secondary	3.55	1.23		
	Graduate & PG	4.48	0.68		
Per capita Income	I	3.94	1.22	0.429	0.787
	II	3.39	1.49		
	III	3.47	1.60		
	IV	3.45	1.40		
	V	3.39	1.56		
Immunization status of measles	Yes	3.58	1.38	4.237	0.016
	No	1.01	-		
	NA	2.89	1.74		
Vitamin A Supplementation	Given According to age	3.62	1.37	3.141	0.026
	Given but not According to age	3.30	1.49		
	Not given	1.00	-		

Table 4 showing that in present study statistically highly significant association was found between education of mother and knowledge about ORS ( $p < 0.0001$ ). Knowledge about ORS was least in illiterate mothers and more in mother's educated upto graduate or post-graduate. No significant association seen between SES and knowledge of ORS but knowledge was found more in mothers belong to SES class I. Significant association was found between immunization status of children for measles and vitamin A with knowledge about ORS of mothers. Children who were vaccinated for measles and took vitamin A according to their age, their mothers had more knowledge about ORS.

### Discussion

Diarrhoea is defined as the passage of loose, liquid or watery stools more than three times a day. The consistency and character of the stool is more important than the number of stools. Globally, diarrhoeal disease is the second leading cause of death in children under five years of age, and is responsible for killing around 525,000 children every year. [6] Acute diarrhoeal disease is one of the most deadly diseases, which mostly affects children of under-five age group. The mortality due to diarrhoeal diseases is decreasing in the recent times mainly due to proper treatment using ORS and zinc supplementation. This study has given an interesting insight to the level of knowledge, attitude and practice, the mothers of under five children possess in the study area.

In present study children who had episode of diarrhoea in previous 2 weeks were mostly (50%) belong to >6 month to 24 months of age and least to 0-6 months. Similar results were found in study by Sudipta Basa. [14] It may be due to weaning is started at this age and personal hygiene of the caregiver, contaminated water or food, and poor sanitary conditions are contributed in more chance of

diarrhoea. These factors are absent in children 0-6 months who are on exclusive breast feeding and they are protected by antibody transmitted through breast milk. Children of >6 to 24 months of age, suffering with diarrhoea were more in rural area than urban area, that may be due to sanitation and personal hygiene conditions were worse in rural area.

Maximum mothers (89%) were home makers similar finding were seen in study by Rajendra Gupta et al, [15] V Prasanna Rani et al. [16] Only 5 mothers of urban area were doing job because graduate and above education was only 18% in urban area and 6% in rural area. In present study 40% mothers knew the ORS and many studies by SK Rasanian et al (69.8), 12 V Prasanna Rani et al (73%), [16] Hemant Jain et al (80%) [17] in current study 91.8% mothers knew that hand washing should be done before preparation of ORS. Mothers of rural area were more aware for that than urban area. Similar finding were seen in study by V Prasanna Rani et al. [16]

Knowledge about the exact proportion of ORS with water and when to give ORS were more in rural area and knowledge about the amount of ORS to be given was more in urban area. Only 5% mothers of our study were fully aware about the preparation and use of ORS and this is very less in comparison to other studies done at Udaipur by Hemant Jain et al (72.7%) [17] and at Delhi by Priti Chaudhary et al (72%). [18] This difference may be due to study done at tertiary health centre and metro city respectively. So there was more availability of health services, staff and mass media. [19]

Only 2 mothers of urban area gave the Zinc tablet to children in diarrhoea that may be due to either they didn't know about the medicine prescribed by doctor or prescribing less. At the time of survey Zinc preparation was not available at Primary Health Centre and Community Health

Centre. Similarly, less use of Zinc tablet was found in study by V Prasanna Rani et al (3.4%) [16] in which it was prescribed by doctors but didn't give by mothers to their children. A highly significant association was found between education of mother and knowledge about ORS ( $p < 0.0001$ ). Illiterate mothers had the less knowledge about ORS and higher educated had more knowledge. Similar observations were found by other authors V Prasanna Rani et al [16] and Hemant Jain et al. [17] No association were found between socioeconomic class and knowledge of ORS, likely found in study by author V Prasanna Rani et al. [16] In present study significant association was found between measles and vitamin A immunization status of children and knowledge about ORS of mothers. Children who were vaccinated for measles and took vitamin A according to age, their mothers had more knowledge about ORS.

### Conclusion

The knowledge regarding use and preparation of ORS solution for management of diarrhoea was found to be inadequate in this study. Though most mothers are aware that it is useful, most are not aware of its proper preparation and use. More informative and educational measures need to be adopted to improve this knowledge and make mothers aware about proper preparation and use of ORS. There is a need to sensitize the community on the use of ORS in diarrhoea management by using newer IEC strategies through efficient health education, increase women's educational status, improve sanitation and health care services. These are expected to decrease the diarrhoeal diseases morbidity and mortality in the long run.

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