International Journal of Biomedical Research
ISSN: 0976-9633 (Online); 2455-0566 (Print)
Journal DOI: https://dx.doi.org/10.7439/ijbr
CODEN: IJBRFA

Original Research Article

Knowledge and use of oral rehydration solution in the home management of diarrhea among mothers of under fives in Jos, Plateau State

Danjuma A Bello[1], Tolulope O Afolaranmi[*1], Zuwaira I Hassan[1], Faith C Ogbonna[2], Patrick G Inedu[2], Cecilia Ejiga[2] and Olubunmi O Chirdan[1]

[1]*Department of Community Medicine, University of Jos. Jos, Plateau State, Nigeria*
[2]*Faculty of Medical Sciences, University of Jos, Jos Plateau State, Plateau State, Nigeria*

QR Code

***Correspondence Info:**
Dr. Tolulope O. Afolaranmi,
Department of Community Medicine,
University of Jos, P. M. B. 2084, Jos,
Plateau State, Nigeria

***Article History:**
Received: 13/12/2016
Revised: 23/12/2016
Accepted: 24/01/2017
DOI: https://dx.doi.org/10.7439/ijbr.v8i1.3781

Abstract

Background: Diarrheal disease is one of the leading causes of pediatric morbidity and mortality worldwide, with an estimated 1.8 million childhood deaths annually, accounting for 17% of childhood deaths. Death can occur following severe dehydration if body fluids and electrolytes are not replenished either through the use of Oral Rehydration Salt (ORS) solution or intravenous fluid. Hence, this study was conducted to determine the level of use of ORS among mothers of under fives.

Methodology: This was a cross sectional study conducted among 158 mothers of under-fives attending the FHC between November 2014 and April 2015 using quantitative method of data collection. Epi info statistical software version 3.5.4 was used for data analysis with a 95% confidence interval was used in this study and a p-value of ≤ 0.05 was considered statistically significant.

Result: The mean age of the respondents in this study was 29 ±5 years. Good knowledge of ORS was found among 94 (59.5%) of the respondent with a corresponding 96 (60.8%) engaging in good use of ORS in the management of diarrhoea disease for their under five children. Use of ORS in management of diarrhoea disease was significantly influenced by level o knowledge of ORS, age of the mothers, availability of prep-packed ORS and tertiary education.

Conclusion: This study revealed a fairly high level of knowledge and practice of ORT in the home management of diarrhoea amongst mothers of under–fives.

Keywords: Oral Rehydration Solution, Mothers of Under-fives, Diarrhoea, Jos.

1.Introduction

Diarrheal disease is one of the leading causes of pediatric morbidity and mortality worldwide, with an estimated 1.8 million childhood deaths annually, accounting for 17% of childhood deaths.[1] Diarrheal disease is the 2nd leading cause of death in children under the age of five globally.[2] In Nigeria, diarrheal disease is the 3rd leading cause of death in children below 5years, accounting for 16% of under-five mortality.[3] Each episode of diarrhea deprives the child of nutrition necessary for growth thereby contributing significantly to the burden of malnutrition.[4] Diarrhea is both preventable and treatable; it can last several days resulting in severe fluid and electrolyte imbalance and dehydration which is the major cause of death in diarrheal disease.[2] Eighty percent (80%) of the deaths from diarrhea results from dehydration.[1,2] Death can occur following severe dehydration if body fluids and electrolytes are not replenished either through the use of Oral Rehydration Salt (ORS) solution or intravenous

fluid.[2] Oral Rehydration Therapy (ORT) is a well-established therapy for prevention and treatment of dehydration due to diarrhea, vomiting and fever. It entails the replacement of on-going fluid losses with appropriate rehydration solutions consisting of fluids and electrolytes at both the rehydration and maintenance phases.[1,5] The pivotal role of ORT in the management of diarrheal diseases is well established and the global efforts to promoting the use ORT has achieved significant gains in reducing the morbidity and mortality associated with diarrhea illness when appropriately used. However, these gains are yet to be optimized especially in developing countries where diarrhea plays the highest part in childhood morbidity and mortality due to lack of awareness about its availability and importance in the management of diarrhoea disease.[1,6] Hence, this study was conducted to determine the level of use of ORS in the home management of diarrhoea and the factors influencing its use.

2. Methodology

2.1 Study area

This study was carried out in the Family Health Clinic (FHC) of Jos University Teaching Hospital (JUTH). JUTH was established in 1981 and currently situated in the Lamingo area, Jos North LGA, Plateau State. JUTH is one of the three tertiary health institutions in Jos with an estimated bed capacity of 500.[7] The institution has several service delivery outlets which includes: Family health clinic, Emergency Paediatric Unit, Paediatric Out-Patient Department, Ante-natal Care, Family Planning, Obstetric Care, Gynaecology, Accident and Emergency Unit, Medical Out-Patient Department, Surgical Out-Patient Department Intensive Care Unit, amongst others.[7]

The FHC is one of the service delivery outlets of Community Health Department which is set out to cater for children under the age of five years and their parents/caregivers. The clinic runs from Monday through Friday providing services such as vaccination against vaccine preventable childhood illness in accordance with the National Program on Immunization (NPI) as well as treatment of common childhood ailments, health education, growth monitoring, nutritional rehabilitation and follow up services etc.

