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Knowledge, Attitude and Practice of Diarrhoea, Home Management and Prevention among Mothers/Care-Givers Attending a Paediatric Outpatient Clinic in Rivers State, Nigeria

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ABSTRACT

Introduction: Diarrhoea is a major contributor to under-five morbidity and mortality. A good knowledge of the disease and caregivers' ability to commence appropriate treatment at home is key in reducing childhood mortality.
Aim: To assess caregivers' knowledge, attitude and practice of diarrhoea home management and prevention in a paediatric outpatient clinic in Nigeria.
Method: The study took place in the paediatric outpatient clinic of Rivers State University Teaching Hospital. A questionnaire was used to collect data on biodata, knowledge, attitude and practice of diarrhoea home treatment and prevention from mothers/caregivers. Each question answered correctly was awarded a mark. The participants were grouped into having good, fair and poor knowledge, attitude and practice based on their scores.
Results: Overall, 69.7% of the participants had good attitude while only 31.1% and 34.8% had good knowledge and practice of diarrhoea home management. Majority of the participants (83.3%) correctly defined diarrhoea and knew that diarrhoeal illness could have complications (90.3%), but only few knew the signs of dehydration (34.2%) and identified danger signs of diarrhoea (22.4%). About 43% commenced treatment at home when their children had diarrhoea but only 14% gave the right treatment. The caregivers age, parity and educational level were significantly associated with good knowledge and attitude, while socioeconomic class of the mothers/caregivers was associated with good practice of diarrhoea home management and prevention.
Conclusion: Mothers/caregivers' knowledge and practice of home management/prevention of diarrhoeal disease was suboptimal. Health workers and community educators therefore need to do more to improve the narrative.

Keywords: Diarrhoea, Knowledge, Attitude, Practice, Mothers/caregivers, Home management, Prevention, Nigeria

INTRODUCTION

Diarrhoea is a common childhood morbidity and commoner among under-five children. It is said to occur when a child passes three or more watery or loose stool in a 24 hours period or if there is an increase in the frequency of stooling considered normal by the caregiver of the child [1,2]. Diarrhoea diseases is one of the topmost causes of death among children aged less than five. Majority of such mortalities is from dehydration a common complication found among them [3]. In 2019, about half a million children died globally because of diarrhoeal illnesses, mostly because of dehydration. Most of the casualties occurred in the developing countries especially in sub-Saharan Africa and south Asia [1,4].

Apart from the passage of watery stools, such children could also have bloody stools if the child has dysentery, abdominal pain, vomiting and fever. More importantly, they develop features in keeping with complications of diarrhoea, commonest among them is dehydration. The clinical features of dehydration include, excessive thirst, crying without tears, restlessness, irritability, sunken eyes, dry buccal mucosa, inability to drink and loss of consciousness in severe cases [5,6].

The management of diarrhoea includes prevention, early recognition of danger signs and prompt treatment of dehydration at home with cheap and cost-effective fluids (oral rehydration solution and salt sugar solution) which has saved the lives of quite a number of under-fives. Other treatment guidelines are zinc supplementation, continued feeding with nutrient rich food, improved environmental sanitation, handwashing, exclusive breastfeeding, vaccination with rotavirus vaccine and health education [1-3,6].

Diarrhoeal illnesses are preventable but it requires caregivers to be knowledgeable about the illness, including knowing what causes diarrhoea, mode of transmission, recognition of signs and symptoms of diarrhoea and dehydration and knowing what to do at home in treating the diarrhoeal illness. In addition to recognising the danger signs of diarrhoea such as presence of blood in stool, child drinking poorly or unable to drink, weakness and unconsciousness, adequate knowledge of these danger signs will prompt the caregivers to bring the children to the hospital immediately [7,8]. The question however is; are caregivers implementing these measures at home?

In the 2018 Nigeria Demographic and Health Survey (NDHS 2018) [9], about 13% of under five children surveyed had an episode of diarrhoea, 2 weeks preceding the survey. Of these only 50% were treated for diarrhoea. More worrisome was the fact that almost half the children with diarrhoea were given lesser amount of water and food during the illness instead of receiving more.

Studies in Lagos [10], Nigeria and Ethiopia [11] reported that the overall caregivers' knowledge and home management of diarrhoea were suboptimal. In the Lagos study, [10] less than half of the caregivers gave more food and water to facilitate the resolution of the diarrhoeal illness. In addition, less than half of the mothers in that study knew that ORS should be given to children to treat diarrhoea and the danger signs of diarrhoea.

In a different study conducted in India [12], although more than 70% of caregivers knew that ORS should be given to children with diarrhoea, its use during diarrhoeal illness was however poor.

An earlier study conducted in another tertiary health facility in Rivers State, Nigeria, less than a third of the mothers and caregivers that participated in the study had good knowledge of home management and prevention of diarrhoea while a third of them had good practice. These statistics are suboptimal and not acceptable if the incidence of diarrhoea and the mortality associated with it is to decline remarkably [13].

It is therefore imperative for mothers and caregivers to have adequate knowledge about the disease and the practical steps they should undertake at home to prevent and treat their children with diarrhoea. The last study to assess the knowledge of mothers on diarrhoea in our locality was about a decade ago. Several educational campaigns have been carried out in the communities by health workers and officials to provide adequate knowledge about diarrhoea disease, the use of ORS at home and recognition of danger signs necessary to prevent complications and mortalities from diarrhoea diseases. This is expected to yield positive results [14,15].

