

# Knowledge and Practice regarding Oral Rehydration Therapy for Diarrhea among Mothers of Under-5 Children in Buddhabhumi Municipality, Kapilvastu

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## ABSTRACT

**Introduction:** One of the most effective and established therapies for the treatment of dehydration is oral rehydration therapy, which is convenient as it can be easily carried out in the home. Diarrhea in itself is not lethal, however; inadequate knowledge and poor practices among the primary caregiver; mothers lead to severe dehydration leading to death. The main objective of this study was to assess the mothers' knowledge and practice regarding oral rehydration therapy for diarrhea among mothers of under-5 children.

**Methods:** This cross sectional study was conducted with a sample size of 216. Relevant descriptive statistics were computed for all items. A semi-structured questionnaire was used for data collection while SPSS version 20 was used for analysis. Purposive sampling technique was used, by utilizing a semi-structured questionnaire.

**Results:** The study highlighted that half of the mothers (52.4%) having under five aged children had fair knowledge about Oral Rehydration Solution (ORS) while one-fourth of the participants had poor (23.3%) and one-fourth of participants (24.3%) had good knowledge. More than half of the participants did not know the role of ORS in diarrhea. Half of the participants (58.2%) knew that either boiled or clean water was necessary for the preparation of ORS. Two-thirds (78.8%) of the participants knew that 1 liter of water is needed for 1 packet of ORS.

**Conclusions:** Despite the rampant availability of information sources, the study shows the need for awareness and knowledge dissemination sessions to be conducted at the community level to upgrade the level of knowledge.

**Keywords:** *Diarrhea; Knowledge; ORS; Oral Rehydration Therapy; Practice.*

## INTRODUCTION

The major causes of mortality and morbidity among under-five children in developing countries is diarrhea.<sup>1</sup> The major influencing factors for the occurrence of the disease in lower and middle-income countries are the unavailability of safe water and poor hygiene practices.<sup>2</sup> Oral rehydration therapy is one of the most efficacious therapies for the treatment of dehydration.<sup>3</sup> In Nepal,

four major strategies have been listed for the treatment of diarrhea which is stated as Oral rehydration solution (ORS), zinc supplementation, usage of extra fluids, and counseling.<sup>4</sup>

Diarrhea in itself is not lethal, however; inadequate knowledge and poor practices among the primary caregiver; mothers leads to mismanagement and severe dehydration.<sup>5</sup> Thus, the main objective of this study was to assess the knowledge and practice regarding

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oral rehydration therapy for diarrhea among mothers of under-5 children in Buddhabhumi Municipality, Kapilvastu.

## METHODS

A community-based cross-sectional study design was utilized in this study to assess the knowledge and practice regarding oral rehydration therapy. This study was done from November 2020 to April 2021. Kapilvastu was selected as a study area since it had the highest severe dehydration rate i.e. 0.51% in the fiscal year 2075/76.<sup>6</sup> The ethical approval was taken from IRC (Ref no. SMTC-IRC-20210214-80). Verbal consent was taken from the respondents before taking information. Respondent was informed and explained the purpose of the study. Privacy, confidentiality was maintained regarding the information provided by the respondents. Respondents' information was used for research purposes only. Participants were free to leave or quit research activities whenever they want without any compensation.

Women having at least one child under five years of age living in Buddhabhumi Municipality were included in the study. The selection criteria were carefully outlined to ensure the relevance and reliability of the research findings. Inclusion criteria comprised mothers meeting two key conditions: having at least one child below the age of five and expressing a willingness to provide informed consent for their participation in the study. On the other hand, exclusion criteria were established to maintain the integrity of the study by excluding mothers with a psychological disorder.

### Sample size calculation

The sample size was calculated by using Cochran's formula.

$$\text{Sample size } (n) = Z^2pq/d^2$$

Where,

n=Desired sample size

Z=Value of standard normal distribution at 95% confidence interval which is 1.96.

P=50%

q=1-p, [1-0.50=0.50]

The allowable error for this study is 7% i.e. d= 0.07

Now putting the value,

$$n = Z^2pq/d^2$$

$$n = 1.96^2 * 0.50 * 0.50 / 0.07^2$$

$$= 196$$

The required sampling size was 196. And sample size including 10% of the non-response rate was [n=196+20=216]. Participants were recruited using convenient sampling technique.

