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

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Abstract

Background: Diarrhoeal 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 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 of 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

Diarrhoeal 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] Diarrhoeal disease is the 2nd leading cause of death in children under the age of five globally.[2] In Nigeria, diarrhoeal disease is the 3rd leading cause of death in children below 5 years, 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 diarrhoeal disease.[2] Eighty percent (80%) of the deaths from diarrhoea 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...
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 Lamington area, Jos North LGA, Plateau State. JUTH is one of the three tertiary health institutions in Jos with an estimated bed capacity of 500. 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. 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 consent 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]

\[ n = \frac{Z^2 \times p \times (1-p)}{d^2} \]

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\( p \) = 0.105

\( d \) = Precision = 5% = 0.05

Therefore \( n = \frac{1.96^2 \times 0.895 \times 0.105}{0.05^2} = 144 \). A minimum sample size of 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 health 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 the University Ethical Research 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 likelihoods of using 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 3: Factors influence the practice of the use of ORS in the management of diarrhoea among the respondents

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

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 as 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 diarrhoea 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

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**Reference**


