

Current Awareness of Mothers Regarding the use of Ors: Knowledge, Attitude and Practice

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Objectives: To study the current situation about the knowledge, attitude and practice of mothers regarding the use of ORS in children with diarrhea. **Design:** Hospital based descriptive study. **Place of study:** Diarrhea section of Pediatric Department, Jinnah Hospital, Lahore. **Material and Methods:** For a period of 2 months (April & May 2003) a single interviewer, according to a pre-designed questionnaire, interviewed mothers of all children aged 1-60 months admitted with diarrhea and signs of some dehydration. Children presenting with severe dehydration, shock, sepsis, or any other primary diagnosis along with accompanying diarrhea like hepatitis, pneumonia, meningitis etc. were excluded. Queries were made regarding mother's education and socioeconomic background, the knowledge of the mother about diarrhea, ORS, source of information regarding ORS use, method of preparation and use of ORS, type and quantity of ORS used. **Results:** A total of 151 mothers/ caretakers were interviewed. Among the children, 93(61.5%) were males and 58(38.5%) were females, majority (68.9%) is below 12 months of age. Most (41.05%) were from a rural area, and also majority (56.9%) is uneducated. Out of the total, 128 (84.7%) had used ORS, and 23 (15.3%) had never used it. 117 (77.4%) mothers knew that ORS (nimkol) is a rehydration solution. 89 (69.5%) used the commercially available sachet pack, 80 (62.5%) knew the proper method of preparation of ORS sachet pack, while 48 (37.5%) were unable to tell the right way of preparing it. Out of the 23 mothers who had never used ORS, the common reason was lack of knowledge about the use and importance of ORS. 114 (75.8%) mothers came to know about ORS from a health personal, a doctor in majority of cases, but only 28.9% were assessed for the preparation of ORS, and only 45.6% mother were told about the exact quantity of ORS to be used.

Conclusions: Majority of children were below 1 year of age. Majority of mothers, despite being illiterate and having a rural background, knew about ORS use and had used it, but still 47.01% were preparing it wrongly. Although most of them got information from the first medical attendant, but it was rather incomplete, as the quantity of ORS to be used was not told and the mother's knowledge to prepare ORS was not assessed. Sachet pack was the predominant type of ORS used.

Key Word: ORS (Oral rehydration solution).

In developing countries, diarrhea is the common cause of mortality among children aged <5 years, with an estimated 2 million deaths annually¹. Before the regular use of ORS in late seventies this figure was 5 million deaths per year², but the introduction of oral rehydration therapy has reduced mortality due to diarrhea from >5 million children, under the age of 5, in 1978 to 1.3 million in 2002¹⁹. Before oral rehydration therapy (ORT) was developed, intravenous fluid therapy was the mainstay of fluid therapy for diarrheal dehydration. Captain Phillips of the US Army in 1964 first successfully tried oral glucose saline on two cholera patients. Following this, scientists working at the Cholera Research Laboratory, Dhaka, and the Infectious Diseases Hospital, Calcutta, contributed to the development of modern oral rehydration salt (ORS) solution³. Based upon this information, the World Health Organization in 1978 launched the global diarrhoeal diseases control program, with ORS at its heart and the short-term objective of reducing mortality due to diarrhea³. The worldwide consequences of ORS therapy have been discussed in four categories: (1) adoption of ORT as the primary therapy for acute dehydrating diarrhea; (2) establishment of national ORT programs; (3) scientific knowledge gained from studies into intestinal absorption of oral rehydration solutions; and (4) implications of ORT for the next decade⁴. The Diarrheal Disease Control Program when launched, in late seventies was assigned a

high priority by the World Health Organization. By 1988 60% of the world had ORT available, and 25% of affected children received ORT, by the year 1990 it included 99% of the population of the developing world, although it was not uniformly implemented⁴. Despite relatively high ORT access rates (20%-70% in Africa and South East Asia respectively, 1989), oral rehydration solution (ORS) use was inadequate (12.1-26.7% Africa and Eastern Mediterranean respectively, 1988)²⁰. By the year 1990 according to Indian government studies, ORT use varied in India from 36-96.3%, but according to operational research by the National Institute of Cholera and Enteric Diseases, ORT use in the best health facilities was only 11-12%, yet the Indian CDD program has reduced child mortality from diarrhea by 50% between 1981-1990²⁰.

