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Nutritional Status, Care Giving And Feeding Practices Of Infant And Pre-School Children (0 - 5 Years) In Motherless Babies Homes In Owerri Metropolis

Ngozi, P. Obiakor - Okeke and Blessing, C. Nnadi
Faculty of Health Sciences, Department of Nutrition and Dietetics, Imo State University, PMB 2000, Owerri, Imo State Nigeria.
Corresponding Author's Email: ngoziobiakor2001@yahoo.com

ABSTRACT
The study was conducted to determine the nutritional status, care-giving and feeding practices of infants and preschool children (0-5 years) in the motherless babies home (Red Cross and Holy family sisters of the Needy motherless Babies Home) in Imo State. A cross sectional survey was carried out to elicit information from 100 respondents who were randomly selected. Statistical package for social sciences (SPSS) version 16 was used to analyze the data. The World Health Organization Classification was used to define the anthropometric analysis such as wasting, stunting and underweight among the children. Result revealed that anthropometric measurement using WHO standards used in defining the following: Weight- for - height which showed that 18% were wasted, height-for-age assessment revealed that 34% were stunted and weight-far-age showed that 19% were underweight while 19% of the children were overweight. The result of the study indicate that 19% of children were breastfed by wet nursing, 7% ate > 2 times daily, 11% take fits 3 times per week the health status of the children showed that 19% of them were sick all the time, 2% each of the children had Oedema and Beriberi, 26 % had scurvy, 11% had rickets while 37% of the children had anaemic look on them. In conclusion, the study revealed that the nutritional status of the infants and preschool children in the motherless babies home is generally low due to the children's poor feeding habit and poor nutrition knowledge of the care givers as indicated by the study.
Keywords: Nutritional Status, Care Giving, Feeding Practices, Infant, Pre-School Children, Motherless Babies Home

Introduction

Nutritional status is the nutritional health of a person as determined by anthropometric measurements, biochemical measurements of nutrients or their by-products in blood and urine, a clinical (physical) examination, a dietary analysis and-economic evaluation (1). It simply describes the condition of the body as it relates to composition and utilization of food. Good nutritional status is an integral part of health promotion and disease prevention thus, enhancing growth and development. Children with good nutritional status are wealthier and recover from illness more quickly than malnourished children (2). The objective of nutritional status assessment is to emphasize the role of adequate nutrition in the growth, development and prevention of diseases and suggests appropriate corrective measures for feeding practice (3). Care another determinant factor for good nutritional and health status is referred to as the integrated set of actions carried by an older person, group of persons, society or government to ensure that children have access to protection and support for their nutrition, physical, psychological and cognitive aspect for proper development (4).

Severe acute malnutrition remains a major killer of children under five years of age worldwide. The under-5 mortality rate decreased from 201 deaths per 1,000 live births in 2003 Nigeria Demographic and Health Survey (NDHS) to 128 deaths per 1,000 live births in the 2013 NDHS (5 - 7). However, Nigeria still has a long way to go to achieve the MDG target of reducing the under-5 mortality to 64 deaths per 1,000 live births and the infant mortality to 30 deaths per 1,000 live births by 2015 (8). The estimated infant mortality rate in the 2003 NDHS was 100 deaths per 1,000 live births, which decreased to 75 deaths per 1,000 live births in the 2008 NDHS and further to 69 deaths per 1,000 live births in the 2013 NDHS. The pattern shows that about 29 percent of deaths under age 5 occur during the neonatal period (37 deaths per 1,000 live births), and 24 percent occur during the post-neonatal period (31 deaths per 1,000 live births) (5).

The importance of nutrition as a foundation for healthy development is often underestimated. Poor nutrition leads to ill-health and ill-health contributes to further deterioration in nutritional status. These effects are most dramatically observed in infants and young children (8). They suffer the highest risk of disability and death associated with it (9). Report revealed that 54% of all children mortality in Nigeria was attributed directly or indirectly to malnutrition (8). It was equally observed that in Nigeria, 31% of children under-five have been reported underweight, 16% wasted and 34% stunted. Malnutrition is associated with increased morbidity (10).

