

Original Article

Assessment of Maternal Strategies in the Prevention of Under-Five's Diarrhoea in Two Selected Communities in Ibadan, Oyo State, Nigeria

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Abstract

Introduction: Diarrhoea disease is one of the commonest under-five children's diseases with increasing prevalence rate in our communities. Complication of the disease may lead to death however; the diseases as well as its complications are preventable when proper measures are put in place by the mothers of under-five children.

Objective: The study was designed to assess maternal strategies in the prevention of under-five's diarrhoea in two selected communities in Ibadan.

Methods: Community based descriptive design was adopted. Study population included 246 mothers of under-five in the two communities. Data on patient's demographic characteristics, mother's knowledge about diarrhoea and maternal strategies in diarrhoea prevention were recorded using structured questionnaire. The data was analysed using descriptive analysis and Chi-square was used to test the set hypotheses.

Results: Mean age of the 243 mothers, who participated in the study is 30 years (\pm SD 6.4). Overall, 89.3% of mothers had adequate knowledge of diarrhoea; however, there were deficiencies in some areas, 71.6% of mothers acknowledged teething as causes of diarrhoea, 39.9% and 33.3% did not know that rotavirus vaccine and exclusive breast feeding may reduce diarrhoea incidence respectively. In addition, 55.6% of participants' children had incidence of diarrhoea. Also, 94.2% of mothers had appropriate maternal strategies in the prevention of diarrhoea. Mothers always practice exclusive breastfeeding for the first six months of life (62.6%) and always wash hands with soap and water (68.3%). Only 11.5% mothers received rotavirus vaccine.

Conclusion: The study findings indicated low uptake of rotavirus vaccine and high incidence of diarrhoea among the respondent's children. Therefore, effort should be made to provide information about rotavirus vaccine and prevention of diarrhoea disease.

Key words- Maternal strategies, Diarrhoea, Under-five and Prevention.

Introduction

World Health Organization (2019) defines diarrhoea as the passage of three or more loose or liquid stools per day, or more frequently than is normal for the individual. Diarrhoea is

among childhood illnesses responsible for under-five years mortality (Omer et al., 2021). It is responsible for about 480,000 under-five children's death globally annually (Behera, 2021).

Diarrhoea is a disease that can be prevented by the under- fives' mothers/caregivers. Globally, several interventions focusing on specific risk factors (lack of access to clean water and hygiene, poor sanitation malnutrition and non-exclusive breastfeeding) and pathogens have produced an estimated reduction of diarrhoea incidence (Lancet Infectious Disease, 2017). In addition, the rotavirus vaccine that was introduced is associated with significant reductions in rotavirus hospitalization and diarrhoea mortality (Webb & Cabada, 2018). WHO (2019) recommended that exclusive breastfeeding during; at least, the first six months of an infant's life reduces diarrhoea among under- fives. Oral Rehydration Therapy (ORT) together with zinc tablet is an effective management of diarrhoea. Despite all these, diarrhoea still remains one of the major diseases killing this age group in developing countries (Efunshile, et al., 2019). Although, there has been a decrease in the incidence of diarrhoea in the developing countries from 4.6 million to 0.8 million over 30 years, the number of diarrhoeal deaths remains extremely high in developing countries (Jiwok, Adebowale & Umeokonkwo, 2021). This is because, 78 million and 2.5 billion people lacks adequate water and sanitation respectively in developing countries (Bidhuri, Taqi and Khan,2018) and according to WHO/UNICEF (2021) 1 in 4 people or 2 billion people around the world lack safe drinking water.

According to Centre for Disease Prevention and Control (CDC, 2020), it was reported that about 88% of diarrhoea-associated death are due to unsafe water, inadequate sanitation and insufficient hygiene. also, it increases their susceptibility to other infectious diseases. In Nigeria, the prevalence rate of diarrhoea among children is 18.8%, this is above the average of 16% in Sub-Sahara Africa. Hence, making the Nigerian prevalence one of the worst in the region (Okafor,et al,2022). Among the Nigerian six geo-political zones, South West prevalence of diarrhoea is 5.3% and this is the lowest (Awoniyi&Neupane,2021) but it's of great concern. Hence, the researchers assessed the maternal strategies in the

prevention of under-five's diarrhoea in two selected communities in Ibadan, Oyo state, Southwest, Nigeria.