2.2 Study design

This was a cross sectional study conducted among mothers/caregivers of under-fives attending the FHC between November 2014 and April 2015 using quantitative method of data collection.

2.3 Study population

The study population comprised mothers of under-fives who attended the FHC for the period of the study.

2.4 The Inclusion Criteria

Mothers of children between 6 – 59 months who attended the FHC, JUTH and consented to participating in the study were included while mothers of under-fives attending FHC who declined content as well as those with children below the age of 6 months and above 59 months were excluded from the study.

2.4 Sample size determination

The sample size was determined using the acceptable formula for a cross sectional study as stated below.[8]

$$n = \frac{Z^2 P q}{d^2}$$

Where n = Minimum sample size

Z = Standard normal deviation at 95% confidence interval = 1.96

p = Proportion of mothers/caregivers of under-fives with good knowledge of the role of ORS in management of diarrhea from a previous similar study was 89.5%.[6]

q = Complementary probability (1-P) = 1 – 0.895= 0.105

d = Precision = 5% = 0.05

Therefore $n = \frac{1.96^2 \times 0.895 \times 0.105}{(0.05)^2} = \frac{0.3610}{0.0025} = 144$

Adding 10% to make up for incomplete or poor responses

n = 158. Therefore, the minimum sample size was 158.

2.5 Sampling technique

A multi-stage sampling technique was used to select in this study.

Stage 1: From a list of all the three tertiary heath institutions providing child health services, JUTH was selected using simple random sampling technique by balloting.

Stage 2: All the mothers of under-fives attending the FHC during this period that gave their consent and had met the inclusion criteria were sampled until the sample size was met.

2.6 Data collection

A semi structured interviewer administered questionnaire was used and the data collection instrument was pretested in a secondary health facility in the state. Four research assistants were trained on the data collection instrument prior to the commencement of the study by the lead researcher. Ethical clearance was sought and obtained from Jos University Ethical Review Committee.

2.7 Scoring and Grading of Responses

To assess the knowledge of mothers regarding ORT, 4 stem questions were used with a maximum obtainable response of 13 of which 4 were correct. A score of 2 was allocated to each correct response and a score of 0

for every incorrect response or 'I don't know' response with a maximum attainable score of 8. A score of 4-8 was graded as 'good knowledge' while a score of 0-3 was graded as 'poor knowledge'.

To assess use of ORT, 7 stem questions were used with a maximum obtainable response of 24 of which 8 were correct. A score of 2 was assigned to every correct response and 0 for every incorrect or 'I don't know' response, with a maximum obtainable score of 16. A score of 8-16 was graded as 'good practice of use' while a score 0-7 was graded as 'poor practice of use'.

2.8 Data analysis

Data collected was processed and analyzed using Epi info statistical software version 3.5.4. Quantitative data such as age was presented with mean and standard deviation. Multiple logistic regressions were used to identify factors influencing the use of ORS. A 95% confidence interval was used in this study and a p-value of ≤ 0.05 was considered statistically significant.

3. Results

The mean age of the respondents in this study was 29 ±5 years with age group 21-30 years account for more than half (64.6%). Most of the respondents (99.4%) were married with 143 (91.7%) in a monogamous family setting. Slight above half (51.3%) of the respondents and most (70.1%) of their husbands had completed tertiary education respectively. (See Table 1)

Good knowledge of ORS was found among 94 (59.5%) of the respondent with a corresponding 96 (60.8%) engaging in good use of ORS in the management of diarrhoea disease at home for their under five children. (See Table 2)

Good use of ORS in home management of diarrhoea disease was found to be significantly influenced by age of the mothers, as mothers in the age groups 21 -30 and 31 – 40 years respectively had about 20 times the likelihood of use ORS in management of diarrhoea episodes as against other age groups. Furthermore, availability of prep-packed ORS in shops in the respondents' neighbourhood and tertiary education of the mothers were found to influence its use for management of diarrhoea episodes 6 times more than where it was not readily available and as well as for other levels of maternal education. Mothers with poor knowledge of ORS of the products were less like to use it as compared to those with good knowledge of the product. (See Table 3)

