

Knowledge, Attitude and Practice of Mothers in Selected Rural Areas of Bangladesh Regarding the Use of Oral Rehydration Solution

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Abstract

Introduction: Diarrhea is a major cause of child death worldwide. While Oral Rehydration Solution (ORS) is a simple, lifesaving treatment, its use is limited by gaps in knowledge. With a view to assessing the knowledge, attitudes and practices of ORS use, a study was conducted among 180 respondents in Tajpur, Dinajpur.

Objective: To assess mothers' knowledge, attitudes and practices in selected rural areas regarding the use, correct preparation and practical application of Oral Rehydration Solution (ORS).

Methods: A cross-sectional study was conducted using a structured questionnaire. A total of 180 respondents were selected through convenience sampling. Data were collected on socio-demographic characteristics and specific KAP indicators related to ORS definition, preparation, storage and usage during diarrheal episodes. Descriptive statistics were used to analyze the data.

Results: The study revealed a high level of general awareness about ORS, 92.0% of the total respondents knowing it is used to treat diarrhea and 88.0% expressing a desire for more information. However, critical knowledge gaps identified that only 37.0% of the total respondents knew the correct storage duration for prepared ORS (12 hours) and 30.0% incorrectly believed ORS should not be administered to a vomiting child. Although 90.0% knew the correct amount of water (500ml) needed for one packet of ORS preparation but more than half (53.0%) of the total respondents practiced mixing inadequate water to prepare ORS. Most respondents (48.0%) often using mugs, a non-standard household items as water measurement tools for ORS preparation and a significant portion (5.0%) reused the leftover ORS from previous day. Most of the respondents (80.0%) had used packet of ORS in their last diarrheal episode and found it affordable (89.0%). Family members (29.0%) were the most frequently cited source of information about ORS.

Conclusion: Despite high level of awareness of ORS, a significant knowledge-practice gap exists. Critical errors in preparation, storage and use, especially during vomiting, are common. Future programs must focus on practical, hands-on training to ensure correct ORS use and maximize its effectiveness.

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Introduction

Diarrhea continues to pose a significant public health challenge, particularly among children under five years of age, where it ranks as the second leading cause of mortality globally, contributing to approximately 760,000 deaths annually.¹ In developing countries, including Bangladesh, the burden is amplified by factors such as inadequate sanitation, contaminated water supplies, poor hygiene practices, and limited access to healthcare, leading to an estimated 3.2 episodes per child per year.² Defined by the World Health Organization (WHO) as the passage of three or more loose or watery stools per day, diarrhea can result in severe dehydration and malnutrition, especially in rural settings where resources are scarce.³ In Bangladesh, rural areas, home to over 60% of the population, face heightened risks due to seasonal flooding and cultural reliance on traditional remedies, with diarrhea prevalence estimated at 6.94% among under-five children.⁴ The introduction of Oral Rehydration Solution (ORS) by the WHO in the 1970s revolutionized diarrhea management, offering a simple, cost-effective method to prevent and treat dehydration.⁵ Comprising a mixture of salts, glucose, and water, ORS promotes sodium and water reabsorption in the gut, proving as effective as intravenous fluids for mild to moderate dehydration and reducing mortality by up to 93% when combined with continued feeding and zinc supplementation.⁶ Its utility extends beyond pediatric care, with applications in preoperative settings like Enhanced Recovery After Surgery (ERAS) protocols, where it corrects electrolyte imbalances and improves postoperative outcomes.⁷ However, the success of ORS hinges on maternal knowledge, attitudes, and practices (KAP), as mothers are typically the primary caregivers in rural households. Studies across low- and middle-income countries (LMICs) reveal significant gaps in this domain. In Karachi,

Pakistan, a cross-sectional survey found that while 47% of mothers understood diarrhea correctly and 51% were aware of ORS, only 71% sought medical advice, with family members serving as the primary information source.⁸ In India, 63.34% of mothers aged 18-35 exhibited little or average ORS knowledge, linked to primary-level education and homemaker status.³ Despite national efforts, ORS use among under-five children in Bangladesh dropped from 83% in 2017 to 74% in 2022, with proper utilization remaining low at 20-30%.⁷ In rural Bangladesh, cultural preferences for home remedies, limited mass media exposure, and low maternal education perpetuate these challenges.⁸ Socioeconomic factors, including poverty and illiteracy, correlate with poor practices, while higher education levels are associated with better knowledge and adherence.⁹

Objective: To know about Knowledge, Attitude and Practice of Mothers in Selected Rural Areas of Bangladesh Regarding the Use of Oral Rehydration Solution.