Infants and young children dehydrate more easily than adults, when fluid intake is insufficient or fluid loss is too high, because of the combination of a large extra cellular fluid volume, a large insensible loss and a mediocre concentrating capacity of the kidney. In such situations oral rehydration is almost always possible⁵. ORT (oral rehydration therapy) includes, rehydration and maintenance fluids with oral rehydration solutions (ORS), combined with continued age appropriate nutrition⁶. In all cultures treatment of diarrhea usually begins at home, families should be encouraged to start therapy with a commercially available ORS as soon as diarrhea begins,

because treatment with ORS is simple and enables management of uncomplicated cases of diarrhea at home, regardless of the etiological agent. Severe dehydration is a medical emergency but mild to moderate dehydration can be safely treated at home⁷. Ever since the use of ORS started, efforts have been inducted on national and international levels to increase the awareness regarding its benefits and advantages, especially in the developing world, and Pakistan is no exception, as diarrhea is also the leading cause of infant and child death in Pakistan⁶. A cross sectional study was carried out in Islamabad in late eighties for similar reasons, in which about 75% respondents claimed that they had an experience of using ORS (Nimkol). Only 11% mothers of children who were currently suffering from diarrhea were using ORS (Nimkol) and a few mothers mentioned of giving home made fluid remedies like salt-water, salt-sugar-water or lemon-sugar-salt water for childhood diarrhea. Regarding the preparation of ORS (Nimkol) solution, just 57.8% respondents had a fairly accurate knowledge⁸. In the recent past similar studies have also been carried out in Asian countries like India⁹ and Bangladesh^{10,11}, African countries like Nigeria¹² and even United States¹³. Almost all studies had a common conclusion that knowledge about ORS regarding its indications of use, preparation and quantity to use is still not up to the mark among mothers and caregivers. With figures showing the 'ORS use rate' (Percentage of children 0-4 years with diarrhea in the last two weeks who received increased fluids and continued breast feeding during the episode) in Pakistan, which was 97% for the years 1990-1998¹⁴, 48% for the years 1995-2000¹⁵, 19% for the years 1994-2004¹⁶, it is probably still required to assess on regular basis the concepts of mothers and caregivers about the indications, preparation and quantity of use of ORS. The present study was a descriptive one that was meant to analyze the latest situation about the knowledge, attitude and practices regarding the use of ORS among mothers.

Material and methods:

This was a descriptive study that was carried out in the diarrhea section of the Pediatrics ward, Jinnah Hospital Lahore, for a period of two months i.e. April and May 2003. Mothers of all children aged 1-60 months admitted in the diarrhea section of Pediatrics department, during the above said period with a history of diarrhea and signs of 'some dehydration' only were included in the study. For labeling a patient as having some dehydration, signs mentioned in the WHO manual for the treatment of diarrhea were used¹⁷. Similarly, regarding the quantity of ORS required and used in a given child, again the age matched quantities of ORS mentioned in the same manual¹⁸ were considered as standard. A single interviewer, according to a pre-designed questionnaire after an informed consent, interviewed the mothers. Mothers were divided in three groups on the basis of education i.e.

uneducated, educated (anything between no education and professional education) and professional education. Children presenting with severe dehydration, shock, sepsis, or any other primary diagnosis along with accompanying diarrhea like hepatitis, pneumonia, meningitis etc. were excluded. The concept of including mothers of children having signs of some dehydration only was that such children are easier to rehydrate with ORS at home, yet they presented in an acute emergency situation and most of them required I/V treatment that could have probably been prevented by, in time and proper use of ORS at home. After recording the bio data of the mother and child including the family's socio-economic background & mother's education, queries were made regarding the knowledge of the mother about diarrhea, ORS, source of information regarding ORS use, method of preparation and use of ORS, type and quantity of ORS used in the index child during the current episode or previously and factors limiting the use of ORS. If ORS was not given what other fluids were chosen. Similarly it was also evaluated that whether or not the first health attendant informed the mother/caretaker to use ORS, assessed her knowledge regarding the preparation of ORS and informed her about the quantity of ORS to be given to the index child.

