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Original Research Article

Factors associated with maternal knowledge, perception and practice of oral rehydration solution for diarrhoea in a health facility in Port Harcourt

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ABSTRACT

Background: Oral rehydration solution (ORS) is an effective, inexpensive intervention for preventing dehydration and mortality among children with diarrhoea. However, this benefit can only be achieved, if caregivers have appropriate knowledge and right perceptions to make them use it when needed in diarrhoeal illness. This study was carried out to assess the level of knowledge, perception and the practice of ORS by mothers attending the paediatric outpatient clinic in Rivers State university teaching hospital and determine factors associated with it.
Methods: A cross-sectional study was carried among mothers of under-five children attending the clinic. Specific questions on knowledge, perception and practice of ORS were answered, correct responses collated and converted to percentages, with 50% used as cut-off for good knowledge, perception and practice of ORS. Data analysis was done using SPPS version 23.
Results: A total of 143 mothers aged 22-50 (32.1±5.4) years, participated in the study. The ORS awareness among them was high with corresponding high level of knowledge (71.6%), perception (77.6%) and practice (69.4%) of ORS. However, there was poor knowledge and practice regarding when to start and duration of administering ORS to children with diarrhoea. Middle socioeconomic class and higher parity were significantly associated with good knowledge of ORS and being married with good perception. Good knowledge of ORS was significantly associated with good perception and good practice.
Conclusions: Though the knowledge, perception and practice of ORS in this study were good, public enlightenment is needed to address the gaps in knowledge and practice.

Keywords: Oral rehydration solution, Knowledge, Perception, Practice, Diarrhoea, Port Harcourt

INTRODUCTION

Oral rehydration solution (ORS), a type of oral rehydration therapy is a fluid administered orally or via nasogastric tube used to prevent and treat dehydration especially resulting from diarrhoea.[1] ORS was first developed in the 1940s with the use of electrolyte solutions with or without the use of glucose. It was mainly used for persons with mild dehydration and convalescent patients.[2] Its' use became popular in the 1960s after use on cholera patients with the discovery of the importance of glucose in the promotion of sodium and water absorption.[3]

ORS is composed of fluids and electrolytes and the recommended formulation consist of sodium chloride, sodium citrate, potassium chloride and glucose.[1] The efficacy of the ORS is based on the fact that water is continually absorbed from the intestines even during fluid loss due to diarrhoea or vomiting. The glucose in the ORS increases the uptake of sodium while water follows

passively.[2] In addition, the potassium chloride and sodium citrate prevent the common complications that results from diarrhoea and/or vomiting such as hypokalaemia and acidosis.[4-6]

Timely management of diarrhoea with ORS is responsible for reduction in under-five mortality with an estimated reduction in the risk of death from diarrhoea by about 93%.[7] It is noteworthy that WHO recommends ORS as the key intervention in the treatment of diarrhoea and it is one of the drugs in the WHO's list of essential medicines.[8,9] In addition, UNICEF also advocates the use of ORS to reduce the impact of diarrhoea on children.[3]

ORS is the commonest, simplest, highly effective, inexpensive, technologically appropriate and non-invasive intervention useful for treatment of mild to moderate dehydration in children with diarrhoea.[10,11] It is thus able to avert deaths from diarrhoea when commenced early. It is usually commenced alongside the use of other treatments such as zinc supplements which helps to reduce severity, frequency and duration of diarrhoea with continued feeding to prevent malnutrition.[1] It is pertinent to note that it has no effect on diarrhoea duration, although the reduced osmolality ORS has been shown to reduce the volume of stool passed.[12,13]

It is recommended that ORS is prepared with clean water and the WHO/UNICEF recommends that it is started immediately diarrhoea starts so as to prevent dehydration.[14] Infants are given ORS via cup and spoon every 1-2 minutes while older children are encouraged to take several sips from a cup or an estimated volume of 200-400 ml per loose stool or vomiting episode.[1] If vomiting occurs, the mother or caregiver is taught to wait 5-10 minutes before recommencing ORS.[15]

