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Effect Of Nurse-Led Intervention on Nutritional Status of Under-Five Children and Their Mothers in Nigeria

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Abstract

In recent years, achieving "health in all policies" has gained significant attention and it emphasizes the integration of health considerations into all policy-making processes to ensure that health outcomes are prioritized across various sectors. Nurses' potential as public health advisors can be realized through strengthening education, fostering teamwork, promoting, prevention, and increasing their role, resulting in a healthier and more equitable India.

Keywords: Management of malnutrition; Stunted under-5 children; Infant-feeding; Health intervention; Nutritional status

Introduction

Malnutrition is one of the world's most serious health issues. It is the serious problem that happens when people do not get enough nutrients from food intake. It literally means "poor nutrition" which may occur either due to overeating or under-eating. It has to do with missing, too much or having wrong amounts of nutrients in a person's diet. What, and the way children eat have effect on how quickly they grow and develop. Malnutrition is a condition that occurs when people consistently do not consume or absorb the right amounts and types of food and essential nutrients. One of the main indicators of childhood malnutrition is stunting, when children are too short for their age. Stunted children have poor cognitive and brain development which prevents them from reaching their full potentials in life in an increasingly competitive world [1]. Malnutrition affects almost half of global population (41%), every year [2]. Malnutrition among children is getting worse in every country, and it is one of the main causes of sickness all over the world. Roughly 2.3 million of the 6 to 24-month-old children in poor countries die because of it. Furthermore, malnutrition accounts for around 5.6 million children among the 10 million children dying each year while chronic malnutrition accounts for approximately 1.5 million of these deaths. As captured by the World Health Organization, as much as 178 million malnourished children exist worldwide, with 20 million afflicted the most excruciating form of malnutrition at any given time, which has serious repercussions.

Over 940,000 children between the ages 6-9 months were acutely malnourished across Nigeria's North Eastern states, with about 500,000 suffering from moderate while close to 450,000 are suffering from severe malnutrition [3]. Malnutrition is responsible for a large percentage of child fatalities worldwide, and particularly in Nigeria [4]. The developing world, especially Nigeria, has made very little progress in improving how babies and young children are fed. This is because of many things, such as poor hygiene and poverty. With an estimated population of over 200 million inhabitants, Nigeria remains the .largest country by population in Africa [5]. According to a survey by Nigeria's National Population Commission (NPC), children that are not up to the age of five years (i.e. under-5) had a high proportion of moderate to severe stunting (41%), as well as moderate to severe wasting (14 percent) (Demographic and Health Survey (Angela, Thorne-Lyman, Manohar, Shrestha, Klemm, Adhikari, and West Jr, 2020). About 37 percent of under-5 children remain stunted and 21 percent are acutely underdeveloped, as measured by the height-for-age index of the US National Center for Health Statistics reference population [6].

Demographic and Health Survey compares height and weight measurements to an international standard to evaluate children's nutritional standing, while the survey reported 37% of under-5 children in Nigeria to be stunted or too short relative to their age [7]. Ahmed (2020) found that nearly two out of every five under-5 children in Nigeria (53.9%) are stunted. Enugu (15%) and Anambra (14%) states have the lowest rates of stunting, whereas Kebbi (66 percent) and Jigawa (64%) have the highest rates. Slightly more than half (54%) of the children with uneducated mothers (no high school education) and 55% of those from the low-income households are the most vulnerable to coming down with malnutrition [8].

Oyo State has recorded the highest rate of malnutrition in Southwestern Nigeria, with malnourished children under five-years-old having a mortality rate of 73 deaths per 1000 live births, and an infant mortality rate of 59 per 1000 live births (Hamadneh, Kassab, Abu-hammad, Al-bayyari, Hamadneh, Obeidat, and Saqan, 2018). The consequences of malnutrition transcend the individual in terms of limited growth in children, but also results to inadequate social and economic development, society-wide. Other impacts include anaemia, Poor/Low immunity which makes the child to be prone to frequent infections. When growth stops or is stunted, bad things happen, like slow developments in the mental and physical domains that can last a lifetime [9]. The negative impacts of malnutrition are enormous and there is need for intervention in improving nutritional status of under-five children. This study assessed effect of nurse-led intervention on nutritional status of under-five children in Ibadan, Nigeria.

