



## **KNOWLEDGE, ATTITUDES AND PRACTICE ON ORAL REHYDRATION SALT AMONG MOTHERS ATTENDING TO OUTPATIENT PHARMACY, DISTRICT GENERAL HOSPITAL MATARA**

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Diarrhea is a significant health issue in developing countries. The World Health Organization (World Health Organization, 2006) reports that it is the second leading cause of death in children under five years old. This study aims to assess mothers' knowledge, attitudes, and practices regarding Oral Rehydration Salts (ORS).

This was a cross-sectional survey-based study conducted at the outpatient pharmacy of the District General Hospital Matara. Data was collected from mothers attending the pharmacy using a content and face validated questionnaire (using experts in the field). The questionnaire was self-administered after obtaining informed consent. The sample size was 260. Mothers having children under the age of five were included through the lottery method. The questionnaire included questions about their knowledge, attitudes, and practices regarding Oral Rehydration Salt. Response rate was 98%.

The mean age of mothers in the study was 29.9 years. Regarding their understanding of diarrhea, 78.5% correctly defined it as the frequent passing of watery stools. Most of the mothers (90.8%) had heard of ORS, but only 46.9% knew that it replaces salts, energy, and water lost during diarrhea. Some misconceptions were found, with 31.2% believing ORS could stop diarrhea, 8.5% thinking it could stop vomiting, and 11.2% needing more awareness of its purpose. Regarding storage, 5% of mothers stored prepared ORS for more than one day. When it came to home remedies, 68.1% of mothers used them, while 26.5% did not. Furthermore, 80% of mothers agreed they should give extra food and drinks during diarrhea. However, 15.4% believed that breastfeeding could worsen diarrhea, while 69.2% disagreed with this idea. In terms of preparation, 82.3% claimed to know how to prepare ORS, but only 54.2% provided the correct answer (1 sachet of ORS dissolved in 1000mL).

According to the findings of this study, the mother's knowledge about the use of ORS for treating diarrhea was inadequate. Therefore, implementing more educational programs about ORS for mothers would be beneficial.

**Keywords:** Knowledge, Attitudes, Practice, Oral Rehydration Salt, developing country, Sri Lanka, Diarrhea

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### **INTRODUCTION**

Diarrheal disease is the second most common cause of death in children under five years old, with around 520,000 children dying from it each year. Infants and children are particularly vulnerable to diarrheal disease because of contaminated food and water, inadequate sanitation, challenges in expressing their needs, high metabolic rate, and susceptibility to infections (Sow et al., 2016). According to the United Nations International Children's Emergency Fund (UNICEF), diarrhoea was a significant cause of child mortality, accounting for approximately nine percent of all deaths among children under five years worldwide in 2019 (Opeyemi, 2022). Available data indicates that 1,300 young children are dying every day despite the existence of a simple treatment solution for diarrhea. Furthermore, deaths from diarrhea among children under 5 are most prevalent in South Asia and Sub-Saharan Africa (Sow et al., 2016). Diarrhea is defined as the passage of three or more loose or liquid stools per day. Dehydration is the primary complication of diarrhea, resulting from the excessive loss of fluids and electrolytes from the body. Dehydration can be life-threatening and may lead to fatal outcomes unless the loss of fluids and electrolytes is promptly replaced (World Health Organization, 2006).

Oral Rehydration Therapy (ORT) is a method used to administer fluids and electrolytes to address dehydration. Oral Rehydration Solution (ORS) is a solution containing a precise mixture of electrolytes and carbohydrates dissolved in water. It is designed to replace the salt and water lost during dehydration caused by conditions such as gastroenteritis, diarrhea, and vomiting (Ofei and Fuchs, 2019). Oral rehydration salt is the first-line treatment for dehydration, offering a simple, cost-effective, and immediate intervention. It can be administered by mothers who have been educated about its use as a home treatment when a child's diarrhea begins. The global use of ORS has contributed to a 61% decrease in deaths due to dehydration from diarrhea among children under five years old (UNICEF, 2012). In Sri Lanka, the mortality rate due to diarrhea among children decreased significantly from 0.05% in 2003 to 0.01% in 2017 (Cohen Jr and Colford, 2017). Therefore, studying mothers' knowledge, attitudes, and practices regarding ORS is crucial to improve their understanding and utilization of this life-saving treatment. By enhancing their knowledge and practices, we can effectively prevent dehydration, reduce morbidity and mortality rates associated with diarrhea, and improve child health outcomes.

