

**Knowledge, Attitude and Practice of Oral Rehydration Solution (ORS) Use as a First Aid Tool in Diarrhoea Management in Children Among Antenatal Attendees in Aba, Abia State**

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**ABSTRACT**

**Background:** Diarrhoeal disease is one of the commonest illnesses that has the greatest negative impact on the growth and development of infants and young children. During a diarrhoeal episode, water and electrolytes (sodium, chloride, potassium and bicarbonate) are lost through liquid stools, vomit, sweat, urine and breathing leading to dehydration.

**Objective:** This project was aimed at assessing the knowledge, attitude and practice of Oral Rehydration Solution (ORS) use as a first aid tool in the management of diarrhea in children among antenatal attendees in Aba.

**Materials and methods:** A descriptive cross-sectional study was carried out on 400 consenting antenatal clients. Multistage cluster sampling was used to select participants for this study. Data was obtained using self-administered pretested questionnaires and analyzed with Statistical Package for Social Sciences (SPSS) version 20.0.

**Result:** Result of this study showed that 55% of respondents first heard about ORS in Antenatal clinic. Of the respondents, 89.9% knew that diarrhoea meant the frequent passage of loose stool. Also 93.1% of respondents knew that ORS is used to manage diarrhoea at home, however, less than half of the respondents (49.9%) correctly knew that ORS is given after each diarrhoea episode. With respect to attitude of respondents to ORS use, 56.3% of respondents strongly agreed that mothers will need to wash their hands before preparing ORS, and 42.9% agreed that ORS is enough as a treatment for diarrhoea. While 49.9% of respondents disagreed to ORS having any side effects, 51.2% of respondents agreed that children dislike the taste of ORS.

**Conclusion:** This study showed that antenatal attendees in Aba have good knowledge of use of ORS in the management of diarrhoeal disease, though with poor practice of ORS use in the management of diarrhoea. In the assessment of the attitude towards ORS use, less than half of the population believed that ORS was not enough as a treatment for diarrhoea. Factors affecting ORS use included age, educational status, occupation and source of knowledge.

**Keywords:** ORS, KNOWLEDGE, ATTITUDE, PRACTICE, FACTORS

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**INTRODUCTION**

Diarrhoea is the passage of loose or watery stools.<sup>1</sup> During a diarrhea episode, water and electrolytes (sodium, chloride, potassium and bicarbonate) are lost through liquid stools, vomit, sweat, urine and breathing leading to dehydration.<sup>2</sup> Dehydration remains a major cause of morbidity and mortality in infants and young children worldwide.<sup>3</sup> Signs of dehydration include sunken eyes, decreased frequency of urination or dry diapers, depressed anterior fontanelle, dry or

sticky mucous membrane, lethargy, and irritability.

The basic objective of treatment of diarrhoea include: prevention of dehydration, correction of dehydration, maintenance or improvement of nutrition and, treatment of etiological agents.<sup>4</sup> The first line of management which is to prevent dehydration can be achieved with Oral Rehydration Solution (ORS).<sup>5</sup> WHO recommends the use of Oral Rehydration Solution (ORS) as a key measure in the treatment of diarrhoea.<sup>2</sup> ORS has also been recognized and advocated by United Nations International Children's Emergency Fund (UNICEF) and the Integrated Management of Childhood Illness to reduce the impact of diarrhea in children.<sup>6</sup> Timely management of diarrhoea in children with ORS has substantially declined the mortality and morbidity of diarrhoea especially acute diarrhoea.<sup>7</sup> Oral Rehydration Therapy (ORT) is the most common and simplest treatment for diarrhea, and this therapy is achieved with the use of Oral Rehydration Solution (ORS)<sup>8</sup>. However, use of Oral Rehydration Solution (ORS) as a first aid tool depends on the knowledge, attitude and practice of ORS use among the mothers and caregivers of such children.

