

CARE GIVER'S KNOWLEDGE ABOUT CHILDHOOD DIARRHEAL MANAGEMENT IN A RURAL COMMUNITY IN SOUTH-SOUTH NIGERIA

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ABSTRACT

This study was designed to determine the knowledge of mothers of under-five children of Oral Rehydration Solution (ORS) and their child feeding/ drug use practices during diarrhea. This descriptive cross-sectional study was carried out among 204 mothers of under-five years children in a community in Edo state, using researcher administered structured questionnaires. Data was analyzed using SPSS, with statistical significance set as < 0.05 . One hundred and sixty (78.4%) mothers recognized the acronym 'ORS' out of which 17 (10.6%) knew the full meaning, 143 (83.3%) knew correctly that ORS provided energy during diarrhea, 128 (80.0%) knew it replaced lost fluids. Seventy-eight (38.2%) mothers acknowledged that children should be given more fluids than usual during diarrhea, 72 (35.3%) more breast milk than usual, and 94 (47.1%), more food than usual. One hundred and twenty (58.8%) mothers were aware that antibiotics may be used during diarrhea. Overall, only 80 (39.2%) mothers were found to have good knowledge of home management of diarrhea. Knowledge was significantly associated with age, marital status, educational status and social class of mothers. Health education should be tailored to address the knowledge gaps of mothers and target women who were more at risk of poor practice.

Keywords: Home management, Diarrhea, Child feeding practices

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INTRODUCTION

Globally, improved access to sanitation, clean drinking water, and increased availability of ORS have significantly reduced diarrheal-related deaths in under five children by nearly half the figures obtained in 1980- 1990 (Boschi-Pinto., et al 2006). Despite this progress, diarrhea still poses a significant threat to the health, wellbeing and survival of under-fives in many developing countries today, especially in Africa and South East Asia, and accounts for as much as 16% of childhood deaths (Black, 2003; United Nations Children's Education Fund, 2010). The main complication with diarrhea is the development of dehydration with insufficient fluid intake, which can be prevented through the appropriate use of ORS (Black et al., 2003).

However, there are indications that in some developing countries, knowledge and use of oral rehydration therapy to successfully manage diarrhea in under-fives, especially at home, may be declining, irrespective of the fact that the majority of mothers are reportedly reached by health education on oral rehydration therapy (Ekanem and Benebo, 1988; Federal Ministry of Health, 2007). Even in areas where ORS utilization is high, there is growing concern that practice is inappropriate (Rao et al.,

1998). Additionally, inappropriate feeding practices, irrational use of antibiotics, anti-diarrheal preparations and other forms of drug, including herbal remedies during diarrheal episodes by the mothers, may contribute to worsen diarrheal morbidity and mortality (Ali et al., 2000; Curtis, 2003; Onyema et al., 2002; Onyema et al., 2004; Seyal and Hanif, 2009).

As research into diarrheal incidence and home management practices has generally declined, there is at present a dearth of published work on maternal diarrheal related practices even in Nigeria. The study aimed to investigate the current level of knowledge of ORS and child feeding/ drug use practices of rural mothers with regard to home management of childhood diarrheal disease with a view to providing recommendations that will be useful in enhancing the quality and content of health information so as to ensure good practice and an overall success of diarrheal control in Nigeria.

MATERIALS AND METHODS

Study area and design: This cross sectional study was conducted in July 2011, in Edo State, in the South-south geopolitical region of Nigeria. Edo State is located between latitudes 50' 41 and 70 '381 North

and longitudes 50° 41' and 61° 11' East of equator. The state has tropical climate characterized by rainy season between April and October and dry season lasting from November to March. The state has a mean rainfall of about 1300 to 2300 mm (Edo Agricultural Development Programme, EADP, 1995). Through a multistage sampling technique, a representative local government area (Estako Central) was selected from amongst 18 others, and a political ward from within 10 wards in the selected local government area. The Afemai tribe is in the majority, and predominant occupation as farming. The ward is home to one comprehensive and several Primary health care centers.

Sample size: Sample size was calculated as 184, obtained using the formula for prevalence study, $N = pq/(E/1.96)^2$ (Araoye, 2003), with p set as 14% being the proportion of caregivers who could correctly prepare the UNICEF ORS in a study carried out in Enugu, Nigeria (Adimora et al., 2011) and non-response rate of 10%.

Study population: Study population included mothers of under-five children. Mothers who had been resident in the study area for at least one year prior to the study and were present at home were eligible for the study.

