Original Research Article

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How knowledgeable and practicable are the mothers of under five children in urban slum, Tamil Nadu on: utilization of ORS, homemade fluids and feeding practices during acute diarrhoeal diseases

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ABSTRACT

Background: Globally, acute diarrhoea claims around 1.5 million lives of under-five children. In India, acute diarrhoeal disease (ADD) accounts for 8% of deaths in <5 yrs age group. Child may be pushed into an irreversible outcome as stunting because of inadequate nutrition and repeated bouts of infection during the first 1000 days of life. Oral rehydration therapy is the most effective treatment intervention which can avert about 14% of deaths in under five children.

Methods: A cross sectional study was done among 270 mothers of under five children from our urban health centre service area of PSGIMSR.

Results: Among 270 mothers of under five children most of them belonged to the age group of \leq 25 years. Only 10.7% of the mothers were aware that infection or germs cause diarrhea, signs of dehydration were not known by 80% of mothers. Mothers' with more than one child and mothers with education more than 8th class were emerged as the factors affecting ORS preparation.

Conclusions: The knowledge on diarrhoea was low. Although awareness regarding spread of diarrhoea and ORS was adequate in this community, knowledge regarding continuation of feeding and signs of dehydration were deficient. Thus educating the mothers of under-five children regarding correct practices of home management of diarrhoea is likely to further reduce diarrhoea morbidity and mortality.

Keywords: Utilization of ORS, Homemade fluids, Mothers of under five children, Urban slum, Tamil Nadu

INTRODUCTION

Diarrhoea is one of the leading causes of morbidity and mortality among under-five children. Globally, acute diarrhoea claims around 1.5 million lives of under-five children. Moreover, in the South-East Asian region diarrhoea has been estimated to account for 31.3% of under-five mortality. The current estimates in under five children suggest that there are about 1.4 billion episodes of diarrhoea per year with 123 million clinic visits

annually and 9 million hospitalization worldwide, with a loss of 62 million disability-adjusted life years (DALYs) Comparing estimates of the current global burden of diarrheal disease with previously published estimates, highlights that the incidence of diarrhoea has not changed much, although overall diarrheal mortality has declined.³

According to the report of UNICEF February 2018, diarrhoea causes 8% of death worldwide and 9% of death in India among under five children.⁴ Diarrhoea is a

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common factor leading the child to malnutrition, which would again makes the child prone to get other infections leading to a vicious cycle. Child may be pushed into an irreversible outcome as stunting because of inadequate nutrition and repeated bouts of infection during the first 1000 days of life. Stunting has long-term effects on individuals and societies, including: diminished cognitive and physical development reduced productive capacity and poor health, and an increased risk of degenerative diseases such as diabetes.⁵

Sustainable Development Goals (SDGs) called for a reduction in under-five mortality to at least as low as 25 per 1000 live births.⁶ Strategies followed by international agencies centered toward scaling up the use of ORT, zinc supplementation, and education regarding its appropriate usage for those in need with focus on cultural/hygienic factors. ORS is one of the most important medical advances of twentieth century. Low-osmolality ORS is preferred now because it reduces stool output by 20%, vomiting by 30%, and the need for intravenous fluid administration by 33% in comparison to regular ORS. Zinc supplementation reduces the duration of diarrhoea by one-fourth and 40% reduction in treatment failure and death in persistent diarrhoea. Washing hands with soap is cited as one of the most cost-effective public health intervention, reducing incidence by over 40%. But only 39% children with diarrhoea in developing countries receive ORT and contin-ued feeding. Only 22% children drink more fluids of any type during diarrhea.¹

The single most strategy as advocated by WHO in preventing diarrheal severity or death is ORS. Oral rehydration therapies can avert about 14% of deaths in under five children. However, the range of coverage of oral rehydration therapy varies between 2-16% in India.

However, the range of coverage of ORT varies between 2-16% in India. The coverage of ORS of under three years children is 26.2% according to NFHS-3. Studies have shown that, the level of awareness on a cause of diarrhoea as infection or germs was very low (9.0%). Majority expressed their knowledge of cause of diarrhoea in terms of mode of infection such as dirty water, spoiled or stale food, flies, general lack of hygiene and unclean food. The coverage of th

According to the IMNCI guidelines, children with no dehydration should be managed at home with ORS, home available fluids (HAF) & continue feeding including breast feeding. The early detection of diarrhea at home, early and optimal use of ORT, maintenance of proper, hygienic and safe feeding practices reduce the duration, severity, hospitalization, overall medical costs and death of under five children in diarrhea.