According to the Nigeria Demographic and Health Survey done in 2018, 87% of women in Nigeria, as at the time of study, knew about ORS packets for treatment of diarrhoea.<sup>9</sup> Knowledge of ORS packets was seen to be higher among urban women (91%) than among women in rural areas (84%). The percentage of women with knowledge of ORS packets was found to be highest in the South East region (91%) and lowest in the South-South region (73%).<sup>9</sup>

Another study carried out in Samaru, Kaduna state, Nigeria, reported that 69.1% of respondents were aware of the use of ORS in the management of diarrhoea.<sup>10</sup> while in a study among nursing mothers in Odukpani Local Government Area of Cross River state, Nigeria, 52.4% lacked awareness of ORS and 16.6% lacked information on ORS preparation and composition.<sup>11</sup> Also among mothers of under-five children in a military barrack in Ibadan, Nigeria, knowledge about diarrhoea diseases and oral rehydration therapy was high among respondents, but their use of oral rehydration was low.<sup>12</sup>

## **MATERIALS AND METHODS**

This was a descriptive cross-sectional study carried out in Aba, a city in the southeast of Nigeria. The study population was antenatal attendees of selected health care facilities in Aba. These were

all expectant mothers, including primigravidas, who utilize the maternal and child health services provided in these health facilities. The study tool was a semi-structured questionnaire which consisted of close-ended questions. The questionnaire was divided into 4 sections namely socio-demographic characteristics, knowledge of Oral Rehydration Solution (ORS) use, attitude towards the use of ORS, and practice of ORS administration. A total of 400 semi-structured questionnaires were administered and same retrieved. Data collected was coded and analyzed with Statistical Package for Social Sciences version 20.

## RESULTS

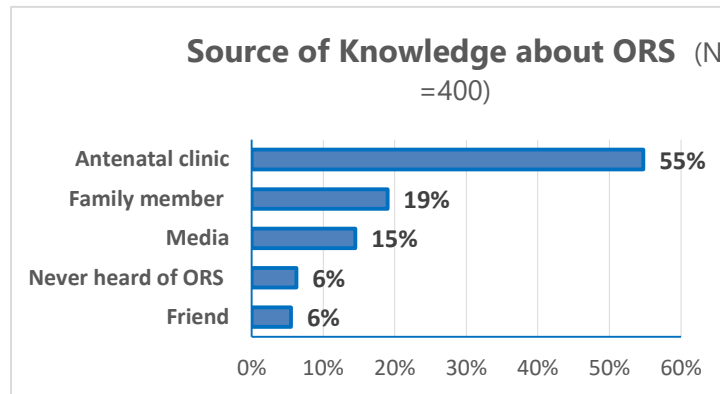
**Table 1: Socio-demographic variables of respondents**

Variable	Frequency(N =400)	Percentage (%)
<b>Age Group</b> (Mean Age =29± 4.9Years)		
21 - 25 Years	86	21.5%
26 - 30 Years	<b>142</b>	<b>35.5%</b>
31 - 35 Years	95	23.8%
36 Years and above	77	19.3%
<b>Educational Status</b>		
None	1	0.3%
Primary	5	1.3%
Secondary	155	38.8%
Tertiary	<b>239</b>	<b>59.8%</b>
<b>Occupation</b>		
Housewife	35	8.8%
Civil Servant	85	21.3%
Trader	<b>128</b>	<b>32.0%</b>
Others	72	18.0%
Hairdresser	80	20.0%
Business Owner	0	0.0%
<b>Religion</b>		
Christianity	<b>397</b>	<b>99.3%</b>
Muslim	3	0.8%
Traditional Religion	0	0.0%

Table 1 above shows the socio-demographic variables of the respondents. The mean age of respondents was  $29 \pm 4.9$  years. Majority of the study participants (52.9%) were in the 26-30 years

age group. A higher proportion of respondents (59.8%) had attained tertiary level of education, 32.0% were traders, and nearly all the respondents (99.3%) were Christians.

**Figure 1: Source of Knowledge about ORS**



On the source of knowledge about ORS as presented in figure 1 above, 55% of respondents first heard about ORS in Antenatal clinic, and 6% of respondents first heard about ORS from Friend. A total of 6% of the respondents had never heard about ORS.