Data was collected by face to face interview. Data collection tool was pre-designed semi-structured

questionnaires. Data was entered, coded, analyzed, and interpreted using SPSS version 20.0 and MS Excel. The collected data were entered, coded, and subsequently analyzed using statistical software tools, specifically SPSS version 20.0 and Microsoft Excel. These software platforms facilitated a comprehensive examination of the data in alignment with the study's objectives. The analysis primarily involved descriptive statistical methods, including the calculation of frequencies, percentages, and means. For both dependent and independent variables, the frequencies provided an overview of the occurrence of different categories, percentages illuminated the proportional distribution within each category, and means offered a central measure representing the average value.

## RESULTS

The characteristics of the 216 participants involved in this study are presented in Table 1. Based on the result of this study, the median age of the participants was 25.0±5.11 years. The gender-wise data shows an almost equal distribution with females (53.4%) and males (47.6%). Concerning religion, a high proportion of respondents (59.4%) follow Hindu religion. Nearly one-fourth of the respondents 44 (24.2%) were working as labor and 24 (12.9%). Regarding ethnic groups, the study reveals that most of the respondents (30.45%) were Brahmin/Chhetri followed by Muslim (29.5%). The majority of the participants were literate with secondary level education (59.3%) followed by basic level education (26.8%). The participant's husband's education level was also similar with 59.3% having secondary-level education. With regards to the husband's occupation, 25.9% were involved in foreign employment followed by agriculture (25.4%) and business (21.3%). With regards to the number of children in the family, a higher percentage (45%) of participants had only one child followed by 33.9% having two children. This shows a preference of the participants towards small families.

**Table 1: Distribution of characteristics of the study population**

Variables	Frequency n (%)
<b>Complete Age of Participants(years)</b>	
Less than 20	37 (17.1%)
21-25	91 (42.1%)
26-30	67 (31.1%)
31-35	16 (7.4%)
36-40	3 (1.4%)
Above 40	2 (0.9%)
MedianSD=25.05.11, Minimum=17, Maximum = 42	
<b>Sex of the Under 5 children</b>	
Male	103 (47.6%)
Female	113 (53.4%)
<b>Religion</b>	

Variables	Frequency n (%)
Hindu	129 (59.4%)
Buddhist	4 (1.8%)
Christian	2 (10.2%)
Islam	62 (28.6%)
<b>Ethnicity</b>	
Brahmin/Chhetri	66 (30.4%)
Terai/Madhese	24 (11.1%)
Dalit	42 (19.8%)
Janajati	20 (9.2%)
Others(Muslim)	64 (29.5%)
<b>Occupation of the Participants</b>	
Service	30 (13.8%)
Housewife	120 (55.6%)
Business	38 (17%)
Labor	4 (1.9%)
Agriculture	24 (11.11%)
<b>Education level of the Participants</b>	
Illiterate	11 (5.1%)
Basic Level	120 (55.6%)
Secondary Level	68 (31.4%)
Higher than Secondary	17 (7.9%)
<b>Occupation of the Participant's husband</b>	
Service	43 (19.9%)
Business	46 (21.3%)
Foreign Employment	56 (25.9%)
Agriculture	55 (25.4%)
Labor	16 (7.5%)
<b>The education level of the Participant's husband</b>	
Illiterate	2 (0.9%)
Basic level	58 (26.8%)
Secondary level	128 (59.3%)
Higher than Secondary	28 (13%)
<b>Types of the family</b>	
Nuclear	114 (52.7%)
Joint	102 (47.3%)
<b>Number of people in the family</b>	
3 to 4 people	88 (40.7%)
5 to 6 people	66 (30.7%)
More than 6 people	62 (28.6%)
<b>Number of the children in the family</b>	
One	97 (45%)
Two	73 (33.9%)
Three	26 (12%)
More than Three	20 (9.1%)

The majority of the participant's children had pre-episodes of diarrhea every 6/6 months (53.4%) followed by every 2/3 months (21.2%). Regarding the distance of the health facility from the participant's home, most of them had an easily accessible distance of less than half an

hour (79.1%). Despite the availability of nearby health facilities, 58.7% sought health services only sometimes. Sources of ORS were health facilities (43.9%) followed by medical shops (37%).

