

Effect of Nurse-Led Intervention On the Knowledge and Management of Childhood Diarrhoea Among Caregivers in Child Daycare Centres in Ibadan, Oyo State

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Abstract

Diarrhoea is widely recognized as a major cause of childhood morbidity and mortality in many developing countries, particularly in Nigeria. Therefore, this study was a nurse-led intervention on the knowledge and management of childhood diarrhoea among caregivers in child daycare centres in Ibadan, Oyo State. This study adopted pre-test post-test quasi-experimental, research design. Convenience Sampling was adopted to select 126 care givers working in 88 child daycare centres in Ibadan. A self-designed questionnaire with three sections was used to collect data on knowledge of diarrhoea and management of diarrhoea. Face and content validity of the instrument was ascertained by presenting them expert in field of nursing with certification in Tests and Measurement. The reliability of the instruments was ascertained by testing the questionnaires using 13 caregivers in 5 child daycare centres. Cronbach Alpha was used to calculate the data collected and the reliability coefficient values for Section B and C were 0.700 and 0.854 respectively. Data collected were processed descriptively and inferentially. The findings revealed that the caregivers pre and post intervention mean score on knowledge of diarrhoea were 12.09 and 18.99 while pre and post intervention mean score on knowledge of

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management of diarrhoea were 5.03 and 8.84. There were statistical differences between the pre and post-intervention mean score of participants' knowledge of diarrhoea and knowledge of management of diarrhoea. It was recommended among others that caregivers should be encouraged to participate in any training programme organized by professional healthcare givers to improve their knowledge and management of diarrhoea.

Keywords: Nurse-Led Intervention, Knowledge, Management, Childhood Diarrhoea, Caregivers,

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Introduction

There are a number of killer diseases affecting the under-five children. Such diseases are pneumonia, diarrhoea, malaria, measles, tetanus and polio. Diarrhoeal disease account for 1 in 9 child death worldwide, making diarrhoeal the second leading cause of death among children under the age of 5 (Center for Disease Control and Prevention (CDC), 2019). Nearly 6 million under five children die every year, yet majority could be saved by prevention or treatment of the conditions. The total number of under-five death has declined from 12.6 million in 1990 to 5.3 million in 2018 (World Health Organization (WHO), 2019). Despite significant worldwide progress in reducing child deaths over the last decades, diarrhoea remains a leading cause of mortality in under-five children. In 2016, diarrhoea accounts for approximately 8 percent of all deaths among children under age five worldwide. This translates to over 1,300 young children dying each day, or about 480,000 children a year. The majority of these deaths are preventable through improvements in water, sanitation, hygiene, nutrition, breastfeeding and immunization (WHO, 2017).

Diarrhoea is more common in children below 2 years of age, males are more affected than females and there are more cases in rural areas (Padhy, Sethi & Behera, 2017). It is important to note that >90 percent of cases of acute diarrhoea can be treated effectively with oral rehydration. Other effective treatments include zinc, intravenous fluids, and antibiotics in selected cases (Merali, Morgan & Boonshuyar, 2018). Diarrhoea is one of the leading causes of death amongst children after the neonatal period (WHO, 2017).

Childhood diarrhoea is defined as the passage of three or more loose or watery stool within a day or an increase in stool frequency or liquidity that is considered abnormal by the caregiver (WHO, 2017). Diarrhoea could also be referred to as a disturbance of the gastrointestinal tract comprising of changes in intestinal motility and absorption leading to increase in the volume of stools and in their constituency (Peter & Umar, 2018).

The main consequences of diarrhoea are frequent loose or watery stool, the risk of damage to intestine especially when there is bloody diarrhoea and loss of appetite with or without vomiting. The 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 eyes, depressed fontanel, dry mouth and throat, fast and weak pulse, loss of skin elasticity and reduced amount of urine. This leads to shock and untimely death of under-five children. Dehydration takes its heaviest toll on infant and children under-five (Mekomane, Mengistie & Sahilu, 2017).

Traditionally, women are expected to stay at home, nurture children and carrying out other domestic functions which is an integral part of their lives (Kapur, 2019). However, due to the economic situation of the country many parent put their babies in Child Day Care Centers (CDCCs) also known as crèches and preschools so as to allow them have time to support their families financially. Any place children congregate together has increased rate of infectious diseases. Childhood diarrhoea disease is an infectious disease that easily spread in CDCCs. Studies indicate that diarrhoea occur more frequently among children enrolled at child CDCCs than among age matched children cared for at home (Tahoun, Hasab & El-Nimr, 2019).

