

## Assessment of Maternal Knowledge and Attitude towards the use of Oral Rehydration Therapy (ORT) in Childhood Diarrhoea Disease

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### Abstract

Diarrhoea remain one of the leading causes of death among children below the age of five. Most infant deaths due to diarrhoea can be prevented by simple administration of oral rehydration therapy (ORT) and mothers play an essential role in implementing this therapy. This study assesses the knowledge, attitude and practices of mothers of under-5 children attending the Children Specialist Hospital towards oral rehydrating therapy. Based on informed consent, a validated semi-structured questionnaire was used to collect data on ORT knowledge, attitude and practice from a total of 203 mothers attending the Children Specialist Hospital, Ilorin, Kwara State. Sample size was determined using the Fischer's formula. Data obtained were checked for completeness and then analyzed using descriptive and chi-square analysis. A total of 206 mothers were enrolled into the study, with response rate of 99 %. Based on the scoring system, more than 70 % of mothers displayed good knowledge of the therapy while 49.3 % (100/203) and 28.6 % (58/203) exhibited fair and poor attitude towards the therapy respectively. Overall ORT practice among mothers in this study was very poor, with only 32.5 % (66/203) showed good practice skill of the therapy. Mothers level of knowledge positively influence their ORT practice ( $P=0.015$ ). The findings from this study indicate that the attitude and practices of mothers towards ORT utilization during episodes of under-5 diarrhoea disease is inadequate. More efforts towards improving maternal knowledge, attitude and practices on the use of ORT in the management of under-5 diarrhoea is recommended.

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**Keywords:** Knowledge, practices, mother, childhood diarrhoea, ORT.

### Introduction

Diarrhoea is a gastrointestinal infection characterized by the passage of three or more watery stool within a day. It is often caused by pathogens, most especially rotavirus, through the consumption of contaminated food or water<sup>1</sup>. In severe cases, the disease often results in excessive loss of fluids, and may result in life threatening conditions, especially in young and immunocompromised children<sup>2,3</sup>.

Diarrhoea diseases is known to be the second leading cause of death among children under the age of five<sup>4</sup>. In 2017 alone, approximately 480,000 children below the age of five died due to this disease, mostly within the first two years of life<sup>5</sup>. The burden of diarrhoea-related deaths among children under the age of five is highest in the Sub-Saharan African and South Asian regions due to factors such as poor hygienic practices, consumption of

contaminated foods and water, malnutrition, sub-optimum breastfeeding, zinc deficiency and lack of access to affordable and quality healthcare<sup>4</sup>. The prevalence of diarrhoea in Nigeria is estimated to be 18.8 %, with 26 % of cases treated with oral rehydrating salt solution<sup>6</sup>. An estimated 150,000 children below the age of five die every year in Nigeria due to diarrhoea-induced dehydration<sup>4,7</sup>. In the last sixteen years, significant advancement has been made in reducing infant mortality due to diarrhoea. The use of WHO recommended low-osmolarity oral rehydration solution (ORS) and supplemental zinc, alongside exclusive breastfeeding in the first six months of life has significantly reduced diarrhoea-induced child mortality by 60 % between 2000 and 2017<sup>5,8</sup>. Most cases of under-5 deaths due to diarrhoea occur as a result of dehydration and are preventable with timely administration of rehydrating fluids<sup>7</sup>. In spite of clinical evidences suggesting that the use of ORS reverses dehydration and prevent diarrhoea death<sup>7,9,10</sup>, the implementation of this life-saving therapy in Sub-Saharan Africa remain low<sup>11-14</sup>. In a study conducted in Nigeria, only 12.5 % of children suffering from diarrhoea receive oral rehydration solution as a first line option<sup>15</sup>. Mothers play a significant role in ensuring optimal child health. Timely and effective administration of correctly prepared ORS and supplemental zinc to children during episodes of diarrhoea by their mother could drastically reduce infant mortality due to diarrhoea. Previous studies had shown that successful home management of diarrhoea by mothers during episodes of childhood diarrhoea is limited due to lack of adequate knowledge and practice skill about the therapy<sup>15,16</sup>. Proper understanding of maternal level of ORT knowledge and practice is key towards putting strategies in place to improve implementation of the therapy. The

objective of this study is to assess the ORT knowledge, attitude and practice of mothers attending the Children Specialist Hospital, Ilorin, Kwara State, Nigeria.