Despite all the benefits of ORS, studies have shown that even though a good proportion of caregivers are aware of ORS for the treatment of diarrhoea at home, it doesn't necessarily translate to good knowledge or practice of ORS. [10,16,17] For instance, in the 2018 Nigeria demographic and health survey, a good proportion of Nigerian women (87%) were aware of ORS for the treatment of diarrhoea. This awareness was more among women in urban (91%) residence compared to those in rural residence (84%). In terms of regions in Nigeria, women in the South-South geopolitical region (73%) were the least knowledgeable.[10] While awareness of the use of ORS in the national survey was commendable, in practice only 40% of children who had diarrhoea were given ORS at home.[10] A hospital-based study in Aba also reported that while 93.1% of mothers had knowledge of using ORS to prevent dehydration in diarrhoea, only 37.1% knew ORS should be commenced with the 1st stooling and 49.1% knew it should be given after every loose stool, demonstrating a knowledge gap between awareness and knowledge of ORS.[16]

The knowledge gap is different in Monno, Bangladesh, where 93.7% of women who participated in the study knew about ORS but only 56.7% knew the correct amount to be administered.[18] The story is also different in Gondar town, Ethiopia, as only half of the women that participated in the study knew that ORS should be commenced as soon as diarrhoea illness starts and every time the child passes watery or loose stool despite the high awareness of ORS.[19]

While WHO and UNICEF recommend the early commencement of ORS at home in the treatment of diarrhoea as it reduces the number of outpatient hospital visit, in-patient hospital care as well as marked reduction in the overall medical cost of treating diarrhoea illnesses, implementing it is not without its own peculiar challenges. These include cultural practices, lack of training of health care professionals, the cost of commercially available ORS and poor parental knowledge of how to prepare and use ORS.[20] A systemic review of the use of ORS in diarrhoea treatment of children found out that poor knowledge of the usefulness of ORS in preventing dehydration and not knowing how to prepare the solution in addition to wrong perceptions by caregivers were barriers to the optimal use of ORS for the treatment of diarrhoea at home.[20]

An earlier study in Port Harcourt, showed that although majority of the caregivers had heard of ORS, only 44% of them knew how to make ORS and the time to discard it, indicating the existence of a knowledge gap. However, the study did not explore possible factors that could be associated with the poor knowledge of ORS among mothers in Port Harcourt.[21] However, a study carried out in Ethiopia, reported that mothers who were housewives or divorced significantly had poor knowledge of ORS compared to their counterparts who were married or working. It also revealed that mothers with poor knowledge of ORS were significantly more unlikely to use it for their children with diarrhoea.[22]

The aim of this study therefore, is to determine the knowledge, perception and practice of ORS by mothers in Rivers State university teaching hospital, a health facility in Port Harcourt. In addition, it is aimed at identifying if knowledge gaps in regards to ORS exist and to identify possible factors that could be associated with their level of knowledge, perception and practice of ORS. Besides, findings from this study could be used to strengthen existing ORS practices as well as help formulate new policies that would improve the use of ORS in the treatment of diarrhoea, thereby reducing childhood morbidity and mortality.

METHODS

It was a descriptive cross-sectional study of mothers in the paediatric outpatient clinic of the Rivers State university teaching hospital carried out over a 6-month period 1st of May to October 31st 2023.

The Rivers State university teaching hospital (RSUTH), a tertiary hospital is owned by the Rivers State Government and consist of 375 beds with clinical and non-clinical departments. The clinical departments include the departments of paediatrics, obstetrics and gynaecology, surgery, internal medicine, family medicine, pathology, anaesthesiology, physiotherapy and pharmacy, whereas the non-clinical departments include the Works, Social welfare among others.