This study was therefore deployed to assess the knowledge of caregivers on home management of diarrhoea and their practice when their children have diarrhoea in order to ascertain if the narrative has changed since the last study in our locality.

MATERIALS AND METHODS

This was a cross-sectional descriptive study carried out on 161 mothers/caregivers attending the paediatric outpatient clinic between 1st June, 2022 to 30th November, 2022.

The study was conducted in the paediatric outpatient unit of the Rivers State University Teaching Hospital (RSUTH), Port Harcourt, Rivers State Nigeria. The Hospital, a 375-bed tertiary health care facility, is located in the south-south region of Nigeria. It renders health care services to people in Rivers State, accepting referrals from the primary and secondary health facilities in the state in addition to the private clinic and hospitals in Rivers State. In addition, patients are also referred to the facility from other states in the southern parts of Nigeria and other regions in Nigeria because of the modern equipment and man power in the hospital.

The paediatric out-patient clinic renders services to newborns up to children aged 17 years. It operates 5 days in a week between 8am and 4pm with a daily staff complement consisting of registrars, senior registrars and house officers, in addition to nurses, clerks and cleaners. Daily activities in the clinic are supervised by consultant Paediatrician(s). An average of 800 children are seen every month in the clinic.

The ethical clearance for the study was obtained from the Ethics Review Committee of the hospital. The mothers and caregivers were educated on the content and procedure for obtaining data for the research and reassured of the confidentiality of all the data obtained. A written informed consent was then obtained from them before the commencement of the interview.

The study population was made of all mothers/caregivers of children aged between 0 – 5 years attending the paediatric out-patient clinic.

The inclusion criteria were all mothers/caregivers of children 0 – 5 years attending the paediatric out-patient clinic as well as mothers or caregivers who gave consent to participate in the study whereas the exclusion criteria were mothers/ caregivers who did not give consent to participate in the study, whose children were above 5 years and who could not communicate in English language.

The convenient sampling technique was deployed for this study. Mothers/caregivers attending the paediatric outpatient clinic who gave informed consent were consecutively recruited into the study throughout the study period.

The data for the study was collected using a pre-tested questionnaire developed by the researchers. The questionnaire was administered directly to the participants by one-on-one interview with the researchers. The questionnaire collected data on the biodata of the participants in addition to asking questions to assess their knowledge, attitude, home management and prevention of diarrhoea. A total of 7 questions were asked to assess their knowledge on the home management and prevention of diarrhoea, 8 on attitude and 9 on practice. A correct answer to any question was awarded a mark each.

Assessment of knowledge had a total of 7 marks. The total score of each participant was collated and the percentage of the total score calculated. The participants who scored 70% and above were said to have good knowledge of diarrhoea, while those who scored 50-69% and less than 50% were said to have fair and poor knowledge on the home management and prevention of diarrhoeal disease.

Likewise a mark was awarded to every correct answer given by the participants to assess their attitude towards home management and prevention of diarrhoea. The individual scores were converted to a percentage of the maximum total score of 8. Participants who scored 70% and above were said to have good attitude towards the home management and prevention of diarrhoea, while those who scored 50-69% and less than 50% were said to have fair and poor attitudes respectively.

A total of 9 questions were asked to determine their practice of home

management and prevention of diarrhoea. Each correct answer was given one mark. The total of the participants scores were collated and the percentage of the maximum score was calculated. Mothers/caregivers who scored 70% and above were said to have good practice, while those who scored 50-69% and less than 50% were said to have fair and poor practice.

The data obtained from the study was extracted from the questionnaire into an excel sheet by a research assistant. The data analysis was carried out using the Statistical Package for Social Sciences (SPSS) version 23. The chi square test was used to test for association between categorical dependent and independent variables. The level of statistical significance was set at 5% with 95% confidence interval. The test of association was said to be significant if the *P* value was less than .05

RESULT

Socio-demographic Characteristics of Participants

Of 161 mothers/caregivers who participated in the study, majority were of age group 26-35 years 65(40.4%) with parity of four and above 40(28.6). Majority were married 118(73.3%) and of Igbo tribe 66(41.0%). Secondary level of education 75(46.6%) predominated in the mothers whereas tertiary level of education 71(48.3%) was commonest in the fathers. Most participants were of upper socioeconomic status 76(47.2%), Table I.

Table I: Socio-demographic Characteristics of Participants

Variables	Frequency, n=161 (%)
Age (years)	
< 25	24 (14.9)
26-35	65 (40.4)
36-45	51 (31.7)
> 45	21 (13.0
Parity	
One	37 (26.4)
Two	37 (26.4)
Three	26 (18.6)
Four and above	40 (28.6)
Marital Status	
Married	118 (73.3)
Single	22 (13.7)
Separated	21 (13.0)
Tribe	
Igbo	66 (41.0)
Rivers	58 (36.0)
Yoruba	13 (8.1)
Hausa	2 (1.3)
Ibibio/Efik	16 (9.9)
Ijaw	6 (3.7)
Mother's level of education	
Nil	9 (5.6)
Primary	29 (18.0)
Secondary	75 (46.6)
Tertiary	48 (29.8)
Father's level of education, n=147	
Nil	3 (2.0)
Primary	15 (10.2)
Secondary	58 (39.5)
Tertiary	71 (48.3)
Socio-economic status	
Low	31 (19.3)
Middle	54 (33.5)
Upper	76 (47.2)