The awareness and use of ORT can substantially reduce mortality and morbidity due to diarrhoea. Hence, this study is been planned to determine knowledge and practices on acute diarrhoeal diseases (ADD) among mothers of under five children in the urban health centre service area, India. This assessment would help the public health professionals to tailor make the behavior change communication measures.

METHODS

A cross sectional study was carried out during August and September 2017. We studied urban slum areas of urban health centre service area of PSGIMSR, Coimbatore. The study area is served by our Institute Urban Health Centre. The total urban population of our study area was 8717 with an under-five population of 364. The entire sampling frame was covered however 270 mothers of under five children were only able to interview as they were only available even after making three visits to their house. A structured and pre-tested questionnaire was administered to the mothers of under five children through door-to-door survey. Verbal informed consent was obtained before interviewing each participant. Based on the study done in Pondicherry the level of awareness on knowing at least one preventive measure of diarrhoea was 65%, we calculated the sample size with 80% power and 10% of non-response the calculated sample size was 140. Statistical analysis was done using SPSS version 24: IBM. We calculated odds ratios using logistic regression to find out the risk factors for the lack of knowledge about preparation of ORS. 95% confidence intervals were stated for Odds ratios. In all analyses. P values less than 0.05 were considered significant.

RESULTS

Table 1 shows the sociodemographic characters of the study population. All mothers were literate and most of them belonged to the age group ≤25 years. More than half of the mothers were housewives. Predominantly the per capita income was >1000 and most of them lived in kutcha house. Out of 270 mothers, 44% had one child and 96% of families were nuclear. During the study period 88 (32.58%) children had an episode of diarrhoea.

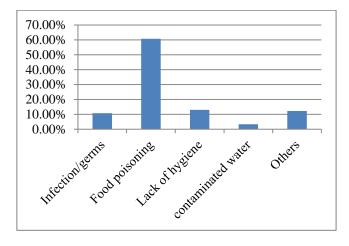


Figure 1: Knowledge regarding causes of diarrhoea among 270 mothers of under five children.

Knowledge regarding diarrhoea

Causes of diarrhoea

Only 10.7% of the mothers were aware that infection or germs causes diarrhoea. Majority expressed their knowledge of cause of diarrhoea in terms of mode of infection such as, 60.7% said that it may be due to food poisoning, spoiled or undigested food; 13% said may be due to lack of hygiene; 12.6% expressed that it may due to contaminated water, others were drugs, teeth eruption, evil eyes, heat, intestinal obstruction, hair in stomach and 2.96% did not know about the cause of diarrhoea (Figure 1).

Table 1: Socio demographic characteristic of the 270 mothers of under five children.

Categories	Number	(%)
Age of mothers		
≤ 25	175	64.8
>25	95	35.2
Education (years)		
Up to 8	106	39.3
>8	164	60.7
Occupation		
Daily wages	63	23.3
House wives	148	54.8
Others	59	21.9
Per capita income		
<1000	31	11.5
>1000	239	88.5
Type of house		
Kutcha	140	51.9
Semipucca	83	30.7
Pucca	47	17.4
Type of family		
Nuclear	259	96
Joint	11	4
Number of children		
One	120	44.4
>One	150	55.6

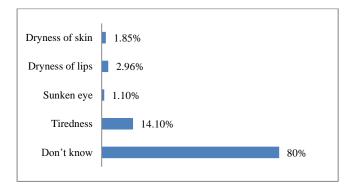


Figure 2: Knowledge regarding signs of dehydration among 270 mothers of under five children.

Table 2: Knowledge regarding ORS and homemade fluids and feeding practices during diarrhoea among 270 mothers of under five children.

Categories	Number (%)		
Heard about ORS			
No	72 (26.7)		
Yes	198 (73.3)		
Whether ORS is used for diarrhoea			
No	94 (34.8)		
Yes	176 (65.2)		
Know ORS preparation			
No	95 (35.2)		
Yes	175 (64.8)		
When ORS should be given			
As doctor advice	111 (41.1)		
When frequency increases	34 (12.6)		
Immediately	33 (12.2)		
Don't know when to give ORS	92 (34.1)		
Whether ORS should be stopped if d	iarrhoea		
persists			
No	108 (40)		
Yes	63 (23.3)		
Don't know	99 (36.7)		
Aware of homemade ORS			
No	182 (67.42)		
Yes	88 (32.58)		
Whether water should be restricted			
No	248 (91.9)		
Yes	22 (8.1)		
Whether diet should restricted			
No	256 (94.8)		
Yes	14 (5.2)		
Whether breast feeding stopped			
No	263 (97.4)		
Yes	7 (2.6)		
Whether bottle feeding associated with diarrhoea			
No	82 (30.4)		
Yes	188 (69.6)		

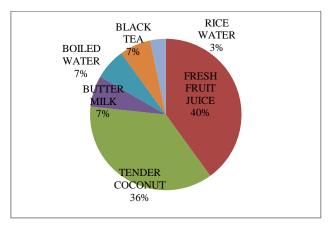


Figure 3: Home available fluids that were given by mothers of under five children during diarrheal episode (n=88).

