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KNOWLEDGE AND PRACTICE REGARDING ORAL REHYDRATION SALTS (ORS) SOLUTION USE IN DIARRHEAL DISEASE AMONG MOTHERS OF UNDER-FIVE CHILDREN IN RURAL WEST BENGAL: A HOSPITAL BASED CROSS SECTIONAL STUDY

Paediatrics

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ABSTRACT

Childhood diarrhea is one of the major public health problems. Diarrhea is the second most common cause of mortality in under-five children. Use of Oral rehydration salts (ORS) solution is the most cost-effective intervention to prevent diarrhea related mortality and morbidity. **Aims And Objectives:** To evaluate the knowledge and practice towards ORS use in diarrheal disease among mothers of under-five children in rural West Bengal. **Methodology:** This hospital based cross sectional study was carried out in pediatrics department of BSMCH, Bankura. Data about demography, knowledge and practice regarding diarrheal management and ORS use were collected with predesigned semi structured questionnaire from 300 mothers of under-five children who have suffered at least once from diarrhea in last one month. **Results:** Demographic findings indicated 54.3% mothers belonged to age of 18-25 years while illiterate and primary level educated mothers constituted 35% and 28% of study sample, respectively. Though 87% mothers heard about ORS but only 68.7% mothers considered ORS as remedy of diarrhea. Knowledge about preparation (42%), initiation (43%), amount (39%), timing of use (35.3%) and storage of ORS (22%) were unsatisfactory. Furthermore, majority had no clue regarding Zinc (9.6%) and Rota virus vaccination (13.3). Age and education of the mother had statistically significant ($P < 0.05$) association with knowledge and practice. **Conclusion:** In our study, mothers had lacuna in their knowledge about proper use of ORS. Successful treatment of diarrhea depends on mother's knowledge and practices. Health Education should be aimed at rectifying those inadequacies to reduce further mortality and morbidity.

KEYWORDS

Diarrhea, knowledge and practice, oral rehydration therapy, ORS, Zinc

INTRODUCTION:

Diarrhea can be defined as passage of more than two loose or liquid stools per day (more frequent passage than is normal for the individual).¹ Clinically, Diarrhea is divided into three types such as acute watery diarrhea, acute bloody diarrhea and persistent diarrhea. Diarrhea results from either infection in the gastrointestinal tract caused by variety of infectious agents like bacterial, viral and parasitic organisms or some non-infectious conditions. Malnourished children as well as children with impaired immunity are most at risk of severe diarrhea. Infectious diarrhea is most prevalent throughout the developing country. Most common pathogens responsible for moderate to severe diarrhea are Rota virus and Escherichia coli.¹ Infections usually spread through contaminated foods and drinking water. Poor personal hygiene, improper sanitation and congested living conditions increase the risk of contamination. Children living in low-income country like India have on an average three episodes of diarrhea per year in first three year of life.¹

Diarrhea is one of the most common diseases during childhood accounting for nearly 1.7 billion cases every year. Diarrhea is responsible for killing an estimated 525000 children annually, making it the second most common cause of death in under-five children.¹ Of all deaths caused by diarrhea, 60% occur only in Africa and southeast Asian regions.¹ Most dreaded complication of diarrhea accounting for most of the deaths in diarrhea is dehydration. Body loses plenty of water and electrolytes during acute diarrheal episode making the body in need of fluid replacement.

Diarrhea, although being a major public health problem, is both easily treatable and preventable. Use of ORS with zinc is cost-effective treatment of diarrhea which can prevent death of up to 93% of diarrheal cases.² They are easily available too. ORS is a mixture of clean water, sugar and salts which is absorbed in small intestine and replenish the losses caused by diarrhea. Since 2005, low osmolality ORS was introduced along with supplementary zinc by WHO and UNICEF.³ Addition of zinc can reduce the duration of diarrhea by 25% and

prevent short term recurrence. Preventable measures such as safe drinking water, proper sanitation and regular hand washing with soap can significantly reduce cases of diarrheal disease. Rotavirus vaccination is also recommended by WHO.⁴

Uses of ORS is still very low despite having all the merits to prevent adverse outcomes of such common illness. Shockingly, only 40% of children suffering from diarrhea receive treatment with ORS.⁵ furthermore, 95% of children do not receive zinc globally.⁵ Besides unavailability, ignorance regarding benefit of ORS is one of the most important challenges we are facing still today. Mother's basic knowledge regarding diarrhea and use of ORS is very low. Success of ORS in childhood diarrhea primarily depends on caregiver knowledge and practices of ORS. In our study, we assess the knowledge and practices regarding ORS use in diarrheal disease.