Sampling technique and data collection: A preliminary survey carried out in the ward identified eligible mothers, following which all were invited to participate. Consenting mothers were interviewed using a structured questionnaire designed by the researchers after an extensive literature search, and with the objectives in mind. The questionnaire was divided into two parts: Part A: socio-demographic questions and part B ORS knowledge related questions focusing on knowledge of benefits of ORS, preparation and frequency of use for feeding. Other questions sought to investigate child feeding and drug practices during diarrhea. The questionnaire was initially tested with 20 subjects in the pilot phase. Thereafter, amendments were made to ensure content and construct validity, including the addition of suitable options and modification in wordings of some questions. The administered questionnaires were collated and responses coded.

Maternal knowledge of home management of childhood diarrhoea was determined by allotting scores to responses to questions on ORS, feeding and drug use. A similar scoring system has been used in a previous study carried out in Nepal (Rehan et al., 2003). A correct response to questions relating to

meaning of ORS, use of ORS, method of preparation and preservation and frequency of administration was given a score of '1' each. An incorrect response was scored zero (0). A positive response each in favour of continued breast feeding, increased fluid intake, increased quantity of food eaten during and after diarrheal episodes, and non-use of drugs in the absence of fever was given a score of one (1), while a score of zero (0) was given for negative responses. Total possible score for knowledge of home management of diarrhea was 19. 'Good knowledge' was described by an aggregate score $\geq 50\%$ of the total, while 'poor knowledge', a score $< 50\%$ of the total.

Data analysis: Data was analyzed using the Statistical Package for Social Sciences (SPSS) for Windows version 15.0 (SPSS Inc, Chicago IL 60606-6412). Categorical data were presented as frequency tables, while continuous data were summarized as means with standard deviation. Chi-square test of association was carried out where appropriate with statistical significance set as $p < 0.05$.

Ethical Consideration: Institutional ethical approval was obtained and verbal consent voluntarily given by respondents. Confidentiality of respondents was maintained.

RESULTS

Two hundred and eighty nine mothers were identified, of which 204 (70.6%) participated in the study. Mean age was 29.47 ± 6.6 years as shown in table 1 alongside their socio-demographic profile.

A greater proportion of the mothers (146; 91.3%) obtained their health information on management of childhood diarrhea from the health centres. Other sources of information were family (7; 4.4%), mass media (5; 3.0%) and social club (2; 1.3%).

One hundred and sixty (78.4%) respondents were familiar with the acronym ORS, though only 17 (10.6%) respondents correctly knew the full meaning to be 'oral rehydration solution' as against 143 (89.4%) who could not. Overall, 134 (83.8%) respondents knew correctly that ORS provided energy during diarrhea, 128 (80.0%) knew it replaced lost fluids, while 88 (55.0%) and 113 (70.6%) knew that ORS increased appetite and cured diarrhea respectively.

A larger proportion (134; 83.8%), knew the correct ingredients (bowl, ladle, boiled clean water, ORS

sachet) required to mix ORS [one ORS sachet to 1 litre of water (two 500ml sachet water packs)]. Seventy –seven (58.3%) respondents knew correctly that prepared ORS should be discarded after 24 hours

Table 1: Socio-demographic characteristics of respondents (N = 204)

Variable	Frequency (%)
Age (Years)	
≤ 24	46 (22.5)
25 – 34	114 (55.9)
35 – 44	38 (18.6)
≥ 45	6 (2.9)
Social Class	
Low	154 (75.5)
Middle	40 (19.6)
High	10 (4.9)
Ethnic Group	
Estako	196 (96.1)
Others	8 (3.9)
Religion	
Christianity	76 (37.3)
Islam	128 (62.7)
Marital status	
Single	4 (2.0)
Married (monogamy)	146 (71.6)
Married (polygamy)	54 (26.5)
Educational status	
None	36 (17.6)
Primary	94 (46.1)
Secondary	64 (31.4)
Tertiary	10 (4.9)

while 22 (16.7%) incorrectly mentioned 12 hours, 9 (6.8%) 72 hours, 7(5.3%) 168 hours, and 6 (4.5%) after 6 hours. Fifty six (35.0%) would discontinue ORS if child refused to take or vomited, while 104 (65.0%) would encourage child to take ORS.

One hundred and thirty two (82.5%) respondents mentioned that ORS was the preferred fluid to be given at home during diarrhea. Other home based fluids included coconut water 26(16.3%), rice water 14(10.6%), weak tea or beverage 12 (7.5%), soft drinks 23 (14.4%) and herbal remedies 68 (42.5%).