Signs of dehydration

Signs of dehydration was not known by 80% of mothers, rest have said as tiredness 14.08%, dryness of lips 2.96%, dryness of skin as 1.85% and sunken eye as 1.11% (Figure 2).

Table 3: Multivariable adjusted analysis of factors affecting the knowledge regarding ORS preparation (n=270).

Independent variable	Odds ratio (95% CI)	P value	
Age (in years)			
≤ 25	1.7 (0.9 to 3.0)	0.05	
> 25	1	0.03	
Number of children			
1	1	0.02	
>1	1.8 (1.0 to 3.0)	0.02	
Mother's education			
Up to eight years	1		
More than eight	2.46 (1.4 to 4.1)	.001	
years	2.40 (1.4 10 4.1)		

Hosmer-Lemeshow goodness-of-fit Chi-Square.

Prevention of diarrhoea

More than half of the mothers (57%) have said that diarrhoea can be prevented by taking medicine, 17.4% by good hygiene, 8.5% by good food, 4.4% by taking ORS, 1.5% by taking boiled water and 11.2% did not know that diarrhoea is preventable.

Knowledge regarding ORS and homemade fluids and feeding practices during diarrhoea

Almost 73.3% of mothers have heard about ORS. Of which 92.9% have heard ORS from medical personnel, 4.5% from neighbours, 2.5% from Anganwadi centre. 69.25% of mothers were aware that ORS is used for diarrhoea, 4.08% for diarrhoea and vomiting and 26.67% are not aware about the use of ORS. 64.81% of mothers knew about the preparation of ORS. Homemade ORS was not known to 67.42% mothers. None of the mothers have heard or were aware of zinc supplementation. Almost every mother has said that water, food and breast feeding should not be restricted during diarrhoea. Majority of the mothers knew that bottle feeding is associated with diarrhoea (Table 2).

Practice regarding management of diarrhoea

Only those mothers whose children had diarrhoea in the past month were evaluated for their actual practice and treatment seeking behaviour. In the past month period 88 (32.58%) children had an episode of diarrhoea. During diarrheal episode 70 (79.5%) mothers sought medical care, of which 50 (71.4%) visited UHC, 20 (28.5%) visited private practitioner. Rest of 10 (11.1%) visited

medical shop, 3 (3.4%) did oil massage at home, 5 (6%) thought that it get relieved by itself. Among 88 children 40 received ORS, 10 received home available fluids, 20 received both, and 18 didn't receive anything.

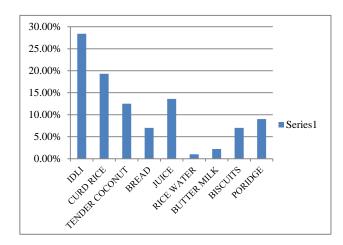


Figure 4: Solid and liquid food items that were given to their children during diarrheal episode (n=88).

Assessment on practice of when to visit the doctor showed that, among 70 mothers who seeked health care, 25 (36%) visited immediately at the onset of diarrheal episode, 30 (43%) when frequency increases, 15 (21%) when diarrhoea was persistent for more than two days.

Practice regarding usage of ORS

Regarding administration ORS, among 70 who gave ORS/home available fluids, 45 of mothers gave by tumbler, 10 by spoon, 8 by silver vessel, and 7 by bottle. More than half (55) of the mothers did not stop ORS and 15 stopped when diarrhoea was persistent. Regarding preparation of ORS/home available fluids, 62 of them used tumbler, 5 used other silver vessel, 3 used bottle. Majority (62) of mothers used the prepared ORS within 6 hours, 5 used within 6 to 12 hours, 3 used it within 24 hours.

Practice regarding usage of homemade fluids

Among 30 mothers who gave home available fluids during the diarrheal episode 12 gave fresh fruit juices, 11 gave tender coconut, 2 gave butter milk, 1 rice water, 2 gave boiled water, 2 gave black tea.