## **Method**

### **Ethical Approval, Study participants and study location**

The study was approved by the National Health Research Ethics Committee (NHREC) of the University of Ilorin Teaching Hospital, Ilorin, Nigeria, with NHREC assigned and protocol approved numbers: NHREC/02/05/2010 and PAN/2017/05/0563 respectively. Mothers (n=203) with at least a child below the age of five years were recruited into the study from the Children Specialist Hospital, Centre Igboro, Ilorin. Each eligible participant was adequately informed about the study verbally and consent to participate in the study was obtained from them by completing and signing an informed consent form before being enrolled into the study. Only mothers (18 years and above) with at least a child below the age of five and who had no mental, hearing or speaking difficulties were included in the study. All participants who do not meet the inclusion criteria were excluded from the study.

### **Study design**

This study is a cross-sectional study conducted in two stages. The first stage is a pilot study which involves the administration of proposed study questionnaire mothers (n=20) who met the study eligibility criteria and live in area different from the study site. This stage is intended to help in the validation the study questionnaire before administering it to the actual study participants. In the second stage, the validated study questionnaire was used to collect data on ORT knowledge, attitude and practice from actual study participants.

### **Sample size determination and technique**

The Fischer's formula was used to determine the sample size for this study at 5 % margin of error, 95 % confidence interval and a 10 % non-response rate. A previous study conducted in Balogun Alanamu ward, Ilorin, revealed that only 14.8 % of children under the age of three were given ORT during episode of diarrhoea<sup>17</sup>. The proportion of children treated with ORT during diarrhoea episode was scaled up to 35 % to have a more representative sample size for the present study. The calculated sample size was 206. All mothers who presented at the study centre and met the study inclusion criteria were recruited into the study. This was necessary to allow the participation of as many eligible mothers who met the inclusion criteria and to meet the target sample size for the study. To avoid duplicate sampling, each enrolled participant was assigned a unique identification number.

### **Data collection tools and process**

The data for this study were collected using a standard, structured and validated questionnaire that contain the sociodemographic data, knowledge, attitude and practice questions of the mothers regarding the use of ORT in the treatment of under-5 diarrhoea. Mothers who could read, understand and write English language completed the questionnaire themselves. For those who could not read and write in English, questions were translated into their local language and responses filled in the questionnaire by trained nurses.

### **Data processing and analysis**

After data collection, all returned questionnaires were thoroughly reviewed for

completeness. This was followed by quantitative data entry and descriptive statistical analyses using the Statistical Package for Social Sciences (SPSS) version 20. The descriptive statistical analysis was used to compute frequencies, percentages and means of the findings of the study. Results were presented as tables and graphs. Chi-square was used to evaluate the correlation between categorical data at a confidence interval of 95 %. Outcome variables measured in this study includes knowledge, attitude and practice. The scoring system was used to measure outcome variables and was rated as poor, fair or good.

### **Results and Discussion**

A total of 206 eligible mothers participated in the study with a response rate of 98.5 %. Three of the respondents did not completely respond to the questions and their responses were excluded from the data analysis. Overall, responses from 203 mothers were analysed. More than half of the mothers (53.7 %, n=109) were within the age of 24-35years. Most of the patients (97 %, n=197) were married and only 3 % (n=6) do not have a formal education. Based on religion, mothers who practice Islam (77.8 %, n=158) are dominant. The study was conducted in Ilorin, an urban city in Kwara state, with one of the highest number of literates and inhabitants that has a strong Islamic background. These features explain why a large percentage of the study participants are Muslims with at least a secondary school level of education. Details of the demographic characteristics of the study participants are shown in Table 1 below.