Methodology

Setting

The setting of the study is Ibadan. Ona-Ara Local government and Ibadan-South East local Government areas was specifically used in Ibadan for the study. The headquarters of Ona-Ara Local-

Government, Oyo State, Nigeria, the location of this study, is Akanran. It is a 290-square-kilometer area with a population of 265,571, according to the 2006 census, with a predicted population of 265,571 in 2021 [10]. Akanran, Araromi, Badeku, Gbada-Efon, Idi-Ose, Idi-Osan, Olorunsogo, Ajia, Olunloyo, Gbedun, and Oremeji are the communities in the Local Government. The Local Government is organised into eleven (11) wards, which are made up of 495 villages and larger communities (two urban, two peri-Urban and seven rural wards).

Sampling technique

A purposive sampling-technique was used to recruit malnourished children and their mothers for the study. Mothers were chosen from the communities of Molete, Bewaji, and Elere in the selected Local Government Area. The use of shirker's strip was taught to educable town criers who went into the communities (wards 5-Idi Ose, 7-Olorunsogo, and 9-Olunloyo) to help draw mothers of under-5 malnourished children into the designated community area for the Infant-Feeding Health Education Intervention and malnutrition Management.

Inclusion and exclusion criteria

The inclusion criteria for the study include children ages 6-24 months with their mothers or caregivers. At screening, malnutrition status must either be mild or severe (which will either be on the yellow or red columns of the shirker's strip). The exclusion criteria for the study include children ages 25-36 months with their mothers or caregivers, children who do not exhibit signs of any form of malnutrition and children whose mothers were not willing to take part in the research.

Instrument

Two instruments were used for data collection in the study. The Food-Frequency-Questionnaire was used to derive demographic and baseline nutritional status information of the malnourished children. An anthropometrics indices checklist was used to assess the anthropometric data of the malnourish children. The questionnaire was written in English, and then it was translated into Yoruba so that people who do not speak English could understand it better. The instruments were constructed in line with the objectives of the study after reviewing relevant literature. Content, face and construct validity were ensured through the submission of the draft of the instruments to the experts in the Department of Adult Education and Food and Nutrition. The reliability index of The Food Frequency Questionnaire was 0.76, for Anthropometric Indices, the reliability index was 0.76.

Procedure for data collection

The researcher obtained a letter of introduction and permission to conduct research from the Head of the Department Adult Education, University of Ibadan, and submitted it to the Oyo State Ministry of Health Ethics Body AD/13/479/1089 and the University of Ibadan's Social Sciences and Humanities Research Ethics Committee (SSHE) UI/SSHREC/2019/0025. Informed consents were taken from mothers. The participants were assured of confidentiality. There was no cohesiveness, and participants had opportunity to withdraw from the study at any time without facing any negative consequences. The researcher additionally enlisted the support of a few trained research assistants to assist with the process of data collection. The Research Assistants (8) received adequate training to familiarise them with the data collection instruments and to assist uneducated mothers in filling out their copies of the questionnaire. Data collection was done in three phases of pre-intervention, intervention and Post-intervention.

Pre-intervention phase

The respondents were met, and the objectives of the study were explained to them. Informed consent was signed. The facilities were split into two groups: intervention and control. At this pre-intervention phase, Pre-intervention anthropometric index of weight, height and Mid Upper Arm Circumference were evaluated to serve as a baseline data.

Intervention phase

The research assistants were trained on how to use shirkers' strip to identify the severe malnourished under-five children been a community-based intervention. After that, a designated place was chosen in the community away from the health center. Baseline anthropometric indices of the under-five children (height, weight, and BMI), after which this was repeated every week for a period of 13weeks. The UNICEF Infant and Young Children Feeding module was adopted to teach mothers on feeding of their under-five children; this was followed by food demonstration at each session (available staple foods were used; fortified soya was also used). Each lesson lasted a minimum of one hour per day and covered the various classes of food and their nutritional relevance. Lecture-discussion, charts, and demonstrations on the usage of the intervention module were used to deliver the package. Food demonstration sessions were held to show the mothers how to cook some meals for their children.