Research Questions

The followings are the two research questions for the study;

1. What is the knowledge of childhood diarrhoea among mothers of under-fives?
2. What are the strategies of diarrhoea prevention by mothers of under- five?

Research Hypotheses

1. There is no association between the socio-demographic characteristics (age, level of education, occupation and marital status) of mothers of under-fives and their knowledge on diarrhoea
2. There is no significant association between mothers of under-fives' knowledge about diarrhoea and their strategies in the prevention of diarrhoea.

Background

Diarrhoea remains among the five top preventable killers of children under-five but still, the leading cause of mortality among infant and children younger than 5 years of age in both underdeveloped and developing countries (Melese et.al, 2019).

UNICEF (2023) has stressed the importance of well- known basic intervention for reducing the global burden of childhood diarrhoea which include safe drinking water, use of improves sanitation and hand washing with soap, vaccination against rotavirus, cholera, typhoid and measles, micronutrient supplementation for zinc and vitamin A; exclusive breastfeeding promotion and support; adequate nutrition for mothers and children; and intervention for the provision of water, sanitation and hygiene (WASH). In addition to this, it is believed that prompt and appropriate treatment intervention can cure children from diarrhoea and ensure survival. According to a study by Desmennu (2017), the prevalence of diarrhoea varies according to education of mothers, being significantly higher among children of mothers with no

formal education compared to those mothers with higher education.

This is probably because education provides knowledge of the rules of hygiene, feeding and weaning practices, and the interpretation of symptoms which promote timely action on childhood diarrhea and these strategies make prevention easier for every individual especially mothers.

Globally, much attention has been given to improving water and sanitation as this is a vital factor in attempts to decrease diarrhoea due to all causes (WHO, 2017). Although, the Federal Government along with various NGOs has contributed appreciable resources towards the reduction of diarrhoea in Nigeria as evidenced by the recent ranking in which Nigeria drop from 2nd to 4th position trailing Pakistan, Bangladesh and India in the rating of countries with the highest number of child death due to diarrhoea, but still there is room for improvement in order to achieve the set goals of Sustainability Development Goal 1 (2015-2030) (Peter & Umar, 2018). In Ibadan, Oyo State, Nigeria, the prevalence of childhood diarrhoea is 55% which is high (Nwokocha, Chukwudeh & Ukwandu 2020). This may be due to lack of access to potable water and poor environmental sanitation among many communities inclusive of the setting for the study. The lack of nation-wide study that determines maternal strategies and community participation in the prevention of diarrhoea is a significant gap.

Methodology

This study adopted the community based descriptive design. Ibadan is the capital and most populous city of Oyo State, Southwest, Nigeria, with population of 3,565,108 (World Population Review, 2018). The two communities for the study were selected by simple random sampling; it cuts across the urban area (Agbowo) and rural area (Ejioku) to ensure appropriate representation of mothers of under-five. Eligible and consenting 243 participants were selected by systematic sampling technique. Mothers that were critically ill during the period of data collection and those that are not willing to participate

were excluded from the study. Structured questionnaire was used to collect data. Some parts of the questionnaire were adapted from a validated questionnaire used in Nigeria by Oluwatosin, Olaogun and Oluseye (2015). The questionnaire was prepared both in English and Yoruba Language and back- to- back translation was done. Questionnaire was subjected to face and content validity by research experts. In addition, pilot study was carried out with 50 participants in Ibadan North East Local Government, same analysed using Cronbach alpha to test for reliability and result yielded coefficient of 0.80. Ethical approval was obtained from ethical board of Ministry of Health with ethical number-AD13/479/1148/18th March, 2019. Data was coded, entered and cleaned using the Statistical Packaged for Social Sciences version 23 (SPSS 23) for the quantitative study. Analysis was done using descriptive and statistical inferential tools. Knowledge about diarrhoea was assessed by assigning 1 mark for each correct answer and 0 for an incorrect answer. The highest obtainable score was 22. A mean score was determined. Mean score and above was rated adequate knowledge while score below mean was rated inadequate knowledge. Likewise, the assessment of maternal strategies was measured on a scale of 0-3 and mean score determined. The highest obtainable score was 40. Mean score and above was rated as efficient preventive strategies while score below the mean score was rated inefficient preventive strategies. Results were presented in tables, frequencies and charts. Chi-square test was used to determine the associations between the variables. Statistical significance was set at $p \leq 0.05$.