Table 1: Demographic characteristics of study participants

Variable	Frequency (n=203)	Percentages(%)
<b>Age (years)</b>		
18-24	29	14.5
25-34	109	53.7
35-44	17	28.1
>45	8	3.9
<b>Marital Status</b>		
Single	3	1.5
Married	197	97
Widowed	3	1.7
<b>Level of Education</b>		
Primary	34	16.7
Secondary	83	31
Tertiary	100	49.3
No formal Education	6	3
<b>Religion</b>		
Islam	158	77.8
Christianity	45	22.2
<b>Occupation</b>		
Unemployed	51	25.12
Government Worker	45	22.17
Self-employed	93	45.81
Student	4	2

Appropriate maternal knowledge, attitude and practice towards the use of ORT is key in reducing infant mortality due to diarrhoea. The present study found that majority (97 %) of mothers had heard about ORS though less than two-third knew it is useful in reversing dehydration and stopping diarrhoea in children under the age of five. Based on the scoring system, over 70 % (n=145) of mothers exhibited adequate knowledge of ORS usage during episodes of

under-5 diarrhoea (Figure 1). Summary of ORT knowledge of mothers that participated in this study is shown in Table 2.

Adequate ORT knowledge of mothers demonstrated in this study is consistent with findings reported in earlier studies<sup>18-20</sup>. For instance, mothers in Odeda local government area of Ogun state was reported to exhibit good ORT knowledge and utilization in the management of diarrhoea in their children<sup>18-20</sup>.

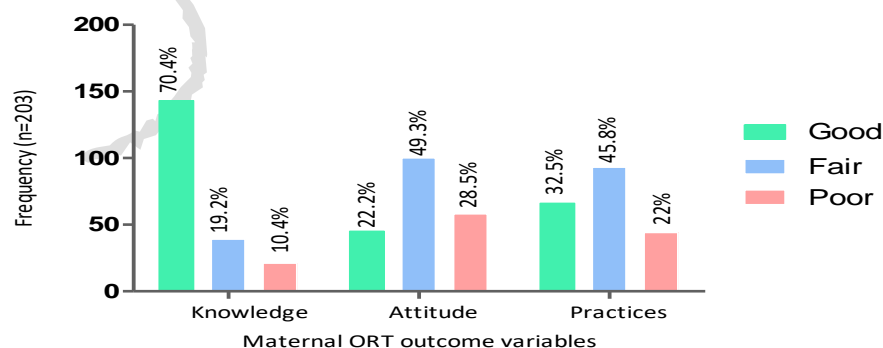


Figure 1: Maternal ORT knowledge, attitude and practice using the scoring system

Table 2: ORT knowledge of study participants

Variable	Frequency (n=203)	Percentages (%)
<b>Have you heard of ORT?</b>		
Yes	107	97
No	6	3
<b>Where did you hear of ORT?</b>		
Hospital/Clinic	144	73.1
Pharmacy	34	17.3
Media	4	2
Friends	4	2
Others	11	5.6
<b>What is the function of ORT?</b>		
Stop diarrhoea	128	66
Stop dehydration	43	22.2
Stop diarrhoea and dehydration	9	4.6
Don't know	14	7.2
<b>Have you ever give your child ORT?</b>		
Yes	182	89.7
No	14	6.9
Not sure	7	3.4

A similar finding was reported by Adimora *et al.* in 2011<sup>20</sup>. Contrary to this finding, a later study revealed that the maternal administration of ORS to children below the age of five during diarrhoea episodes in the Northwestern part of Nigeria is very low<sup>15</sup>. Also, Agbolade and co-workers reported that less than half of the mothers in a Military cantonment in Ibadan administered ORS to their children during episodes of diarrhoea<sup>19</sup>. These findings clearly indicate that mother's knowledge and use of ORT to under-5 children with diarrhoea disease vary across different places in Nigeria. This may be due to differences in maternal access to education regarding the importance and appropriate use of this therapy. The high level ORS knowledge exhibited by mothers who took part in this study may be attributed to access to quality information about the importance and use of ORT at the Children Specialist Hospital (a paediatric clinic)