Knowledge of Diarrhoea among the participants

Majority of the participants had heard of diarrhoea 149(92.5%), defined diarrhoea correctly 134(83.2%) but did not know the causes of diarrhoea 78(48.4%). All the participants knew the age group most affected 161(100%). Most of the participants neither knew the complication(s) of diarrhoea 146(90.7%)

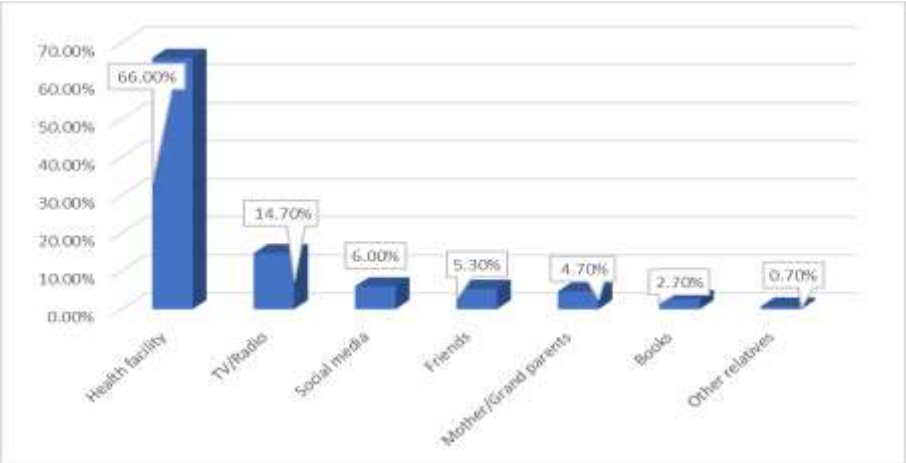
nor knew the signs of dehydration 106(65.8%). One hundred and forty-one (87.6%) were aware of danger signs of diarrhoea but most 125(77.6%) did not identify the danger signs of diarrhoea while most participants knew diarrhoea could lead to death 149(92.5%), Table II.

Table II: Knowledge of Diarrhoea among the participants

Variables	Frequency, n=161 (%)
Has heard of diarrhoea	
Yes	149 (92.5)
No	12 (7.5)
Defined diarrhoea correctly	
Yes	134 (83.2)
No	27 (16.8)
Knows causes of diarrhoea	
Yes	78 (48.4)
No	83 (51.6)
Knows age group most affected	
Yes	161 (100.0)
No	0
Knows complication(s) of diarrhoea	
Yes	15 (9.3)
No	146 (90.7)
Knows signs of dehydration	
Yes	55 (34.2)
No	106 (65.8)
Aware of danger signs of diarrhoea	
Yes	141 (87.6)
No	20 (12.4)
Identified danger signs	
Yes	36 (22.4)
No	125 (77.6)
Knows diarrhoea can lead to death	
Yes	149 (92.5)
No	12 (7.5)

Sources of Knowledge on Diarrhoea Management and Prevention

The commonest source of knowledge on diarrhoea management and prevention was from the health facility 99(66.0%) followed by TV/radio 22(14.7%) while the least was from other relatives 1(0.7%), Figure 1.



TV=Television

Figure 1: Sources of Knowledge on Diarrhoea management and Prevention

Knowledge on Diarrhoea Management and Prevention

Of 161 participants, 109(67.7%) knew that diarrhoea can be treated at home while 45(28.0%) knew the use of zinc and ORS and 102(63.4%) knew that withholding food is not effective in diarrhoea treatment. Majority knew that diarrhoea was preventable 132(82.0%) but only 15(9.3%) knew at least one preventive measure. Most

participants knew exclusive breastfeeding 118(73.3%) and immunization 127(78.9%) were beneficial in the prevention of diarrhoea, Table III.

Table III: Knowledge on Diarrhoea Management and Prevention

Variables	Frequency, n=161 (%)
Diarrhoea can be treated at home	
Yes	109 (67.7)
No	52 (32.3)
Knows use of zinc and ORS for treatment of diarrhoea at home	
Yes	45 (28.0)
No	116 (72.0)
Is withholding food effective in diarrhoea treatment?	
Yes	59 (36.6)
No	102 (63.4)
Is diarrhoea preventable?	
Yes	132 (82.0)
No	29 (18.0)
Knowledge of preventive measure(s)	
Yes	15 (9.3)
No	146 (90.7)
Is exclusive breastfeeding beneficial in preventing diarrhoea?	
Yes	118 (73.3)
No	43 (26.7)
Is immunization beneficial in preventing diarrhoea?	
Yes	127 (78.9)
No	34 (21.1)

Attitude of Participants towards Diarrhoea Management and Prevention

Most participants would treat their children diarrhoea at home 92(57.1), would look for danger signs 83(57.6%) and would continue feeds 117(72.7%). Majority would give more fluids 99(61.5%), take their children to the hospital 141(87.6%), give zinc tablets 123(76.4%) and ORS 135(83.9%), Table IV.