Methods

Cross sectional type of descriptive study was conducted in Tajpur, Sadar, Dinajpur from 21st August to 25th August, 2025. Total 180 mother having at least one under five child at that time was taken from rural area of four villages of selected union of Sadar upazila of Dinajpur by convenience sampling technique. Structured questionnaire was used for data collection. Data were collected from the respondents by face-to-face interview. Collected data were analyzed according to the objectives of the study by using Statistical Package of Social Science (SPSS) software, version 27.0 and those data were summarized using frequency tables

Results

The study revealed a high level of general awareness about ORS, 92.0% of the total respondents knowing it is used to treat diarrhea and 88.0% expressing a desire for more information. However, critical

knowledge gaps identified that only 37.0% of the total respondents, knew the correct storage duration for prepared ORS (12 hours) and 30.0% incorrectly believed ORS should not be administered to a vomiting child.

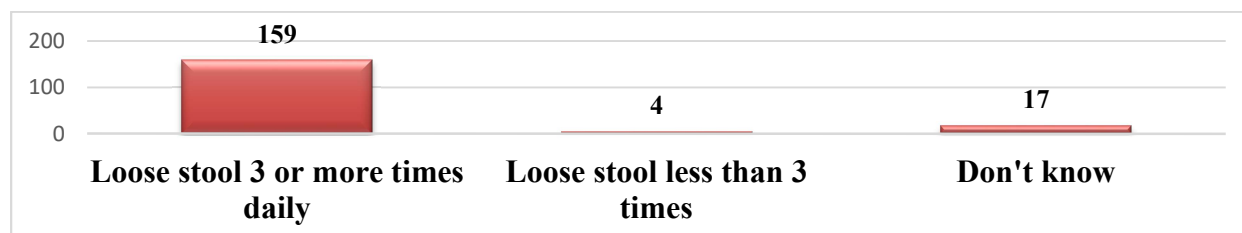


Figure 1. Knowledge regarding definition of diarrhoea (n=180)

Figure-1 showed that, 88% of the total respondents, can define diarrhoea while 12% of the total respondents were unable to define diarrhoea correctly.

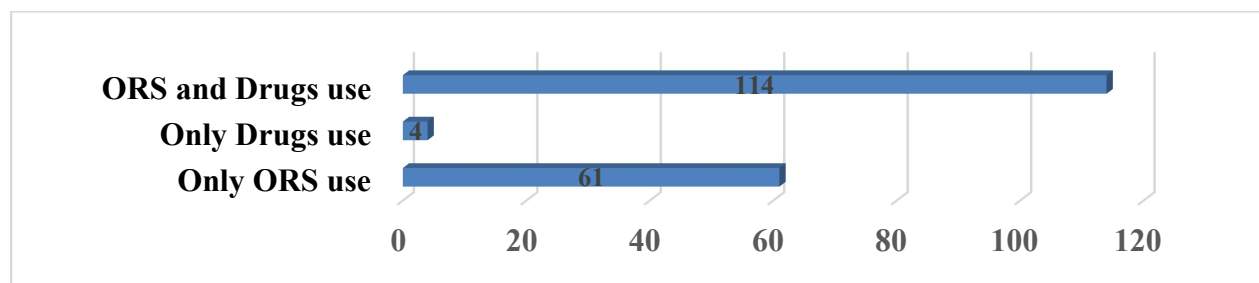


Figure 2. Measures taken during diarrhoea (n=180)

Figure 2 showed that among the total respondents, about 33% used only ORS during diarrhoeal episode and 63% used both ORS with drugs during diarrhoea.