Results:

A total of 151 mothers/ caretakers were interviewed accompanying 163 children with signs of some dehydration, 12 mothers had more than one child brought to the hospital at the same time, but one mother was entered for one child only. Among the children, 93(61.5%) were males and 58(38.5%) females, table 1. The age breakdown of children affected with diarrhea as shown in table 2, reflects that majority (68.9%) is below 12 months of age. The educational, and socioeconomic breakdown of mothers is presented in tables 3&4 respectively, reflecting that most (41.05%) of the mothers were from a rural area, and also majority (56.9%) is uneducated. Out of the 151 mothers interviewed 128 (84.7%) had attempted oral rehydration during any episode of diarrhea present or previous, and 23(15.3%) had never used it. 117(77.4%) mothers knew that ORS (nimkol) is a rehydration solution and used in diarrhea and vomiting, out of the remaining 34(22.6%), 21(13.9%) had no answer, 10(6.6%) considered it as a drug for stopping diarrhea & vomiting and 3(1.98%) thought that it was a multivitamin to support and strengthen a dehydrated patient. Regarding the type of oral rehydration solution used, out of the 128 mothers who used it, 89(69.5%) used the commercially available sachet pack, 11(8.5%) each used home made salt and water solution, and the commercially available liquid ORS (Pedialyte), while 17(13.2%) mothers used more than one of the above at one time. Regarding the method of ORS preparation (sachet as well as home made), out of the 128 mothers who had ever used ORS 80 (62.5%) knew the proper method of preparation of ORS sachet pack, while

48 (37.5%) were unable to tell the right way of preparing it. To this figure of 48, those 23 cases were also added who had never used ORS making a total of 71/151 (47.01%) mothers who did not know the method of preparation of ORS. The common mistakes during preparation of ORS sachet in order of frequency were, trying to prepare a lesser quantity, unboiling of water, adding extra sugar to the solution and boiling after preparation. Factors limiting the use of ORS, in order of frequency were, disliking of taste, vomiting and poor compliance.

Out of the 23 mothers who had never used ORS in any episode of diarrhea, the common reasons for not using ORS in order of frequency included, lack of knowledge about the use and importance of ORS, not being told by any health personal, using alternate fluids like boiled water etc. and incorrect assessment regarding the severity of dehydration. Regarding the source of information for the use of ORS, 114 (75.8%) mothers came to know about ORS from a health personal, a doctor in majority of cases, 22 (14.6%) by a family member and 15(10.1%) through media sources. In case of mothers (114) who were asked to use ORS by a health personal, in only 28.9% of cases did the concerned health personal assessed the mothers capability regarding the preparation of ORS, and in 45.6% of the cases the health personal told the mother about the exact quantity of ORS to be used in a given type of dehydration. Most of the time mothers were just asked to give ORS to their child and it was taken for granted that she must know the preparation as well as the quantity of ORS to be used.

Table 1: Sex distribution of study cases (n=151)

Males	Females
93(61.5%)	58(38.5%)

Table 2: Age breakdown of study cases (n=151)

Age in years	n=	%age
0-1	104	68.9
1-2	29	18.9
2-3	11	6.9
3-5	07	5.3
Total	151	100

Table 3 Educational status of mothers (n=151)

Education of mothers	n=	%age
Uneducated	86	56.9
Educated	57	37.9
Highly educated	08	5.2

Table 4 Socioeconomic background of study cases (n=151)

Social status	n=	%age
Urban posh	14	8.6
Urban middle class	51	34.4
Urban slum	24	15.6
Rural area	62	41.4

Discussion:

The 'ORS use rate' (Percentage of children 0-4 years with diarrhea in the last two weeks who received increased fluids and continued breast feeding during the episode) in Pakistan, which was 97% for the years 1990-1998¹⁴, is 48% for the years 1995-2000¹⁵ and 19% for the years 1994-2004¹⁶. First of all we compared our present data with a similar study that was carried out in Rawalpindi-Islamabad in 1990⁸ in which 23% mothers were illiterate with about 75% respondents having an experience of using ORS (Nimkol) and 57.8% knew how to prepare it. While in our study 56.9% were uneducated and 84.7% mothers had an experience of ORS use in the present or previous episode of diarrhea and 62.5% knew the exact preparation of ORS, thus showing an improvement in awareness of the public regarding ORT, despite the fact that more mothers were illiterate in the present study (56.9% Vs 23%). We had around 15.3% mothers who had never used ORS, majority of them claiming that nobody insisted them to use it and they were not aware of its importance as well and a few saying that they were reluctant to use it because they had never used it before. Our data was also comparable with Indian studies e.g. a study was carried out in Madras in 1995 showing that 69% of mothers interviewed were aware of oral rehydration therapy, but only 66% among them practiced it²¹. Another study carried out in Maharashtra, India in 2001 showed that 90.7% of mothers were aware of ORT and ORS was easily available to the majority, but only 60% of mothers [corrected] practiced ORT. Nearly 1/3rd of mothers were mixing ORS in the wrong fluid⁹. Similarly data from rural Bangladesh in the year 2000 showed that the overall ORT-use rate was 29% and only 17% of the cases were using it adequately²². In another study carried out in rural Chittagong regarding the correct preparation of ORS, 33.3% mothers were able to demonstrate the preparation correctly and the remaining 56.4% demonstrated the preparation incorrectly¹⁰. This reflects that in the developing world the maternal knowledge towards diarrhea and ORS is still quite inadequate and there is a big gap between actual and desired practices. In our study about 70% percent mothers were using the commercially available sachet pack, reflecting a reasonably good awareness regarding the choice of ORS to be used. It was good to note that around 75% mothers came to know about ORS use from a health personal but on the other hand we found that in only 28.9% of cases, a mother was assessed regarding her knowledge to prepare ORS by the medical attendant, also the correct amount of ORS to be used was only known to 45.6% mothers, rather they were never told about the correct amount of ORS to be used by the first medical attendant. We found similar figures in other studies as well, e.g. in a study from Bangladesh only 34.5% mothers had used the correct amount of ORS during a diarrheal episode. In another study done in Madras, India in 1995, to evaluate the knowledge of mothers, pharmacists and medical attendants about the use of ORS, 48% of mothers

interviewed, received advice regarding oral rehydration therapy from medical personnel and health care providers while 44% of medical practitioners themselves were not sure of the exact method of dilution and preparation of the commercially available preparations²¹.

Poor ORS awareness and use is not only the problem of developing world such that the picture is not different in the developed world as well. In the United States ORT is grossly underused, where several hundred children still die annually of effects of diarrhea²³. One reason, the authors believe, is that physicians in developed countries have only limited exposure to serious dehydration and so are poorly informed on the principles of intervention. Contrary to the recommendations of the American Academy of Pediatrics (AAP) and the Centers for Disease Control and Prevention (CDC), health care providers overuse intravenous hydration, prolong rehydration, delay reintroduction of feeding, and inappropriately withhold ORT, especially with children who are vomiting¹³.

In children, dehydration from diarrhea may be prevented by increasing parents'/caregivers' general knowledge of diarrhea and dehydration and the appropriate usage of oral rehydration solutions. Intervention programs designed to increase parents'/caregivers' knowledge must be culturally sensitive and appropriate for diverse educational backgrounds and must assist in improving access to health-related information. Such intervention programs need to be carried out on regular basis for the health personal and general public in order to upgrade their knowledge about ORT and ORS. Similarly the impact of public awareness needs to be assessed on regular basis, as health personal and new mothers are continuously being added to the pool of the target population.

Conclusion:

It was concluded from our study that a reasonably good percentage of mothers knew about ORS, and had used it in the present or previous episode, but still a good percentage was not preparing it in the right way. Among those who were using it majority did not know the amount of ORS to be used in their child for a given type of dehydration. Although majority mothers were told by the first medical attendant to use ORS, but their skill of preparing it was not assessed, and the correct amount of ORS to be used was not informed.

