

Nurse-Led Intervention on Prevention and Home Management of Diarrhoea Among Mothers of Under-5 Children in Surulere Local Government, Lagos State

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ABSTRACT: *The adverse impact of diarrhoea in Nigeria as a nation cannot be far-fetched with various scientific findings and correlation over the years. The prevalence of childhood diarrhoea in Nigeria is 18.8%. Therefore, the study examined the effect of nurse-led intervention on prevention of diarrhoea among mothers of under-5 children. The study adopted a two group quasi-experimental design. Purposive and proportional sampling techniques were used to select 161 participants for the study. Two instruments were used as tools for collecting information from the respondents which are questionnaire and checklist. The study was carried out in three phases namely pre-intervention, intervention and post-intervention stage. Descriptive and inferential statistics were used to analyse the data collected at 0.05 level of significance. The results revealed that respondents' knowledge of prevention of diarrhoea among mothers of under-5 children was low at the pre-intervention stage for both the experimental group (8.03 ± 1.19) and the control group (8.02 ± 1.28) while it increased significantly at the immediate post intervention for the experimental group (20.01 ± 1.97) while the control group (8.75 ± 0.74) remained almost the same. There were significant differences in the post intervention knowledge of prevention of diarrhoea between mothers of under-5 children in the intervention and control group (Mean difference = 11.26; $t = 39.291$; $p < .05$); and post intervention knowledge of preventive skills for diarrhoea between mothers of under-5 children in the intervention and control group (Mean difference = 8.90; $t = 33.750$; $p < .05$). The study concluded that nurse-led intervention increased the levels of knowledge of prevention and preventive skills of diarrhoea among mothers of under-5 children. It was recommended among others that an intensive and comprehensive educational initiative should be organized by nursing leaders and tailored to meeting the specific needs of mothers.*

KEYWORDS: nursing-led intervention, knowledge, prevention, diarrhoea

INTRODUCTION

Diarrhoeal accounts for high levels of mortality in young children in developing countries like Nigeria, despite worldwide efforts to improve overall child health levels. Each year, in the

developing countries of Asia, Africa and Latin America, approximately five million children under five years of age die from acute diarrhoeal. In the developing world as a whole, about one-third of infant and child deaths are due to diarrhoeal disease and approximately 70 percent of diarrhoeal deaths are caused by dehydration (Fakire, 2019). Diarrhoeal accounts for 1 in 9 child deaths worldwide, making diarrhoeal the second leading cause of death among children under the age of 5 (Fakire, 2019). Nearly 6 million under five children die every year, yet the majority could be saved by prevention or treatment of the conditions.

UNICEF (2020) submitted that in Nigeria, infant mortality rates are twice as high in rural settings as they are in urban ones due to poor hygiene and poor sanitation. Of the annual 3 million infant births in Nigeria, approximately 170,000 result in deaths that are mainly due to poor knowledge and home management practices of childhood diarrhoeal. Several factors are likely to contribute to the very high diarrhoea morbidity and mortality rates, in children under-five years including poverty, female illiteracy, poor water supply and sanitation, poor hygiene practices and inadequate health services (WHO, 2019). Malnutrition is another established risk factor for mortality among children with diarrhoea disease. This may be due to inadequate case home management. The first line of home management of diarrhoeal therefore, the prevention of dehydration. This can be achieved at home using Oral Rehydration Therapy (ORT).

Diarrhoeal is the disturbance of the gastrointestinal tract comprising of changes in intestinal motility and absorption, leading to increase in the volume of stools and in their consistency (Ballabriga, et al, 2018). In certain cases, they may contain blood in which case the diarrhoea is called dysentery (Obionu, 2017). The consistency and the volume of stool constitute how to classify diarrhoea (United Nations Children's Fund & WHO, 2017).