**Table 2: Distribution of health-related variables of mothers having under-5 children (n=216)**

Variables	Frequency
<b>Pre-episodes of diarrhea of child</b>	
Every Month	14 (6.3%)
Every 2/3 month	46 (21.2%)
Every 6/6 Month	115 (53.4%)
Never	20 (9%)
Not suffered since last year	21 (10.1%)
<b>Walking distance to health facility from home</b>	
Less than ½ hours	171 (79.1%)
More than ½ hours	45 (20.9%)
<b>Visit to the health facility when the child suffered from diarrhea</b>	
Every time	51 (23.6%)
Sometimes	127 (58.7%)
Seldom	38 (17.7%)
<b>Source of ORS at Home</b>	
Health Facility	95 (43.9%)
Medical shop	80 (37%)
Both	15 (6.9%)
Never Brought	26 (12.2%)

Almost all the respondents (98.1%) had previously seen the ORS packets with the majority of them (61.5%) knowing about it through health workers and relatives/friends (21.7%).

**Table 3. Information related to ORS (n=216)**

Variables	Frequency
<b>Seen ORS Packets</b>	
Yes	212 (98.1%)
No	4 (1.9%)
<b>First Source of Information about ORS</b>	
Health Worker	133 (61.5%)
Relatives/Friends	47 (21.7%)
Media	14 (6.5%)
Others	22 (10.3%)

Among 216 participants, only 71 (32.8%) participants knew the role of ORS during diarrhea. 68 (31.7%) knew about the correct steps for preparation of ORS packets. Almost all, 210 (97.4%) participants knew that clean utensils and clean hands should be considered while preparing ORS. 137(63.5%) knew that ORS shouldn't be stored for more than 24 hours. Regarding breastfeeding practices, 143(66.1%) knew that breastfeeding shouldn't be stopped during ORS therapy.

Similarly only, 42 (19.6%) of participants knew about

the amount of ORS needed to feed to above 2 years child on every loose motion.

**Table 4. Knowledge about ORT among mothers of under-5 children**

Variables	Correct response
	Frequency
ORS prevents dehydration during diarrhea	71 (32.8%)
Steps for preparation of ORS packet	68 (31.7%)
Amount of quantity used for Homemade ORS	2 (1.1%)
Boiled and cooled or clean water for ORS preparation	125 (58.2%)
Clean Utensils and Clean hands should be considered while preparing ORS	210 (97.4%)
ORS shouldn't be stored for more than 24 hours	137 (63.5%)
Breastfeeding shouldn't be stopped during ORS therapy	143 (66.1%)
ORS packet is available free of cost at the Health Facility	200 (92.6%)
Amount of ORS feed under 2-year child on every loose motion(50-100ml)	31 (14.3%)
Amount of ORS feed above 2 years child on every loose motion(100-200ml)	42 (19.6%)
If vomiting occurs, wait a few minutes to continue ORS	83 (38.4%)
1 liter of water needed for 1 packet of ORS	170 (78.8%)

The majority of the participants (78.3%) had used ORS packets at least once in their lifetime. On a positive light, 96.3% considered clean vessels while preparing the ORS, and added to that 84.5% continued breastfeeding even though their child was on ORS therapy.

**Table 5. Practices of ORT among participants (n=216)**

Variables	Yes
	Frequency
Ever used ORS packets(n=216)	169 (78.3%)
Used ORS for their Child during Diarrhea(n=162)	162 (75%)
Prepared Homemade ORS(n=207)	207 (95.4%)
Considered Clean Vessels and Clean hands while preparing ORS(n=208)	208 (96.3%)
Boiled, cooled, or Clean water used(n=133)	133 (61.5%)
Stored ORS more than 24 hours(n=19)	19 (8.7%)

Variables	Yes
	Frequency
Continued to Breastfeed while a child on ORS therapy(n=183)	183 (84.5%)
Ever bought ORS(n=109)	109 (50.8%)
Ever provide Solid or semisolid food to a child with diarrhea(n=161)	161 (74.4%)
Given ORS firstly at home while the child suffered from diarrhea(n=43)	43 (19.8%)

## DISCUSSION

Our revealed that 23.3%, 52.4%, and 24.3% of mothers having children under five years of age had a poor, fair, and good level of knowledge regarding oral rehydration therapy. As compared to another study done in Nigeria (7), the result is similar with regards to the fair level of knowledge while it differs with regards to the poor level of knowledge with results as 27%, 63.3% and 9.9% as poor, fair and good level respectively.