From the researcher's clinical observation, when she took her child for care at one of the CDCCs, it was assumed that there is deficiency in knowledge of diarrhoea, its prevention and management among the caregivers despite the fact that most of them were married women. Caregivers should have adequate knowledge of the childhood diseases, among which diarrhoea is a key causal of death. To the researcher's knowledge, no intervention studies

previously have been undertaken on caregivers' knowledge and management of childhood diarrhoea among caregivers in CDCCs in Ibadan.

Since the use of CDCCs is a common practice among working class women, the first persons to manage diarrhoea episodes amidst the children in the CDCCs are their caregivers. Therefore, there is the need to assess an intervention on caregivers knowledge of diarrhoea and management in CDCCs in Ibadan. Based on the foregoing, the study investigated the effect of nurse-led intervention on the knowledge and management of childhood diarrhoea among caregivers in child daycare centres in Ibadan, Oyo State. The study specifically:

- i. examined the pre and post intervention knowledge of participants on childhood diarrhoea;
- ii. determined the pre and post intervention knowledge of participants on management of Childhood diarrhoea;
- iii. determined difference in the pre and post intervention knowledge of the caregivers on childhood diarrhoea; and
- iv. examined difference in the pre and post intervention knowledge of management of childhood diarrhoea among caregivers

Research Questions

The following research questions were raised to guide the study:

1. What is the pre and post intervention knowledge of participants on childhood diarrhoea?
2. What is the pre and post intervention knowledge of participants on management of Childhood diarrhoea?

Research Hypotheses

The following null hypotheses were generated for this study:

1. There is no significant difference in the pre and post intervention knowledge of the caregivers on childhood diarrhoea
2. There is no significant difference in the pre and post intervention knowledge of management of childhood diarrhoea among caregivers

Methodology

One group pre-test post-test quasi-experimental research design was used to assess the effect of a nurse-led intervention on knowledge and management of childhood diarrhoea among caregivers in CDCCs. The study population comprised 270 caregivers who were working in the 88 CDCCs in Ibadan, Oyo State. The sample size for the study was 126 caregivers while convenience sampling technique was used for sample selection. The instrument that was used for data collection was a self-developed questionnaire with open and close ended questions. The questionnaire was divided into 3 sections. Section A consisted of 6 items designed to gather information about pertinent demographic characteristics of participants. Section B consisted of 20 items designed to assess the knowledge of the participants on childhood diarrhoea. The maximum score for correct response to knowledge of diarrhoea is 20. The scores are categorized into three: Low knowledge of diarrhoea score were those who scored 40% and less of the total score which is 1 – 8; Average knowledge of diarrhoea score were those who scored 41% - 69% of the total score which is 9 – 13; High knowledge of diarrhoea score were those who scored 70% and above of the total score which is 14 – 20. Section C consisted of 11 items designed to assess knowledge of baseline management of childhood diarrhoea. The maximum score for caregivers' knowledge on management of diarrhoea was 11. Low knowledge of diarrhoea management score were those who scored 40% and less of the total score which is 1 – 4. Average knowledge of

diarrhoea management score were those who scored 41% - 69% of the total score which is 5 - 7 while High knowledge of diarrhoea management score were those who scored 70% and above of the total score which is 8 - 11. The possible response to each question is true/false or Yes/No. All the correct responses were scored 1 while the false responses were scored 0.

The validity of the instrument was determined by presenting it to experts in the field of nursing profession with certification in Tests and Measurement to ascertain the content and face validity. Corrections were made and ambiguous questions were removed. The instrument was pretested on 13 caregivers in 5 CDCCs in Lagelu Local Government so as to ascertain the reliability of the instrument. Cronbach Alpha was used to calculate the data collected and the reliability coefficient values for Section B and C were 0.700 and 0.854 respectively.

The data collected (before and after intervention) were analyzed using descriptive and inferential statistics. Descriptive statistics (percentages, mean, and standard deviation) were used to answer the two research questions while t-test Statistics was used to test the two hypotheses at 0.05 level of significance.

Intervention

The intervention stage was in three phases::

1. Pre-intervention phase
2. Intervention phase
3. Post-intervention (Evaluation) phase

Pre- intervention Phase

The researcher introduced herself and explained the objective of the study to them. They were informed that the study would be in 3 sessions, the researcher mentioned the topics of the training and they agreed that each session would last 60 minutes. They were assured that they were free to withdraw at any stage of the research work without it having any negative implication on them. A convenient time for the participants was agreed upon for other sessions. A day training was conducted for 2 research assistants. The pre-test instrument to determine their pre-intervention knowledge of childhood diarrhoea, its prevention and management was administered on them by the research and two research assistants

Intervention Phase

The participants were exposed to 2 modules of training. They were exposed to the content of module 1 which include; introduction and definition of diarrhoea, causes of diarrhoea, risk factors of diarrhoea, transmission of diarrhoea, signs and symptoms of dehydration and complications of diarrhoea. They were also exposed to management of childhood diarrhoea.