The main consequences of diarrhoea are frequent loose or watery stools, the risk of dehydration, damage to the intestine (especially when there is bloody diarrhoea) and loss of appetite with or without vomiting. However, Tambe, et al (2015) asserted that signs of dehydration are not evident until there is acute fluid loss of approximately 4-5 percent of body weight. The signs and symptoms of dehydration include sunken fontanelle, dry mouth and throat, fast and weak pulse, loss of skin elasticity and reduced amount of urine. This loss leads to shock and untimely death of under-five. Werner, (2001) noted that dehydration takes its heaviest toll on infants and children under-five. The signs and symptoms according to Longmach, et al (2018) are passage of frequent loose watery stools, abdominal cramps or pain, fever particularly if there is an infectious cause and bleeding. Bacteria and parasites often can produce bloody diarrhoea (dysentery). In addition, inflammatory bowel disease, polyps and colorectal cancer can cause blood and mucus in the stools, nausea and vomiting may also be present in the case of infection.

The most important aspect of managing a child with diarrhoea is preventing or managing dehydration and maintaining good nutrition. These preventive practices according to WHO (2020) include breastfeeding, improved weaning, use of plenty of water for hygiene and clean water for drinking, hand washing, use of latrines, proper disposal of the stools of young children, use of Oral Rehydration Therapy (ORT) and Oral Rehydration Solution (ORS) and immunization against measles.

A study by Alemwork, et al (2021) on priorities for intervention to prevent diarrhoea between 0-23 months revealed impact of improve breastfeeding practices, availability of hand-washing facilities and regular cleaning of latrines as significantly associated with diarrhoea among the defined cases(children with acute diarrhoea). Checkley, et al (2008) revealed the adverse effect on diarrhoea in children, it made them 1.5cm shorter especially if it occurred in the first 24months.hence the adverse impact of diarrhoea in Nigeria as a nation cannot be far-fetched with various scientific findings and correlation over the years. The prevalence of childhood diarrhoea in Nigeria is 18.8% with 26% of cases treated with ORS (WHO, 2018).

Another study by Greenland, et al (2016) in Lusaka Zambia on multiple behavior change intervention for diarrhoea control randomly sampled 16 health centres. Mothers of infant and caregivers of under-5 were selected in control and experimental groups. The intervention was via clinic, community or text messaging. The self-reported outcomes were zinc use and exclusive breastfeeding, while ORT preparation was demonstrated (Greenland et al., 2016). Mothers who bring their under-5 to the clinic on cases of diarrhoea display inadequate knowledge on its causes and prevention. To the researcher's knowledge, no intervention studies previously have been undertaken on mothers' knowledge of prevention and home management of childhood diarrhoea in Surulere Local Government Area.

Therefore, there is a need to conduct nurse-led intervention on prevention of diarrhoea among mothers of under-5 children in Surulere Local Government Area, Lagos State because of the high incidence of diarrhoea incidence in the health centres located in the area. The specific objectives were to:

1. establish the pre and post-intervention knowledge mean score of diarrhoea prevention among mothers of under-5 children in the intervention and control group;
2. assess the difference in pre and post-intervention mean score on skills of prevention of diarrhoea among mothers of under-5 children in the intervention and control group

Research Hypotheses

H₀1: There is no significant difference in the post intervention knowledge of prevention of diarrhoea between mothers of under-5 children in the intervention and control group.

H₀2: There is no significant difference in the post intervention knowledge of preventive skills for home management diarrhoea between mothers of under-5 children in the intervention and control group.

METHODOLOGY

The study was a quantitative research that adopted a two group quasi-experimental method (one intervention group and one control group) to assess the outcome of an intervention programme on the experimental group. The target population for the study were all the mothers attending clinic in the two health centres in Surulere local government area of Lagos State. They were about 161 on the whole for six months evaluation. The sample size for this study was 124. Purposive and proportional sampling technique were used to select participants for the study. Participants were selected from each clinic days through proportional sampling technique.

Two instruments were used as tools for collecting information from the respondents which are questionnaire and checklist. The questionnaire was divided into three (3) sections. Self-developed rating scale checklist was used to measure skills of mothers on prevention of diarrhoea and the psychomotor domains of the participants. The questionnaire and checklist were presented to experts in the field of test and measurement and paediatrics to ascertain content and face validity. The face and content validity of the instrument was determined as valid. Reliability of the questionnaire was ascertained by pre-testing it among 20 mothers attending a clinic outside the research area. The internal consistency approach based on Cronbach Alpha was used to calculate the reliability coefficient which was 0.863. The study was carried out in three phases namely pre-intervention, intervention and post-intervention phases. All the data collected were coded and analysed with the use of Statistical Package for Social Sciences (SPSS) Version 27. Descriptive and inferential statistics were used to analyse the data collected. The research questions were answered using frequency count, simple percentage, mean and standard deviation. All the hypotheses were tested using t-test at 0.05 level of significance