Result

Out of 243 mothers of under-five who participated in the study, majority of the participants 171 (70.4%) are within the age group of 20 to 34 years. The mean age is 30 (± 6.4). Table 1 shows details of other demographics data.

Regarding the information about diarrhoea, the participants who affirmed that their children have had diarrhoea before were 135 (55.6%),

and 104 (44.4%) claimed that none of their children has had diarrhoea.

Concerning the knowledge of diarrhoea, 89.3% of mothers had adequate knowledge among which 200 (82.3%) of the participants correctly defined diarrhoea as the - passage of three or more loose stools or liquid per day. More so, 228 (93.2%) of them identified that the infection can spread through contaminated food or water. Signs and symptoms of diarrhoea that were identified by the participants include fluid loss which may be life threatening 207 (85.2%), dry skin 182 (74.9) and sunken eyes 161 (66.3). In addition, strategies of diarrhoea prevention were identified to include the followings; hand washing 239 (98.4%), Rotavirus immunization 146 (60.1%) and six months exclusive breastfeeding 162 (66.7%). Two -hundred and fifteen mothers (88.5%) indicated that diarrhoea can be managed at home with oral rehydration therapy. Other information on the knowledge of diarrhoea among mothers of under-five diarrhoea are in table 2.

Overall, 94.2% of mothers had appropriate maternal strategies in preventing diarrhoea. Most of the mothers in the study 152 (62.6%)

always breastfeed their children exclusively with breast milk only for the first six months of life. More so, (166) 68.3% always wash their hands with soap before feeding their babies but only 100 (41.2%) always treat their water before drinking. Meanwhile two hundred and fifteen (88.5%) of the participants' children had never received Rotavirus vaccine for the prevention of diarrhoea. Table 3 shows other details of maternal strategies in the prevention of under-five diarrhoea. Details of the distribution of the waste management and environmental hygiene strategies employed by mothers in the study to prevent diarrhoea is depicted in table 4.

The result of the hypotheses revealed that there was no significant association between the participants' age, occupation and their knowledge of childhood diarrhoea. In contrast, there was significant association between the participants' marital status, level of education and their knowledge of childhood diarrhoea, table 5 shows the detail. Also, there was no significant association between the participants' level of knowledge and their strategies towards prevention of childhood diarrhoea.

Table1: Socio demographic variables of participants (N = 243)

Social demographic variables	Frequency	Percent	Mean	SD
Age				
Teenage mothers (18-19 years)	8	3.3		
20-34 years	171	70.4	30	±6.4
35-52 years	64	26.3		
Marital Status				
Single	11	4.5		
Married	201	82.7		
Separated	19	7.8		
Widowed	12	4.9		
Education level				
Informal education	14	5.8		
Primary school	32	13.2		
Secondary	94	38.7		
Tertiary	103	42.4		
Occupation				
Unemployed	29	11.9		
Apprenticeship	43	17.7		

Petty trading	89	36.6
Farming	8	3.3
Employed	74	30.5
Religion		
Christianity	139	57.2
Islam	99	40.7
Traditional	5	2.1
Ethnicity		
Yoruba	211	86.8
Igbo	19	7.8
Hausa	10	4.1
Benue	2	0.8
Edo	1	0.4
No of children		
1-4 children	230	94.7
5-6 children	13	5.3
No of children below 5 years		
One	150	61.7
Two	85	35.0
Three	8	3.3

Table 2: Knowledge of causes and signs and symptom of diarrhoea among respondents and Knowledge of prevention and management of diarrhoea among respondents