Post Intervention (Evaluation) Phase

All the participants were given the post-test questionnaire on knowledge and management of diarrhoea. The questionnaires were collected immediately after the post-test.

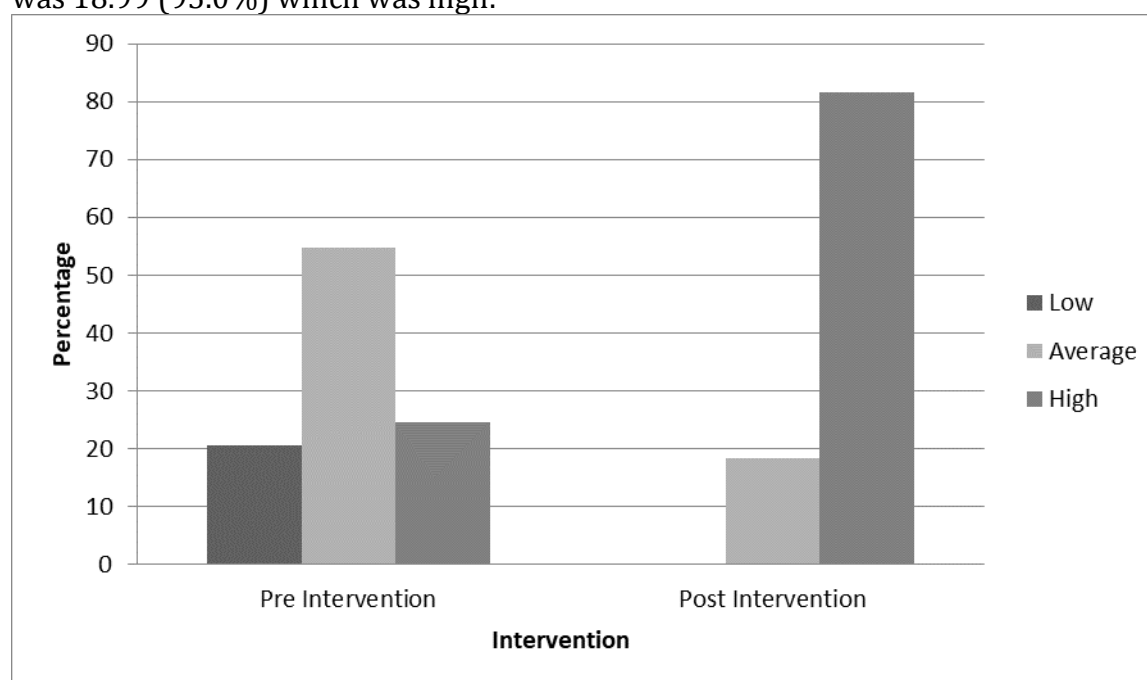
Results

Research Question 1: What is the pre and post intervention knowledge of participants on childhood diarrhoea?

Table 1: Information on the pre and post intervention knowledge of participants on childhood diarrhoea

The knowledge of participants on childhood diarrhoea	Category of scores	Pre-intervention		Post-intervention	
		Freq.	%	Freq.	%
Low	1-8	26	20.6	-	-
Average	9-13	69	54.8	23	18.3
High	14-20	31	24.6	103	81.7
Total		126	100	126	100
Mean		12.09		18.99	
Standard dev.		3.97		2.76	
Std. Error of Mean		0.39		0.27	
Mean difference		6.90			

Table 1 presents the pre and post intervention knowledge level of the participants on childhood diarrhoea. The pre-intervention mean scores of the knowledge of the participants on childhood diarrhoea was 12.09, which is equivalent to 60.5%, it could be said that the participant's knowledge on childhood diarrhoea before intervention was on the average. However, post-intervention mean knowledge level of the participants on childhood diarrhoea was 18.99 (95.0%) which was high.