About 30-40% of deaths in pre-school age children in Nigeria are associated with malnutrition (11). Nigeria Food Consumption and Nutrition Survey and Nigeria Demographic and Health Survey observed that in Nigeria, the rate of stunting among under-five children exceeds 40%, wasting about 90% and underweight 25%. At least 60% of children who die from different causes have malnutrition as an underlying cause (6 - 7).

Infants and pre-school children in motherless babies home are nutritionally challenged because many do not have access to breast milk which is very nutritious and helps in disease prevention (1). They are among the vulnerable group in our society and are mostly exposed to malnutrition (2). These infants and pre-school are motherless and some may not have relatives thus they are neglected by the society and the government, which may result to lack of fund for their up-keep both nutritionally and otherwise. When the maximum or desired nutrition is not obtained, it results in Protein Energy Malnutrition (PEM) which is known as deficiency of protein and energy in the diet. This can also lead to micronutrients deficiencies. It is not one disease but a range of pathological conditions arising from inadequate diet. Also these infants and per-school children in motherless babies' homes are not most times biologically related to their care givers, this may limit the level of love and care being given to them and it could affect their emotional, behavioral, mental and cognitive development. Nutrition is very important in mental development because physical and mental development is dependent on food. At this stage of infancy, great nutritional attention is to be given to them reason being that it is the stage of brain development. Brain development can be enhanced in infants by feeding them with micronutrient such as iodine as supplement deficiency of iodine, cause mental retardation its source include; iodized salt, crayfish and most sea foods (1).

The general objective of the study is to assess the nutritional status, care-giving and feeding practices of infants and pre-school children 0 - 5 years in motherless babies home. Specifically, the study is aimed: to determine their nutritional status using anthropometric assessment, to assess their feeding practices and to assess the relationship between their anthropometric index and feeding practices. This study will provide information that will help care-givers and proprietors of motherless babies' home to care and nurture healthy and productive citizens of Nigeria through adequate nutritional care at this vulnerable stage. This study will also help to elaborate more on the nutritional status of those infants and pre-school children in motherless babies home.

Methodology

Study Area

The study was carried out in two motherless babies' homes (Red Cross Motherless Babies Home and Holy Family Sisters of the Needy Motherless Babies Home) in Owerri Metropolis, Owerri Imo State. The Red Cross Motherless Babies Home is under the support and care of the Nigerian Red Cross Society, Owerri Division while Holy Family Motherless Babies Home is under the auspice of the Catholic Sisters of the Order of Holy Family.

Sampling and Sample Size

A total of 100 children were randomly selected from the two motherless babies' home based on the total number of under 5 children recorded in the register of oath home i.e. 124 children. The formula below was then used:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size required
1 = a constant
N = Total number of <5 children in both homes = 124 children
e = merging of error = 5% = 0.05.

$$n = \frac{124}{1 + 124\ (0.05)^2}$$

$$n = \frac{124}{1 + 124\ (0.0025)}$$

$$n = \frac{124}{1 + 0.31}$$

$$n = \frac{124}{1.31}$$

= 94.6 Ω 95 samples

Then 5% was allowed for dropout and non response to get.

$$\frac{5}{100} \quad X \quad \frac{95}{1}$$

= 4.74

Total Sample = 95 + 4.75
= Ω 100 children

A stratified random sampling was then used to select 50 children from each of the motherless babies' home.

Validation of Method of Study
Structured questionnaire was pre-tested and validated by lecturers in the Department of Nutrition and Dietetics. The questionnaire instrument was pre-tested on a group of care-givers in a neighbouring motherless babies' home.