The paediatric outpatient clinic (POPC), one of the units in the department of paediatrics is open Mondays to Fridays, 8.00 am to 4.00 pm and it is run by consultants, resident doctors, house officers, nurses and other support staff. Care is rendered to children aged 0-17 years and a total number of 35-40 children are seen each clinic day. Other units in the department of paediatrics include the children emergency ward, children's ward and the special care baby unit.

A research assistant was recruited for this study after which she was trained on the inclusion and exclusion criteria and the proper administration of the proforma.

Mothers whose children were under 5 years attending the POPC constituted the study population.

Inclusion criteria were all mothers attending the POPC whose child(ren) were under 5 years as well as those who gave consent to participate in the study. Mothers of children who were more than 5 years and/or who did not give consent to participate in the study were excluded.

All mothers were informed about the intended study in clear language they understood and they were allowed to make informed decision either to participate in the study or to decline (verbally). Those that declined were reassured that there were no consequences. Ethical clearance was obtained from the Rivers State university teaching hospital research ethics committee.

A convenient sampling method was used and a total of 143 mothers who were eligible for study were recruited.

The researchers and research assistant administered the pre-tested and validated questionnaire to the mothers recruited on a one-on-one basis. The questionnaire consisted of 4 sections which included questions on the socio-demographic characteristics, knowledge, perception and the practice of ORS among mothers. Ten questions were used to assess the knowledge of participants, 3 for the perception while 8 were used to assess practice. A participant was said to have good knowledge, perception and practice if a score of more than 50% was obtained and poor if score was 50% or less.

Data obtained from the questionnaires were entered into an Excel sheet and analysed using the statistical package for social sciences version 23. Results were reported in frequencies, percentages, bar and pie charts. Associations were established using Fishers Exact test and chi square test. Statistical significance was set at $p \leq 0.05$.

RESULTS

Sociodemographic characteristics of study population

143 mothers aged 22-50 years participated in the study, with a mean age of 32.1±5.4 years. Majority of them were aged 26-35 years 98 (68.5%). More than half of them (53.9%) were para 1 and 2, 141 (98.6%) were Christians and others Muslims. Majority 136 (95.1%) were married, resided in urban areas (93%), had post-secondary school education 65.1% and of middle socioeconomic class 83 (58%) (Table 1).

Table 1: Sociodemographic characteristics of the study population, (n=143).

Variables	N	Percentages (%)
Age groups (in years)		
≤ 25	9	6.3
26-35	98	68.5
36-45	33	23.1
≥ 45	3	2.1
Parity		
1	35	24.4
2	42	29.4
3	37	25.9
> 3	29	20.3
Marital status		
Married	136	95.1
Separated	2	1.4
Single	3	2.1
Widow	2	1.4
Place of residence		
Rural	10	7.0
Urban	133	93.0
Educational level		
Primary	4	2.8
Secondary	51	35.7
Tertiary	88	61.5
Socioeconomic status		
High	19	13.3
Middle	83	58
Low	41	28.7

Knowledge of ORS and factors associated with knowledge

One hundred and thirty-four (93.7%) of the 143 participants had heard of ORS before and majority 107 (79.9%) heard of it from health care workers. One hundred and eight (80.6%) knew that it was used for treatment of diarrhoea or dehydration, 88 (65.7%) knew that a sachet of ORS should be mixed with a litre of water, 32 (23.9%) said ORS should be commenced when a child with diarrhoea gets weak. Majority knew that

ORS should be administered with a cup and spoon and stored for 24 hours, 111 (82.8%). The least correctly answered question was how frequently should ORS be administered to children as only 6 (4.5%) said it should be administered after every watery stool (Table 2). Ninety-six (71.6%) participants had good knowledge of ORS while 38 (28.4%), Figure 1. The probability of having good knowledge of ORS is statistically significantly increased by 2 folds among mothers of para 3 or more. There is an increased odd of good knowledge among mothers from low and middle socioeconomic class, p<0.023 and 0.004 respectively (Table 3).