Table IV: Attitude of Participants towards Diarrhoea Management and Prevention

Variables	Frequency, n=161 (%)
Would you treat diarrhoea at home?	
Yes	92 (57.1)
No	69 (42.9)
Would you look for danger signs?	
Yes	83 (57.6)
No	78 (48.4)
Would you continue feeds during diarrhoea?	
Yes	117 (72.7)
No	44 (27.3)
Would restrict feeds if child has diarrhoea	
Yes	33 (20.5)
No	128 (79.5)
Would give more fluid if child has diarrhoea	
Yes	99 (61.5)
No	62 (38.5)
Would take child to the hospital	
Yes	141 (87.6)
No	20 (12.4)
Would give tablet zinc	
Yes	123 (76.4)
No	38 (23.6)
Would give ORS	
Yes	135 (83.9)
No	26 (16.1)

Practices of Participants on Diarrhoea Management and Treatment

Of 161 participants, 69(42.9%) commenced treatment of diarrhoea at home, 23(14.3%) gave correct treatment and 35(21.7%) withheld feeds because of diarrhoea. Majority of the participants continued breastfeeding during diarrhoea 113(70.2%), used plate/cup/spoon as feeding utensils and took child to the hospital because of diarrhoea 121(75.2%). Most participants washed hands always before food

preparation 139(86.3%) and washed hands always after defecation/cleaning child's poo 143(88.8%). Majority of the participant's children under 5 years were fully immunized for age 142(88.2%), Table V.

Table V: Practices of Participants on Diarrhoea Management and Treatment

Variables	Frequency, n=161 (%)
Commenced Treatment of diarrhoea at home	
Yes	69 (42.9)
No	92 (57.1)
Correct treatment of diarrhoea was done	
Yes	23 (14.3)
No	138 (85.7)
Withheld feeds because of diarrhoea	
Yes	35 (21.7)
No	126 (78.3)
Continued breastfeeding during diarrhoea	
Yes	113 (70.2)
No	48 (29.8)
Utensils used for feeding	
Feeding bottles	57 (40.7)
Plate/cup/spoon	83 (59.3)
Took child to the hospital	
Yes	121 (75.2)
No	40 (24.8)
Washed hands always before food preparation	
Yes.	139 (86.3)
No	22 (13.7)
Washed hands always after defecation/cleaning child's poo	
Yes	143 (88.8)
No	18 (11.2)
Child is fully immunized for age	
Yes	142 (88.2)
No	19 (11.8)

Assessment of knowledge, Attitude and Practice of Diarrhoea

Fifty participants (31.1%) had good knowledge, 112(69.6%) had good attitude while 56(34.8%) had good practice, Table 2.

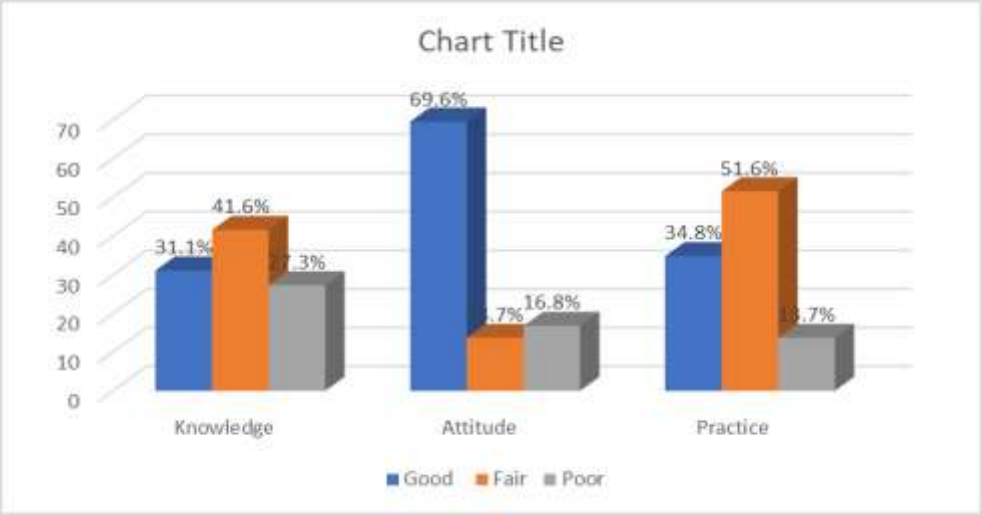


Figure 2: Assessment of knowledge, Attitude and Practice of Diarrhoea

Association of Knowledge level with the Socio-demographic Characteristics of the Participants

Age, parity, mother's level of education and father's level of education were significantly associated with the knowledge level of the participants (*P* value = .012, .014, .003, .001 respectively), Table VI.