AIMS AND OBJECTIVES:

Our study was conducted to evaluate the knowledge and practice towards Oral Rehydration Salts (ORS) solution use in diarrheal disease among mothers of under-five children in rural West Bengal.

MATERIAL AND METHODS:

This hospital based cross sectional study was conducted in Pediatrics department (both indoor and outdoor) of Bankura sammilani medical college, Bankura, West Bengal from January 2022 to March 2022. Mothers having at least one under-five children who have experienced diarrhea at least once in last one month were included in our study. Exclusion criteria were chronic diarrhea, children who were more than five years of age, and unwilling mothers. Sample size was estimated using WHO formula ($N = Z^2 PQ / d^2$) supposing prevalence of ORS use as 75.3.⁶ Final sample size was adjusted to 300 mothers (calculated sample size was 288). Data regarding demography, knowledge, and practice about diarrhea and its management were collected by consecutive nonprobability sampling method. Predesigned semi-structured questionnaire were prepared in both English and Bengali. Questionnaire were divided into demography, knowledge, and

practice. Statistical analysis was done operating SPSS version 25. Numerical data was expressed in mean and standard deviation while categorical data as frequency, percentage. Association between categorical data was calculated by chi square formula where P value <0.05 was considered significant.

RESULTS:

300 mothers were enrolled in our study.

Demography:

Figure -1 showing more than half (163, 54.3%) mothers belonged to age 18-25 years followed by 79 (26.3%) of age 26-30 and 58 (19.3%) of age 31-35 years. Mean age of mothers were 24.92 ± 4.87 years.

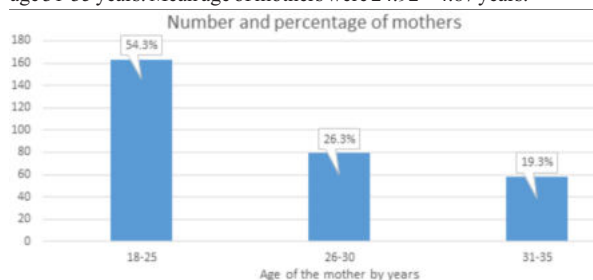


Figure-1: Distribution Of Mothers Of Study Sample By Age (N= 300)

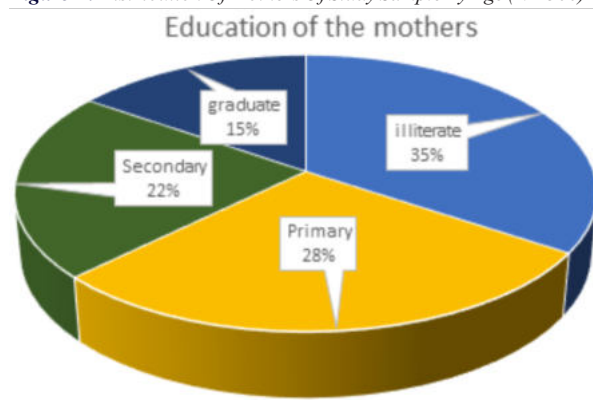


Figure-2: Pie Chart Showing Distribution Of Education Level Among Mothers

Among the study sample, 103 (35%) mothers were illiterate followed by 85 (28%) and 66 (22%) mothers of primary and secondary level respectively while graduate mother (n=46, 15%) being least in number (figure 2).