Perception of participants and factors associated with perception

Majority of participants 104 (77.6%) agreed that they would be willing to give ORS to their children with diarrhoea but 95 (70.9%) agreed to start ORS at the onset of diarrhoea in their children (Table 4). A total of 104 (77.6%) mothers had good perception towards ORS. The odds of having good perception towards ORS was increased by 3 and 10-fold among Para 3 or more mothers and among those who were married, p=0.007 and 0.008 respectively (Table 5).

Practice of ORS and factors associated with practice

Ninety-five participants (70.9%) had administered ORS to a child. Of these 95 who had used ORS before, 73 (76.8%) mixed it correctly with a litre of water, 71 (74.7%) administered to their children after 2-3 episodes of water stools, 88 (92.6%) and 90 (94.7%) administered ORS with a cup and stored it for 24 hours respectively (Table 6). Overall, 93 (69.4%) participants had good practice while 41 (30.6%) had poor practice, (Figure 1) no sociodemographic factor was significantly associated with good practice (Table 7).

Association between level of knowledge with level of perception and practice

This study has shown that mothers who have good knowledge of ORS are about 5 times more likely to have good perception of ORS and significantly use it as home treatment for diarrhoea (Table 8).

Table 2: Participants knowledge of ORS.

Variables	N	Percentage (%)
Have you heard of ORS before?		
No	9	6.3
Yes	134	93.7
Variables for those who have heard of ORS, (n=134)		
Where did you hear of ORS?		
Health facility/health worker	107	79.9
Chemist/pharmacy	17	12.7
Neighbours/friends/relatives	6	4.5
Social media	2	1.5
Seminar/books	2	1.4
What is ORS used for?		
Treatment of diarrhoea or dehydration	108	80.6
To give child strength	20	15.0
High temperature	1	0.7
Don't know	5	3.7
How is ORS mixed?		
1sachet of ORS to 1 litre of water	88	65.7
1 sachet of ORS to 1.5 litres of water	11	8.2
1sachet of ORS to 750 ml of water	12	9.0
1/2 sachet of ORS in 500 ml of water	2	1.5
Mix I sachet of ORS in any amount of water	5	3.7
Don't know	16	11.9
How soon should ORS be started?		
After 2-3 episodes of watery stools	72	53.7
After 24 hours of passing watery stools	2	1.5
After 48 hours of passing watery stools	4	3.0
Don’t know	24	17.9
When the baby gets weak	32	23.9
What utensils should be used in giving ORS		
Cup and spoon	106	79.1
Bottle	23	17.2
Don't know	5	3.7

Continued.

Variables	N	Percentages (%)
How often should ORS be given during diarrhoea illness at home?		
After every watery stool	6	4.5
As often as the child can take	7	5.2
Every 2-20mins	3	2.2
Use as water	93	69.4
2-4 times daily	5	3.7
I don't know	20	14.9
For how long should you give ORS to a child having diarrhoea?		
1-2 days	74	55.2
3-5 days	3	2.2
Till child stops purging/gets better	38	28.4
Till mixture is finished	1	0.7
Don't know	18	13.4
For how long should ORS be stored after mixing? (Hours)		
24	111	82.8
6	1	0.7
I don't know	22	16.4
What should you do if the child is vomiting?		
Continue with ORS and take to hospital	95	70.9
Give drugs and manage and home	1	0.7
Give water and rub back of child	1	0.7
Take to chemist	4	3.0
I don't know	33	24.6

Table 3: Factors associated with good knowledge of ORS.