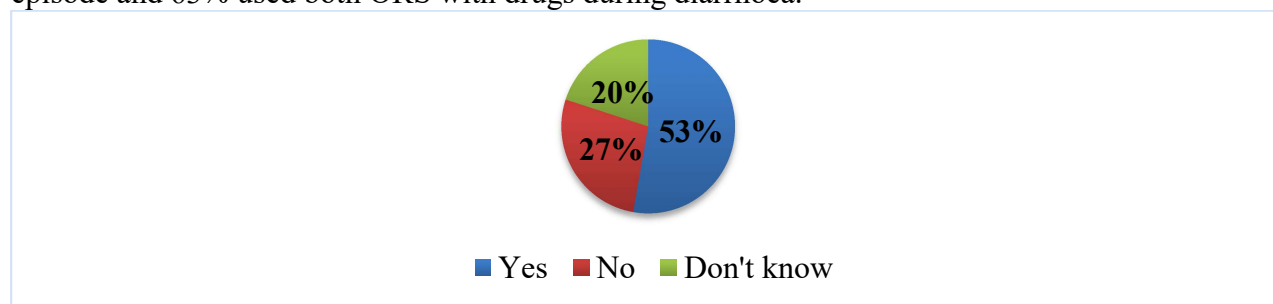


Figure 3. Practice of inadequate water mixing to prepare ORS (n=180)

Figure 3 showed that, about halves (53%) of the total respondents practiced of mixing inadequate water to prepare ORS and about one-fifth (20%) had no knowledge regarding the amount of water to be mixed to prepare ORS.

Table I: Main purpose of ORS use (n=180)

Variable	Frequency	Percent
Prevent water loss	77	42.8
Treat diarrhoea	41	22.8
Prevent salt and water imbalance	40	22.2
Treat diarrhoea and prevent salt and water imbalance	5	2.8
Prevent water loss and Treat diarrhoea	3	1.7
Prevent water loss, treat diarrhoea and prevent salt and water imbalance	3	1.7
Don't know	11	6.1

Table I showed that, out of the total respondents, 42.8% believed that ORS can prevent water loss and 22.2% believed that ORS can prevent salt and water imbalance. About 6.1% of the total respondents had no knowledge regarding the purpose of ORS use.

Table II: Amount of water used for ORS preparation (n=180)

Amount of water	Frequency	Percent
500 ml	162	90.0
1 litre	3	1.7
2 litre or more	1	0.6
Don't know	14	7.8

Table II showed that, regarding the amount of water use to prepare ORS, 90% used 500 ml water and 2.3% of the total respondents used 1 or more litre of water to prepare ORS. Remaining 7.8% of the respondents had no knowledge about the amount of water for ORS preparation.

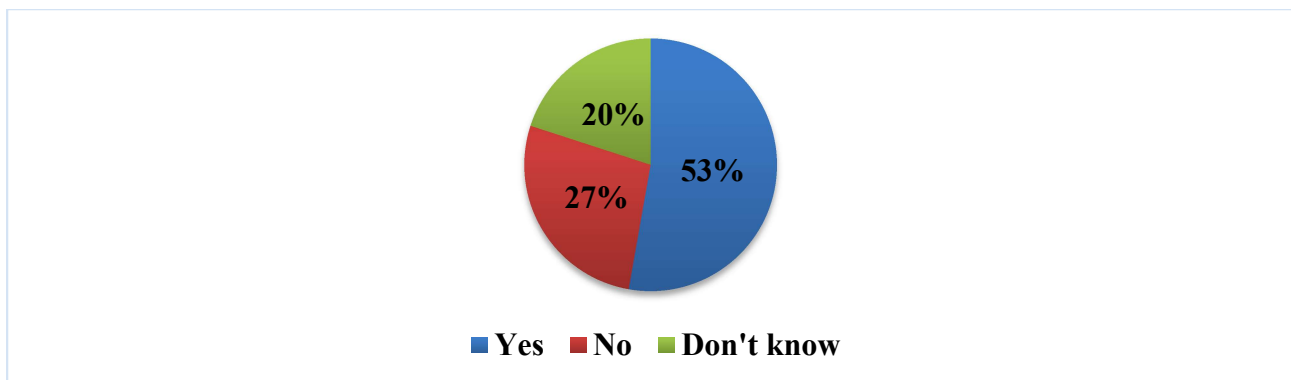


Figure 4. Practice of inadequate water mixing to prepare ORS (n=180)

Figure 4 showed that, about halves (53%) of the total respondents practiced of mixing inadequate water to prepare ORS and about one-fifth (20%) had no knowledge regarding the amount of water to be mixed to prepare ORS.

Table III: ORS stored after preparation (n=180)

ORS Stored time after preparation	Frequency	Percent
6 hours	50	27.8
12 hours	67	37.2
24 hours	27	15
48 hours or more	1	0.6
Don't know	35	19.4

Table III showed that, 67 and 50 of the total respondents stored ORS after preparation for 12 hours and 6 hours respectively. Among the total respondents, 28 stored ORS for 24 or more hours and 35 had no idea about the stored hour of ORS after preparation.