**Table 2: Evaluation of Knowledge about ORS Use**

Variable	Frequency (n = 375)	Percentage
<b>What is Diarrhoea</b>		
Frequent passage of loose stool	337	89.9%
Passage of hard stool	8	2.1%
Throwing up food from the mouth	30	8.0%
<b>ORS is used to Manage Diarrhoea at home</b>		
Yes	349	93.1%
No	5	1.3%
I don't Know	21	5.6%
<b>ORS is used to replace</b>		
Only Water Lost	57	15.2%
Only Salt Lost	9	2.4%
Both Salt and Water Lost	308	82.4%
<b>Types of ORS</b>		
Sachet ORS	59	15.7%
Salt-Sugar Solution	83	22.1%
Both	233	62.1%
<b>Fluid Used for ORS</b>		
7up	109	29.1%
Beer	0	0.0%
Juice	0	0.0%
Water	266	70.9%
<b>When do you start giving ORS</b>		
After the 1st stooling	139	37.1%
After 5times of stooling	118	31.5%
When the child becomes weak	118	31.5%
<b>How often do you give ORS</b>		
When the child feels thirsty	127	33.9%
After each diarrhoea episode	187	49.9%
Daily	61	16.3%

Table 2 above shows the evaluation of knowledge about ORS use. Majority of the study participants (89.9%) knew that diarrhoea is the frequent passage of loose stool, 93.1% were aware that ORS is used to manage diarrhoea at home, while 82.4% of respondents affirmed that ORS is used to replace both salt and water lost in stool. Study showed that 62.1% of respondents knew that there are two types of ORS (Sachet ORS and salt-sugar solution) and 70.9% of respondents recognised water as the fluid used for ORS while 29.1% felt 7up (soft drink) was the ideal fluid. On when to commence ORS, 37.1% knew that ORS is started after the 1<sup>st</sup> stooling while 31.5% said it should be commenced after 5 loose stools and another 31.5% said when the baby becomes weak. Less than half of the respondents (49.9%) correctly knew that ORS is given after each diarrhoea episode.

**Table 3: Attitude of Respondents to ORS Use**

<b>Attitude to ORS USE (n = 375)</b> <b>Frequency n (%)</b>					
<b>Question/ Response</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Undecided</b>	<b>Agree</b>	<b>Strongly Agree</b>
Mothers will need to wash their hands before preparing ORS	6(1.6)	0(0)	2(0.5)	156(41.6)	<b>211(56.3)</b>
ORS is enough as a treatment for diarrhoea.	20(5.3)	100(26.7)	39(10.4)	<b>161(42.9)</b>	55(14.7)
There are side effects with the use of ORS.	52(13.9)	<b>187(49.9)</b>	79(21.1)	38(10.1)	19(5.1)
Children dislike the taste of ORS.	15(4)	72(19.2)	57(15.2)	<b>192(51.2)</b>	39(10.4)
ORS can be given with other food.	13(3.5)	37(9.9)	48(12.8)	<b>205(54.7)</b>	72(19.2)
ORS makes diarrhoea worse	161(42.9)	<b>174(46.4)</b>	23(6.1)	14(3.7)	3(0.8)

Table 3 above shows the attitude of respondents to ORS use. More than half of the respondents (56.3%) strongly agreed that mothers will need to wash their hands before preparing ORS, 42.9% agreed that ORS is enough as a treatment for diarrhoea, and 49.9% of respondents disagreed to ORS having any side effects. Also, 51.2% of respondents agreed that children dislike the taste of ORS, 54.7% agreed that ORS can be given with other foods, and 46.4% of respondents disagreed to ORS making diarrhoea worse.

