

## TREATMENT OF CHILDHOOD DIARRHOEA: WHAT MOTHERS DO

E. F. Ugochukwu

Dept. of Paediatrics, College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus

### ABSTRACT

Igbo mothers residing in Enugu Urban were interviewed using a pre-tested structured questionnaire to find out what treatments were given during episodes of diarrhoea in their under five year olds. Use of home remedies was first-line treatment. Ninety-seven percent of mothers were aware of oral rehydration therapy (ORT) and 86% had used salt sugar solution (SSS). About 23% of mothers could not describe the correct reconstitution of SSS and only 28.4% would give sufficient quantities of SSS to avert dehydration. Antidiarrhoeal drugs were used by 28.3% of mothers. Over a third of mothers practised withdrawal of certain foods and fluid restriction during diarrhoea while 48% knew about feeding extra meals after a diarrhoeal illness to allow for catch-up growth. Educated mothers had a better understanding of the management of childhood diarrhoea than their less educated counterparts. Emphasis needs to be laid on demonstrations of SSS preparation by health personnel to mothers. The staff on duty should supervise SSS administration by mothers while in health facilities and more education given on the purpose of SSS use, the quantity administered and correct reconstitution.

**Key words:** Mothers, childhood diarrhoea, oral rehydration therapy, salt sugar solution, feeding.

### INTRODUCTION

Diarrhoea is a leading cause of childhood morbidity and mortality and a major cause of undernutrition worldwide, especially in developing countries<sup>1</sup>. Childhood diarrhoea refers to diarrhoea in children under five years old. In 1989 alone, the estimated total morbidity and mortality from diarrhoeal disease in Nigerian children under 5 years of age were 83.2 million episodes and 314,200 deaths respectively, giving a yearly average of 3.6 episodes per child<sup>2</sup>.

Repeated attacks of diarrhoea lead to undernutrition and poor growth because of energy losses from diarrhoea, reduced food intake (owing to anorexia or withholding of food), malabsorption of nutrients, and increased nutrient requirements.

A significant development in recent years has been the discovery that dehydration from acute diarrhoeas of all aetiologies and in all age groups can be safely and effectively treated by the simple method of oral rehydration<sup>1</sup>. Oral rehydration therapy is based on the discovery that glucose greatly enhances the absorption of salts and water, thereby replacing electrolytes and fluid lost in stool and hence preventing dehydration<sup>3</sup>.

ORT and appropriate feeding, during and after diarrhoea, are the major elements of the case management strategy promoted by the Diarrhoeal Diseases Control (CDD) Programme of WHO, which is aimed at reducing deaths from diarrhoea and diarrhoea-associated undernutrition<sup>1</sup>.

It is, therefore, important that mothers, as the primary caregivers of these at-risk children, are equipped with this simple technology and education. In almost all cases, dehydration can be prevented by a parent who knows that feeding should continue,

that an oral rehydration solution should be given to the child from the beginning of the illness, that enough should be given to replace the fluids lost during the illness itself, and that help should be sought if the diarrhoea persists or if dehydration sets in, then the lives of several million young children could be saved yearly.

### SUBJECTS AND METHODS

The survey population was made up of women who brought their children to government-owned health facilities in Enugu Urban. The provisional result of the 1991 census put the population of Enugu at 465,072, out of which 233,818 are males and 231,254 are females<sup>4</sup>. A large proportion of the population comprises civil servants and traders - mainly indigenes of the state and immigrants from other states of the federation. A great majority of the city-dwellers are Igbo-speaking. This was a cross-sectional descriptive epidemiological survey.

Any woman of childbearing age who had a child/children less than 5 years old and resided in Enugu was eligible to be included in the study. Those excluded were

- (a) House helps or temporary care-takers (e.g. day-care centre staff, grandmother on a short visit who just happened to bring the child to the clinic);
- (b) All women whose last children were >5 years old;
- (c) All women who refused consent to be interviewed.

Category (a) was excluded on the assumption that their history of diarrhoea management will be deficient since they were not the primary caregivers. Women in category (b) would not be able to recall the details of diarrhoea in their children when the latter were aged < 5 years.

A total of 512 women were selected by a randomised systematic sampling method from women who attended Awkunanaw Health Centre, Uwani Health Centre, Abakpa Health

\*Correspondence: Dr Ugochukwu

Centre, Asata Polyclinic, Ogidi Street Health Centre, Ogbete Health Centre, Park Lane General Hospital and the Children's Outpatient Clinic of the University of Nigeria Teaching Hospital. A structured questionnaire was administered in the local dialect to each mother by the author. Areas covered by the questionnaire included demographic parameters, first-line treatment of diarrhoea in the home, knowledge about oral rehydration, perception of the severity of diarrhoea and its complications, feeding during and after a diarrhoea episode.