RESULTS

Table 1: Socio-demographic Characteristics of Respondents in Experimental and Control Group

Socio-demographic characteristics	Experimental Group (N=72)		Control Group (N=52)	
	f	%	f	%
Age				
Less than 25 years	9	12.5	13	25.0
25 – 30 years	15	20.8	17	32.7
31 – 35 years	36	50.0	17	32.7
Above 35 years	12	16.7	5	9.6
Total	72	100.0	52	100.0
Marital Status				
Married	66	91.7	50	96.2
Single	5	6.9	2	2.8
Divorced	1	1.4	0	0.0
Total	72	100	52	100.0
Parity				
One	5	6.9	8	15.4
Two	28	38.9	23	44.2
Three	27	37.5	15	28.8
Above Three	12	16.7	6	11.5
Total	72	100.0	52	100.0
Ethnicity				
Yoruba	41	56.9	42	80.8
Hausa	2	2.8	2	3.8
Igbo	14	19.4	2	3.8
Others	15	20.8	6	11.5
Total	72	100.0	52	100.0
Educational Status				
Can't read nor write	15	20.8	14	19.4
Literate	57	79.2	38	52.8
Total	72	100.0	52	100.0

Monthly Income				
Less than N10,000	3	4.2	4	7.7
N10,000 – N20,000	18	25.0	16	30.8
Above N20,000	51	70.8	32	61.5
Total	159	100.0	52	100.0

Source: Researcher Field Report 2022

On socio-demographic variables of the participants as shown in table 4.1, 9(12.5%) of the mothers in the experimental group were less than 25, 15(20.8%) were within 25-30 years, 36(50%) were within 31-35 years, while 12(16.7%) were above 35 years. In the control group, 13(25%) were less than 25, 17(32.7%) were within 25-30 years, 17(32.7%) were within 31-35, while 5(9.6%) were above 35 years. On marital status in the experimental group, 66(91.7%) were married, 5(6.9%) were single, while 1(1.4%) were divorced. In the control, 50(96.2%) were married, while 2(2.8%) were single. On parity in the experimental group, 5(6.9%) had one child, 28(38.9%) had two, 27(37.5%) had three while 12(16.7%) had above three. In the control group, 8(15.4%) had one child, 23(44.2%) had two children, 15(28.8%) had three children while 6(11.5%) had above three. On ethnicity in the experimental group, 41(56.9%) were Yoruba, 2(2.8%) were Hausa, 14(19.4%) were Igbo while others were 15(20.8%), in the control 42(80.8%) were Yoruba, 2(3.8%) were Hausa, 2(3.8%) were Igbo while others were 6(11.5%). On educational status, 15(20.8%) cannot read nor write, 57(79.2%) were literate in the experimental group, 14(19.4%) cannot read nor write in the control group likewise 38(52.8%) were literate. In the experimental group on monthly income, 3(4.2%) had less than #10,000, 18(25%) had between #10000 and #20000 while 51(70.8%) had above #20000. In the control group, 4(7.7%) had less than #10,000, 16(30.8%) had between #10000 and #20000, while 32(61.5%) had above #200

Table 2: Information on the pre and post intervention knowledge of prevention of diarrhoea among mothers of under-5 children

Knowledge of prevention of diarrhoea	Category of scores	EXPERIMENTAL				CONTROL			
		Pre- intervention		Post- intervention		Pre- intervention		Post- intervention	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Low	1-12	72	100.0	0	0.0	52	100.0	52	100.0
Average	13-18	0	0.0	13	18.1	0	0.0	0	0.0
High	19-26	0	0.0	59	81.9	0	0.0	0	0.0
Total		72	100.0	72	100.0	52	100.0	52	100.0
Mean		8.03±1.19		20.01±1.97		8.02±1.28		8.75±0.74	
Percentage		30.88		76.96		30.84		33.65	
Mean difference		11.98				0.73			
Maximum		11.00		23.00		11.00		11.00	
Minimum		4.00		14.00		4.00		7.00	

Source: Researcher Field Report 2022

Results from Table 2 shows that in the experimental group, 72(100%) mothers had low knowledge of prevention of diarrhoea pre intervention, only 13(18.1%) had moderate knowledge of prevention of diarrhoea post intervention, while 59(81.9%) had high knowledge post intervention. It was also observed in the table that the mean score of knowledge of prevention of diarrhoea in the experimental group was 8.03 ± 1.19 as compared with the 20.01 ± 1.97 . The minimum and maximum score of the participants in the experimental group

were found to be 4.00 pre intervention and 11.00, and post intervention it was 14.00 and 23.00. The mean difference was 11.08.