Data Collection
Structured and validated questionnaire and anthropometric measurement equipment was the research instrument used in the study. The structured and pre-tested questionnaire was used to elicit information on feeding practices, care-givers information, health status as well as clinical assessment of the under 5 children. The care-givers were given the questionnaire to fill on behalf of the child/children under their care while clinical assessment was immediately observed and recorded appropriately by the trained survey team. Data on anthropometric indices were obtained by measuring the children's weight, height/length.

Weight Measurement
The babies were weighed naked on a salter scale, which was placed on a flat table for balance and this scale was always zeroed before taking any measurement. The readings were taken to the nearest O.lkg. Children up to 2 years were however weighed with clinical weighing scale while standing erect in an upright position.

Length/Height Measurement
A portable measuring board was used in taking the Babies' length. A child was laid on a board which is itself a flat surface. The baby's head was positioned firmly against the fixed board, the knees extended by firm pressure and the feet flexed at right angles to the lower leg. The upper sliding foot piece was moved to obtain firm contact with the heels and the length was read to the nearest 0.lcm. Children up to two years were measured while standing erect with their hands by their side and their heads upright in order to obtain their height.

Statistical Analysis
The data obtained was analyzed using means, frequencies and percentages with Statistical Package for Social Sciences (SPSS) version 16. Chi square was also used to show the relationship between the children's anthropometry and their feeding practices. Anthropometric index of the under 5 children such as weight for height, height for age and weight for age were analyzed using WHO Anthro Plus software.

Result

Table 1: Feeding Habit/Practices of the Children in the Motherless Babies Home Variables

Variable	Frequencies (F) = 100	Percentages (%) = 100
Children breastfed by wet nursing		
Yes	19	19
No	81	81
No of times child feed/day		
≥2 times	7	7
3 times	63	63
4 times	16	16
No of times child eats fruits/week		
Once	27	27
2 times	23	23
3 times	11	11
Whenever available	39	39
Child given snacks meals		
Daily	59	59
Once a week	11	11
Twice a week	30	30
No of children that eats from a plate during meal time	27	27
One	53	53
Two	20	20
3 and above		
Child allowed to feed self		
Sometimes	13	13
Yes	61	61
No	26	26

Result above shows that 19 (19%) were breastfed by wet nursing, 7 (7%) ate ≤ 2 times/day, 11 (11%) snacks once a week, 20 (20%) ate with 3 or more children at a time and only 26 (26%) were fed by the care-givers themselves.

Table 2: Information on Care Giving Practices of the Care Givers Variables

Variable	Frequencies (F) = 100	Percentages (%) = 100
No of times child is bathed		
Once	23	23
Twice	77	77
No of times child brushes tooth		
Once	66	66
Twice	34	34
3 times	0	0
No of children that sleeps in a bed		
Once	15	15
Two	23	23
3 and above	62	62
Child taken out for tourism and creation		
Steadily	10	10
Often	11	11
No	79	79
Child's finger and toe nails cut		
Once a week	16	16
Often	35	35
Once a month	49	49

Table 3: Health Information and Characteristics of the children Variables

Variable	Frequencies (F) = 100	Percentages (%) = 100
Frequency of child's illness		
All the time	19	19
Rarely	40	40
Occasionally	41	41
Child taken to hospital when ill		
All the time	58	58
Sometimes	38	38
Never	4	4
Source of drinking water		
Tap water	35	35
Borehole water	37	37
Stream water	20	20
Well water	8	8
Drinking water boiled		
Yes	22	22
No	16	16
Sometimes	62	62
Child washed hand before and after meal		
Yes	71	71
No	7	7
Sometimes	22	22
Child's food hygienically prepared		
Yes	89	89
No	11	11
Child's clothes often washed		
Twice a day	4	4
Once a week	31	31
Everyday	65	65

Result reveals that 19(19%) of the children feel ill always, 4(4%) never taken to hospital, 37(37%) drank borehole water, only 16(16%) boiled the water, 89(89%) of food were hygienically prepared and their washed twice a week 4(4%).