Data collection lasted 12 months from September 1994 to August 1995. Data entry and processing were done with EPI-INFO Version 5.0 of 1990. NCR (IBM Compatible) Microcomputer Model 386SX was used. Statistical analysis was done using the X<sup>2</sup> test and the 0.05 level of significance was adopted.

## Results

The demographic parameters of the women are outlined in Table I. Social classes of respondents were determined according to the method of Oyedeji<sup>5</sup>, with some modifications. Socio-economic index scores were awarded to each respondent based on her occupation and educational attainment and those of her spouse.

### For occupation:

Class I Senior public servants; professionals; managers; large-scale traders; businessmen and contractors.

Class II Intermediate grade public servants; secondary school teachers; nurses; intermediate grade traders; technicians.

Class III Primary school teachers; junior public servants – clerical and secretarial; auxiliary nurses; drivers; artisans; mechanics.

Class IV Petty traders, labourers, messengers and similar grades

Class V Unemployed; full-time housewives; students; subsistence farmers; apprentices.

Table 1: Demographic characteristics of Survey respondents (N= 512)

Age Group (Years)	FREQ.	%
≤20	17	3.30
21-30	276	53.90
31-40	191	37.30
41-50	28	5.50
TOTAL	512	100.00
Social Class	FREQ	%
I	33	6.40
II	69	13.50
III	114	22.30
IV	247	48.20
V	49	9.60
TOTAL	512	100.00
Level of Education	FREQ	%
Higher Education	138	26.95
WASC or Equivalent	47	9.20
Secondary School not completed	142	27.70
Primary School Completed	115	22.45
Primary School not completed	23	4.50
No formal education	47	9.20
TOTAL	512	100.00
Family Size (Total no. of parents and children)	FREQ	%
≤6	140	27.30
7 – 10	347	67.80
>10	25	4.90
TOTAL	512	100.00

The mean age of the women was 32 years (Range: 15-47).

Table 2: Household management of diarrhoea in children according to the social class of respondents (N=512).

Management modality	Percentage of mothers by social classes					p Value
	I N = 33	II N = 69	III N = 114	IV N = 247	V N = 49	
1. Salt Sugar Solution	78.8	89.9	81.6	77.7	55.1	p=0.005
2. Therapy from a health facility	42.4	36.2	39.5	34.8	28.6	p=0.090
3. Antidiarrhoeal drugs	18.2	10.1	25.4	33.2	42.9	p=0.000
4. Oral rehydration salts	54.5	40.6	36.0	6.1	0.0	p=0.000
5. Herbal drinks ± herbal anal poultices	0.0	1.4	7.0	18.2	26.5	p=0.000
6. None especially if the child is teething	0.0	5.8	4.4	6.1	6.1	p=0.000
7. Prayer house	0.0	1.4	2.6	3.6	4.1	p=0.000
8. Scarifications on the skin	3.0	0.0	0.0	0.8	0.0	p=0.000

X<sup>2</sup> statistic used

**For educational attainment:**

Class I University graduates or equivalents;

Class II School Certificate (SSSC/OL GCE) holders who also had teaching or other professional training;

Class III School Certificate or Grade II teachers certificate holders or equivalents;

Class IV Uncompleted Secondary School Education or equivalents; First school-leaving certificate holders;

Class V Uncompleted primary school education i.e. cannot read or write; illiterates.

The mean of four scores (two for the respondent and two for her spouse) to the nearest whole number was the assigned social class.

Knowledge about SSS was found in 96.9% of mothers, 89.1% having derived their knowledge from health personnel, 14.8% from the media (Radio/Television) and 11.1% from other women. A great majority would give SSS as first-line treatment of diarrhoea (Table 2). The proper mode of reconstitution of SSS was described by 67.8% of mothers while 23.6% gave an incorrect description. Out of this proportion low quantities of sugar (34.9%), abnormally high quantities of salt (50.3%) and smaller measures of water (14.8%) were used. Forty-four respondents (8.6%) did not know how to prepare SSS. Awareness and use of ORT increased with age ( $X^2 = 69.23$   $p = 0.000$ ), social class ( $X^2 = 27.80$   $p = 0.011$ ) and level of education ( $X^2 = 37.46$   $p = 0.012$ ).

Women in the lower social classes tended to give inadequate quantities of SSS (perceiving it as a drug) compared to their counterparts in the upper social classes.