### **METHODOLOGY**

The main objective of this study was to assess the knowledge, attitude, and practices of mothers of children below five years of age regarding Oral Rehydration Salt (ORS) at the Outpatient Pharmacy of District General Hospital Matara. The study also aimed to discover the home remedies mothers use to treat dehydration. This research was a cross-sectional survey conducted at District General Hospital Matara, focusing on mothers with children under five years old who visited the outpatient pharmacy. About 800 mothers visit this pharmacy every month. A sample of 260 mothers was selected with a 95% confidential interval and 5% error, according to Raosoft software. The mothers were chosen randomly using a lottery method. The study considered demographic factors like age, education, and occupation, as well as the mothers' knowledge, attitudes, and practices related to ORS. All



participating mothers were given a content and face validated questionnaire covering these topics after obtaining informed consent.

Ethical approval for this study was obtained by the Ethics Review Committee of the Faculty of Health Sciences, The Open University Sri Lanka. Informed consent was obtained from all participants, who were assured of anonymity and confidentiality. Continuous data were summarized using median/mean values, while categorical data were summarized as percentages. A significance level of 0.05 was used as significant throughout the analysis.

## RESULTS AND DISCUSSION

Among the total participants (260), the mothers had a mean age of 29.9 years ( $\pm 5.8$  years) with an age range of 18 to 44 years. The largest group of participants (40%) fell into the age range of 25 to 31 years. In terms of education, the majority (49.62%) had achieved an advanced level of education. Regarding employment status, the majority (62.7%) were non-employers. Most mothers (78.8%) had one child under the age of five, while 20.4% had two children in that age group, and the remaining mothers had three children.

### Knowledge about ORS

In the study, 78.5% of mothers correctly defined diarrhea as the frequent passing of watery stools. However, 18.1% incorrectly identified diarrhea as the passage of greenish stool. A very small percentage, 0.8%, thought diarrhea was the presence of blood in stool, and 0.4% believed it was the frequent passage of non-watery stool. When their children had diarrhea, 96.2% of mothers said they consulted a doctor, while the remaining 3.8% said they used prescription medications available at home. Additionally, 90.8% of mothers had heard of ORS, which is consistent with similar studies conducted in Sri Lanka (Fernando et al., 2017) and India (Kadam et al., 2012).

A relatively small proportion (12.3%) of mothers reported acquiring knowledge about ORS from media sources, while the majority (72.7%) stated that clinicians were their primary source of information. A minor percentage (3.8% and 1.9%, respectively) indicated learning about ORS from pharmacists or pharmacies, as well as from family and friends. This finding is similar to a previous study that revealed that 80.1% of participants heard about ORS from healthcare professionals (Agbolade et al., 2015).

In this study, 46.9% of mothers recognized that ORS replaces the body salts, energy, and water lost during diarrhea. However, 31.2% believed it could stop diarrhea, 8.5% thought it could stop vomiting, and 11.2% unaware of ORS's purpose. A study by Thammanna et al. in 2015 reported that 58.4% of mothers knew about the role of ORS in treating diarrhea (Thammanna et al., 2015). In our study, 85.4% of mothers have used ORS previously, although they were not always certain about the appropriate timing for its initiation and cessation. Many reported starting ORS when diarrhea began and stopping when the child recovered. It's worth noting that World Health Organisation guidelines suggest ORS should start at the first sign of diarrhea to prevent dehydration (World Health Organisation, 2006).