Table 1: Socio-demographic characteristics of the respondents

Characteristics	Frequency	Percentage n = 158
Age group (years)		
≤ 20	6	3.8
21 – 30	102	64.6
31 – 40	45	28.5
> 40	5	3.2
Marital status		
Single	157	99.4
Married	1	0.6
Birth order of present child		
1	53	33.5
2	56	34.4
3	21	13.3
> 3	28	17.7
Mother's educational level		
Non formal	7	4.4
Primary	7	4.4
Secondary	63	39.9
Tertiary	81	51.3
Husband's/spouse's educational level		
Non formal	6	3.8
Primary	6	3.8
Secondary	36	22.9
Tertiary	110	69.5
Family type		
Monogamous	144	91.1
Polygamous	14	8.9
Availability of ORS in your neighbourhood		
Available	131	82.9
Not available	27	17.1
Perception of affordability of ORS		
Affordable	139	88.0
Not affordable	19	12.0

Table 2: Level of knowledge and practice of use of ORS in the management of diarrhoea among the respondents

Parameters	Frequency	Percentage n = 158
Level of knowledge		
Poor	64	41.5
Good	94	59.5
Level of practice of use		
Poor	62	39.2
Good	96	60.8

Table 3: Factors influence the practice of the use of ORS in the management of diarrhoea among the respondents

Factors	Odds ratio	95% Confidence interval	P - value
Age group (years)			
≤ 20	6.1	0.6866 – 53.9626	0.1047
21 – 30	20.0	2.0707 – 193.1734	0.0096
31 – 40	20.1	1.1000 – 429.8941	0.0456
> 40	1	-	-
Marital status			
Single	0.000	0.0000 >1.0E12	0.9642
Married	1	-	-
Birth order of present child			
1	0.9	0.3896 – 2.5089	0.9808
2	1.3	0.4964 – 3.1477	0.6358
3	1.9	0.5609 – 6.2680	0.3073
> 3	1	-	-
Mother's educational level			
Primary	3.3	0.3619 – 30.7012	0.2879
Secondary	2.6	0.4960 – 15.2463	0.2470
Tertiary	6.3	1.1409 – 34.8376	0.0348
Non formal	1	-	-
Husband's educational level			
Primary	3.7	0.5004 – 124.8996	0.1415
Secondary	2.8	0.4527 – 17.3179	0.2681
Tertiary	3.5	0.6135 – 19.9660	0.1585
Non formal	1	-	-
Family type			
Polygamous	0.9	0.2464 – 2.8937	0.8263
Monogamous	1	-	-
Availability of pre-packed ORS in the neighbourhood			
Available	6.4	1.1798 – 34.1931	0.0314
Not available	1	-	-
Perception of affordability of ORS			
Not affordable	0.4	0.1009 – 1.7814	0.2413
Affordable	1	-	-
Knowledge of ORS			
Poor	0.3	0.2060 – 0.7711	0.0063
Good	1	-	-

4. Discussion

The predominant age group of the mothers in this study was found to be similar to that of other studies done in Kingston Jamaica and Southern part of Nigeria. [5,9] Similarity in marital status and highest attained educational levels of the respondents exits in this study and other study conducted elsewhere in Kenya and Nigeria.[5,10] The similarities in the demographic characteristics of the respondents in this study and other studies could be attributable to the fact that these studies were conducted in urban settings.

In this study, there was a relatively high level of knowledge of ORS for home management of diarrhoea disease with shared similarities of findings with that of other studies conducted in within and outside Nigeria. [3,4,6,9,11,12,13]. The reasons for these similarities are not far-fetched as diarrhoea is a common childhood illness in most resource constraint settings where most of these studies were carried out and therefore mothers or caregiver may have attempted its use at one point or the other in the process of child rearing.

The practice of use of ORS in the home management of diarrhoea was found to be good among a higher proportion of the mothers in this study though higher than what was obtained from other similar studies conducted in Nigeria, Pakistan and India.[6,14-16] However, a Vietnamese study revealed a higher level of ORS use for diarrhoea disease management as compared to this study.[17] The variation in the level of use of ORS by mothers in the management of episodes of diarrhoea across the various studies could have reasons such difference in the levels of education, socio-cultural and access to information by the mothers responsible.

In this study, the use of ORS for diarrhoea management at home was significantly influenced by the age of the mothers, knowledge of ORS, higher maternal education and availability of the products which further corroborates the findings of other studies.[5,17-20] This could be attributable to the fact that younger mothers are less likely to be familiar with diarrhoea related basic information due to lack of experience unlike the older mothers who are more knowledgeable as they might have had prior experience with diarrhea management. Other study also revealed that cultural belief and availability of ORS sachets were determinants of its use in management of episodes of diarrhoea.[15]

5. Conclusion

This study revealed a fairly high level of knowledge and practice of ORT in the home management of diarrhoea amongst mothers of under–fives, however there is still a need for improvement in the knowledge and practice of the use of ORT among mothers. Improving maternal education and availability of ORS are vital areas where interventions for improving the use of ORS for home management of diarrhoea can be targeted for better uptake.