Post-intervention phase: At this phase, the post intervention anthropometric measurements of the malnourished children were taken.

Method of data analysis

Statistical Package for Social Sciences Version 25.0 was used as statistical software for the study. Descriptive statistics, such as frequencies counts and simple percentages, were used to examine the demographic data and the anthropometric measurements for the study. Analysis of Covariance (ANCOVA) was used to test association between variables at p value 0.05. The Nutri Survey software was used to conduct the anthropometric analysis.

Results

From Table 1 majority 8(25%) were between ages 25-29 in the experimental group while majority 18(34%) were from age 30-34 years from the control group. All the women 53(100%) from the control group were married but 28(87.5%) of mothers with malnourished child were married. Majority 22(41.5%) of the mothers from control group had junior secondary education while 13(40.6%) of mothers from experimental group had senior secondary education. Most of the respondents from both the experimental group 27(84.4%) and 48(90.6%) from control group were traders. From the experimental group, majority 19 (59.4%) had male child, while from the control group, majority 30 (56.6%) had a female child. Both the control group 49 (92.5%) and experimental group 28 (87.5%) had mildly malnourished children.

Table 2 shows that during the pre-intervention that majority of children's nutritional status for the intervention/control group were mildly malnourished, but during post-intervention 28(87.5%) of children in the intervention group were normal and none of the children were malnourished. For the control group, during the pre-intervention, the majority 37(69.8%) were mildly malnourished but during post interventions, 49(92.5%) were normal, none of the children were malnourished. For pre-intervention, 2(6.3%) had oedema in the

Table 1: Demographic characteristics of the respondents.

Demographic characteristics	Labels	Intervention (n=32)		Control (n=53)	
		Frequency	%	Frequency	%
Age of mothers	20-24 years	7	21.9	12	22.6
	25-29 years	8	25.0	14	26.4
	30-34 years	7	21.9	18	34.0
	35-39 years	4	12.5	4	7.5
	40 years and above	6	18.8	5	9.4
Marital status	Married	28	87.5	53	100.0
	Separated	1	3.1		
	Widowed	3	9.4		
Level of education	No formal-education	1	3.1	5	9.4
	Primary-education	7	21.9	-	-
	Junior-secondary	9	28.1	22	41.5
	Senior-secondary	13	40.6	20	37.7
	Others	2	6.3	6	11.3
Occupation	Housewife	4	12.5	3	5.7
	Trading	27	84.4	48	90.6
	Civil servant	1	3.1	2	3.8
Religion	Islam	22	68.8	36	67.9
	Christianity	10	31.3	14	26.4
	Traditional	-	-	3	5.7
Income per annum	₦5,000-₦10,000	8	25.0	2	3.8
	₦10,001-₦20,000	10	31.3	11	20.8
	₦20,001-₦30,000	6	18.8	14	26.4
	₦30,001-₦40,000	5	15.6	14	26.4
	Above ₦50,000	3	9.4	12	22.6
Number of children	1-2-children	11	34.4	35	66.0
	3-4-children	14	43.8	15	28.3
	5-6-children	5	15.6	3	5.7
	7-9-children	2	6.3	-	-
Sex of child	Male	19	59.4	23	43.4
	Female	13	40.6	30	56.6
Nutritional status	Green (Normal)	-			
	Yellow (Mild malnourished)	28	87.5	49	92.5
	Red (Severe malnu.tri.tion)	4	12.5	4	7.5

Table 2: Showing pre-test and post-test anthropometric measurement of malnourished children.