Statement Items	Incorrect		Correct	
	Freq.	%	Freq.	%
Diarrhea is the passage of 3 or more loose or liquid stools per day, or more frequently than is normal for the individual	43	17.7	200	82.3
Diarrhoea infection can spread through contaminated food or drinking-water	15	6.2	228	93.8
If hands are not washed after using the toilet or doing dirty jobs, it can lead to diarrhoea	10	4.1	233	95.9
Dirty food, spoilt food and exposed uncovered food can lead to diarrhea	17	7	226	93
Teething is the major cause of diarrhoea in babies	174	71.6	69	28.4
When a child is about to start crawling, standing or walking the child will have diarrhoea	143	58.8	100	41.2
Breast feeding in a child with diarrhoea increases the diarrhea	110	45.3	133	54.7

Eating mud can cause diarrhoea	100	41.2	143	58.8
Signs and Symptoms				
Severe diarrhoea leads to fluid loss, and may be life-threatening.	36	14.9	207	85.2
Dry skin in a child with diarrhoea is a sign of dehydration	61	25.1	182	74.9
Sunken eye is a sign of dehydration	82	33.7	161	66.3
Decrease in amount of urine passed and dark urine is a bad sign of dehydration	100	41.2	143	58.8
It is normal for a child with diarrhoea to have dehydration	201	82.7	42	17.3

Knowledge of prevention and management of diarrhoea among respondents

Statement Items	Incorrect		Correct	
	Freq.	%	Freq.	%
Prevention				
Avoidance of open defecation in the home can reduce diarrhoea	19	7.8	224	92.2
Hand washing will help reduce risk of developing diarrhoea	4	1.6	239	98.4
Rotavirus immunization reduce diarrhoea	97	39.9	146	60.1
Exclusive breast feeding for the first six month of life will help to reduce diarrhoea	81	33.3	162	66.7
Management				
When a child has diarrhoea all forms of feeding must stop as any form of feeding will increase the diarrhoea.	102	42	141	58
When a child that is breastfeeding has diarrhoea the child should continue with breastfeeding	56	23	187	77
Diarrhoea can be managed at home with oral rehydration therapy (ORT) sachet or salt sugar solution (SSS)	28	11.5	215	88.5
ORT or SSS should commence once diarrhoea starts and the child should be taken to health facility for assessment if there is no improvement.	41	16.9	202	83.1
Diarrhoea can never lead to death in children	137	56.4	106	43.6

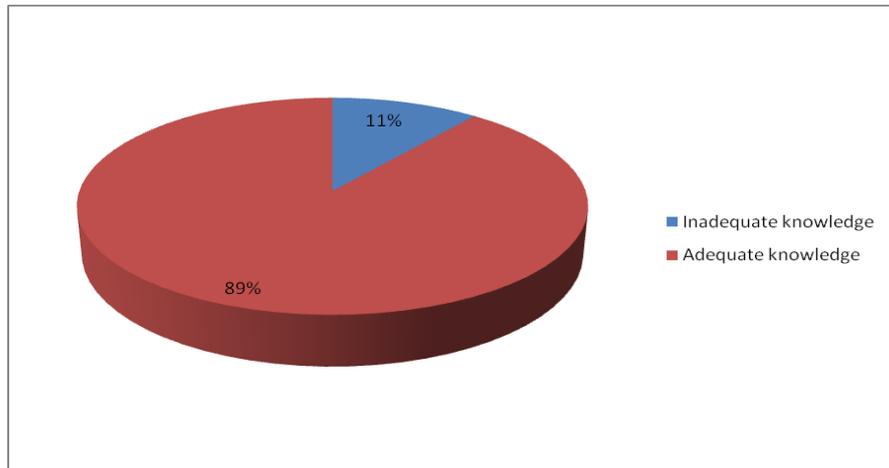


Figure 1: Level of Knowledge of Childhood Diarrhoea among mothers

Table 3: Maternal strategies in the Prevention of childhood Diarrhoea (N = 243)