**Table 4: Mode of Practice by ORS Users**

<b>Mode of Practice by ORS Users</b>		
<b>Variable</b>	<b>Frequency(n=333)</b>	<b>Percentage(%)</b>
<b>If yes, did you prepare it yourself, purchased the sachet, or both?</b>		
Prepared by Me	82	24.6%
Bought Sachet	97	29.1%
Both	<b>154</b>	<b>46.2%</b>
<b>Quantity of Water Used</b>		
1 litre/ 2 beer bottles	88	26.4%
1 big table water	<b>130</b>	<b>39.0%</b>
75cl bottle water	99	29.7%
500mls water	16	4.8%
<b>Quantity of sugar Used (n=236)</b>		
1 Cube	39	16.9%
3 Cubes	52	19.4%
5 Cubes	<b>91</b>	<b>40.6%</b>
7 Cubes	54	23.1%
<b>Quantity of Salt Used (n=236)</b>		
1 teaspoon	<b>198</b>	<b>83.9%</b>
2 teaspoons	17	7.2%
3 teaspoons	14	5.9%
1 Cup	7	3.0%
<b>How was the ORS given to the child?</b>		
With Cup and Spoon	<b>156</b>	<b>46.8%</b>
With Feeding Bottle	93	27.9%
Direct from Cup	84	25.2%
<b>When do you discard prepared ORS that was not used?</b>		
After 6hrs	63	18.9%
After 24hrs	<b>244</b>	<b>73.3%</b>
After 2 days	19	5.7%
After 1 Week	7	2.1%

Table 4 above shows the mode of practice by ORS Users. A total of 46.2% have prepared ORS using both sachet ORS and salt-sugar solution, however, 39.0% used one big table water to prepare ORS while 26.4% of respondents correctly used 1 litre of water. While 40.6% of respondents used 5 cubes of sugar to prepare salt-sugar solution, a majority of respondents (83.9%) used 1 teaspoon to prepare salt-sugar solution. Also 46.8% gave ORS to child using cup and spoon, and 73.3% discarded prepared ORS that was not used after 24 hours.

**Table 5: TEST OF ASSOCIATION BETWEEN SOCIO-DEMOGRAPHICS AND PRACTICE OF ORS USE**

VARIABLES	Have You Ever Used ORS (N=375)		$\chi^2$	<i>p-value</i>
	Yes N=333 (%)	No N=42 (%)		
<b>Age</b>				
21 - 25 Years	58 (75.3)	19 (24.7)	18.327	<b>0.001*</b>
26 - 30 Years	122 (91)	12 (9)		
31 - 35 Years	84 (92.3)	7 (7.7)		
36 - 40 Years	67 (94.4)	4 (5.6)		
>40 Years	2 (100)	0 (0)		
<b>Educational Status</b>				
None	0 (0)	0 (0)	4.794	0.091
Primary	5 (100)	0 (0)		
Secondary	131 (92.9)	10 (7.1)		
Tertiary	197 (86)	32 (14)		
<b>Occupation</b>				
Housewife	28 (90.3)	3 (9.7)	9.557	<b>0.049*</b>
Civil Servant	79 (92.9)	6 (7.1)		
Trader	111 (92.5)	9 (7.5)		
Others	55 (85.9)	9 (14.1)		
Hairdresser	60 (80)	15 (20)		
Business Owner	0 (0)	0 (0)		
<b>Religion</b>				
Christianity	330 (88.7)	42 (11.3)	0.381	0.537
Islam	3 (100)	0 (0)		
African Traditional	0 (0)	0 (0)		
<b>Source of Knowledge</b>				
Antenatal Clinic	196 (89.5)	23 (10.5)	5.765	0.124
Media	49 (84.5)	9 (15.5)		
Family Member	71 (93.4)	5 (6.6)		
Friend	17 (77.3)	5 (22.7)		
<b>* (significant at <math>p &lt; 0.05</math>)</b>				

Table 5 shows test of association between socio-demographic variables and practice of ORS use. Age and occupation of respondents showed statistically significant association with practice ( $P=0.001$  and  $0.049$  respectively).



## DISCUSSION

The result of this study revealed that the major source of knowledge about ORS was antenatal clinics (55%). This could be attributed to the regular health education programmes carried out on every antenatal clinic day in most hospitals and primary health centres. This finding is similar to that reported by Omole V. N et al in their study on the knowledge, attitude and practice of home management of diarrhoea among mothers of under-fives in Samaru, Kaduna State, Nigeria, where it was noted that Hospitals and other health facilities accounted for almost half (48.3%) of the sources of information about ORS.<sup>10</sup> In a study carried out among mothers of under-five children in a military barrack in Ibadan, Nigeria, most of the respondents (80.1%) heard of ORS from health care personnel.<sup>12</sup> This figure is much higher than the finding in this study (55%). This could be as a result of close proximity and accessibility of the health facility to the study population in this study who permanently reside in the military cantonment in Akinyele Local Government Area, Oyo State, Nigeria.<sup>12</sup>