Nutritional dimensions	Labels	Pretest (n=85)		Posttest (n=85)	
		Experimental (n=32)	Control (n=53)	Experimental (n=32)	Control (n=53)
Nutritional status	Green (Normal)	-	37(69.8%)	28(87.5%)	49(92.5%)
	Yellow (Mild Malnourished)	19(59.4%)	12(22.6%)	4(12.5%)	4(7.5%)
	Red (Severe malnourished)	13(40.6%)	4(7.5%)	-	-
Body Mass Index	No response	5(15.6%)	-	-	-
	Normal	6(18.8%)	49(92.5%)	16(50.0%)	53(100.0%)
	Mild Malnutrition	3(9.4%)	4(7.5%)	4(12.5%)	-
	Moderate Malnutrition	8(25.0%)	-	4(12.5%)	-
	Severe Malnutrition	10(31.3%)	-	12(37.5%)	-
Oedema	No	30(93.8%)	52(98.1%)	31(96.9%)	52(98.1%)
	Yes	2(6.3%)	1(1.9%)	1(3.1%)	1(1.9%)
Illness in the past 30 days	No	20(62.5%)	41(77.4%)	21(65.6%)	35(66.0%)
	Yes	12(37.5%)	12(22.6%)	11(34.4%)	18(34.0%)

intervention group but during the post intervention, 1(3.1%) had oedema in the intervention group. The control group had both 1(3.1%) both at the pre and post intervention.

Table 3 demonstrates that the findings of an analysis of the preventing and treating of malnourishment in under-5 children reveal that gender had no significant main effect (F = 1.559, p>.05, 2=.019) on malnutrition.

Discussion

Sociodemographic characteristics

Majority were between ages 25-29 in the intervention group while age 30-34 years were from the control group which confirmed the findings of a study conducted by Ajao, Ojoifetimi, Adebayo, Fatusi, and Abiola. Children in the intervention group gained the same amount of weight and length as children in control groups at 18 months, in accordance with a research by Waddington et al. All the women from the control group were married and of mothers with malnourished child. Less than half of the mothers from control group had junior secondary education while less than half of mothers from intervention group had senior secondary education. Most of the respondents from both the intervention group and control group were traders. This is in alignment with what Armar-Klemesu et al. found in their research in Ghana. From the intervention group, more than half had male child, while from the control group, more than half had a female child.

Anthropometric measurement of malnourished children

The findings revealed that only around half of the children had a

Table 3: Analysis of covariance (ancova) showing the main effect of gender on the preventing and treating of severe malnourishment in under-5 children.

Source	Sum of Squares	Df	Mean Square	F	Sig.	Eta. Sq
Corrected Model	3794.327	2	1897.164	2.876	.062	.066
Intercept	25959.651	1	25959.651	39.357	.000	.324
Pretest	3242.723	1	3242.723	4.916	.029	.057
Gender	1028.363	1	1028.363	1.559	.215	.019
Error	54086.136	82	659.587			
Corrected Total	57880.464	84				

R Squared= .066 (Adjusted R Squared = .043)

normal dietary-status, and most children had no illness 30 days prior to the study and had a low BMI. However, after the intervention (most women are now aware of the intervention), almost nine out of ten (90.6 percent) of children's nutritional condition improved, and more than two-thirds of the children had no illness in the previous 30 days, and had a very good BMI. More than 30% of children who were somewhat malnourished improved. Folake found that stunting, underweight, and waste children in high-density urban areas had pervasiveness rates of 44.4%, 41.9%, and 21.0%, respectively. These results match the outcomes of prior researcher in which the pervasiveness of malnourishment of under-5 children were the same. Also, among kids between the ages of 6 and 8, while Mehdi et al., (2006) found 47.4 percent stunting, 51.7 percent underweight, and 21.2 percent waste in disadvantaged regions in India. Several surveys have also revealed that many developed-country households lack adequate food, as a result, many households have poor food intake. Wasting is a current measure of nutrition, stunting, and a long-term proxy for dietary changes, but underweight is a valuable indicator of both current and historical diets. The pervasiveness rate of these three indices in the two groups of children was not particularly high as revealed by this research. This finding is not surprising, given the country's long-running economic problems. As a result of soaring inflation in all goods, including food, the purchasing power of many households has dwindled. Because of this, many kids, especially those from poor homes, will probably have been necessitated to eat low-quality food.