Maternal strategies in the Prevention of Diarrhoea	Never		Rarely		Often		Always	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Exclusive breastfeeding for first six month of life	40	16.5	16	6.6	35	14.4	152	62.6
Feeding your baby with both infant formula and breast milk for the first six month of life	82	33.7	45	18.5	34	14	82	33.7
Covering your baby's food when not taken by the baby	4	1.6	0	0	34	14	205	84.4
Washing your hands with soap before feeding your baby	2	0.8	34	14	41	16.9	166	68.3
Washing your baby's feeding utensils immediately after use	0	0	9	3.7	44	18.1	190	78.2
Use of feeding bottle before or after six months of life	31	12.8	44	18.1	68	28	99	40.7
Feeding your baby with spoon before or after six months of life	29	11.9	57	23.5	49	20.2	108	44.4
Washing your hands more often when your child had diarrhoea	2	0.8	17	7	60	24.7	164	67.5
Washing your hand with soap after visiting the toilet	5	2.1	33	13.6	52	21.4	153	63
Water treatment for drinking	41	16.9	75	30.9	27	11.1	100	41.2

Table 4: Waste Management and Environmental Hygiene Strategies Employed by Mothers and rotavirus vaccine uptake in prevention of diarrhoea (N = 243)

Waste management & environmental hygiene strategies	Frequency	Percent
Waste management method at home		
Burning	64	26.3
Government agencies	31	12.8
Dung hill	57	23.5
Waste bin	45	18.5
Incinerator	17	7.0
River	15	6.2
Bush	12	4.9
Recycling	2	0.8
Source of drinking water		
Stream	11	4.5
Public well	58	23.9
Personal well	82	33.7
Bore hole	69	28.4
Government water supply	23	9.5
Availability of toilet at home		
Available	204	84.0
Not available	39	16.0
What type of toilet is in your home		
Pit latrine	72	29.6
Water closet system	132	54.3
Papers/potty for disposal into nearby bush	39	16.0
Where do you dispose your baby's faeces		
Pit latrine	71	29.2
Water closet system	132	54.3
Papers/potty for disposal into nearby bush	39	16.0
Outside within the residential premises	1	0.4
Proper hygiene prevents diarrhoea		
Yes, it does	235	96.7
No, it doesn't	4	1.6
I don't know	4	1.6
Childhood diarrhoea education		
Received	145	59.7
Not received	98	40.3
Has your child received Rotavirus vaccine		
Yes	28	11.5
No	215	88.5

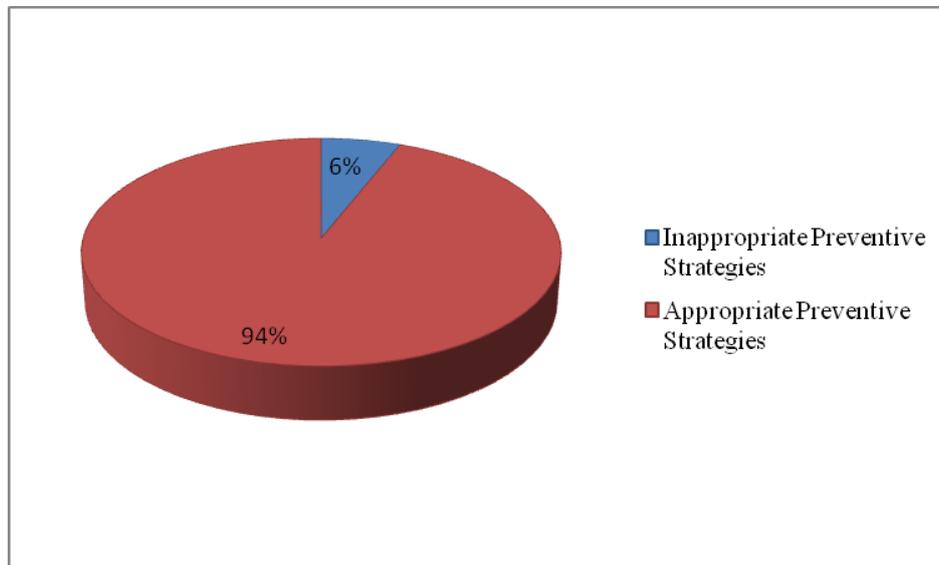


Figure 2: Childhood Diarrhoea Prevention Strategies used by mothers

Table 5: Association between socio-demographic and knowledge of childhood diarrhoea