Results from the table shows that in the control group, all the respondents 52(100%) had low knowledge of prevention of diarrhoea among under-5 children at pre intervention. At post intervention, a similar level was observed post intervention. The knowledge mean score of the participants in the control group was 8.02 ± 1.28 pre intervention, it increased post intervention to 8.75 ± 0.74 . The minimum and maximum score pre intervention was (4.00 and 11.00) and post intervention 7.00 and 11.00. The mean difference was 0.73.

Table 3: Information on the pre and post-intervention mean score on skills of prevention of diarrhoea among mothers of under-5 children

Skills of prevention of diarrhoea	Category of scores	EXPERIMENTAL				CONTROL			
		Pre-intervention		Post-intervention		Pre-intervention		Post-intervention	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Low	1-10	72	100.0	0	0.0	52	100.0	52	100.0
Average	11-14	0	0.0	10	13.9	0	0.0	0	0.0
High	15-21	0	0.0	62	86.1	0	0.0	0	0.0
Total		72	100.0	72	100.0	52	100.0	52	100.0
Mean		7.01±0.78		15.90±1.54		6.48±0.98		7.00±1.31	
Percentage		33.38		75.71		30.86		33.33	
Mean difference		8.89				0.52			
Maximum		9.00		20.00		8.00		9.00	
Minimum		5.00		14.00		4.00		5.00	

Source: Researcher's field Report 2022

Results from Table 3 shows that in the experimental group, 72(100%) mothers had low score on skills of prevention of diarrhoea pre intervention, only 10(13.9%) had average score on skills of diarrhoea post intervention, while 62(86.1%) had high score post intervention. It was also observed in the table that the mean score on skills of diarrhoea in the experimental group was 7.01 ± 0.78 as compared with the 15.90 ± 1.54 . The minimum and maximum score of the participants in the experimental group were found to be 5.00 pre intervention and 9.00, and post intervention it was 14.00 and 20.00. The mean difference was 8.89. Results from the table shows that in the control group, all the respondents 52(100%) had low score on skills of prevention of diarrhoea among under-5 children at pre intervention. At post intervention, it was a similar score. The knowledge mean score of the participants in the control group was 6.48 ± 0.98 pre intervention, it increased in post intervention to 7.00 ± 1.31 . The minimum and maximum score pre intervention was (4.00 and 8.00) and post intervention 5.00 and 9.00. The mean difference was 0.52.

Test of Hypotheses

H₀₁: There is no significant difference in the post intervention knowledge of prevention of diarrhoea between mothers of under-5 children in the intervention and control group

Table 4: Independent t-test showing the difference in the post intervention knowledge of prevention of diarrhoea between mothers of under-5 children in the intervention and control group

	N	Mean	Std. Deviation	df	T	Mean diff	Sig
Intervention Group	72	20.01	1.97	122	39.291*	11.26	.000
Control Group	52	8.75	0.74				

*Significance level of 0.05

Results in Table 4 indicate a significant difference in the post intervention knowledge of prevention of diarrhoea between mothers of under-5 children in the intervention and control group (Mean difference = 11.26; $t = 39.291$; $p < .05$). Going through the knowledge mean scores as shown above, one can say that there is difference in the post intervention knowledge of prevention of diarrhoea between intervention group (20.01) and the control group (8.75). The earlier set hypothesis was rejected.

H₀₂: There is no significant difference in the post intervention knowledge of preventive skills for diarrhoea between mothers of under-5 children in the intervention and control group.