With respect to attitude of respondents to ORS use, 42.9% agreed that ORS is enough as a treatment for diarrhoea with 26.7% in disagreement, and 49.9% of respondents disagreed to ORS having any side effects. This finding is in contrast to that noted in a study on the knowledge, attitude and practice of mothers towards oral rehydration therapy in Duhok where 231 mothers (77% of 300 total respondents) believed that ORT is not enough as a treatment for diarrhoea in children, and 297 mothers (99%) agree there are no side effects behind its use.<sup>13</sup> This indicates that despite having a good knowledge about ORS, attitude towards its use still poses a challenge. There is a need for reinforced health education and correction of misconceptions. Also in another study on mothers' knowledge, attitude and practice towards the prevention and home-based management of diarrhoeal disease among under-five children in Diredawa, Eastern Ethiopia, around half of the mothers, 152 (51.5%) believed that their child dislikes the taste of oral rehydration solution.<sup>14</sup> This is similar to our finding where 51.2% of respondents agreed that children dislike the taste of ORS.

On the practice of ORS use, 88.8% of respondents have used ORS in their life time, while the rest of the respondents (11.2%) have never used ORS. This finding is higher than that seen in a study conducted in an urban community in Lagos, where only 44.3% of all respondents have used ORT for children with diarrhoea.<sup>15</sup> Thus, indicating a higher utilization rate of ORS in Aba.

While, 39.0% of respondents in this study used one big table water to prepare ORS, only 26.4% of respondents correctly used 1 litre of water. In contrast, a study carried out in Fagita Lekoma District, Awi Zone, Amhara Regional State, Northwest Ethiopia to assess the knowledge, practice, and associated factors of home-based management of diarrhoea among caregivers of children attending under-five clinic, 85.4% prepared ORS powder correctly with the recommended amount of water.<sup>16</sup> Less than half of the respondents (40.6%) used 5 cubes of sugar to prepare salt-sugar solution, and such is also seen in a study on home management of childhood diarrhoea conducted in an urban community in Lagos, where 51% of respondents prepared salt-sugar solution using 5 cubes of sugar.<sup>15</sup> Also, 73.3% of the respondents in this study discarded prepared ORS that was not used after 24 hours. This finding is similar to that seen in same Lagos study, where majority of mothers (87.5%) correctly discarded prepared solutions after 24 hours.<sup>16</sup> The findings in this study indicate a poor practice of ORS use.

In this study, a statistically significant association was found between age of respondent, educational status, occupation and source of knowledge and practice of ORS use. This finding is similar to that found in a study on the prevalence of oral rehydration therapy use and associated factors among under-five children with diarrhoea in Dangure, Benishangul Gumuz Region where Mother's educational status was one of the factors associated with oral rehydration therapy use.<sup>17</sup>

## **CONCLUSION**

This study showed that antenatal attendees in Aba have good knowledge, mixed attitude and poor practice of ORS use. Source of knowledge was majorly from antenatal clinics, this however did not reflect in their practice of ORS use, which was found to be poor. Factors affecting knowledge of ORS included age, educational status, occupation and source of knowledge, while practice was affected by age and occupation of respondents.

## **RECOMMENDATION**

1. ORS preparation should be demonstrated by health workers when teaching about ORS, and as a means of evaluation, participants should be asked to demonstrate skill acquired.
2. Health information about ORS and its use should be broken down to the barest minimum for every woman to understand regardless of level of education attained.

3. ORS sachets should be given freely, by the government through the Ministry of Health and health facilities, or at a minimal cost, to every pregnant woman during their antenatal visits, at least once.
4. Mass media involvement (radio, television, social media) in the publicity of ORS and its use should be incorporated to reach wider population of women and help in correcting misconceptions.

### **ACKNOWLEDGEMENTS**

Authors are grateful to all the participants.