**Figure**

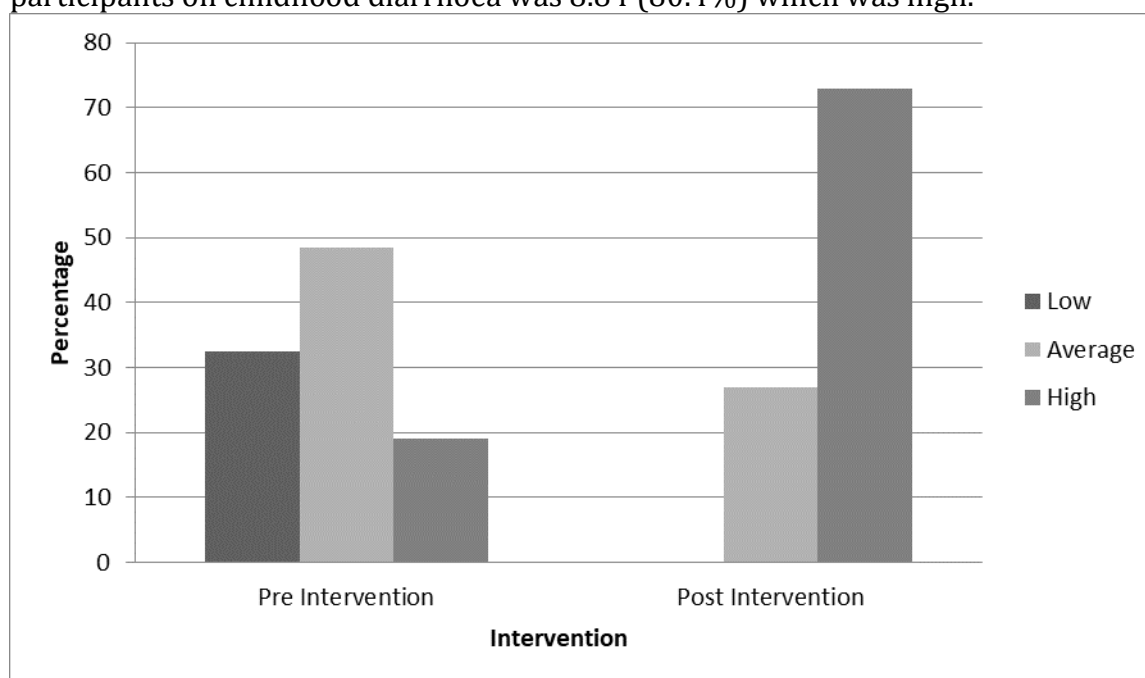
i: Pre and post intervention knowledge of participants on childhood diarrhoea

Research Question 2: What is the pre and post intervention knowledge of participants on management of Childhood diarrhoea?

Table 2: Information on the pre and post intervention knowledge of participants on management of childhood diarrhoea

The knowledge of participants on management of childhood diarrhoea	Category of scores	Pre-intervention		Post-intervention	
		Freq.	%	Freq.	%
Low	1-4	41	32.5	-	-
Average	5-7	61	48.4	34	27.0
High	8-11	24	19.1	92	73.0
Total		126	100	126	100
Mean		5.03		8.84	
Standard dev.		1.92		1.17	
Std. Error of Mean		0.33		0.25	
Mean difference		3.81			

Table 2 presents the pre and post knowledge level of the participants on management of childhood diarrhoea. The pre-intervention mean scores of the knowledge of the participants on management of childhood diarrhoea was 5.03, which is equivalent to 45.7%. It could be said that the participant's knowledge on management of childhood diarrhoea before intervention was low. However, post-intervention mean knowledge level of the participants on childhood diarrhoea was 8.84 (80.4%) which was high.

**Figure**

ii: Pre and post intervention knowledge of participants on management of childhood diarrhoea

Testing of Hypotheses

Ho1: There is no significant difference in the pre and post intervention knowledge of the caregivers on childhood diarrhoea

Table 3: Independent t-test showing the difference in the pre and post intervention knowledge of the participants on childhood diarrhoea

	N	Mean	Std. Dev.	Std. Error Mean	df	t-cal	Mean diff	Sig
Pre-Intervention	126	12.09	3.97	0.39	250	6.451*	6.90	.000
Post-Intervention	126	18.99	2.76	0.27				

*P<0.05

Results in Table 3 showed that the pre intervention knowledge of the participants on childhood diarrhoea (M = 12.09, SD = 3.97) and the post intervention knowledge of the participants on childhood diarrhoea (M = 18.99, SD = 2.76). The findings indicate a significant difference in the participants' knowledge of childhood diarrhoea because the t-cal value of 6.451 is significant since $p = 0.00$ ($t = 6.451$, $df = 250$, $MD = 6.90$, $P = 0.00$). Hence, the null hypothesis was rejected. Therefore, there was significant difference in the pre and post intervention knowledge of the caregivers on childhood diarrhoea.