Table IV: Learning sources about ORS (n=180)

Learning sources about ORS	Frequency	Percent
Health worker	42	23.3
Mass media	20	11.1
Doctor	42	23.3
Family members	53	29.4
Health worker, mass media and family members	3	1.7
Doctor, Family member, Mass media, Health worker	1	0.6
Mass media and family members	3	1.7
Other	16	8.9

Table IV showed that, about one-fourth (23.3%) of the total respondents learned about ORS from Health worker and Doctor. Majority (29.4%) and about one-tenth (11.1%) learned about ORS from their family members and mass media respectively.

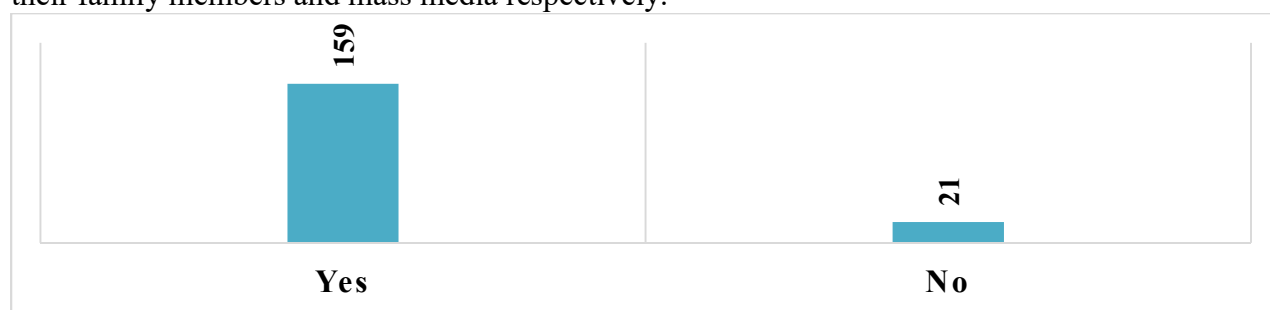


Figure 5. Desire to gather more information regarding ORS (n=180)

Figure 5 showed that among the total respondents about 88% were interested to get more information about ORS for the management of diarrhoea while 12% showed no interest to gather more information regarding ORS.

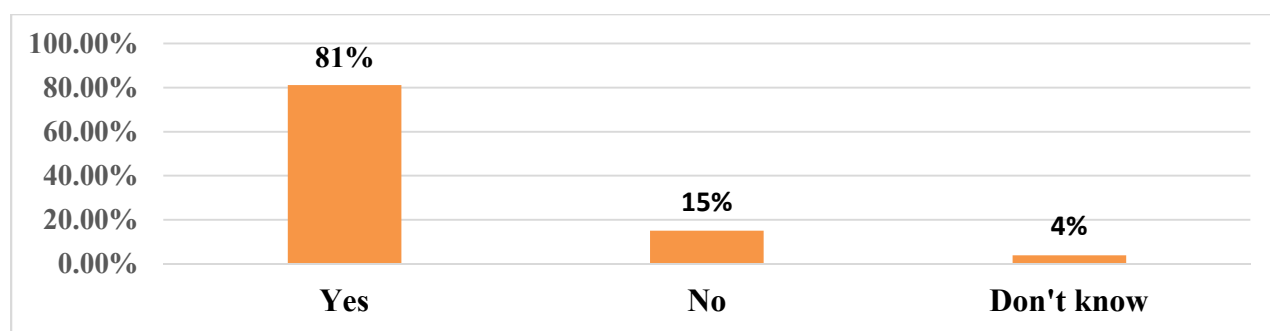


Figure 6. ORS helps to prevent hospital admission (n=180)

Figure 6 showed that majority (81%) of the total respondents believed that ORS can prevent hospital admission while minimum (15%) did not believe the role of ORS in preventing hospital admission.