Table-1 showing, 62% of mothers (n=186) belonged to nuclear family. Main source of drinking water was tube well (n=231, 77%). While 83% of mothers used modern toilet (n=249). Median age of children suffering from diarrhea was 26 ± 15.36 months. In our study, 81% (n=243) children were fully immunized for their age while 171 (57%) mothers exclusively breast fed their child till 6 month of age.

Table-1: Demographic Variables Of 300 Mothers Of Under-five Children

CAREGORY	Number(N=300)	Percentage (%)
Age of the child by month		
0-12 month	54	18%
13-24 month	104	34.7%
25-36 month	69	23%
37-48 month	44	14.7%
49-59 month	29	9.7%
Family types		
Nuclear family	186	62%
Joint family	114	38%
Drinking water source		
Tube well	231	77%
others	69	23%
Condition of toilet		
Modern	249	83%
conventional	51	13%

Immunization status		
Fully immunized	243	81%
Incomplete	57	21%
Exclusive breast fed		
Yes	171	57%
No	129	43%

Knowledge: Table-2 shows majority of mothers (n=194, 64.6%) were able to describe diarrhea correctly but most of them (n=212, 70.6%) had no idea about the multiple etiologies of diarrhea. Only 8% mothers (n=24) knew about infectious agent to be a cause of diarrhea. Furthermore, 64.7% (n=194) mothers were not familiar with all danger signs of diarrhea. Although, 261 (87%) mothers heard about ORS but among them only 206 (68.7%) mothers considered ORS as to be an effective treatment of diarrhea. They got the information of ORS mainly from health care workers including doctor (n=135, 45%) followed by neighbors (n=86, 29%) and mass media (n=40, 13%). Knowledge regarding preparation, initiation, timing, amount and storage of ORS were insufficient. Only few mothers knew about Zinc (n=29, 9.6%) as well as Rota virus vaccination (n=40, 13.2%). Furthermore, only 2 (0.006%) mothers could tell about the purpose of giving zinc in diarrhea.

Table-2: Knowledge Regarding Diarrhea And Its Management (N=300)

Category	Response	
	Good	Poor
Description of diarrhea	194(64.6%)	106(35.4%)
Etiology of diarrhea	88(29.47%)	212(70.6%)
Danger signs of diarrhea	106(35.3%)	194(64.7%)
Heard about the ORS	261(87%)	39(13%)
Consider ORS as a remedy of diarrhea	206(68.7%)	94(31.3%)
How to prepare ORS	126(42%)	174(58%)
Initiation of ORS use	129(43%)	171(57%)
Timing of ORS	106(35.3%)	194(64.7%)
Amount of ORS to be given during diarrhea	117(39%)	183(61%)
How to store ORS	66(22%)	234(78%)
Importance of Hand washing in prevention of diarrhea	140(46.7%)	160(53.3%)
Increased requirement of fluids during diarrhea	184(61.3%)	116(38.7%)
Continuation of breast-feeding during diarrhea	155(51.7%)	145(48.3%)
Homemade fluids given during diarrhea	212(70.6%)	82(29.4%)
Heard about zinc tablet/ syrup	29(9.6%)	271(90.3%)
Heard about rotavirus vaccination to prevent diarrhea	40(13.3%)	260(86.7%)

Table-3 demonstrates that only 147 (47.7%) mothers used ORS during diarrheal diseases in comparison to 204 mothers (68%) using home-based fluids. 43.7% mothers (n=131) increased frequency of breastfeeding in comparison to 8.3% mothers (n=25) completely stopped breast feeding during diarrheal episode. Majority of mothers (n=198, 66%) did not practice hand washing to prevent spread of diarrhea.