Variables	Knowledge of ORS		Logistic regression for good knowledge		
	Good (n=96)	Poor (n=28)	Odds ratio	95% CI	P value
Age group (in years)					
≤ 35	72 (72)	28 (28)	1	0.396-2.199	0.875
> 35	24 (70.6)	10 (29.4)	0.933		
Parity					
1-2	47 (64.4)	26 (35.6)	1	1.023-4.989	0.044
≥ 3	49 (80.3)	12 (80.3)	2.259		
Age of last child (in years)					
≤ 5	84 (71.2)	34 (28.8)	1	0.248-2.733	0.751
> 5	12 (75)	4 (25)	0.824		
Educational level					
Pry/sec	29 (63)	17 (37)	1	0.863-4.055	0.113
Post secondary	67 (76.1)	21 (23.9)	1.870		
Marital status					
Married	90 (70.9)	37 (29.1)	1	0.287-21.204	0.411
Not married	6 (85.7)	1 (14.3)	2.467		
Employment status					
Employed	82 (73.2)	30 (26.8)	1	0.244-1.679	0.365
Unemployed	14 (63.6)	8 (36.8)	0.640		
Socioeconomic status					
High	8 (42.1)	11 (57.9)	1		
Low	27 (74.3)	9 (25.7)	3.972	1.215-12.991	0.023
Middle	62 (77.5)	18 (22.5)	4.736	1.656-13.549	0.004

Table 4: Perception of participants towards ORS, (n=134).

Variables	N	Percentages (%)
Would you give ORS to your child if the child has diarrhoea		
Yes	104	77.6
No	7	5.2
I don't know	23	17.2

Continued.

Variables	N	Percentages (%)
Would you start ORS immediately after child starts having diarrhoea		
Yes	95	70.9
No	16	11.9
I don't know	23	17.2
Would you give ORS after every watery stool to your child that is having diarrhoea?		
Yes	103	76.9
No	8	6.0
I don't know	23	17.2

Table 5: Factors associated with good perception of ORS.

Variables	Perception towards ORS		Logistic regression for good perception		
	Good (n=104)	Poor (n=30)	Odds ratio	95% CI	P value
Age group (years)					
≤ 35	76 (76)	24 (24)	1	0.545-3.932	0.445
> 35	28 (82.4)	6 (17.6)	1.474		
Parity					
1-2	50 (68.5)	23 (31.5)	1	1.401-8.988	0.008
≥ 3	54 (88.5)	7 (11.5)	3.549		
Age of last child (years)					
≤ 5	92 (78)	26 (22)	1.179	0.351-3.965	0.790
> 5	12 (75)	4 (25)			
Educational level					
Pry/Sec	32 (69.9)	14 (30.4)		0.859-4.512	0.109
Post secondary	72 (81.8)	16 (18.2)	1.969		
Marital status					
Not married	2 (28.6)	5 (71.4)	1	1.869-55.676	0.007
Married	102 (80.2)	25 (19.7)	10.200		
Employment status					
Unemployed	14 (63.6)	8 (36.8)	1	0.872-6.265	0.091
Employed	90 (73.2)	22 (19.6)	2.338		
Socioeconomic status					
High	14 (73.7)	5 (26.3)	1		
Middle	66 (82.5)	14 (17.5)	1.684	0.521-5.440	0.384
Low	24 (68.6)	11(31.4)	0.779	0.224-2.708	0.695

Table 6: Participants practice of ORS, (n=134).

Variables	N	Percentages (%)
Have you ever given ORS to your child?		
No	39	29.1
Yes	95	70.9
Why was ORS given to your child? (n=95)		
Watery stools	91	95.8
Vomiting	1	1.1
Weakness	3	3.2
How was ORS prepared?		
With 750 ml of water	4	4.2
With 1000 ml of water	73	76.8
With 1500 ml of water	14	14.7
With any amount of water	3	3.2
Can't remember	1	1.1
How soon was ORS started after diarrhoea?		
After 2-3 watery stools	71	74.7
After admission in the hospital	2	2.1
When child got weak	7	7.4
Within 24 hours	15	15.8

Continued.

Variables	N	Percentages (%)
Which utensils did you use to give ORS		
Cap of bottle	5	5.3
Cup and spoon	88	92.6
Feeding bottle	2	2.1
Was ORS given after each loose stool is passed?		
No	57	60.0
Yes	38	40.0
When did you stop giving ORS?		
After 2-3 days	5	5.3
After 3-4 days	2	2.1
After 24 hours	81	85.3
After exhausting mixture	4	4.2
When diarrhoea stopped	3	3.2
How long did you store the ORS?		
24 hours	90	94.7
>24 hours	5	5.3

Table 7: Factors associated with good practice of ORS.