Social-demographic variables	Level of Knowledge				Chi Sq	df	P-value	Remark
	Inadequate		Adequate					
	Freq	%	Freq	%				
Age:								
18 – 34	21	80.8	158	72.8	0.75	1	0.45	NS
35 – 52	5	19.2	59	27.2				
Marital Status:					6.12	1	0.02	S
Single	9	34.6	33	15.2				
Married	17	65.4	184	84.8				
Educational Status:					22.14	2	0.001	S
Informal/Primary	10	38.5	36	16.6				
Secondary	16	61.5	78	35.9				
Tertiary	0	0.0	103	47.5				
Occupation:					1.089	1	0.36	NS
Unemployed	10	38.5	62	28.6				
Employed	16	61.5	155	71.4				

Table 6: Association between the level of knowledge and diarrhoea prevention strategies

Maternal Strategies								
Level of Knowledge	Inappropriate		appropriate					
	Freq	%	Freq	%	Chi Sq	df	P-value	Remark
Inadequate	2	14.3	24	10.5	0.2	1	0.67	NS
Adequate	12	85.7	205	89.5				

Discussion

Diarrhoea is the second leading cause of death in children, accounting for approximately nine per cent of all deaths among the under-five despite the availability of simple effective prevention and treatment which can be adopted by the mothers or the caregivers (WHO, 2019).

The findings from the current study, revealed that more than eighty percent of the mothers with under-five children had adequate knowledge of childhood diarrhoea. Although, there exist deficiency in their knowledge on the cause of diarrhoea. Majority 174 (71.6%) of the participants said teething is the major cause of diarrhoea, which is incorrect. This is quite worrisome and may be related to some myths mothers have on diarrhoea. Oluseye and Oluwatosin (2019) finding among mothers in Ibogun community Ogun State, Nigeria, revealed that among the myths held by mothers on diarrhoea is that teething can cause diarrhoea. Although, babies around the age six months are at increased risk of infection because the level of passive immunity from mother is on decline. Most babies at this age are also fond of putting objects in their mouth which can expose them to ingesting microorganism that might predispose them to diarrhoea infection (Iannelli,2022). Therefore, mothers need health education on personal and environmental hygiene in order to prevent their children from ingestion of micro-organisms.

Regarding the knowledge of the mothers on prevention of diarrhoea, the result of this current study shows that most participants had adequate knowledge. However, significant percentage of the respondents didn't know that

rotavirus vaccine can prevent diarrhoea. This may be as a result of lack of awareness on the vaccine and its importance in preventing diarrhoea. It is worth noting that majority of the mothers knew that diarrhoea can be managed effectively with oral rehydration therapy sachet or salt sugar solution. This is congruent with the research done by Yusuf, et al. (2022) on assessment of knowledge and usage of Oral Rehydration Therapy in the management of childhood diarrhoea among mothers of Kambaza town, Kebbi State, Nigeria. The findings showed that more than eighty percent know how to prepare ORT and have once used ORT in the management of diarrhoea. In contrast to this study, Amu, et al. (2022) study across the Southwestern states Nigeria, reported that only 10.4% of mothers are aware of ORT, and only 6.5% had ever use. Hence, there is need for more public awareness on ORT and its use across the entire Southwestern states in Nigeria.

Present study revealed that mothers employed different strategies in preventing diarrhoea. Majority of the participants indicated that they wash their hands with soap and water before feeding their babies, after visiting the toilet and more often when their children had diarrhoea respectively. Hand-washing promotion among communities prevents around one-quarter of diarrhoea episodes and most deaths associated with diarrhoea are caused by pathogens acquired as a result of unsafe drinking water, poor sanitation condition and lack of hygiene (Ejemot et. al, 2021). According to Dairo, et al. (2017), it was revealed in their study conducted on prevalence and determinants of diarrhoea among infants in selected primary

health centres in Kaduna that most (85.9%) of the participants always wash their hands with soap and water after using the toilet, and 76.3% of the participants washes their hands always with soap and water after cleaning infant's perineum.