Table-3: Assessment Of Practices Of Mothers During Management Of Diarrhea

Category	Response	
	Good	Poor
Use of commercial ORS during diarrhea	143(47.7%)	157(52.3%)
Use of home-based fluids during diarrhea	204(68%)	96(32%)
Increased frequency of breast feeding during diarrhea	131(43.7%)	169(56.3%)
Extra diet given after stopping of diarrhea	98(32.6%)	202(67.4%)
Practiced hand washing to prevent diarrhea	102 (34%)	198(66%)

Data was analyzed to find any relationship between demographic variables and their knowledge and practice. Significant association was found in case of age and education of the mother with both knowledge and practice regarding ORS use in diarrheal disease. Younger and educated mothers were more likely to have better knowledge and subsequent appropriate practices in managing childhood diarrhea. (Table-4)

Table-4: Association Of Knowledge And Practices Regarding ORS Use With Different Demographic Variable

Demographic variable	Knowledge and practices	X ²	df	P value
Educational level of the mothers	Knowledge about ORS use in diarrhea	8.780	3	0.032
Maternal age	Knowledge about ORS use in diarrhea	13.510	2	0.001
Educational level of the mothers	Practices of appropriate behavior during diarrhea	12.640	3	0.005
Maternal age	Practices of appropriate behavior during diarrhea	7.862	2	0.020

DISCUSSION:

Our study was conducted in Bankura sammilani medical college, a tertiary health care center in Southeast Asia region. This hospital is primarily visited by people of middle and lower-income family. Here, majority of patients belonged to poor educational background. Hence, we conducted this study to assess the knowledge and practices regarding use of ORS in diarrheal diseases which is associated with poor hygiene, unsafe drinking water and poor quality of living.

In our study, we discussed about the demography of mothers of under five children. Half of the mothers (163, 54.3%) belonged to age of 18-25 years followed by 26.3% and 19.3% mother of age 26-30 and 30-35 years, respectively. This finding is not comparable to a study conducted by Baloch GM et al where 57% mothers belonged to age of 25-35 years. In our study, 188 (62.7%) mothers were either illiterate or had primary level education which is consistent with 69% mothers of similar education level found in a study in rural area of Bangladesh.⁸

In our present study, fair number of mothers (n=194, 64.6%) knew proper description of diarrhea but most (212, 70.6%) were clueless regarding the multifactorial etiologies of diarrhea. Moreover, only 8% mothers knew about infectious agent as a cause of diarrhea in children. Also, majority of mothers (194, 64.7%) had inadequate knowledge about the danger signs of diarrhea. Similarly, Rao et al showed more than three fourth mothers (n=207, 73.8%) did not know about etiology of diarrhea while 88.7% mothers have poor knowledge regarding danger signs of diarrhea.⁹ In our study, 68.7% mothers considered ORS as a remedy of diarrhea although 87% mothers heard about diarrhea. However, knowledge regarding preparation of ORS (42%), initiation of use (43%), timing of use (35.3%) and storage of ORS (22%) were very poor among mothers. Similar observation was seen in a study where 76% mothers used ORS but only 42% mothers knew correct technique.¹⁰ In another study, 39% of mothers knew correct method of ORS preparation.¹¹ Mumtaz et al observed in their study that 75.5% mothers knew how to prepare ORS correctly which is much higher than our finding.¹² In our study, less than half (47.7%) mothers used ORS during diarrhea. Similar low utilization of ORS was also found in other study.^{13,14} This In current study, 9.6% mothers heard about Zinc tablet while only 13.2% mothers knew about Rota virus vaccination. This extreme lack of knowledge about Zinc supplementation were also evident in different studies.^{15,16}

Our present study showed that education and age of the mothers were significantly associated with knowledge and practice of mothers. Younger, and educated mothers especially beyond primary level were more likely to be more knowledgeable about ORS and using ORS appropriately. Khalili et al also showed similar association.¹⁷ In another study, level of education was found to a significant association and not the age of the mother.¹⁸

CONCLUSION:

In our study, we noticed that fair number of mothers knew about usefulness of ORS. But their knowledge regarding preparation, amount, initiation of ORS use, timing of use and storage of ORS were very inadequate. Moreover, they had unsatisfactory knowledge about Zinc and Rota virus vaccination.

Preventive measures like regular hand washing were not practiced properly. Knowledge regarding causes and danger signs of diarrhea were not adequate. Success of ORS use in diarrhea depends on adequate and proper use of ORS which in turns is largely influenced by their awareness and knowledge regarding this health problem. So, educating the mothers about diarrhea will improve the outcome of this common illness. Illiterate, primary level education and older age mothers were likely to be found ignorant in our study.