References:

1. King CK, Glass R, Bresee JS, Duggan C. Managing acute gastroenteritis among children: oral rehydration, maintenance, and nutritional therapy. *MMWR Recomm Rep*. 2003 Nov; 52(RR-16): 1-16.
2. Drucker G. 500,000 lives saved each year. ORT 10 years after. *Int Health News*. 1988 Summer; 9(6): 2.

3. Bhattacharya SK. History of development of oral rehydration therapy. *Indian J Public Health*. 1994 Apr-Jun; 38(2): 39-43.
4. Banwell JG. Worldwide impact of oral rehydration therapy. *Clin Ther*. 1990; 12 Suppl A: 29-36; discussion 36-7.
5. Kist van Holthe J.E, van der Heijden A.J. Dehydration due to gastroenteritis in children. *Ned Tijdschr Geneesk*. 1999 Jan 23; 143(4): 193-6.
6. Mull JD, Mull DS. Mother's concepts of childhood diarrhea in rural Pakistan: what ORT program planners should know. *Soc Sci Med*. 1988; 27(1): 53-67.
7. Sturmberg J P, Watt P. Acute gastroenteritis in children. *Aust Fam Physician*. 1999 Apr; 28(4): 329-32.
8. Ahmed A, Malik IA, Iqbal M, Nawaz M, Azim S, Bukhtiar N, Bhatti RS, Anjum S, Ashraf L, Luqman M, et al. The use of ORS (Nimkol) in management of childhood diarrhea by mothers in the suburbs of Rawalpindi-Islamabad. *J Pak Med Assoc*. 1990 Aug; 40(8): 178-82.
9. Datta V, John R, Singh VP, Chaturvedi P. Maternal knowledge, attitude and practices towards diarrhea and oral rehydration therapy in rural Maharashtra. *Indian J Pediatr*. 2001 Nov;68(11):1035-7.
10. Ahmed FU, Rahman ME, Mahmood CB. Mothers' skills in preparing oral rehydration salt solution. *Indian J Pediatr*. 2000 Feb;67(2): 99-102.
11. Ahmed FU, Rahman ME, Mahmood CB. Limiting factors of ORS intake. *Bangladesh Med Res Counc Bull*. 1999 Aug;25(2): 35-41.
12. Akpede GO, Omotara BA, Shettima AG. Awareness claims versus actual knowledge of oral rehydration therapy and the salt sugar solution in northeastern Nigeria. *J Trop Pediatr*. 1996 Jun;42(3): 180-2.
13. Santosham M, Keenan EM, Tulloch J, Broun D, Glass R. Oral rehydration therapy for diarrhea: an example of reverse transfer of technology. *Pediatrics*. 1997 Nov;100(5): E10.
14. State of the world's children, 2000.
15. State of the world's children, 2001.
16. State of the world's children, 2004.
17. A manual for the treatment of diarrhea. World Health Organization. 1990:7.
18. A manual for the treatment of diarrhea. World Health Organization. 1990:11.
19. Rao MC. Oral rehydration therapy: new explanations for an old remedy. *Annu Rev Physiol*. 2004;66:385-417.
20. Sarkar K, Sircar BK, Roy S, Deb BC, Biswas AB, Biswas R. Global review on ORT (oral rehydration therapy) programme with special reference to Indian scene. *Indian J Public Health*. 1990 Jan-Mar;34(1):48-53.
21. Raghu MB, Balasubramanian S, Indumathy, Balasubrahmanyam G. Awareness of and attitude towards oral rehydration therapy. *Indian J Pediatr*. 1995 Jul-Aug;62(4):439-43.
22. Ali M, Atkinson D, Underwood P. Determinants of use rate of oral rehydration therapy for management of childhood diarrhea in rural Bangladesh. *J Health Popul Nutr*. 2000 Sep;18(2):103-8.
23. Endsley S, Galbraith A. Are you overlooking oral rehydration therapy in childhood diarrhea? It's not just for use in developing countries. *Postgrad Med*. 1998 Oct;104(4):159-62, 165-6, 171.