One hundred and eighty four (90.2%) respondents were of the opinion that a child being weaned from breast milk should continue to receive same when he/she has diarrhea, while 20 (9.8%) recommended stopping breastfeeding altogether.

As to the quantity of breast milk a child with diarrhea should receive, 72 (35.3%) respondents knew that more breast milk than usual should be given. However, 96 (47.1%) were of the opinion that the same quantity of breast milk as usual should be given, while 36 (17.6%) opined breast feeding should be reduced.

Ninety-four (47.1%) respondents opined that more food than usual should be given during diarrhea, 80 (39.2%) same amount as before diarrhea, and 38(18.6%) less food be given. During convalescence, 94 (46.1%) caregivers opined that food intake should be more than before diarrhea, 102 (50.0%) same as before, while only 8(3.9%) mentioned less than before diarrhea episode.

Furthermore, twenty (9.8%) respondents knew that children with diarrhea should not be administered any form of medication as part of home therapy, but 120 (58.8%) said antibiotics may be given. About 123 (60.3%), 96 (47.1%), 86 (42.2%) and 72(35.3%) stated that anti-diarrheal drugs, multivitamins, analgesics and antimalarials should be given respectively. No mother had ever heard of the use of zinc tablets in the management of diarrhea.

Overall, 124 (60.8%) respondents were graded as having poor knowledge of home management of childhood diarrhoea while 80 (39.2%) had good knowledge. Knowledge was significantly associated with age, educational level and socioeconomic status of mother ($p = 0.00, 0.01$ and 0.00 respectively). Thus, unskilled mothers, those with no formal education and those aged >45 years and less than 24 years had poorer knowledge compared to others groups (see table 2).

DISCUSSION

The familiarity of most mothers with ORS has similarly been reported in other studies carried out within and outside the country (Ahmed et al., 1994; Akpede et al., 1997; Chatopadhyay, 2008; Datta et al., 2001). However, it appears that the all-too-popular use of the acronym had resulted in the majority being unfamiliar with its full meaning. The knowledge of the ability of ORS to prevent dehydration and restore energy was known to many, as was similarly reported in a study in Rawalpindi (Sultana et al., 2010) and contrary to what was reported in a study carried out in Northern-Nigeria (Ogunrinde et al., 2012).

Table 2: Socio-demographic determinants of maternal knowledge of home management of diarrhea (N = 204)

Variable	Knowledge		Total (N; %)	p value
	Good (n; %)	Poor (n; %)		
Age (years)				
≤ 24	26 (56.5)	20(43.5)	46 (100.0)	0.01*
25 – 34	74 (64.9)	40 (35.1)	114 (100.0)	
35 – 44	24 (63.2)	14 (36.8)	38 (100.0)	
≥ 45	0 (0.0)	6 (100.0)	6 (100.0)	
≤ 24	26 (56.5)	20(43.5)	46 (100.0)	
Social Class				
Low	84 (56.0)	66 (44.0)	154 (100.0)	0.01*
Middle	32 (80.0)	8 (20.0)	40 (100.0)	
High	8 (80.0)	2 (20.0)	10 (100.0)	
Marital status				
Single	0 (100.0)	4 (0.0)	4 (100.0)	0.00*
Married (monogamy)	38 (70.4)	16 (29.6)	146 (100.0)	
Married (polygamy)	82 (56.2)	64 (43.8)	54 (100.0)	
Educational Status				
None	10 (27.8)	26 (72.2)	36 (100.0)	0.01*
Primary	56 (59.6)	38 (40.4)	94 (100.0)	
Secondary	36 (56.3)	28 (43.8)	64 (100.0)	
Tertiary	6 (60.0)	4 (40.0)	10 (100.0)	

Likewise, the wrong perception that ORS cures diarrhea implies that the role of ORS in diarrheal management needs further emphasis. This latter misconception has also been identified in other studies (Akpede et al., 1997). This misconception may lead to mothers abandoning ORS if diarrhea persists or eventually subsides, even when dehydration is still present in the child as was reported in a study carried out in rural north India (Bently, 1988).

The correct steps and ingredients for the preparation of ORS was known to the majority, contrary to what was found in some other studies (Adimora et al., 2011; MacDonald et al., 2005; Seyal and Hanif, 2009). The reason may probably be because such would have been demonstrated in the health facilities during health talks or previous consultations for diarrhea, or because the materials needed for preparation are readily available, and come in measurements that mothers can easily remember. The minority who missed out on the steps or ingredients represent a group who may have been left out from health information or may have never used ORS. They

represent women whose children stand the risk of dehydration from diarrhea, or ingestion of hyper- or hypo osmolar ORS solutions with resultant increased morbidity in the children. It is important that health care workers seize every opportunity during contacts with mothers at home or in health facilities to deliver information of use of ORS, irrespective of whether the child has diarrhea or not.