Table 4: Anthropometric Index of the Children

Variable	Frequencies (F) = 100	Percentages (%) = 100
Weight for Age		
Underweight	**18**	**18**
Normal	**63**	**83**
Above normal	**19**	**19**
Height for Age		
Stunted	**34**	**34**
Normal	**57**	**57**
Above normal	**9**	**9**
Weight for Height		
Wasted	**18**	**18**
Normal	**62**	**62**
Above normal	**20**	**20**

Result above show a prevalence of 18(18%) of underweight, 34(34%) of stunting and 18(18%) of easting. However, 19% of the children had a weight forage index greater than normal (overweight and obsessed).

Table 5: Clinical Assessment and Characteristics of the Children

Clinical Signs and Symptoms		Present F (%)	Absent F(%)
(a)	Skin and bone appearance	5(5)	95 (95)
(b)	Oedema	2(2)	98(98)
(c)	Apathy, fatigue	11(11)	89(89)
(d)	Aneamic looks	37(37)	63(63)
(e)	Stomatitis	0(0)	100(100)
(f)	Glossities	10(10)	90(90)
(g)	Chelosis	6(6)	94(94)
(h)	Xerophtholmia	0(0)	100(100)
(i)	Scurvy	26(26)	74(74)
(j)	Ricket	11(11)	89(89)
(k)	Beriberi	2(2)	98(98)
(l)	Dental carries	7(7)	93(93)

Clinical assessment result above reveals that 2(2%) of the children had Oedema, 37(37°10) had anemic looks, 6(6%) Cheilosis and 26(26%)' had scurvy. Although micronutrient deficiency was prevalent, stomatitis and Xerphthalmia were absent in all the children.

Table 6: Nutritional Status of the Children by Number Times Care givers Brushes Child's Tooth Daily

Anthropometric Status	Once	2 Times	3 Times	Never	Total
Weight for Age					
Underweight	11(16.7%)	2(14.3)	0(0.0)	5(25.0)	18
Normal	46(69.7)	10(71.4)	0(0.0)	7(35.0)	63
Above Normal	9(13.6)	2(14.3)	0(0.0)	8(40.0)	19
Total	**66(100.0)**	**14(100.0)**	**0(0.0)**	**20(100.0)**	**100(100.0)**
$X^2 = 9.4916$		df = 6		P > 0.05	
Height for Age					
Stunting	23(34.8)	1(7.1)	0(0.0)	10(50.0)	34
Normal	40(60.6)	11(78.6)	0(0.0)	63(30.0)	57
Above Normal	3(4.5)	2(14.3)	0(0.0)	4(20.0)	9
Total	**66(100.0)**	**14(100.0)**	**0(0.0)**	**20(100.0)**	**100(100.0)**
$X^2 = 27.5806$		df = 6		P < 0.05	
Weight for Height					
Wasting	7(10.6)	4(28.6)	0(0.0)	7(35.0)	18
Normal	50(75.8)	4(28.6)	0(0.0)	8(40.0)	62
Above Normal	9(13.6)	6(42.8)	0(0.0)	5(25.0)	20
Total	**66(100.0)**	**14(100.0)**	**0(0.0)**	**20(100.0)**	**100(100.0)**
$X^2 = 15.9263$		df = 6		P < 0.05	

The Chi square analysis showed a significant difference (P<0.05) in stunting and wasting among the children who brushed their tooth once, twice and those who never did. Although those children whose tooth were never brushed had more underweight status 5(25.0%) compared to others. There was no significant difference (P > 0.05) in their weight for Age Index.