where this study was conducted. The attitude of mothers who took part in this study towards ORT utilization during episodes of diarrhoea was generally not satisfactory. More than 25% (56/203) of mothers administered antibiotics or herbal medicines to their children when they present with diarrhoea disease. Most diarrhoea cases resolve with the use of rehydrating solution and often time does not require antibiotic therapy. The use of antibiotics to treat diarrhoea in children below five years of age has been previously reported among mothers in other part of Nigeria<sup>21-23</sup>. Broad use of antibiotics creates selective pressure on microorganisms which may result in antimicrobial resistance<sup>24</sup>. The ORT practices of mothers who participated in this study were found to be poor. Overall maternal ORT practice is presented in Table 3.

Table 3: ORT practices of study participants

Variable	Frequency (n=203)	Percentages (%)
<b>Have you ever given your child ORT?</b>		
Yes	107	97
No	6	3
<b>Method of ORT Preparation</b>		
Appropriate	55	17.2
Not Appropriate	129	63.5
Don't Know	39	19.3
<b>Method of ORT Administration</b>		
Appropriate	139	68.3
Not Appropriate	19	9.4
Don't Know	45	22.1
<b>Length of time ORT is kept</b>		
Until it finishes	5	2.5
24 hours	159	78.5
I don't know	39	19.2
<b>Response to Vomiting</b>		
Stop ORT	65	32
Continue ORT	71	35
Don't know	67	33

Although, approximately two-third (128/203) of mothers affirm that they had used rehydrating fluid, only 17.2% (35/203) was able to prepare correctly a low osmolarity ORS. Most of the mothers in this study stated they prepare the ORS they gave to their children by dissolving a sachet of rehydrating powder in 75 cl of bottle while some in an unknown quantity of water. This method of preparation is deemed to result in dangerously hyper/hypomolar solution, which may result in serious complications such as hyper/hyponatremia. More than two-third administered ORT to their children, however, only 35% (71/203) knew they should continue giving rehydration fluid after vomiting had subsided in children that vomited. Similar findings have been reported in some other parts of Nigeria<sup>25,26</sup>, and elsewhere<sup>27,28</sup>. Overall assessment of maternal ORT practices using scores indicates that more than two-third (159/203) of mothers exhibited inadequate ORT practice skill. It is important for health care professionals to

make the education of mothers of under-5 on the correct method of preparing and administering low-osmolarity ORS a top priority when they come in contact with them during clinic visits. Mothers level of education was significantly associated with their ORT practices (P-value = 0.015), an observation consistent with the report of Onwukwe et al (2016)<sup>27</sup>. Vomiting is a barrier to successful implementation of ORT in under-5 diarrhoea disease. For children that vomit during diarrhoea episodes, mothers are advised to continue the administration of ORT as soon as vomiting resolves so as to prevent diarrhoea-induced dehydration which may result due to stoppage of ORT. In this study, less than one-third (65/203) of mothers continued giving ORT to their child after vomiting has resolved, a finding indicating inadequate maternal knowledge of the appropriate response to vomiting during childhood diarrhoea. Findings from this study were based solely on self-report by the participants. This is considered a limitation



since individual tends to provide responses that are desirable when they are being observed and this may result in the provision of bias responses to the questions used to obtain their knowledge, attitude and practice about ORT. However, this study was able to successfully describe a pattern of mothers ORT knowledge, attitude and practice in the study centre.

### Conclusion

The findings from this study indicate that the maternal ORT attitude and practice is inadequate despite the high level of awareness about the therapy. Mothers' level of education positively influences attitude

and practice towards ORT. Maternal education on the importance and appropriate implementation of this life-saving therapy is recommended. Stakeholders should create avenues where mothers of under-5 can learn how to correctly prepare and administered low osmolarity ORS to their child during episodes of diarrhoea.

**Acknowledgement:** The authors are grateful to the members of Staffs of the Children Specialist Hospital, Centre Igboro, Ilorin, who provided the support required to gain access to the study participants. All mothers who participated in this study are also appreciated.

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