The mention of herbal remedies by some mothers may not be unrelated to traditional beliefs about the cause of childhood diarrhea, mistrust of the orthodox health system, or wrong counseling from family members particularly elderly mothers (Adhikari et al., 2006, Ellis et al., 2007). While some herbs may find a place in the management of childhood diarrhea (Subbotina et al., 2003), the danger use of herbs in this study site lies in the fact that they may be produced under hygienic conditions, nor subjected to any form of analysis to determine content and efficacy. Thus, they may complicate the diarrheal process, and should be discouraged. Health educators need to reach not only mothers but other members of the family that

are influential in taking decisions regarding care of the children with diarrhea.

Mothers were generally ignorant as to appropriate feeding practices during diarrhea, with the majority of the belief that food should be withheld or reduced. This finding was also reported in other studies (Ogunbiyi and Akinyele, 2010), and contrary to what was obtained in Pakistan (Morisky et al., 2002) where over 80% continued to provide adequate food and fluids for their children with diarrhea. Withholding of food by mothers and failure to compensate for decreased food intake by increasing feeding during convalescence are major contributors to the adverse nutritional outcomes of diarrhoea. (Ogunbiyi and Akinyele, 2010). The practice of 'gut resting' during diarrhea is based on the belief that feeding could enhance the passage of frequent watery stools, thus increasing the severity and prolonging the duration of diarrhea. Studies have however proven that the gut kept in a 'resting state' atrophies with a fall in the level of digestive enzymes, and a reduction in absorption of nutrients (Isolauri et al., 1986).

The mention of anti-diarrheal drugs and antibiotics by over 50% of mothers in this study may not be surprising as antibiotics are easily obtained from markets and ambulatory vendors, and can be purchased individually or a few at a time to minimize the cost, a factor appealing to many locals (Ellis et al., 2007). Drugs have no place in diarrheal treatment except for dysentery or cholera (Dutta et al., 1990). Studies carried out in Cambodia (Saunders, 2005), and Kenya (Othero et al., 2008) also found 58% and 45.3% of mothers respectively to give anti-diarrheal medicines. This is an area health educators need to address, as guidelines for home management of diarrhea have no place for use of anti-diarrheal agents (Dutta et al., 1990). Moreover, indiscriminate use of antibiotics can lead to microbial resistance, adverse reactions and increased treatment cost (Gupta and Gupta, 2000). The ignorance of use of zinc is not surprising as the drug is yet to gain widespread acceptance even among health workers.

Thus study has shown that mothers who were in dire need of health information on management of childhood diarrhea at home were those who were of low social class, those without formal education and those who were less than 24 years and older than 45 years of age. These are women who may most likely have reduced access to, and contact with health professionals as a result of inability to afford health care, low decision

making power and a reliance on alternative medicine. Interestingly, children of these women are also more likely to suffer from diarrhea. It may be necessary to design messages that can be delivered through the use of posters and pictorials preferably delivered in the local language. Literacy level and occupation were associated with knowledge of ORS in a study in Gulbarga (Dhadave et al., 2012). Knowledge of ORS was found to be higher among educated mothers belonging to the middle socioeconomic class in Rawalpindi (Sultana et al., 2010). Other studies also associate better knowledge of ORS with higher educational levels in mothers (Datta et al., 2010; Rasania et al., 2005; Taha, 2002). On the contrary, a study carried out among 24 mothers in Kamala found no significant association between demographic variables and awareness of ORS (Chattopadhyay, 2008) possibly due to the small sample size. Though single mothers and those in polygamous relationships in the present study had poorer knowledge compared to those in monogamous relationships, the finding was not significant.

CONCLUSION

There is an urgent need for concerted and intensified health education of mothers of under-five children, to address the identified knowledge gaps. Health education should be delivered in a manner acceptable to them considering their socio-cultural and economic backgrounds. Sustaining the process will ensure that new mothers are captured. Use of the mass media will ensure more mothers are reached with information on ORS. Research on the impediments to use of ORS is recommended.

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AUTHORS CONTRIBUTIONS

All the authors involved in this study participate in the study design, data collection and analysis, as well as the subsequent drafting and review of the manuscript. No conflict of interest is declared.