Table 7: Nutritional Status of the Children by Child's Intake of Snacks Between Meals Child's Intake of Snacks Between Meals

Weight for Age	Daily	Once a Week	Twice a Week	Total
Underweight	3(5.1)	6(54.5)	9(30.0)	5(25.0)
Normal	44(74.6)	3(27.3)	16(53.3)	7(35.0)
Above Normal	12(20.3)	2(18.2)	5(16.7)	8(40.0)
Total	**59(100.0)**	**11(100.0)**	**30(100.0)**	**20(100.0)**
$X^2 = 21.359$		df = 4		P < 0.05
Height for Age				
Stunting	15(25.4)	7(63.6)	12(40.0)	34
Normal	43(72.9)	4(36.4)	10(33.3)	57
Above Normal	1(1.7)	-0(0.0)	8(26.7)	9
Total	**59(100.0)**	**11(100.0)**	**30(100.0)**	**10(100.0)**
$X^2 = 22.3647$		df = 4		P < 0.05
Weight for Height				
Wasting	3(5.1)	5(45.5)	10(33.3)	18
Normal	49(83.1)	5(45.5)	8(26.7)	62
Above Normal	7(11.9)	1(91)	12(40.0)	20
Total	**59(100.0)**	**11(100.0)**	**30(100.0)**	**100(100.0)**
$X^2 = 34.733$		df = 4		P < 0.05

Result above showed that the snaking habits of the children significantly (P<0.05) affected their entire anthropometric index. Higher rates of underweight (54.5% and 30.0% respectively) were observed among children who snacked once or twice a week respectively. Then those who snacked daily (5.1%). Stunting and wasting was highest in children who snacked once (63.6%and 45.5%) a week respectively.

Table 8: Nutritional Status of the Children by Number of Children Eating in a Plate During Meals

Anthropometric Status	Once	2 Times	3 and Above	Total
Weight for Age				
Underweight	1(3.7)	7(13.2)	10(50.0)	18
Normal	16(59.3)	40(75.5)	70(35.0)	63
Above Normal	10(37.0)	6(11.3)	3(15.0)	19
Total	**27(100.0)**	**53(100.0)**	**20(100.0)**	**100(100.0)**
$X^2 = 24.2628$		df = 4		P < 0.05
Height for Age				
Stunting	6(22.2)	14(26.4)	14(70.0)	34
Normal	17(63.0)	36(67.9)	4(20.0)	57
Above Normal	4(14.8)	3(5.7)	2(10.0)	9
Total	**27(100.0)**	**53(100.0)**	**20(100.0)**	**100(100.0)**
$X^2 = 17.6102$		df = 4		P < 0.05
Weight for Height				
Wasting	4(14.86)	5(9.4)	9(45.0)	18
Normal	14(51.9)	42(79.2)	6(30.0)	62
Above Normal	9(33.3)	6(11.3)	5(25.0)	20
Total	**27(100.0)**	**53(100.0)**	**20(100.0)**	**100(100.0)**
$X^2 = 20.6554$		df = 4		P < 0.05

Result above shows that there is significant different (P<0.05) in the anthropometric index of the children and the number of children eating in a plate at a time. Although underweight, stunting and wasting (i.e. 50.0%, 70.0% and 45.0% respectively) was prevalent in the children who ate with 3 or more children. Wasting was however less among children who ate in pairs (9.4%) compared to the child who ate alone (14.8%).

DISCUSSION

Nutritional Status of The Children in The Motherless Babies Home

The nutritional status of the children have been shown by both anthropometric index (Table 4) and clinical assessment (Table 5). The result from Table 4, there was high prevalence of stunting 34(34%) among the children compared to wasting 18(18%) and underweight 18(18%). On the other hand a relatively large number of the children were overweight 19 (19%) for their age as shown by the weight for age index. The reason for having this paradox of high stunting and overweight at the same time may be due to the feeding habit practices and quality of care giving to the children. Some of the younger children ate with their older pairs and the quality of the diet may be inadequate. This may have contributed too much weight gain in some children (especially the older children) and at the same time high prevalence of stunting (among the younger children). A similar study by Onyechi et al reported a similar prevalence of stunting (36%) and wasting 19(19%), although there were much underweight children (48.8%) (12).