RECOMMENDATIONS:

We recommend using health education as a tool to spread awareness regarding management of diarrhea. Health workers should properly instruct the mothers regarding preparation and using ORS while prescribing. Awareness about benefits of using Zinc should be intensified.

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1. World Health Organization, Diarrhea Disease fact sheet N°330, WHO, Geneva, May 2017.
2. UNICEF, World Health Organization, Ending Preventable Child Deaths from Pneumonia and Diarrhea by 2025, WHO, Geneva, April 2013, p. 15.
3. World Health Organization, Diarrhea Treatment Guidelines, International Science and Technology Institute, Arlington, January 2005.
4. UNICEF, Rotavirus Vaccine, UNICEF, Copenhagen, August 2018.
5. The UN Commission on Life Saving Commodities, Oral Rehydration Salts (ORS) – Product Profile, UN Foundation, New York, 2012.
6. NFHS-5: National family health survey (2019-2020). India
7. Baloch GM, Abbasi MA, Bhutto A. Children with diarrhoea and awareness about ORS among mothers at paediatric OPD of district hospital, Dadu, Sindh, Pakistan. Med Channel 2013; 19:42-6.
8. Anne RT, shova ss, sharmin t, bahrat t. Awareness, perception, and attitude toward oral rehydration salt solution, among the parents in management of awd in children in rural areas of Bangladesh.
9. Amitkumar Rao, Jyothi Jadhav, T S Ranganath, Lilian Dsouza. Awareness regarding diarrhea, its prevention, and oral rehydration therapy among mothers of under-five children in urban slums of Bengaluru. Int J Med Sci Public Health. (2015), [cited April 05, 2022]; 4(8): 1086-1089. doi:10.5455/ijmsph.2015.30012015227
10. Chaudhary P, Basu S, Dzeyie AK, Gulla S, Khade S, Patel A, Phukan D, Dikid T, Kumar A, Shrivastava A. Knowledge, attitude and practice of mothers regarding diarrhoeal illness in children under five years of age: a cross sectional study in an Urban Slum of Delhi, India. The J Communicable Diseases. 2014; 46(3):13-21.
11. Mahor GR. Knowledge and attitudes of mothers regarding use of Oral Rehydration Solution in management of diarrhea. Asian Journal of Biomedical and Pharmaceutical Sciences, 2013; 3(22): 6-8.
12. Mumtaz Y, Zafar M, Mumtaz Z. Knowledge attitude and practices of mothers about diarrhea in children under 5 years. J Dow Uni Health Sci, 2014; 8(1): 3-6.
13. Ansari M, Ibrahim MI, Hassali MA, Shankar PR, Koirala A, Thapa NJ. Mothers' beliefs and barriers about childhood diarrhea and its management in Morang district, Nepal. BMC Res Notes. 2012 Oct 24; 5:576. Doi: 10.1186/1756-0500-5-576. PMID: 23095352; PMCID: PMC3517331.
14. 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.
15. Dhar DK, Majumder N, Paul D. Assessment of knowledge and practice of mothers of children under five regarding zinc therapy in childhood diarrhea. Int J Adv Integ Med Sci. 2016; 1(4):169-72.
16. Ali F, Singh O, Dutta A, Haq Z, Ghatak A, Ashtankar T. Assessing critical gaps in implementation of WHO and UNICEF'S 7-point diarrhea control and prevention strategy in Uttar Pradesh, India. Annals of Tropical Medicine and Public Health. 2017 May 1; 10(3).
17. Khalili M, Mirshahi M, Zarghami A, Rajabnia M, Farahmand F. Maternal knowledge and practice regarding childhood diarrhea and diet in Zahedan, Iran.
18. Saurabh S, Shidam UG, Sinnakirouchenan M, Subair M, Hou LG, Roy G. Knowledge and Practice Regarding Oral Rehydration Therapy for Acute Diarrhoea among Mothers of Under-Five Children in an Urban Area of Puducherry, India. Natl J Community Med, 2014; 5(1): 100-104.