71.5% of mothers indicated knowing when to stop ORS, while 22.3% responded negatively, indicating uncertainty. Among those who knew when to discontinue ORS, the majority (61.4%) correctly stated they would stop when their child's diarrhea had resolved, while 7.2% mentioned they would cease when their child became active again.

### Practices on ORS usage

In our study, 45% of mothers reported using soup, while 39.6% mentioned using rice water. Additionally, 7.7% opted for juice, 3.8% utilized a sugar and salt solution, and a minimal



0.8% indicated not administering any remedy for diarrhea. The majority of mothers (82.3%) demonstrated the correct practice of how to prepare ORS. However, a smaller percentage (14.6%) admitted not knowing how to prepare it. Study findings reveal various practices among mothers regarding ORS preparation and administration. Specifically, 54.2% reported correctly dissolving one sachet of ORS in 1 L of water, which was lower than findings from a previous study (Hanif et al., 2018), where 80.4% had good knowledge. It's important to note that, a 1000 mL sachet of ORS should be dissolved in 1000 mL of water in government hospitals. However, only a small fraction (0.8%) adhered to the manufacturer's instructions. Additionally, 54.6% reported providing ORS to their children in unrestricted quantities, 19.6% used a 100 ml coffee cup to administer ORS, 17.3% were uncertain about the appropriate ORS dosage, and 0.8% followed medical guidance for ORS administration.

Most mothers (68.1%) utilized previously boiled water, while 22.3% used drinking water to prepare ORS. A small percentage (1.5%) relied on any available water source. When administering ORS, most mothers opted for using a cup, with 15.8% using a cup and spoon, and 2.7% relying on feeding bottles. A similar study in Nigeria found that 82.9% of mothers indicated cup and spoon as a safe utensil to give ORS to their child, while 7.7% used a feeding bottle and 8.8% had no idea (Agbolade et al., 2015).

Approximately half of the mothers (55.8%) reported keeping the prepared ORS for a duration of 24 hours, while 30.4% indicated they stored it for less than 24 hours. Additionally, 5% of mothers mentioned keeping it for more than one day. However, most mothers (86.2%) consumed the ORS within one day. Regarding taste, most mothers (81.5%) reported that their children liked the taste of ORS. In a study by Thammanna et al. (2015), 63.9% of mothers said that their children did not accept the taste of ORS and therefore tended to give flavoured solutions. Regarding purchasing ORS, 91.1% of mothers confirmed that they checked the expiry date. Most mothers reported that they sought information about the use of ORS from a healthcare professional or pharmacist when purchasing it. Furthermore, 68.1% of mothers indicated that they utilized home remedies or medicines, while 26.5% stated that they did not use such remedies. Among the mothers who answered "yes", the majority reported using Rasam, herbal soup, fruit juice (pomegranate), and kanji as home remedies. Some mothers mentioned using medicines prescribed by a doctor, although they were not sure about the specific names of these medications. This practice is consistent with findings from similar studies (Hanif et al., 2018) and underscores the importance of understanding and addressing home-based diarrhea management strategies.

### **Attitudes on ORS**

In our study, 80% of mothers agreed that they should give additional foods and fluids during diarrhea. 15.4% of mothers responded that breast milk would aggravate diarrhea conditions, while 69.2% of mothers disagreed with this statement. Comparing these results with previous studies, it was found that 90.9% of mothers continued feeding during diarrhea. In comparison, 50.6% of mothers gave solid and semi-solid food during diarrhea in one study (Mohammed et al., 2013), and 86% of mothers gave other food during diarrhea in Nigeria (Agbolade et al., 2015).

In our study, 30.8% of mothers considered homemade ORSs to be equally effective as the ORS formulation provided at health facilities. Additionally, 38.1% of mothers agreed that ORS is the mainstay of diarrhea treatment, while 18.5% disagreed. A significant portion, 43.5% of mothers, responded as "don't know" regarding the mainstay of diarrhea treatment.