The study shows that 32.8% knew about the role of ORS and only 31.7% knew the correct steps to prepare ORS which contradicts the results of another study (8) which showed that 69.8% knew about the role of ORS in diarrhea with 38.7% knowing about the way to prepare ORS properly. Similarly, a study (9) in India showed that 47.6% knew how to prepare ORS properly. In this study, 98.4% of the mothers had seen the packets of ORS, whereas a study conducted in Tamil Nadu (10) also showed similar results with 99.5% of the mothers being familiar with the packets of ORS.

With regards to the awareness level, 63.5% were aware that ORS solution shouldn't be stored for more than 24 hours which is in line with another study conducted in Puducherry, India which showed 77.5% knew that ORS solution should be consumed within 24 hours (10). The majority of the participants (61.5%) knew about ORS through health workers which mimic the study done in Nigeria (11) which showed that 75.2% first heard about ORS in a health facility. Another study ((9) showed the main source of information about ORS was through doctors (44.38%).

The study showed that 91% of the participants reported that their under 5 children had experienced diarrhea at least once in their lifetime which is similar to another study (7) which showed that 79.9% of participant's children had diarrhea at least once.

## CONCLUSIONS

The current study highlighted that one-fourth of the mothers having under-five children had a poor level

of knowledge. Since the major source of information was health workers; this emphasizes the role of healthcare providers and the need for proper training of them. Despite the rampant availability of information sources, the study shows the need for awareness and knowledge dissemination sessions to be conducted at the community level to upgrade the level of knowledge. Since the study was conducted in one municipality only, the results cannot be generalized across the population. Only that woman of Buddhabhumi municipality who were present during the time of study was covered.

### CONFLICT OF INTEREST

None

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### REFERENCES

1. Ugboko HU, Nwinyi OC, Oranusi SU, Oyewale JO. Childhood diarrhoeal diseases in developing countries. *Heliyon*. 2020 Apr 13;6(4):e03690.
2. Prüss-Ustün A, Bartram J, Clasen T, Colford JM, Cumming O, Curtis V, et al. Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. *Trop Med Int Health*. 2014 Aug;19(8):894–905.
3. Divasha, Pasi R, Ravi KS. Level of knowledge of mothers (18-35 years of age) of under 5 children regarding ORS therapy. *J Family Med Prim Care*. 2020 Sep 30;9(9):4747–50.
4. Ghimire M, Pradhan YV, Maskey MK. Community-based interventions for diarrhoeal diseases and acute respiratory infections in Nepal. *Bull World Health Organ*. 2010 Mar;88(3):216–21.
5. Hackett KM, Mukta US, Jalal CSB, Sellen DW. Knowledge, attitudes and perceptions on infant and young child nutrition and feeding among adolescent girls and young mothers in rural Bangladesh. *Matern Child Nutr*. 2015 Apr;11(2):173–89.
6. DoHS. DoHS-Annual-Report-FY-075-76-.pdf [Internet]. 2018 [cited 2023 Dec 17]. Available from: <http://dohs.gov.np/wp-content/uploads/2020/11/DoHS-Annual-Report-FY-075-76-.pdf>
7. Agbolade MO, Dipeolu IO, Ajuwon AJ. Knowledge and Use of Oral Rehydration Therapy among Mothers of under-five children in a Military Barrack in Ibadan, Nigeria. *African Journal of Biomedical Research*. 2015;18(1):7–15.
8. R HK, S P, J HP, R G. Knowledge, attitude and practices of oral rehydration therapy among mothers coming to tertiary care centre. *International Journal of Contemporary Pediatrics*. 2019;6(1):127–30.
9. Thammanna PS, Sandeep M, Sridhar PV. Awareness among mothers regarding oral rehydration salt solution in management of diarrhea: A cross-sectional study. *Indian Journal of Child Health*. 2015 Dec 29;215–8.
10. M M, S G. Use of oral rehydration solution by mothers of under-five children in a rural area of Kancheepuram district, Tamil

Nadu: a KAP study. *International Journal Of Community Medicine And Public Health*. 2017 Oct 25;4(11):4326–32.

11. Ezeonwu BU, Ayodele A, Ajaegbu OC, Mbagwu NE, Ovemeso O, Okolo AA. Is knowledge and practice of oral rehydration therapy suboptimal? Assessment at Federal Medical Center, Asaba, South-South Nigeria. *International Journal Of Community Medicine And Public Health*. 2017 Jul 22;4(8):2658–62.