Table 5: Independent t-test showing the difference in the post intervention knowledge of preventive skills for diarrhoea between mothers of under-5 children in the intervention and control group

	N	Mean	Std. Deviation	df	T	Mean diff	Sig
Intervention Group	72	15.90	1.54	122	33.750*	8.90	.000
Control Group	52	7.00	1.31				

*Significance level 0.05

Results in Table 5 indicate a significant difference in the post intervention knowledge of preventive skills for diarrhoea between mothers of under-5 children in the intervention and control group (Mean difference = 8.90; $t = 33.750$; $p < .05$). Going through the knowledge mean scores as shown above, one can say that there is difference in the post intervention knowledge of preventive skills for diarrhoea between intervention group (15.90) and the control group (7.00). The earlier set hypothesis was rejected.

DISCUSSION OF FINDINGS

The present study revealed that respondents' knowledge of prevention of diarrhoea among mothers of under-5 children was low at the pre-intervention stage for both the experimental group (8.03 ± 1.19) and the control group (8.02 ± 1.28). However, the knowledge increased significantly at the immediate post intervention for the experimental group (20.01 ± 1.97) with mean difference of 11.98 while the control group (8.75 ± 0.74) remained almost the same with mean difference of 0.73. On the hypotheses tested, it was revealed that there was significant difference in the post intervention knowledge of prevention of diarrhoea between mothers of under-5 children in the intervention and control group (Mean difference = 11.26; $t = 39.291$; $p < .05$) in favour of the intervention group.

This finding is corroborated by the reports of Ogbeyi, et al (2016) who indicated that (42.7%) of the respondents had fair knowledge of the correct definition of diarrhoea in a child, while 57.3% had poor knowledge of the prevention of diarrhoea (68.1%). Agengnehu, et al (2019) also reported that diarrhoea prevention practice among caregivers of under-five children was low. Efushile, et al (2017) found poor knowledge and home management of diarrhoea among women in Abakaliki Metropolis, Nigeria. They concluded that there was a need for health education for women and caregivers at CDCCs on causes of childhood diarrhoea, its prevention as well as its home management.

The present study further revealed that respondents' skills of prevention of diarrhoea among mothers of under-5 children was low at the pre-intervention stage for both the experimental group (7.01 ± 0.78) and the control group (6.48 ± 0.98). However, the skills increased significantly at the immediate post intervention for the experimental group (15.90 ± 1.54) with mean difference of 8.89 while the control group (7.00 ± 1.31) remained almost the same with mean difference of 0.52. On hypothesis tested, it was revealed that there was significant difference in the post intervention knowledge of preventive skills for diarrhoea between mothers of under-5 children in the intervention and control group (Mean difference = 8.90; $t = 33.750$; $p < .05$)

This finding is corroborated by the reports of Workie, et al (2018) who found out that 58% of the mothers had poor practice towards home- based home management and prevention of diarrhoea among under-5 children. Sunanda, et al (2017) found out that there was a significant effect of a structured educational program on skills of prevention of diarrhoea among mothers of under-5 children

CONCLUSION

The study concluded that nurse-led intervention increased the levels of knowledge of prevention and preventive skills of diarrhoea among mothers of under-5 children. This was demonstrated in the experimental group. It is safe to conclude that nurse-led intervention is needed to influence a change in the knowledge of prevention and preventive skills of diarrhoea among mothers of under-5 children.

Recommendations

In view of the findings stated earlier, the following recommendations were made:

- i. An intensive and comprehensive educational initiative should be organized by nursing leaders and tailored to meeting the specific needs of mothers.
- ii. Nurses should as a matter of urgency introduce health classes on prevention of diarrhoea at least once a month to foster good adherence to knowledge of prevention of diarrhoea.
- iii. Giving of health talks on basic hygiene care and practical demonstration of hand washing should be a regular and continuous in our primary health centers.

CONTRIBUTION TO KNOWLEDGE

This study was designed to address the effect of nurse-led intervention on prevention of diarrhoea among mothers of under-5 children in Surulere Local Government Area, Lagos State. Therefore, this study contributes significantly to the existing body of knowledge as under listed:

1. Nurse-led intervention is an ideal means to promote prevention of diarrhoea among mothers of under-5 children
2. Obtained results from this study further validate the claim that interventions through theory are successful in influencing behavioural change. Hence this study constitutes a concept test that confirms the importance of the use of theory in research.

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