### **CONCLUSIONS/ RECOMMENDATIONS**

According to study's findings, mothers' understanding of using ORS for diarrhea treatment was lacking. It's essential to improve this by educating mothers through various programs. To



achieve this, an educational campaign can be launched in MOH health clinics. This initiative would involve pharmacists, dispensers, and medical officers providing guidance on using ORS correctly. Informative posters and banners in the outpatient department (OPD) could also help illustrate ORS's importance. Additionally, comprehensive mass media and social media campaigns can be launched to inform the public about the correct use of ORS as the primary treatment for diarrhea.

## REFERENCES

- A L P de S Seneviratne. (2003). *A study of maternal awareness of acute diarrhoeal disease*.
- Bello, D. A., Afolaranmi, T. O., Hassan, Z. I., Ogbonna, F. C., Inedu, P. G., Ejiga, C., & Chirdan, O. O. (2017). *Knowledge and use of oral rehydration solution in the home management of diarrhea among mothers of under fives in Jos, Plateau State*.
- Bham, S. Q., Shah, M. A., & Saeed, F. (2015). *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*. 20.
- Blum, L. S., Oria, P. A., Olson, C. K., Breiman, R. F., & Ram, P. K. (2011). Examining the use of oral rehydration salts and other oral rehydration therapy for childhood diarrhea in Kenya. *The American Journal of Tropical Medicine and Hygiene*, 85(6), 1126–1133.
- Fernanado, T., Tharanganie, S., Subasinghe, S., Pathirana, K., Ramachandra, R., Senadheera, A. & Priyanthi, W. 2017. (7). *Knowledge, Attitudes and Practices on Oral Rehydration Salt Solution for Diarrhoea among Mothers with Children under Five Years Old*. Pdf, n.d.)
- Hanif, Z., Afridi, A., Kibria, Z., Maroof, A., & Sumayyah, E. (2018). *Knowledge, attitude and practice of mothers regarding the use of oral rehydration solution in children's suffering from diarrhea*. 8(1).
- Kadam, D., Hadaye, R., & Pandit, D. (2012). *Knowledge and practices regarding oral rehydration therapy among mothers in rural area of Vasind, India*.
- Mohammed, W. J., Hassan, R. J., Kadhm, R. A. J., & JasimTaqi, A. (2013). *Assessment of Mothers' Knowledge, Attitude and Practice in Use of Oral Rehydration Solution For Diarrhea in a Sample of the Primary Health Care Centers of Al-Karkh Health*
- Mohsin, A., Raza, A. B., & Ahmad, T. M. (2012). *Knowledge, Attitude and Practices of the Mothers Regarding Oral Rehydration Solution, Feeding and Use of Drugs in Childhood Diarrhoea*.
- Onwukwe, S., van Deventer, C., & Omole, O. (2016). Evaluation of the use of oral rehydration therapy in the management of diarrhoea among children under 5: Knowledge attitudes and practices of mothers/caregivers. *South African Family Practice*, 58(2), 42–47.
- Rasania, S. K., Singh, D., Pathi, S., Matta, S., & Singh, S. (2005). *Knowledge and attitude of mothers about oral rehydration solution in few urban slum of delhi*. (Shireen Qassim Bham1, n.d.)
- Sillah, F., Ho, H.-J., & Chao, J. C.-J. (2013). The use of oral rehydration salt in managing children under 5 y old with diarrhea in the Gambia: Knowledge, attitude, and practice. *Nutrition*, 29(11–12), 1368–1373.
- Sultana, A., Riaz, R., Ahmed, R., & Khurshid, R. (2010). *Knowledge and Attitude of Mothers Regarding Oral Rehydration Salt*.
- Thammanna, P. S., Sandeep, M., & Sridhar, P. V. (2015). Awareness among mothers regarding oral rehydration salt solution in management of diarrhea: a cross-sectional study. *Indian journal of child health*, 02(04), 215–218.
- World health organization (2006). Oral rehydration salts.
- United Nations International Children's Emergency Fund (2012)



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