Table 3: Reasons for Refusal to use SSS by 32 women.

Reasons	Frequency	%
1. I don't know much about oral rehydration	16	50.00
2. Children don't like the taste and refuse to drink it.	8	25.00
3. SSS does not stop diarrhoea	2	6.25
4. My child has outgrown it. Oral rehydration is for small babies only	2	6.25
5. I will give SSS only when the child is getting weak	2	6.25
6. I prefer to use drugs prescribed in hospital for diarrhoea	2	6.25
<b>TOTAL</b>	<b>32</b>	<b>100.00</b>

Thirty-two women refused to give SSS to their children for reasons adduced in Table 3. Antidiarrhoeal drugs (antimicrobials and constipating agents) were purchased over the counter from chemist shops or pharmacies following self-prescription or the recommendation of the shop attendant. Herbal drinks and anal poultices were used solely for treatment of 'Jedi Jedi' (a variant of diarrhoea with frothy, greenish and blood-stained stools). Leaves of the local mint ('nchuonwu') or *Ocimum gratissimum* were mashed and applied to erythematous perianal skin. Alternatively 'Yoruba medicine' (i.e. herbal concoctions sold by indigenes of the Yoruba tribe) was used. The three respondents who made scarifications on their children's bodies did so to prevent death in case the child was an 'ogbanje' (cyclically reincarnated child). Use of anti-diarrhoeal drugs and herbal medications were found more in women in social classes 4 & 5.

Table 4: Feeding practices by mothers during a diarrhoeal illness (N=508)

Practice	%
1. Breastfeed more often	88.8
2. Give usual meals	70.9
3. Give plenty of fluids	67.1
4. Stop adding milk to cereal feeds	21.7
5. Feed minimally to rest the bowel	14.8
6. Give plain dilute gruels (thin pap)	10.6
7. Restrict fluid intake	10.2
8. Give usual fluid intake	4.1
9. Stop or reduce breastfeeding	3.9
10. Withhold sugary foods	0.8

Table 5: Mothers' reasons for seeking medical help during a diarrhoeal illness in a child (N=512)

Reasons	Frequency	%
1. Associated fever and/or vomiting	512	100.00
2. Persistence of diarrhoeal beyond 72 hours after administration of home remedies	450	87.9
3. Increasingly irritable or weak child	381	74.4
4. Blood in stool	367	71.7
5. Refusal to feed or drink	337	65.8
6. Passage of greenish frothy stools	252	49.2
<b>Total</b>	<b>32</b>	<b>100.00</b>

Table 4 shows the feeding practices adopted by mothers during diarrhoeal illness. It was believed by mothers that a lot of fluids in the diet further increased the volume of diarrhoea and minimal food intake was believed to help in reducing the burden of intestinal work, which in turn, reduced the frequency of bowel motions. Some women for its absorbent qualities, which helped to form stools, used raw pap.

Forty-eight percent of mothers gave extra meals daily, following a diarrhoeal illness, to allow for catch-up growth. Another 10.5% would give fewer meals than before the diarrhoea illness for fear of a relapse of the diarrhoea, while 41% did not change their feeding pattern.

The perception of the severity of diarrhoea and its complications was assessed by finding out what would make mothers seek medical help during a diarrhoeal illness (Table 5).

## DISCUSSION

Diarrhoea is a common disease entity in childhood. Diarrhoeal morbidity and mortality are highest in children of less than two years of age and thereafter show a consistent decline up to the age of six years<sup>6</sup>. It is also noteworthy that a large proportion of children with diarrhoea do not get the attention of health-care workers<sup>7-10</sup>. It therefore, behoves health workers who come in contact with mothers at ante-natal clinics, children welfare clinics and children out patient clinics to use every opportunity to educate mothers on initial home care of diarrhoea in children and at what point they must necessarily bring affected children for Medicare.

It is commendable that a great majority of the mothers knew about and had used some form of oral rehydration during diarrhoea in their children. The 1990 Nigeria Demographic and Health Survey report<sup>11</sup> showed a general low awareness and use of oral rehydration, with the more educated, urban-dwelling and hospital-attending mothers using more of this mode of therapy than their rural uneducated counterparts. However, more recent studies show an increased awareness of ORT but still low utilization rates, worse in rural<sup>12,13</sup> than urban<sup>14</sup> communities.

Eighty-nine percent of mothers derived their knowledge of ORT from health personnel. This assesses the effect of health education delivered by health personnel in contact with mothers. Awareness and use of ORT increased with age, social class and level of education. This is in keeping with observations made in other studies<sup>15,16</sup>. This buttresses the importance of female education in child survival.