Table VI: Association of Knowledge level with the Socio-demographic Characteristics of the Participants

Variables	Knowledge level			*P* value
	Good, n=50(%)	Fair, n=67(%)	Poor, n=44(%)	
Age (years)				
≤ 25	4(8.0)	7(10.4)	13(29.5)	
26-35	20(40.0)	30(44.8).	15(34.1)	
36-45	16(32.0)	26(38.8).	9(20.5)	0.012*
>45	10(20.0)	4(6.0)	7(15.9)	
Parity, n=140				
One	11(27.5)	9(14.3)	17(45.9)	
Two	10(25.0)	19(30.2)	8(21.6)	0.014*
Three	10(25.0)	10(15.9)	6(16.2)	
Four and above	9(22.5)	25(39.7)	6(16.2)	
Marital status				
Married	38(76.0)	51(76.1)	29(65.9)	
Single	7(14.0)	4(6.0)	11(25.0)	0.053
Separated	5(10.0)	12(17.9)	4(9.1)	
Tribe				
Igbo	23(46.0)	26(38.8)	17(38.6)	
Rivers	18(36.0)	28(41.8)	12(27.3)	
Yoruba	2(4.0)	3 (4.5)	8(18.2)	0.326
Hausa	0	2(3.0)	0	
Ibibio/Efik	5(10.0)	6(9.0)	5(11.4)	
Ijaw	2(4.0)	2(3.0)	2(4.5)	
Mother's LOE				
Nil	1(2.0)	1(1.5)	7(15.9).	
Primary	10(20.0)	9(13.4)	10(22.7)	0.003*
Secondary	22(44.0)	31(46.3)	22(50.0)	
Tertiary	17(34.0)	26(38.8)	5(11.4)	
Father's LOE				
Nil	0	1(1.6)	2(5.6)	
Primary	8(16.7)	0	7(19.4)	
Secondary	16(33.3)	26(41.3)	16(22.7)	0.001*
Tertiary	24(50.0)	36(37.1)	11(30.6)	
Socioeconomic status				
Low	7(14.0)	9(13.4)	15(34.1)	
Middle	17(34.0)	24(35.8)	13(29.5)	0.067
High	26(52.0)	34(50.7)	16(36.4)	

***=Statistically significant**

Association of Attitude level with the Socio-demographic Characteristics of the Participants

Age, parity, marital status, mother's level of education, father's level of education and socioeconomic status of the family were significantly associated with the attitude level of the participants (*P* value = .012, .006, .006, .002, .022 and .027 respectively), Table VII.

Table VII: Association of Attitude level with the Socio-demographic Characteristics of the Participants

Variables	Attitude level			*P* value
	Good, n=112(%)	Fair, n=22(%)	Poor,n=27(%)	
Age (years)				
≤ 25	10(8.9)	4(18.2)	10(37.0)	
26-35	46(41.1)	12(54.5)	7(25.9)	0.012*
36-45	41(36.6)	4(18.2)	6(22.2)	
>45	15(13.4)	2(9.1)	4(14.8)	
Parity, n=140				
One	18(18.0)	9(45.0)	10(50.0)	
Two	27(27.0)	7(35.0)	3(15.0)	0.006*
Three	20(20.0)	3(15.0)	3(15.0)	
Four and above	35(35.0)	1(5.0)	4(20.0)	
Marital status				
Married	88(78.6)	15(68.2)	15(55.6)	
Single	8(7.1)	5(22.7)	9(33.3)	
Separated	16(14.3)	2(9.1)	3(11.1)	0.006*
Tribe				
Igbo	47(42.0)	8(36.9)	11(40.7)	
Rivers	41(36.6)	9(40.9)	8(29.6)	
Yoruba	7(6.3)	3(13.6)	3(11.1)	
Hausa	2(1.8)	0	0	0.902
Ibibio/Efik	11(9.8)	1(4.5)	4(14.8)	
Ijaw	4(3.6)	1(4.5)	1(3.7)	
Mother's LOE				

Nil	2(1.8)	3(13.6)	4(14.8)	
Primary	19(17.0)	2(9.1)	8(29.6)	
Secondary	53(47.3)	9(40.9)	13(48.1)	0.002*
Tertiary	38(33.9)	8(36.4)	2(7.4)	
Father's LOE				
Nil	1(0.9)	0	2(8.3)	
Primary	9(8.5)	0	6(25.0)	
Secondary	40(37.7)	10(58.8)	8(33.3)	0.022*
Tertiary	56(52.8)	7(41.2)	8(33.3)	
Socioeconomic status				
Low	15(13.4)	5(22.7)	11(40.7)	
Middle	41(36.6)	6(27.3)	7(25.9)	0.027*
High	56(50.0)	11(50.0)	9(33.3)	

***= statistically significant**

Association of Practice level with the Socio-demographic Characteristics of the Participants

Parity and socioeconomic status of the study participants were significantly associated with the practice level of the participants on diarrhoea management and prevention (*P* value .027 and .020 respectively), Table VIII.

Table VIII: Association of Practice level with the Socio-demographic Characteristics of the Participants