According to United Nations Standing Committee on Nutrition (UNSNC) Stunting results to mental impairment and about one billion children will be growing up by 2020 with impaired mental development (13). Numerous studies from developing countries show that physical stunting is closely linked to impaired mental development even after allowing for the relationship of both stunting and poor mental development with socio-economic depression (14). Stunting may be an indication of poor quality protein and especially animal protein, since plant protein is deficient in one or more of essential amino acid and thus must be complimented before it can be used to produce body protein needed for growth in children (1). Clinical Assessment of the Children (Table 5) showed various signs of micronutrient deficiencies especially those of Iron, vitamin C and Vitamin B group. This may be due to the poor feeding habit of the children as well as the inadequate nutrition knowledge by the care givers as well as low intake of adequate healthy snacks in the form of varieties of fruits and handy vegetables (like carrot, cucumber, garden egg). A study by Steve-Edemba in motherless babies homes in Abuja Nigeria revealed the 20% of the children were Vitamin deficient (15) and 60% was Zinc deficient (16).

Nutritional Anemia is another common micronutrient deficiency of public health importance. A study by International Institute of Tropical Agriculture (IITA) in Nigeria with children in 12 selected states in agro ecological zone of Nigeria showed that 20% of the children studied were iron and Vitamin A deficient. Another 8% were with sub clinical iron deficiency (17). Micronutrients are required by human body to stimulate growth, metabolism, fight infection, improve intelligence quotient and learning process especially in children (18)

Feeding Habit/Practices And Care Giving Practices Of The Care Givers

Table 8 reveals the relationship between the nutritional status and care givers practices affecting the feeding habit of the children shown by the number of children eating in a plate at a time. There was significant difference ($P<0.05$) in the anthropometric index of the children and the number of children eating in a plate at a time. Although underweight, stunting and wasting (i.e. 50%, 70% and 45% respectively) were prevalent in a child who ate with 3 or more other children, wasting was however lower in children who ate in pairs (9.4%) compared to the child who ate alone (14.8%). This may be due to the fact that some younger children ate with older ones, also some of the children even within the same age group are not fast eaters like others. These children will not be able to eat enough even when food is served to them together with other children. Also the snacking habits of the children were poor. Children within this age bracket are known to have a good snacking habit. In fact, other studies conducted on snacking habit of children has shown that a common concern (complaint) of their parent is that their children don't always eat or finish their meals yet they snack a lot (1). Children have little stomach capacity; they thus require nutritious snacks in-between meals to meet their nutritional requirement. When children don't meet their nutritional needs, malnutrition sets in and this can be shown by anthropometric indicators.

Other information on care givers practices which could have affected the nutritional status of the children include: the number of times children were bathed daily, number of children sleeping in a bed and the number of times child's tooth was brushed. From the study a significant difference ($P<0.05$) was observed in stunting and wasting among the children who brushed their tooth once, twice and those who never did (Table 6). This may be due to increased risk of infection among those children especially those that also bath just once a day. Infection has a vicious relationship with under nutrition. Infection can precipitate under nutrition and under nutrition can in turn increase, duration and severity of an infectious disease in children (18).

CONCLUSION

In conclusion, this study has revealed that the nutritional status of the infants and pre-school children in the motherless babies' homes in Imo State is generally poor. It is very clear that the care-giving and feeding practices

of the care- givers had an obvious implications for their nutritional status. This study also revealed various signs of micronutrients deficiencies which was also due to the poor feeding habit of the children as well as the inadequate nutrition knowledge by the care-givers. In this illumination there is need to improve all the multiple variables that are major determinants of the nutritional status, care-giving and feeding practices of the infants and pre-school children in the motherless babies' home. Also, the urgency for government to supervise and regulate the activities of all the motherless babies home in the state properly as well as provide subsidy for their feeding and maintenance.

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