Despite the fact that 23.6% of mothers could not describe the correct preparation of SSS as recommended by Grange et al<sup>17</sup>, it is laudable that 67.8% gave accurate descriptions. Compared to the 90% goal set by the national CDD, 67.8% may fall short of the expected, but one has to make allowances, as practices take time to catch on.

Incorrectly prepared SSS can be dangerous, resulting in hypernatremia, if more salt is added. Mothers also have a tendency to forget the recipe. Other studies have noted this pitfall in ORS use with 10-92% of women reconstituting ORS incorrectly<sup>18,19</sup>. There is, therefore, a need for reappraisal of the teaching of the use of SSS in rehydration by health personnel. Mothers have to know that SSS can be effective only when correctly prepared and

administered from the onset of diarrhoea and not when the child becomes weak.

The need for demonstrations cannot be overemphasized, coupled with making mothers prepare solutions under direct supervision. This method drastically reduced faulty preparations to 1-4% after interventional studies, in Bangladesh<sup>20</sup> and to near ideal reconstitution in India<sup>21</sup>.

Another revelation was that most of the mothers did not appreciate the role of SSS in replacement of fluid lost during diarrhoea. SSS was perceived as a drug and hence used sparingly. The implications of this practice are that firstly, mothers get discouraged from using SSS and secondly, a lot more children get severely dehydrated. Other studies have attested to this problem of ORT administration well below the recommended dosage<sup>22-24</sup>. A need exists for health educators to impart and ensure understanding of the basic concept of adequate fluid replacement that is fundamental to ORT. SSS is not meant to stop diarrhoea but prevent and treat dehydration.

Use of anti-diarrhoeal drugs should be discouraged. Health personnel and patent medicine dealers should be reoriented towards prescribing ORT and teaching SSS preparation rather than recommending drugs.

Mothers should also be educated on the value of continuing feeding during diarrhoea in order to maintain an adequate intake of nutrients, prevent weight loss and malnutrition and subsequently, support continued growth. Moreover, the amount of stool lost and the duration of the illness are usually not appreciably increased when food is given<sup>25</sup>. Withdrawal of breastfeeding during diarrhoea is associated with a five times higher risk of dehydration compared with continuation of breastfeeding during diarrhoea at home<sup>26,27</sup>. The feeding of bland dilute pap should also be discouraged since it does not satisfy energy and nutrient requirements. Several balanced diets based on local staples have been tried and found excellent choices for dietary management of diarrhoea<sup>28</sup>. In the southwestern part of Nigeria, a trial of pap fortified with cowpea flour, palm oil and sugar has produced an energy-dense diet suitable for nutrition management of diarrhoea<sup>29</sup>.

## REFERENCES

1. World Health Organization. Programme for the control of Diarrhoeal Diseases. A manual for the Treatment of Diarrhoea. For use by physicians and other senior health workers. 1990: 1-46
2. Babaniyi OA. Oral rehydration of children with diarrhoea in Nigeria: a 12-year review of impact on morbidity and mortality from Diarrhoeal Diseases and Diarrhoeal treatment practices. *Journal of Tropical Paediatrics* 1991; 37: 57-63.
3. United Nations Children's Fund. State of the World's Children 1985, Oxford University Press. 1984: 1-91.
4. Federal office of statistics, Lagos, Nigeria. Federal Republic of Nigeria - Annual Abstract of Statistics. 1993 Edition: 29
5. Oyedeji GA. Socio-economic and cultural background of