Variables	Practice of ORS, N (%)		Logistic regression for good practice		
	Good (n=93)	Poor (n=41)	Odds ratio	95% CI	P value
Age group (in years)					
≤35	69 (69)	31 (31)	1	0.461-2.525	0.862
>35	24 (70.6)	10 (29.4)	1.078		
Parity					
1-2	46 (63)	27 (37)	1	0.919-4.225	0.081
>2	47 (77)	14 (23)	1.970		
Age of last child (in years)					
≤5	81 (68.6)	37 ((31.4)	0.730	0.221-2.414	0.606
>5	12 (75)	4 (25)	1		
Educational level					
Pry/sec	29 (63)	17 (37)	1	0.731-3.345	0.250
Post secondary	64 (72.)	24 (27.3)	1.563		
Marital status					
Married	89 (70.1)	38 (28.5)	1.757	0.375-8.230	0.475
Not married	4 (57.1)	3 (42.9)	1		
Employment status					
Employed	80 (70.1)	32 (28.6)	1.731	0.674-4.447	0.255
Unemployed	13 (59.1)	9 (40.8)	1		
Socioeconomic status					
High	10 (52.6)	4 (47.4)	1		
Low	25 (71.4)	10 (28.8)	2.250	0.704-7.187	0.171
Middle	58 (72.5)	22 (27.5)	2.373	0.851-6.617	0.099

Table 8: Association between level of knowledge with the perception and practice of ORS among study participants.

Knowledge	Variables		Logistic regression for good practice		
	Good (n=104)	Poor (n=30)	Odds ratio	95% CI	P value
	Perception				
Poor	21 (55.3)	17 (44.7)	1	2.173-12.293	<0.001
Good	83 (86.5)	13 (13.5)	5.168		
Knowledge	**Practice**		**Logistic regression for good practice**		
	Good (n=93)	**Poor (n=41)**	**Odds ratio**	**95% CI**	**P value**
Poor	16 (42.1)	22 (57.9)	1	2.462-12.609	<0.001
Good	77 (80.2)	19 (19.8)	5.572		

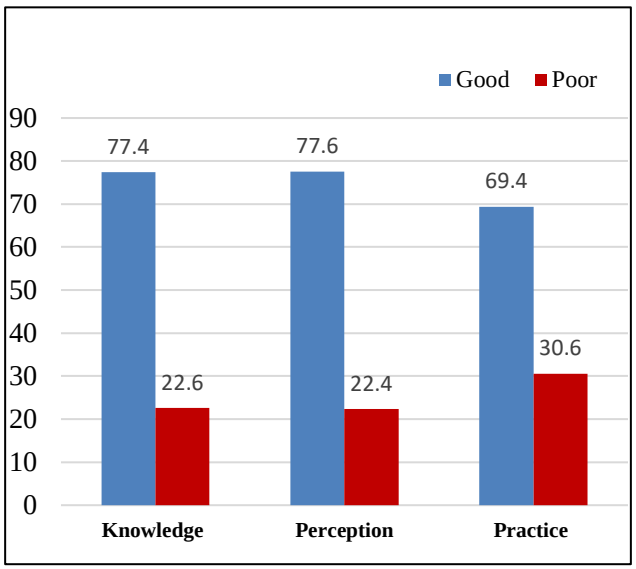

Figure 1: Level of knowledge perception and practice of ORS by the participants.