Variables	Practice levels			*P* value
	Good,n=56(%)	Fair,n=83(%)	Poor,n=22(%)	
Age (years)				
≤25	6(10.7)	12(14.5)	6(27.3)	
26-35	27(48.2)	30(36.1)	8(36.4)	
36-45	17(30.4)	30(36.1)	4(18.2)	0.355
>45	6(10.7)	11(13.3)	4(18.2)	
Parity				
One	8(16.3)	23(30.7)	6(37.5)	
Two	20(40.8)	14(18.7)	3(18.8)	0.027*
Three	12(24.5)	13(17.3)	1(6.3)	
Four and above	9(18.4)	25(33.3)	6(37.5)	
Marital status				
Married	43(76.8)	59(71.1)	16(72.7)	
Single	9(16.1)	8(9.6)	5(22.7)	
Separated	4(7.1)	16(19.3)	1(4.5)	0.101
Tribe				
Igbo	27(48.2)	34(41.0)	5(22.7)	
Rivers	18(32.1)	31(37.3)	9(40.9)	
Yoruba	2(3.6)	8(9.6)	3(13.6)	0.205
Hausa	0	2(2.4)	0	
Ibibio/Efik	5(8.9)	7(8.4)	4(18.2)	
Ijaw	4(7.1)	1(1.2)	1(4.5)	
Mother's level of education				
Nil	1(1.8)	6(7.2)	2(9.1)	
Primary	7(12.5)	15(18.1)	7(31.8)	
Secondary	28(50.0)	40(48.2)	7(31.8)	0.226
Tertiary	20(35.7)	22(26.5)	6(27.3)	
Father's level of education				
Nil	1(1.9)	0	2(11.1)	
Primary	5(9.3)	7(9.3)	3(16.7)	
Secondary	23(42.6)	29(38.7)	6(33.3)	0.198
Tertiary	25(46.3)	39(52.0)	7(38.9)	
Socioeconomic status				
Low	4(7.1)	19(22.9)	8(36.4)	
Middle	23(41.1)	27(32.5)	4(18.2)	0.020*
High	29(51.8)	37(44.6)	10(45.5)	

***= Statistically significant**

Associations amongst Knowledge, Attitude and Practice of Participants on Diarrhoea Management and Prevention

There was significant association between practice level and the knowledge and attitude levels as well as the knowledge and attitude levels, *P* value < .001, Table VIX.

Table VIX: Associations amongst Knowledge, Attitude and Practice of Participants on Diarrhoea Management and Prevention

Variables	Practice level			*P* value
	Good	Fair	Poor	
Knowledge level				
Good	28(50.0)	20(24.1)	2(9.1)	
Fair	22(39.3)	42(50.6)	3(13.6)	<0.001*
Poor	6(10.7)	21(25.3)	17(77.3)	
Attitude level				
Good	45(80.4)	63(75.9)	4(18.2)	
Fair	9(16.1)	11(13.3)	2(9.1)	<0.001*
Poor	2(3.6)	9(10.8)	16(72.7)	
	Knowledge level			
	Good	**Fair**	**Poor**	
Attitude				
Good	41(82.0)	59(88.0)	12(27.3)	
Fair	7(14.0)	4(6.0)	11(25.0)	<0.001*
Poor	2(4.0)	4(6.0)	21(47.7)	

DISCUSSION

Majority of the mothers who participated in the present study were of age group 26-35years (40.4%). This was consistent with several other studies [8,10,16-21], although younger age group (20-29 years) predominated in Dimapur, Nagaland [22] (46.5%) and Lahore, Pakistan [23] 18-25years (43.7%). The predominance of the younger age group is not surprising as these ages fall within the reproductive age.

Secondary school was the commonest level of education among mothers interviewed in the present study. This was similarly observed in India [19] while other studies reported tertiary education [10,16,17] and primary education [12,20,24] as commonest. In contrast, majority of mothers in similar studies had no formal education [8,11,25,26]. It is worthy of note that education of the girl child has been observed to be the single biggest factor in the reduction of under-five mortality.

More than $3/4^{th}$ (83.2%) of mothers/caregivers defined diarrhoea correctly as also reported in other studies in Nigeria [17]. Workie et al [8] in Diredawa, Eastern Ethiopia documented a much higher percentage (92.5%) whereas contrary to the present study, a lower percentage of women 65.4%, 47%, 26% and 14.5% in Lekoma [11] North west Ethiopia, India, [24] Eastern Al Hamza city [21] Iraq and Pakistan [12] respectively defined diarrhoea correctly. These differences could be attributed to the varying level of education, residence whether rural or urban and the ready access to information.

Close to half (48.4%) of the respondents in the present study knew some causes of diarrhoea. In North western Nigeria [27], more than half (59%) of the respondents associated diarrhoea with suboptimal hygienic condition and contaminated food and water whereas in Odisha, India [24] 52% had correct answers regarding the aetiology of diarrhoea. In contrast, only 24% of respondents knew the causes of diarrhoea in Al Hamza city [21], Iraq while only 17.73% had good knowledge on the causes of diarrhoea in another study in India [19]. These differences could also be due to the varying educational status of the respondents as well as varying socioeconomic status and ready access to information. Knowledge of the causes of diarrhoea is critical in reducing the morbidity and mortality of diarrhoea.

Interestingly, all the respondents (100%) in the present study knew that the commonest age group affected by diarrhoea are the under-fives. A similar study carried out by Sa'ad et al in Kano State [18], Nigeria showed that up to 90.8% of the respondents knew that diarrhoea is more dangerous in under-five children whereas Wahab & Faris in Iraq [21] documented that only 28.2% knew correctly the age group mostly affected. This very low knowledge level in the study in Iraq could be because as high as 30% in their study population could not read or write and as such may not have access to information unlike in the present study

where only 5.6% did not have formal education.

About 2/3rd (67.7%) respondents knew that diarrhoea can be managed at home in the present study. This was much lower than the study carried out in Kaduna [16], northern Nigeria where all the respondents (100%) knew that diarrhoea can be treated at home. In contrast in eastern Ethiopia, Workie et al [8], reported close to 2/3rd (61.4%) respondents disagreed that diarrhoea is treatable at home which was similar to findings by Desta et al [11] in northwest Ethiopia who reported close to 3/4th (72.7%) of respondents affirmed diarrhoea is not treatable at home. It is pertinent to note that home management of diarrhoea has been observed to reduce the impact of diarrhoea especially in children thereby reducing its' morbidity and mortality and thus it is been advocated by UNICEF, WHO and IMCI [28,29].