- hospitalised children in Ilesha. *Nig J Paediatr* 1985; 12:111-117
6. **Gopaldas T, Gujrals, Mujoo R, Abbi R.** Child diarrhoea: Oral rehydration therapy and rural mother. *Nutrition* 1991; 7: 335-339.
  7. **El Bushra HA, Tigerman NS, EL Tom AR.** Perceived causes and traditional treatment of diarrhoea by mothers in Eastern Sudan. *Annals of Tropical Paediatrics* 1988; 8: 125-140.
  8. **Martinez H, Saucedo G.** Mothers' perception about childhood diarrhoea in rural Mexico. *J Diarrhoeal Dis Res* 1991; 9:235-243
  9. De Clerque J, Bailey P, Janowitz B, Dominik R, Fiallos C. Management and treatment in Honduran Children: factors associated with mothers health care behaviours. *Soc Sci Med* 1992; 34:687-695.
  10. **Ogbuagu KF, Eneanya I, Ebenebe C.** Igbo mothers' perceptions and treatment of diarrhoea in Eastern Nigeria. *Nig J Paediatr* 1994; 21 (suppl): 30-38
  11. Federal office of statistics Lagos, Nigeria. Nigeria Demographic and Health Survey 1990. IRD/Macro International Inc. Columbia, Maryland, USA. April 1992: 3-111
  12. **Jinadu MK, Fajewonyomi BA, Odebiyi O.** Yoruba perceptions and treatment of diarrhoeal illness in rural areas of Osun state. *Nig J Paediatr* 1994; 21 (suppl): 22-19
  13. **Ketsela T, Asfaw M, Belachew C.** Knowledge and practice of mothers / caretakers towards diarrhoea and its treatment in rural communities in Ethiopia. *Ethiop med J* 1991; 29: 213-224
  14. **Uwaegbute AC, Ene-Obong NH, Onwurah AE, Amazigo UV.** Influence of perceptions on treatment practices for diarrhoea in two Igbo communities. *Nig J Paediatr* 1994; 21 (suppl): 99 - 110
  15. **Thane-Toe, Khin-Maung U, Tin-Aye, Mar-Mar-Nyein, Ye-Htut.** Oral rehydration therapy in the home by village mothers in Burma. *Trans Roy Soc Trop Med Hyg* 1984; 78:581-589
  16. **Ittiravivongs A, Masdoeki RS, Pattara-Arechachai J.** Knowledge of diarrhoeas and socio-economic factors in relation to the use of oral rehydration therapy in Samut Songkhram Province, Thailand. *Southeast Asian J Trop Med Public Health* 1989; 20:215-219
  17. **Grange AO, Okeahialam TC, Seriki O, Muogbo DC, Opaleye O, Salawu O, Gleason G, Brody A, Magan A.** Standardization of Home-made salt-sugar solution for the Treatment of Acute Diarrhoeal Diseases of Childhood in Nigeria. *Nig J Paediatr* 1985; 12: 41-47
  18. **Barros FC, Victora CG, Forsberg B, Maranhao AG, Stegeman M, Gonzalez-Richmond A, Martins RM, Neuman ZA, McAuliffe J, Branco JA Jr,** Management of childhood diarrhoea at the household level: a population-based survey in north-east Brazil. *Bull WHO* 1991; 69:59-65.
  19. **Muninjaya AA, Widarsa T, Soetjiningsih.** Home treatment of acute diarrhoea in Bali, Indonesia. *J Diarrhoeal Dis Res* 1991; 9:200-203
  20. **Islam MA, Kofoed PE, Begum S.** Can mothers safely prepare labon-gur salt-sugar solution after demonstration in a diarrhoeal hospital? *Trop Geogr Med* 1992; 44: 81-85
  21. **Nagarajan L, Majumdar S, Natarajan U, Ganguly NK, Walia BN.** A comparative study of different methods of training of rural subjects for reconstitution of oral rehydration solutions. *Indian Paediatr* 1989; 26:323-329
  22. **Wagstaff LA, Mkhasibe C.** Infant diarrhoea in Soweto — how much oral rehydration therapy? *S Afr Med J* 1989; 76: 489-491.
  23. **Touchette PE, Elder J, Nagiel M.** How much oral rehydration is actually administered during home-based therapy? *Trop Med Hyp* 1990; 93:28-34
  24. **Mac Cormack C.** "We tell mothers to use ORS and they don't". *Dialogue on Diarrhoea* 1992; 48: 4
  25. **Jellife DB, Jellife EFP.** Dietary Management of young children with acute diarrhoea. A manual for managers of health programmes. Second edition. Geneva. World Health Organization in Collaboration with the United Nation Children's Fund. 1991: 1 - 29.
  26. **Faruque AS, Mahalanabis D, Islam A, Hoque SS, Hasnat A.** Breast feeding and oral rehydration at home during diarrhoea to prevent dehydration. *Arch Dis Child* 1992; 67:1027-1029.
  27. **Huffman SL, Combest C.** Role of breastfeeding in the prevention and treatment of diarrhoea. *J Diarrhoea Dis Res* 1990; 8:68-81
  28. **Torun BF.** Recent developments in the nutritional management of diarrhoea. 3. Practical approaches towards dietary management of acute diarrhoea in developing communities. *Trans Roy Soc Trop Med Hyg* 1991; 85:12-17.
  29. **Grange AO, Santosham M, Ayodele AK, Lesi FEA, Stallings RY, Brown KH.** Evaluation of a maize-cowpea-palm oil diet for the dietary management of Nigerian children with acute, watery diarrhoea. *Acta Paediatr* 1994; 83:825-832