DISCUSSION

In general, majority of mothers in this study (93.7%) had heard of ORS, which was comparable to 93.3% earlier reported by Okechukwu et al in Port Harcourt, Nigeria and also from other studies in Nigeria and Ethiopia.[16,19,21,23] However, the ORS awareness in this study was higher than the 62% reported by Sultan et al in Saudi Arabia.[17] This could be due to the fact that half of the mothers in the Saudi study got to know about ORS from medical prescriptions in contrast to the present study where information was mostly obtained from health workers in health care facilities. Equally good is the knowledge that ORS is used to prevent dehydration in diarrhoeal illness as also reported in studies conducted in Nigeria and Ethiopia.[9,16,22] About two-thirds of the mothers that participated in this study knew how to constitute ORS using the WHO oral rehydration salt. This was higher than the 44.4% reported in an earlier study in Port Harcourt but way lower than 92.1% of women in Oromia, Ethiopia that knew how to prepare it correctly.[21,22] There is need for health care workers and health educators to specifically send out appropriate messages on how to mix ORS, which is one litre of water to a sachet of salt, since majority of the participants in this study got their information from health care workers. This is important because consumption of highly concentrated or dilute ORS could cause electrolytes disturbances such as hypernatremia or hyponatremia which has dire consequences.[24]

The world health organization recommendation is for caregivers to immediately start giving ORS as a home remedy for their children who develop diarrhoea even before seeking help from health care workers. This prevents children from developing dehydration by replacing fluid and electrolytes lost in diarrhoea stools.[1,2] One of the knowledge gaps identified in this study was that almost half of the study population did not know when to start giving ORS to children with diarrhoea. More worrisome was that about a quarter said ORS should be commenced at home when the child is weak. This is dangerous as weakness in a child with diarrhoea is a sign that the child is becoming severely dehydrated and could die from the illness.[25] Similarly, majority of the participants in this study did not know the frequency of administering ORS or when to stop ORS as recommended by WHO. Only 6 (4.5%) of participants in this study knew that ORS should be given to their children every time they passed watery or loose stool, while about a quarter knew that ORS should be continued until the stools become formed. However, mothers in other studies conducted in Aba, Nigeria and Ethiopia seemed to know better as slightly less than half of the participants knew that ORS should be administered after each loose stool.[16,19] This study has therefore revealed a large knowledge gap in respect to when to start ORS, how to administer it and when to stop administering ORS. These gaps should be specifically addressed when educating the public and counselling mothers whose children are being treated for diarrhoea.

It is commendable to note that majority of mothers in this study and in other studies knew that ORS once made, should be discarded after 24 hours.[22,26] Although we didn't explore if they understood the implications of keeping ORS for more than 24 hours, it is known that ORS kept for long can become a culture medium for bacteria growth, thereby causing more harm than good to the child with diarrhoea.[27]

In our study, 71.6% of the participants had good knowledge of ORS based on the questions they were asked in contrast to 52% of mothers in a study in Oromia, Ethiopia that had good knowledge.[22] The reason for the difference could be due to factors such as the source of their information, ability to assimilate information given and recall same when asked. Unlike our study where the odds of having good knowledge of ORS was significantly increased among mothers of para 3 or more and those from middle and low socioeconomic class, in the Ethiopian study, mothers earning high wages and those with secondary and post-secondary education had higher odds of having good knowledge of ORS. It is quite interesting that mothers from the middle and low socioeconomic class had better knowledge of ORS than mothers from the high socioeconomic class. It may be that the mothers from the high socioeconomic class are less attentive when information is being shared, knowing that they can afford health care for their children whenever the need arises and therefore not concerned with simple home remedies like ORS for diarrhoea treatment.

The perception of mothers to ORS in the home management of diarrhoea in this study was quite commendable as over three-quarter of them were willing to give ORS and give it immediately to their children if

they have diarrhoea. This in contrast to what was earlier reported by Workie et al in Ethiopia in 2016, where more than half of the mothers in their study had poor perception and said they will not give ORS to their children with diarrhoea.[28] Maternal perception towards ORS in Dhaka, Bangladesh was also poor with only 40.9% having good attitude.[29] However, it is worthy to note that while we used 3 questions to access the perception of the mothers regarding ORS, the Bangladesh study used 8. More so, the cut off mark for good perception was 90% compared to the 50% used in this study. While maternal parity of 3 or more and being married had 3 times and 10 times statistically greater odds of having good perception regarding ORS in diarrhoeal management in this study, no statistically significant factor was associated with good perception to ORS in Dhaka. This difference could just be as a result of differences in methodology, geographical location and cultural bias to medical interventions.