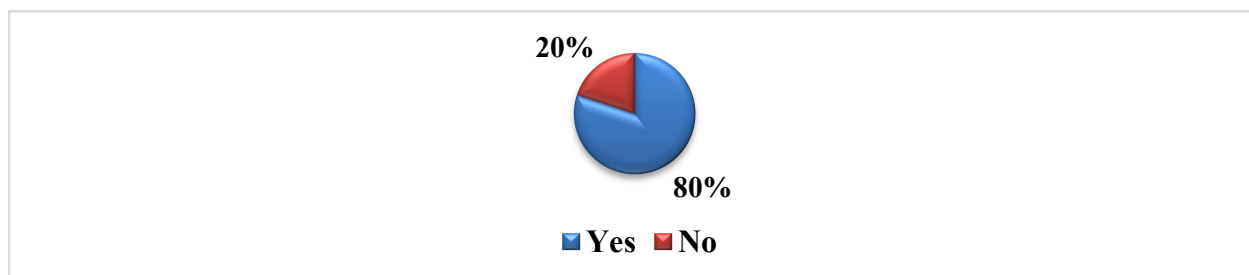


Figure 7. Used packet ORS in last diarrhoeal episode (n=180)

Figure 7 showed that four-fifth (80%) of the total respondents used ORS in the last diarrhoeal episode and one-fifth (20%) did not use ORS in the last diarrhoeal episode of their children.

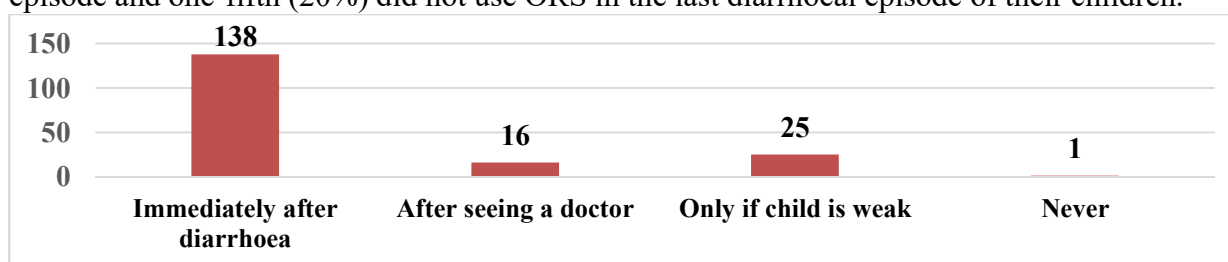


Figure 8. Time of ORS starting (n=180)

Figure 8 showed that out of 180 respondents 77% started ORS immediately after diarrhoea, 14% started ORS only in their child's weakness and 9% started ORS after seeing a doctor.

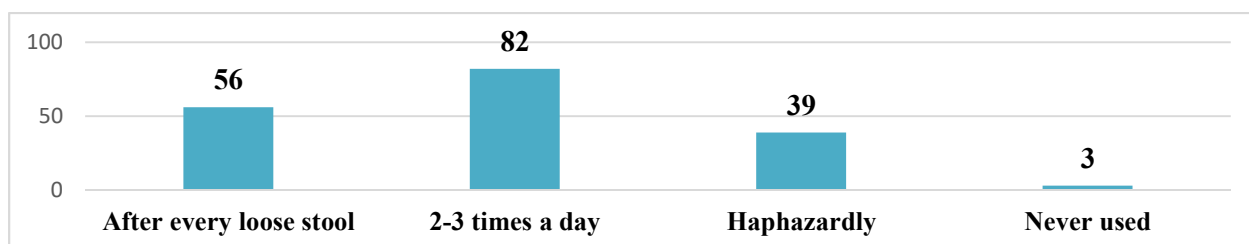


Figure 9. Frequency of ORS use during diarrhoea (n=180)

Figure 9 showed that out of 180 respondents, 46% used ORS 2-3 times a day, 30% used ORS after every loose stool, 22% used ORS haphazardly and rest 2% never used ORS during diarrhoea.

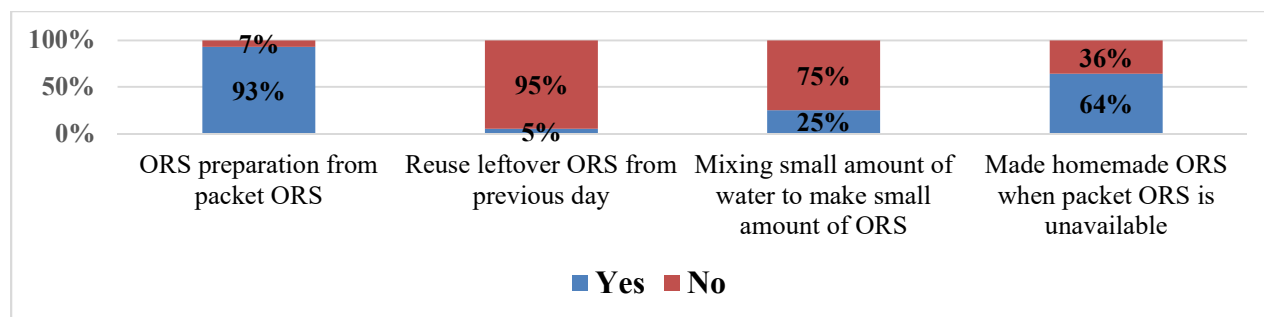


Figure 10. Preparation of ORS (n=180)

Figure 10 showed that, majority (93%) can prepare ORS from packet ORS and one-fourth (25%) mixed small amount of water to prepare ORS.