Feeding practices during diarrhoea

Among 88 children who had diarrhoea for the past one month, majority of the mothers 61 (69.3%) didn't restrict water or breast feeding during diarrheal episode. The solid foods and liquids given by mothers during diarrhoea were idli 25 (28.4%), curd rice 17 (19.3%) tender coconut 11 (12.5%), bread 6 (7%), juice 12 (13.6%), rice water 1 (1%), butter milk 2 (2.2%), biscuit 6 (7%) and porridge 8 (9%) (Figure 4).

Factors affecting the knowledge on ORS preparation

We analyzed the demographic variables such as young mothers aged up to 25 years, per capita income in family up to Rs. 1000 per month and education only till class eight, single child, as plausible risk factors for the lack of knowledge of ORS preparation. On univariable analysis mothers of younger age (\leq 25 yrs) (OR=2.02, 95% CI 1.08-3.57, P=0.03), mothers with education more than 8 years (OR=2.52, 95% CI= 1.51-4.22, p=0.000), mothers more than one child (OR=1.9, 95% CI= 1.14-3.15, p=0.01) are more likely to know about ORS preparation. However on doing multivariable analysis, mothers with more than one child and mothers with education more than 8^{th} class are the emerged factors which affected ORS preparation (Table 3).

DISCUSSION

Knowledge about the cause of diarrhoea among the mothers of under five children was very low (10.7%). Most of the mothers in our study stated the modes of spread of infection as a cause of diarrhoea. It was also found that, the awareness of mothers regarding methods of prevention was related to their awareness of cause of diarrhoea; these findings were similar to the study done in Pondicherry. Though dehydration is the cause of death among under five children, majority of the mothers were not aware signs of dehydration (80%). However regarding the knowledge of ORS and homemade ORS, majority of them have heard about ORS (73.3%) which is higher than another study done in Aligarh, India and comparable to that of a Nigerian study.

Though 73.3% of mothers have heard about ORS among which 92.9% have heard about ORS from medical personnel, 26.67% were not aware about the use of ORS. This is obvious in their practice, where among 88 children who had at least one episode of diarrhoea in last one month only Among 88 children 40 children received ORS. This shows that the mode of BCC has to be changed and measure to assess their degree of understanding should to shape by means of demonstration/peer health education. However the awareness about the usage of ORS in diarrhoea is high compared to the Delhi study. Regarding the practice, none of the mothers used ORS after 24 hrs which is really a good practice and it is high compared to the study done in Bankura. The state of the order of the study done in Bankura.

Among 270 mothers, 67.42% were aware of homemade ORS which was higher in our study compared to the Aligarh study. ¹⁸ However only 30 mother out of 88 gave homemade ORS and none of them gave salt sugar solution. This might be explained by the urban setting of the study with ready availability of packet ORS at low or zero cost, thereby rendering home-made ORS unnecessary. Nearly 23.3% of mothers had a wrong impression that ORS needed to be discontinued if

diarrhoea persisted. This is a cause of concern which needs to be rectified through health education.

When the feeding practice is looked into among 88 children who had diarrhoea for the past one month, majority of the mothers 61 (69.3%) didn't restrict water or breast feeding during diarrheal episode. Though mother's knowledge on feeding practices during diarrhoea was good 38.64% mothers didn't give solid food items for their children during the diarrhoeal episode. However this is lower when compared to other study done in Gwalior. 19

Our findings suggest that higher education levels and having more than one child were associated with higher presence of knowledge of ORS preparation while there was no effect of age of mothers on knowledge on ORS preparation. Focused health education of mothers has been shown to improve their knowledge and practice regarding diarrhoea and oral rehydration in earlier studies. 20,21 This reaffirms the importance of women's education in reducing diarrhoea morbidity and mortality through the correct use of ORS. Although the awareness regarding home available fluids was high, there was a large variety of these fluids being used with at least onefourths of them not suitable for oral rehydration. Thus ORS should be primarily used for oral rehydration while appropriate home available fluids might be used as supplement or only when ORS is not available.

CONCLUSION

The knowledge on diarrhoea was low henceforth health education to mothers regarding the complications and signs of dehydration has to be emphasized. Although awareness regarding spread of diarrhoea and ORS was adequate in this community, knowledge regarding continuation of feeding and signs of dehydration were deficient. Thus educating the mothers of under-five children regarding correct practices of home management of diarrhoea is required to further reduce diarrhoea morbidity and mortality.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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