The result of the present study revealed that more than half of the participants use exclusive breastfeeding as a method of preventing diarrhoea. This is consistent with the findings of Gedamu (2017) among mothers of under-five in Farta Werreck, North West Ethiopia, which reported that more than half of caregivers practiced exclusive breastfeeding for six months. This percentage is higher than the ones seen in the study carried out by Dairo, et al (2017) in Kaduna, Nigeria where only 31.6% of the infants were exclusively breastfed and 11.3% of exclusive breastfed infants were fed with breast milk only for the first six months. Although children of under-five years are still experiencing diarrhoea disease, however the frequency was low with the practice of Exclusive Breastfeeding. This was deduced from the study done on Prevalence of diarrhoea among infants of child welfare clinic at two teaching hospital in Lagos, Nigeria where there was significant association between prevalence of diarrhoea and Exclusive Breastfeeding practice (Ubosi, 2018).

In this present study, only 41.2% always treat their water before drinking. This finding is higher than the study carried out by Gedamu (2017) in Farta Werreck, North West Ethiopia where only 4.9% of the participants treat their drinking water. This is worth noting and reflect poor attitude which promotes prevalence of diarrhoea. Effective household water treatment when combined with safe storage system are major significant ways of preventing under-five children against diarrhoea diseases (Peter & Umar, 2018). Also, appropriate water, hygiene, and sanitation interventions will reduce diarrhoea incidence by 26% and its mortality rate by 65% (CDC,2019. Accessed May 16, 2023)

The findings in this current study indicated that less than twenty percent of the participants do

not have toilet facility at home and equally emptied their faeces and that of their children into nearby bush which can attract flies in the environment and thereby promoting the incidence of diarrhoea. Also, hygiene practices among the mother / caregiver of under -five is poor. Another area where the mothers showed poor preventive strategy in this study is poor vaccination of their children with rotavirus vaccine. Only 11.5% received rotavirus vaccine for their children. This may be as a result of poor knowledge of the existence vaccine and /or its benefits in preventing diarrhoea. There is need for increased awareness on the vaccine and health education on the benefits of the vaccine. Also, rotavirus vaccine should be included and available in the routine immunization.

The findings of the study show that there was no significant association between the participants' age, occupation and their knowledge of childhood diarrhoea. This seems to be consistent with Panom (2018) study on knowledge, attitude and practices on preventing diarrhoea in Juba, South Sudan which reported no significant association between the participants' occupation and their knowledge of childhood diarrhoea. In contrast, there was significant association between the participants' marital status and their knowledge of childhood diarrhoea; thus, married women exhibited better knowledge of childhood diarrhoea than those who were singles/unmarried. This is congruent with study conducted in semi-urban community of Sokoto, Nigeria by Raji, et.al. (2017). The study revealed association between marital status and knowledge about diarrhoea. Similarly, there was significant association between the participants' level of education and their knowledge of childhood diarrhoea. The women who had tertiary education exhibited better knowledge than those who had secondary school education, while those who had secondary school education showed better knowledge of childhood diarrhoea than those who had primary/informal education. Thus, the more educated the women, the more knowledgeable they were regarding childhood

diarrhoea. Education provides with opportunity to acquire diverse information.

In addition, the result of the current study revealed that there was no significant association between the participants' level of knowledge and their strategies towards prevention of childhood diarrhoea. This is in line with the finding by Merali, et al. (2018) in Sap Lake, Cambodia which showed that there is no significant correlation between the overall knowledge and the diarrhoea prevention behaviour among mothers. This may be probably due to poor inherent cultural behaviours especially in aspects of personal and environmental hygiene. Therefore, there is need for nurses to ensure adequate health education on diarrhoea and its preventive strategies to prevent childhood diarrhoea with emphasis on poor cultural, personal and environmental hygiene practices to mothers with under-five children whenever they present at the clinic/health centre.

Acknowledgement: Thanks to the mothers of under-five children in Ejioku and Agbowo communities in Lagelu and Ibadan North Local Governments respectively for their participation in the study. We also acknowledge all who participated during data collection and analysis, thank you for your supports and advice.

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