In the present study only about 1/4th (28%) respondents knew that zinc tablet and oral rehydration solution (ORS) were beneficial in the treatment of diarrhoea at home as similarly reported by Desta et al [11], in North west Ethiopia (28.1%). Momoh et al [10] in Lagos reported 39.4% whereas Workie et al [8] in Eastern Ethiopia showed that 34.9% respondents believed that ORS should be given to children after every loose stool. In contrast, Akpan & Ijezie [30] in Uyo, southern Nigeria reported that 88.4% respondents knew that ORS be commenced at home once diarrhoea started. Olopha & Egbewale [26] in Ibadan, Nigeria in addition reported 32.5% respondents had knowledge on the use of zinc for diarrhoea management whereas in Lagos, Nigeria [10] 52.5% wrongly agreed that zinc tablets is optional in the treatment of diarrhoea. The varying level of knowledge of ORS and zinc in the home management of diarrhoea can be attributed to the level of dissemination of information on diarrhoea in the various locality. The very low knowledge base of the respondents in the present study as well as other studies in and outside Nigeria therefore calls for emphasis on more health education of the populace on home management of diarrhoea considering the fact that globally, diarrhoea is one of the leading causes of death [28].

About two-thirds (63.4%) of respondents in the present study knew that withholding food was not effective in the treatment of diarrhoea. This knowledge was much lower than the 93.6% in West Ethiopia [20] but higher than the 55.9% in Uyo [30], Nigeria. In south Odisha, India [24] however, only 16% had good knowledge as regards feeding during diarrhoea whereas in Lagos [10], Nigeria only 32.2% respondents knew it was not necessary to stop breastfeeding during diarrhoea. Withholding food during diarrhoea could be due to ignorance as well as the cultural belief that continued feeding could worsen diarrhoea [31]. Being that diarrhoea has immense negative impact on the growth and development of children especially those under five years of age [32], increased feeding during diarrhoea is important so as to break the vicious circle between diarrhoea and malnutrition.

Although more than 3/4th (82%) respondents in the present study knew that diarrhoea is preventable, only 9.3% knew preventive measures. In Lagos [10], Nigeria 70.3% knew diarrhoea is preventable and manageable at home whereas in Iraq [21], only 49.6% knew it was preventable. In contrast however, Mumtaz et al [12], in Pakistan reported 62% mothers knew preventive measures while 76.2% in Lekoma [11], Northwest Ethiopia had good knowledge on preventive measures. This thus calls for more enlightenment programmes on diarrhoea management and prevention so as to reduce its incidence.

Exclusive breastfeeding practices was known to be beneficial in the prevention of diarrhoea by close to 3/4th [73.3%) of the respondents. This corroborates with findings in Lagos [10] while lower than half of the respondents in India [24] and West Ethiopia [20] had good knowledge (48% and 47.8% respectively) on the importance of exclusive breastfeeding in diarrhoea prevention. The higher knowledge level in the present study

is not surprising as there have been several campaigns on the benefits of breastfeeding in Nigeria with most of the tertiary hospitals and some private health facilities been designated as 'Breastfeeding Hospitals'.

More than 3/4th [78.9%) respondents knew that childhood vaccination was beneficial in diarrhoeal prevention. This was higher that the 54.7% documented in Lagos, [10] Nigeria. Much lower knowledge level was documented in Lekoma [11], North west Ethiopia (37.3%) and Ginchi town, [20] west Ethiopia (17.8%). This difference could be due to varying geographic locations with cultural beliefs, practices and the level of acceptance of vaccination programmes.

In the present study, close to 1/4th (21.7%) respondents withheld feeds when their child had diarrhoea which was at variance with the 1.9% respondents in Lekoma [11], Northwest Ethiopia where feeds were either decreased or stopped during diarrhoea. In Diredawa [8], Eastern Ethiopia however, 62.7% offered less food during diarrhoea. It is therefore important to enlighten the populace on the importance of continuous feeding during diarrhoea to avoid malnutrition.

Breastfeeding was continued during diarrhoea in close to 3/4th (70.2%) of the respondents in the present study as similarly reported in Iraq [21] 69.3%. Breastfeeding was increased in Darfur, Sudan [33] and in Diredawa, [8] Eastern Ethiopia. The importance of breastfeeding cannot be over emphasized as it has been shown to reduce both morbidity and mortality of diarrhoeal diseases.

Up to 3/4th (75.2%) of the respondents in the present study took their children who had diarrhoea to the hospital. This was similar to the 71.6% in Lekoma [11], Northwest Ethiopia but higher than the 62.4%, 60.7%, 62% and 55% documented in Assosa Ethiopia [34], Diredawa, [8] Eastern Ethiopia, Karachi Pakistan [12] and Lagos [10], Nigeria respectively. The difference in the respondent's health seeking habit could be because of their varying level of education as observed in Karachi, Pakistan where more than half [63.5%) of the respondents were illiterates. In addition, the distance of the hospital from their homes, cost of health care, availability of health insurance and attitude of health staff can also influence the health seeking habit of the populace. Health seeking habit should therefore be encouraged so as to reduce the morbidity and mortality caused by diarrhoea.