In terms of practice, the proportion of mothers who had used ORS in the treatment of diarrhoea in this study (70.7%) was comparable to that reported in Bangladesh (75.8%), and 61.8% reported in an earlier study in Nigeria.[21,30] It was however much higher than the 23.1% of mothers documented to have prepared and used ORS at home for the treatment of diarrhoea in their children in Saudi Arabia.[17] This difference may be attributable to regional differences and the perception of the Saudi women to ORS. In a community-based study in the southern region of Nigeria where ORS practice among mothers was poor, lack of awareness, not knowing how to prepare ORS and cultural beliefs in the community were factors mitigating against the practice of ORS in that community.[31] However, in regards to how mothers constituted the ORS they used, 63% of the participants in Bangladesh correctly mixed ORS with one litre of water in contrast to 76.8% of women in this study and 78% of those in India that did so.[26,30] It was quite interesting to note that in practice, over 9 out of every 10 women that used ORS discarded it at 24 hours as corroborated by Nahdi et al.[22] The implication of this is that the remote chance of children consuming expired ORS is markedly reduced. What however, seems to be a challenge in the practice of ORS in this study was the poor practice of mothers giving ORS to their children after each bowel movement (40%) and continuous administration of ORS until the stool becomes formed (3.2%). This is a reflection of their poor knowledge in regards to this aspect of ORS administration, as only a quarter of respondents in this study knew that ORS should be administered until the diarrhoea illness resolved and 4.5% knew that it should be administered every time the child passed watery or loose stools. It is therefore pertinent for health care workers especially those responsible for educating caregivers and the public on ORS to emphasize these points, and perhaps talk about them in a manner that will ultimately encourage the proper practice of ORS.

While 42% of mothers in an Ethiopian study were said to have good practice, 69% of participants in this study had good practice or used ORS as prescribed.[28] We didn't find any sociodemographic factor significantly associated with good practice in this study in contrast to reports from a diarrhoea disease hospital in Bangladesh where mothers with no formal education and those from low socio-economic class significantly had poor practice of ORS.[29] Another study in Ethiopia found a statistically significant association between the attainment of post-secondary education with good practice.[22] The differences observed was probably from differences in the methodology of the studies as they didn't use the same questions to assess good practice.

Interestingly, this study found that mothers who had good knowledge score of ORS significantly had good perception and practice of ORS. This observation was also reported by Nadhi et al who in their study found that the odds of mothers having good practice of ORS was statistically significantly increased by 22-fold among those who had good knowledge.[22] It therefore demonstrates that knowledge is key to practice. Therefore, all efforts geared towards increasing the use of ORS as a home remedy for diarrhoea among mothers and caregivers, health educators and health workers must explore ways of repeatedly passing relevant information to them in a format they can accept and assimilate. Additionally, since majority of mothers in this study as well as in other studies obtained their information on ORS from Health care workers, perhaps, training and retraining them in novel ways of educating caregivers on ORS would make tremendous impact.

CONCLUSION

This study highlights the high awareness of mothers of ORS as a home remedy for diarrhoea and its ability to prevent dehydration. So also, was the perception of mothers to ORS and their practice also high. However, the study revealed that knowledge gaps exist among those who are aware of ORS and what they know about its' use. These gaps included poor knowledge and practice of when to commence ORS in diarrhoea treatment, how often to give it and not knowing that ORS should be continued until diarrhoea resolved. Additionally, this study also showed that good knowledge of ORS is key to perception and practice as knowledge was significantly associated with good perception and practice of ORS among mothers.

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