Conflict of interest

Authors have declared no conflict of interest

Funding source

This study was completely funded by the authors

Acknowledgements

The Author wishes to acknowledge the members of staff of the Family Health Clinic of the Jos University Teaching Hospital.

Reference

[1] Uchendu UO, Emodi IJ, Ikefuna AN. Pre-hospital management of diarrhea among caregivers presenting at a tertiary health institution: implications for practice and health education. *African Health Sciences* 2011; 11(1):41-47.

[2] World Health Organization (WHO) Fact sheet on diarrhoea. Available from:http//:www.who.int/. Last cited 15 December 2015.

[3] Boma AN, balafama A. Home management of diarrhea by care givers presenting at the diarrhea training unit of a tertiary Hospital in southern Nigeria. *British Journal of Medicine and Medical Research* 2014; 4(35): 5524-5540.

[4] Mahor GR. Knowledge and attitude of mothers regarding use of Oral Rehydration Solution in management of diarrhea. *Asian Journal of Biomedical and Pharmaceutical Sciences* 2013; 3(21):6-8.

[5] Bachrach LR, Gardner JM. Caregiver's knowledge, attitude and practices regarding childhood diarrhea and dehydration in Kingston, Jamaica. *Rev Panam Salud Publica* 2002; 12 (1): 343-355.

[6] Rasania SK, Singh D, Pathi S, Matta S, Singh S. Knowledge and attitude of mothers about Oral Rehydration Solution in few urban slums in Delhi. *Journal of Health and Population- Perspective*. 2005; 28(2):100-107.

[7] Jos University Teaching Hospital. About JUTH. Available from: http//www. juthnigeria.org. Last cited 27 Jan 2015.

[8] Ogbonna C. Research Methodology. In: The Basics in Biostatistics, Medical Informatics and Research Methodology. First edition, Jos, Plateau State: 2014: p.227.

[9] Tobin EA, Isah EC, Asogun DA. Care giver's knowledge about childhood diarrhea management in rural community in South-South Nigeria. *International Journal of Community Research* 2014; 3(4):93-99.

[10] Othero DM, Orago AS, Groenewegen T, Kaseje DO, Otengah PA. Home management of diarrhea among under-fives in a rural community in Kenya: Household perception and practices. *East African Journal of Public Health* 2008; 5(3):142-146.

[11] Shah MS, Ahmad A, Khalique N, Khan IM, Ansari MA, Khan Z. Do the Mothers in Rural Aligarh know about Home-based Management of Acute Diarrhea? *Biology and Medicine* 2011; 3(2):76-80.

[12] Suman S, Umakant GS, Manjula S, Mohsina S, Loo GH, Gautam R. Knowledge and Practice Regarding Oral Rehydration Therapy for Acute Diarrhea among Mothers of under-five children in an urban area of Puducherry, India. *National Journal of Community Medicine* 2014; 5(1):100-104.

[13] Mukhtar A, Mohamed MI, Pamiyil RS. A survey of mothers' knowledge about childhood diarrhea and its management in a marginalized community in Morang, Nepal. *Australas Medical Journal* 2011; 4(9): 474-479.

[14] Mustapha MG, Ifah SS, Garba MA. Knowledge, Attitude and Practices of Mothers on Home Management of childhood Acute watery Diarrhea in Maiduguri, BornoState, Nigeria. *Nigerian Medical Journal* 2008; 49(1): 5-8.

[15] Morisky DE, Kar SB, Chaudhry AS, Chen KR. Update on ORS Usage in Pakistan: Results of a National Study. *Pakistan Journal of Nutrition* 2002; 1 (3): 143-150.

[16] Mumtaz Y, Zafar M, Mumtaz Z. Knowledge, Attitude and Practices of Mothers about Diarrhea in Children under 5 years. *Journal of Dow University of Health Sciences Karachi* 2014; 8(1): 3-6.

[17] Pancharuniti M, Shiyalap K, Dung NM, Wongsawass S. Maternal practice on management of acute diarrhea among children under five years in Nam Dinh, Vietnam. *Journal of Public Health and Development* 2004; 2(1):33-38.

[18] Adimora GN, Ikefuna AN, Ilechukwu G. Home Management of Childhood Diarrhea: Need to Intensify Campaign. *Nigerian Journal of Clinical Practice* 2011; 14(2):237-241.

[19] Khalili M, Mirshahi M, Zarghami A, Rajabnia M, Farahmand F. Maternal Knowledge and Practice Regarding Childhood Diarrhea and Diet in Zahedan, Iran. *Healthscope* 2013; 2(1): 19-24.

[20] Al-trushiAM, Saeed SY, Yahya SM. Knowledge, Attitude and Practice of mothers towards Oral Rehydration Therapy in Duhok. *Isramed Journal* 2012; 4(3): 132-137.