More than 3/4th (86.3%) respondents in the present study always washed their hands before food preparation as similarly observed in 80% of respondents in Sudan [35] and 76.1% respondents in Lagos, [10] Nigeria. Lower percentages of 67.8% and 50% were observed in Ethiopia [8], [36]. It is worthy of note that good hygienic practices such as hand washing with soap and water together with good drinking water was observed to reduce the incidence of diarrhoeal disease by 26% and mortality by up to 65%. [29]

More than 3/4th (88.8%) respondents always washed their hands after defecation in the present study. Interestingly, all the respondents (100%) in Diredawa, [8] Eastern Ethiopia and 97.1% in Kano, [18] did same while 72.9% in Darfur [33], Sudan. These variations could be due to socio-cultural factors, availability of water and access to health information as observed in the present study where most information on home management and prevention of diarrhoea was obtained in the health facility and minimally from television/radio, social media and books. Thus, more adverts and jingles on TV/radio as well as its' increased presence on socio-media will further educate the populace.

In the present study 31.1% of the respondents had good knowledge of home management and prevention of diarrhoea which was comparable to the 28.8% and 37.5% reported in Kashan, Iran [37] and Assosai, [34] Ethiopia but lower than the 56.2%, 59.2%, 61.7% and 65.2% documented in Lekoma [11] Ethiopia, Lagos [10] Nigeria, Iraq [21] and Diredawa,

[8] Eastern Ethiopia respectively. In Dimapur, Nagaland [22] however, a very high knowledge score of 83% was documented. This could be because 93% of the respondents had received formal education and about 3/4th (75.1%) lived in urban areas. These varying knowledge level could also be attributable to the varying criteria used in the classification of good and poor knowledge. In the present study, mothers who answered above 70% of the questions were classified as good knowledge which was not the case in many other studies where mothers who answered above the mean (> 50%) of the knowledge questions were rated as good knowledge. The level of education of these mothers and the level of public enlightenment on this topic could also contribute to their level of knowledge. It is pertinent to note that care-givers good knowledge on the home management and prevention of diarrhoea is important in the reduction of diarrhoea associated morbidity and mortality.

More than 2/3rd (69.6%) respondents had good attitude towards home management and prevention of diarrhoea in under five children in the present study. Positive attitude towards home management of diarrhoea was documented to be 58.2%, 55.8% and 45.1% in Dimapur, Nagaland, [22] Lagos, [10] and Diredawa, [8] Eastern Ethiopia respectively. This difference could be explained by the varying population and geographic regions, cultural differences and level of education in addition to the criteria used for good, fair and poor attitude.

More than 1/4th (34.8%) respondents in the present study had good practice on the home management of diarrhoea and prevention as similarly reported in Iraq [21] and Lekoma, [11] Northwest Ethiopia accounting for 39.3% and 37.6% respectively. This was lower than the 42%, 53.1% and 86.5% reported in Diredawa [8] Eastern Ethiopia, Lagos, [10] Nigeria and Dimapur, Nagaland [22] respectively. The low practice level in the present study would also be accounted for by the much higher cut-off value used.

In the present study the level of good knowledge on home management and prevention of diarrhoea among the mothers/caregivers was low (31.1%) which led to a low practice (34.8%) although their attitude was fair (69.6%). This finding was not surprising as this study showed a significant association between poor knowledge and poor practice (*P* value < .001). This low (poor) knowledge and practice levels are however not too surprising as only slightly above a 1/4th of the mothers had tertiary education majority (46.6%) had secondary education. This therefore calls for education of the girl child which has been shown to reduce child mortality [38].

Age of respondents, parity, mother's level of education, father's level of education was significantly associated with the level of knowledge of respondents on the home management and prevention of diarrhoea (*P* value <.05). Similarly, age, level of education as well as occupation, marital status and ethnicity were significantly associated with knowledge also in Ethiopia [8]. In addition, level of education and place of stay were associated with good knowledge in Dimapur, Nagaland [22].

Age, parity, marital status, mother's level of education, father's level of education and socioeconomic status were significantly associated with the attitude towards the management and prevention of diarrhoea. Momoh et al [10] in Lagos, Nigeria reported that married women were 1.8x more likely to have positive attitude towards diarrhoea home management (*P* value = .034).

Parity and socioeconomic status in the present study were significantly associated with the level of practice. In contrast, mother's level of education, age and family income were significantly associated with good practice in Dimapur [22], Nagaland while in Ethiopia [39], mother's marital status, level of education were significantly associated with the level of practice. These variations in association could be explained by variations in geographic locations

cultural beliefs and the varying sample sizes in the different studies.

CONCLUSION

Only 31.1% of mothers/caregivers of under-five children attending the Paediatric out-patient clinic had good knowledge on the home management and prevention of diarrhoea while 69.6% and 34.8% had good attitude and good practice.

Age of mothers/caregivers, mother's level of education, father's level of education were significantly associated with knowledge while age, parity, marital status, mother's level of education, father's level of education and socioeconomic status were significantly associated with the attitude of mother's/caregivers whereas parity and socioeconomic status were associated with the practice levels of the respondents.

Emphasis should therefore be placed on the formal education of the girl child and increased awareness of topical issues like home management and prevention of diarrhoea via television/radio and social media will improve the knowledge level of the populace thereby increasing both their attitude and practice levels.

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