Main effect of gender on the preventing and treating of severe malnourishment in under-5 children

Gender of child on the administration and prevention of severe malnourishment in under-5-children in the study setting. Depicts no significant main effect of gender of child on the preventing and treating of severe malnourishment in under-5 children at research's locations. (F = .986, p>.05, $\eta 2$=.013). According to the findings, gender played no role in determining susceptibility to malnutrition. Malnutrition was more pronounced amongst male children than among their female counterparts. In contrast to what Babatunde discovered, this is not the case. He claimed that male kids are more at threat of being undernourished than female children as a result of the correlation between a child's genders with the condition. Research conducted in Pakistan by Rahman revealed that boys were more prone to being malnourished than the girl-child. The results of a study by Alkhalidy showed that diet therapy was more commonly sought out by boys than by girls. Based on their research, Keino concluded that females were prone to being overweight than boys, although boys were prone to being shorter. Salah and Nnyepi's findings in their Botswana investigation contrasted sharply with these (2006). The pervasiveness of emaciated or underweight males was reported to be significantly higher than that of females. These findings contradict those of Olwedo, who investigated the root causes of malnutrition among refugees who had been uprooted from their homes in Northern Uganda. Boys have a higher chance of developing severe malnourishment than females

do; in fact, the risk may be twice as great for boys. Similar research was done by JMt to understand the impact of influences such as a child's nutritional status, sexual category, birth weight, and iron status on their cognitive development and school success. They discovered that dietary intervention led to greater academic success for girls than boys in rural Malaysia. Good nutrition, parental education, and financial stability have all been linked to better educational attainment among children. In addition, Khan discovered that female children had a much-decreased risk of stunting and underweight as they aged relative to boys. It was recounted that kids from nuclear family had a higher threat of being stunted or wasted, with the effect being more pronounced for girls. Girls are more at risk of malnutrition and are less likely to receive supplementary meals, according to Bose. The general findings suggesting women's status is excellent for a daughter's health seem to be the exception of a positive association amid the percentage of community's literate women and the sexual category gap in malnourishment. This demonstrates that communities must take further steps than simply encouraging adult education so as to address the issue of neglected daughters.

Limitations of the study

The research would have been expanded to cover more geographical zones within the country. Mothers of under-5 children suffering from severe malnourishment were difficult because they were not always present at the Health Centers for easy identification. Despite the limitations, the study provides an empirical finding on mothers of under-5 children about the preventing and treating of malnutrition in under-5 children. Also, the intervention clinics has demonstrated to mothers of under-5 children the importance of improving their children's nutritional health, hence lowering under-5mortalities.

Conclusion

Malnutrition is still a severe public health issue among under-5 children in Ibadan's specially Ona Ara Local government. Malnutrition (underweight and wasting) was found in high numbers, indicating that the nutrition situation in the research area was serious, owing to the mothers of under-5 children's lack of nutritional expertise. As a result, this study found that Infant-Nutritional Welfare Clinics Intervention is critical in preventing and treating of serious malnourishment in under-5 children in OA-LGA. For enhanced nutritional status for all under-5 children, the intervention educated mothers of under-5 children on the importance of breast milk, personal and environmental sanitation, and a balanced daily diet for children, including breakfast, lunch, and dinner with fruits in between

Recommendations

Health workers, stakeholders and policy makers were encouraged to adopt the intervention as an effective strategy for reducing and managing nutrition status in under-five children. Also, there is need to include programmes that would enhance improvement in knowledge of mothers of under-five children on nutrition status. At infant welfare

and vaccination clinics, continuous training programs, teaching aids, and information and communication gadgets and materials such as fliers, posters, handbills and even digital media banners should be supplied to improve instructions of mothers.

Suggestion for further studies

For a more accurate portrayal of the results, a further study might be expanded to other local government areas around the state. This will aid in promoting children's nutrition especially those below the age of five, thereby reducing morbidity and mortality rates.

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