Discussion

The study revealed that maximum (38.9%) of the total respondents were from 21-30 age group. Majority (62.8%) of the respondents completed secondary level of education and most of the respondents (92.2%) were housewife. This is similar with the results of a study done in Karnataka.¹⁰ Knowledge regarding definition of diarrhoea found that, 88% of the total respondents, can define diarrhoea while 12% of the total respondents were unable to define diarrhoea correctly. These findings were consistent with a study in rural area of Wardha District of Maharashtra, India in 2001.¹¹ Among the total respondents, about 33% used only ORS during diarrhoeal episode and 63% used both ORS with drugs during diarrhoea. Out of the total respondents, 42.8% believed that ORS can prevent water loss and 22.2% believed that ORS can prevent salt and water imbalance. About 6.1% of the total respondents had no knowledge regarding the purpose of ORS use. This finding corroborates with the findings of similar study conducted in India.¹² This study showed that, about one-fourth (23.3%) of the total respondents learned about ORS from Health worker and Doctor. Majority (29.4%) and about one-tenth (11.1%) learned about ORS from their family members and mass media respectively. These findings were similar to a study in Pakistan, where most of the mothers

obtained the information about oral rehydration solution from doctors (37.2%), the media (25%), and their mothers (20%) in Rawalpindi.¹³ Study showed that, majority (61.1%) of the respondents given ORS during their child's vomiting and rest (30%) did not use ORS. Maximum (77.8%) of the respondents thought that ORS preparation is easy at home and majority (88.8%) of them can afford to buy ORS. Regarding the role of ORS, majority (81%) of the total respondents believed that ORS can prevent hospital admission while minimum (15%) did not believe the role of ORS in preventing hospital admission. Study found, 77% respondents started ORS immediately after diarrhoea, 14% started ORS only in their child's weakness and 9% started ORS after seeing a doctor. Frequency of ORS use during diarrheal episode revealed that, 46% used ORS 2-3 times a day, 30% used ORS after every loose stool, 22% used ORS haphazardly and rest 2% never used ORS during diarrhea. Similarly, in a study in rural Aligarh in India showed that 70.4% of mothers knew about oral rehydration solution, and among those, only 30.2% of mothers knew the correct method for preparing it.¹⁹ Another study in Nigeria showed that all mothers had heard of oral rehydration solution, only 20% had a good level of knowledge of the home management of acute watery diarrhea, and

7.5% had used oral rehydration solution.¹⁴Type of water used for ORS preparation, majority (70%) used Tap water and minimum (5%) used Boiled water. Remaining one-fourth (25%) used Tube well water to prepare ORS. This study also found that out of 180 respondents 48% used drinking mug and 32% used drinking glass as water measurement tools. Rest 20% used 500 ml water bottle to prepare ORS. Regarding the preparation of ORS, majority (93%) can prepare ORS from packet ORS and one-fourth (25%) mixed small amount of water to prepare ORS. A significant portion (5%) reused leftover ORS from previous day and majority (64%) of the respondents can make homemade ORS when packet ORS is unavailable. These findings were similar with a study conducted in India.¹⁵Breast feeding a child with acute diarrhea not only helpful in preventing dehydration but also forms one of the important preventive measures recommended by WHO.¹⁶Out of the total respondent about three-fourth (75%) continued breastfeeding during diarrhoea and rest (13%) discontinued breastfeeding during their child's diarrheal episode.

Conclusion

Strengthening community-based health education and ensuring easy access to ORS packets are crucial steps toward reducing dehydration-related complications in children. Continuous awareness campaigns and practical demonstrations can help bridge the gap between Attitude, knowledge and proper use. Overall, empowering mothers with accurate information and practical skills on ORS preparation and administration can play a vital role in preventing childhood morbidity and mortality caused by diarrheal diseases.