### **CONFLICT OF INTEREST**

The authors declare that there is no conflict or interests regarding the publication of this paper

### **REFERENCES**

1. Robert MK. Nelson Textbook of Pediatrics. 20th Ed. Philadelphia: Elsevier; 2016.
2. World Health Organisation (WHO). Diarrheal disease. 2017. Available from <https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease&hl=en-NG>
3. Robert F. Dehydration in Children. 2019. Available from [https://www.emedicinehealth.com/dehydration\\_in\\_children/article\\_em.htm](https://www.emedicinehealth.com/dehydration_in_children/article_em.htm)
4. Azubuikwe JC, Nkanginieme KEO. Pediatrics and child health in a tropical region. 3rd Ed. Lagos: Educational printing and publishing; 2016.
5. Kumar V, Abbas AK, Aster JC. Robbins and Cotran Pathologic Basis of Disease. 9th Ed. Philadelphia: Elsevier Inc; 2015.
6. Magbagbeola DD, Ibrahim TF, Salawu AT. Prevalence and determinants of diarrhea among infants in selected primary health centers in Kaduna north local government area, Nigeria. The Pan African Medical Journal; 2017. 28 (109).
7. Park K. Park's Textbook of Preventive and Social Medicine. 23rd Ed. India: Bhanot Publishers; 2015.
8. Charyeva Z, Cannon M, Oguntunde O, Garba AM, Sambisa W, Bassi AP, Ibrahim MA, Danladi SE, Lawal N. Reducing the burden of diarrhea among children under five years old: lessons learned from oral rehydration therapy corner program implementation in Northern Nigeria. J Health Popul Nutr; 2015. 34 (4).
9. National Population Commission (NPC) [Nigeria] and ICF. Nigeria Demographic and Health Survey 2018. 2019. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF.

10. Omole VN, Wamyil-Mshelia TM, Nmadu GA, Usman NO, Andeyantso EA, Adiri F. Knowledge, attitude and practice of home management of diarrhea among mothers of under-fives in Samaru, Kaduna state, Nigeria. *Port Harcourt Med J*;2019. 13:19-25.
11. Osonwa KO, Eko JE, Ema S. Utilization of Oral Rehydration Therapy in the Management of Diarrhea in Children among Nursing Mothers in Odukpani Local Government Area of Cross River State, Nigeria. *American Journal of Public Health Research*;2016. 4 (1): 28-37.
12. Agbolade MO, Isaac OD, Ademola JA. Knowledge and use of Oral Rehydration Therapy among mothers of under-five children in a military barrack in Ibadan, Nigeria. *African Journal Biomedical Research*; 2015. 18(1):7-15.
13. Akrem MA, Saad YS, Shireen MY. Knowledge, Attitude and Practice of Mothers Towards Oral Rehydration Therapy in Duhok. *Isra Medical Journal*; 2012. 4 (3): 132-138.
14. Workie HM, Sharifabdilahi AS, Addis EM. Mothers' Knowledge, Attitude and Practice towards The Prevention and Home-Based Management of Diarrheal Disease Among Under-Five Children in Diredawa, Eastern Ethiopia, 2016: A Cross-Sectional Study. *BMC Pediatrics*; 2018. 18:358.
15. Olatona FA, Obrutu OE, Adeniyi OF. Home Management of Childhood Diarrhea Including Zinc Supplementation Among Mothers Attending Primary Health Centers In an Urban Community in Lagos;2016. Available from <https://www.researchgate.net/publication/308698073>.
16. Bogale KD, Nega TA, Tesfaye DA. Knowledge, Practice, and Associated Factors of Home-Based Management of Diarrhea among Caregivers of Children Attending Under-Five Clinic in Fagita Lekoma District, Awi Zone, Amhara Regional State, Northwest Ethiopia. *Hindawi Nursing Research and Practice*; 2016. 2017 (8084548).
17. Misgna H, Ebessa B, Nerea M. Prevalence of oral rehydration therapy use and associated factors among under-five children with diarrhea in Dangure, Benishangul Gumuz Region, Ethiopia/2018. 2019. *BMC Research Notes*; 12 (67).