Ho2: There is no significant difference in the pre and post intervention knowledge of management of childhood diarrhoea among caregivers

Table 4: Independent t-test showing the difference on pre and post intervention knowledge of the caregivers on management of childhood diarrhoea

	N	Mean	Std. Dev.	Std. Error Mean	df	t-cal	Mean diff	Sig
Pre-Intervention	126	5.03	1.92	0.33	250	4.208*	3.81	.001
Post-Intervention	126	8.84	1.17	0.25				

*P<0.05

Results in Table 4 indicate that the pre intervention knowledge of the participants on management of childhood diarrhoea (M = 5.03, SD = 1.92) and the post intervention knowledge of the participants on childhood diarrhoea (M = 8.84, SD = 1.17). The findings indicate a significant difference in the participants' knowledge of childhood diarrhoea because the t-cal value of 4.208 is significant since $p = 0.001$ ($t = 4.208$, $df = 250$, $MD = 3.81$, $P = 0.001$). Hence, the null hypothesis was rejected. Therefore, there was significant difference in the pre and post intervention knowledge of management of childhood diarrhoea among caregivers

Discussion

The findings of the study showed that the mean difference between the pre and post intervention knowledge of participants on childhood diarrhoea was 6.90 which imply that the intervention was effective. The increase in the knowledge observed at post intervention level could not have occurred by chance but due to the educational intervention. Implementing an inclusive health education intervention focusing on child caregivers was beneficial for improving knowledge of childhood diarrhoea among caregivers in CDDCs. This suggests that there is a gap existing on knowledge of childhood diarrhoea among caregivers. This outcome is in tandem with findings from studies that education plays a vital role in improving health outcomes irrespective of participants' formal education. Thus, this intervention was required to improve the knowledge of the caregivers on childhood diarrhoea (Harnagle & Chawla, 2013; Brieger, Osamor, Salami, Oladepo & Otusanya, 2014; Sunanda, Ramaiah, Sadiq & Narayana, 2017).

The findings of the study showed that the mean difference between the pre and post intervention knowledge of participants on management of childhood diarrhoea was 3.81 which imply that the intervention was effective. It could be deduced from these findings that the difference in the pre and post intervention score on management of childhood diarrhoea may be as a result of the educational intervention training. This finding is supported by the study conducted in Ethiopia where mothers who had no understanding about diarrhoea were by 80.3%, and were less likely to have good management practice compared with their counterparts (Desta, Assimamaw, & Ashenafi, 2017), this may be due to the fact that mothers who had information about diarrhoea have a good opportunity of good management practice.

Also, Mumtaz et al., (2013) said poor knowledge on management of childhood diarrhoea and its causes are directly linked to poor and ineffective management practices at the household and community level which increases disease prevalence. Carvajal- Velez, Amouzou and Perin (2016), discovered that the prevalence of good diarrhoea management was low in 11 of 12 analyzed surveys. They concluded that too many children were not receiving adequate care for diarrhoea in high burden sub-Sahara African countries.

It was also revealed from the findings of the study that there was significant difference in the pre and post intervention knowledge of the caregivers on childhood diarrhoea. In support of this finding, Brieger, Osamor, Salami, Oladepo and Otusanya (2014) and Sunanda, Ramaiah, Sadiq and Narayana (2017) concluded that intervention programmes on childhood diarrhoea increases knowledge on childhood diarrhoea.

It was also revealed from the findings of the study that there was significant difference in the pre and post intervention knowledge of management of childhood diarrhoea among caregivers. This finding is in consonance with the submission of Sunanda, Ramaiah, Sadiq and Narayana (2017) who found out that there was significant effect of structured education program on maternal knowledge towards diarrhoea management. Also, Joseph and Naregal (2014) that health education produced a significant effect on the management of diarrhoea among caregivers of under-five children

Conclusion and Recommendations

Findings of this study showed that knowledge and management of childhood diarrhoea among caregivers improved significantly after the intervention. In view of the findings and conclusions of this study, the following recommendations were made:

1. caregivers should be encouraged to participate in any training programme organized by professional healthcare givers to improve their knowledge on infectious disease control and management especially diarrhoea so as to foster reduction in infant and child morbidity and mortality rate;
2. proprietors and proprietresses of CDCCs should provide portable water supply and good sanitary measures which are pivotal to further reducing the incidences of diarrhoeal diseases; and
3. nurses and other healthcare workers should intensify effort in educating caregivers in CDCCs and design different approaches in health education for improvement of day caregivers' competence in managing the children.

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