References

1. Bham, S. Q., Shah, M. A., & Saeed, F. Knowledge, attitude and practice (KAP) of mothers on the use of oral rehydration

- salt (ORS) in children with diarrhoea: A cross-sectional survey conducted at Dar-ul-Sehat Hospital, Karachi. *Annals of Abbasi Shaheed Hospital and Karachi Medical and Dental College*, 2015; 20(2), 126-131.
2. Qureshi, R., Baloch, F., Kazi, N. H., Qureshi, I., & Kousar, T. Level of knowledge among mother's uses of ORS therapy in diarrhea under 5 years of children. *Pakistan Journal of Medical & Health Sciences*, 2022; 16(10), 466-468.
3. Barakat, A. M. A., Shaheen, H. M., Alkalash, S. H., & Farahat, T. M. Diarrheal management approach among caregivers of under-5-year-old children in an Egyptian rural area. *Menoufia Medical Journal*, 2020; 33(1), 5-10.
4. Hasan, M. N., Siddiqui, M. N., et al. Assessing Contributory Factors of Diarrhea Among Under-Five Children in Bangladesh From 2006 to 2019 and Recent Increases: A Cross-Sectional Study. *Health Science Report*, 2025; 13;8(2):e70457.
5. Sarkar, A. R., Hossain, Z. Childhood diarrheal infections among the multi hazard disaster risk zones in Bangladesh: A household level analysis. *Acta Tropica*, 2025; 269, 107753-107755.
6. Bihniak, P. I., Gomon, M. L., & Krenov, K. Y. Practical use of oral rehydration solutions and their implementation in ERAS protocols (literature review). *Acta Scientific Gastrointestinal Disorders*, 2025; 4(10), 64-69.
7. Divasha, Pasi, R., & Ravi, K. S. Level of knowledge of mothers (18–35 years of age) of under 5 children regarding ORS therapy. *Journal of Family Medicine and Primary Care*, 2020; 9(9), 4747-4750.
8. Goyal, A. K., Agarwal, A., Parmar, V., Khatri, M., & Luthra, R. A community-based survey on knowledge and practices of ORS usage among mothers in a rural village in Maharashtra. *SSR Institute of*

- International Journal of Life Sciences, 2024; 10(4), 5856-5861.
9. Nuzhat, S., Islam, M. R., Al Fidah, M. F., Islam, S. B., Rahman, M. M., Paul, S., Nesa, M.-U., Chowdhury, D., Nabi, S. F., Awn, A. M. S. A., Khan, L. A., Kawser, C. A., Chisti, M. J., & Ahmed, T. (2025). Maternal knowledge, attitude and practice regarding commercial oral rehydration salt solution: experience from a diarrhoeal disease hospital in Bangladesh. *BMJ Paediatrics Open*, 2025; 9, e003299.
 10. Thammanna PS, Sandeep M, Sridhar PV. Awareness among mothers regarding oral rehydration salt solution in management of diarrhoea: A cross-sectional study. *Indian J Child Health*. 2015 Dec 29; 2(4):215-218.
 11. Vikram Datta, Rosy John, V.P. Singh and Pushpa Chaturvedi. Maternal Knowledge, Attitude and Practices Towards Diarrhea and Oral Rehydration Therapy in Rural Maharashtra. *Indian Journal of Pediatrics*, 2001; 68(1),1035-1037.
 12. Chaudhary P, Basu S, Dzeyie AK, Gulla S, Khade S, Patel A, et al. 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. *J Commun Dis*. 2014;46(3):13-21.
 13. Sultana A, Riaz R, Riaz A, Khurshid K. Knowledge and attitude of mothers regarding oral rehydration salt. *J Rawal Med Coll*, 2010; 14:109–11.
 14. Mustapha MG, Ifah SS, Garba MA. Knowledge, attitude and practices of mothers on home management of childhood acute watery diarrhoea in Maiduguri, Borno State, Nigeria. *Niger Med J* 2008; 49:5–8.
 15. Rani VP, Vaz LS, Kusneniwar GN. Knowledge and attitude of mothers about Diarrhoea, ORS, and feeding practices in under-five children in a rural area of Ranga Reddy, Telangana. *JMSCR* Oct. 2016; 10:13201-13209.
 16. Northrup RS. The epidemiology and etiology of diarrhea. *Reading on Diarrhea. Student Manual*, World Health Organization, Geneva : 2000; 3-119.