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The Effect of Child Care Practices in Orphanage Homes on the Nutritional Status of Children in Nigeria

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Abstract

Background

The nutritional status of children is influenced by multiple interrelated factors, such as food, health, and care. Optimal childcare practices are essential for reducing child undernutrition. The orphanage accommodates children, but it is much cut off from the community and is often so poor that they put the health of children at risk. This study examined the association between childcare practices and the nutritional status of children in orphanage homes.

Methods

Twenty orphanages in Abuja, north-central Nigeria, were recruited using a multistage random sampling technique. A structured, interviewer-administered questionnaire was used to obtain information on the orphanages, study participants, and care practices. The anthropometry of the children was done.

Results

Fifteen (75.0%) orphanages were privately owned, with a staff strength of 1–10 in 70.0% of the orphanages, and most (33.3%) of the children were obtained from the social welfare. The majority (80.2%) of the caregivers had a secondary school level of education, and the most common caregiver-to-child ratio was 1:4–6 (35.0%). Most orphanages provided regular de-worming (90.0%), immunisation (100.0%), and insecticides treated net (60.0%) but rarely monitored the children's growth (15.0%). The prevalence of underweight was 21.7%, stunting 18.4%, and wasting 12.5%. There was no statistically significant association between the facility features, health intervention practices and the children's nutritional status.

Conclusion

The prevalence of undernutrition among children in the orphanages is of public health significance. There is a need for the Government and stakeholders to ensure adequate support and monitoring of the children in orphanages.

INTRODUCTION

Child care is a complex set of behaviours that range from child feeding practices to responses that promote a safe and healthy environment for the child and provide adequate health care, to psychosocial interactions and emotional support [1]. Child care practices refer to the behaviours and practices of caregivers to provide the food, health care, stimulation, and emotional support necessary for children's healthy survival, growth, and development [2]. The foundational UNICEF framework for child health emphasizes that dietary practices, childcare and a healthy environment are underlying determinants of a child's nutrition status [3]. The conditions, including the unavailability of safe and nutritious foods and access to safe water, which increase the risk of malnutrition and infectious disease, may be worse in orphanages that lack adequate resources to provide adequate childcare practices [2].

Nigeria has one of the highest burdens of orphans and vulnerable children in the world, with a prevalence of 17.5 million [4]. In Sub-Saharan Africa, there are about 60 million orphans [4]. An orphan is a child (0–17 years) who has lost one or both parents [4]. Orphanages care for orphans as well as other children who are abandoned but whose parents may be alive. The size, organisation, and activities carried out within these institutions can vary widely. In the most closed and isolated institutions, the child's entire life – education, health services, work, leisure, and sleep take place there. Sadly, the institution is very much cut off from the rest of the community because most children in the orphanage have disability, family disintegration, violence in the home, lack of social support systems, and poor social and economic conditions, including poverty. Moreover, the conditions in many orphanages are often so poor that they put the health and lives of children at risk [5].

A study by DeLacey et al [6] showed that children living within institutionalised care were commonly malnourished, with undernutrition affecting young children. The children experience falls in food intake, reduced access to health care, they live in deplorable conditions and are exposed to neglect, exploitation, abuse, and are deprived of basic human rights and needs [7]. A study in Ethiopia reported a prevalence of 9.9%, 27.8% and 45.7% for wasting, underweight and stunting, respectively, among under-5 children in an orphanage home [8]. In Imo State, southeast Nigeria, a prevalence of 18.0%, 18.0% and 34.0% for wasting, underweight, and stunting, respectively, was obtained for under-5 children from two orphanage homes [9]. A study in Kebbi State, northwest Nigeria, the prevalence of wasting, underweight and stunting in under-five children in an orphanage home was 30.0%, 40.0% and 60.0%, respectively [10]. The poor nutritional status in the orphanage homes has the potential to place an enormous burden on the healthcare system and reducing the effective workforce in the nation; hence, the need to evaluate the childcare practices and nutritional status of children aged 6 to 59 months living in orphanage homes in the north-central region of Nigeria. Likewise, there is a need for effective policies to ameliorate under nutrition and poor child care practices in orphanage homes, but objective data are not available, thus posing a policy and research problem. This study determined the association between childcare practices and the nutritional status of children aged 6 to 59 months in orphanage homes. The findings from this study will aid in improving the childcare practices in orphanages, with resultant improvement in the health and nutritional status of the institutionalised children.

METHODOLOGY

Study area

The study was done in the Federal Capital Territory (FCT), Abuja, the capital of Nigeria. The FCT has six area councils- Abuja Municipal Area Council (AMAC), Abaji, Bwari, Gwagwalada, Kuje and Kwali area councils with a population of 1,406,239 in the 2006 census.69 The main indigenous tribes are the Gwaris and others such as Yorubas, Igbos, Hausas, Fulanis, Koros and Gede who are mainly farmers, traders, and artisans. Twenty orphanages were recruited into the study, of which eight are from the Abuja municipal area council, four from Bwari area council, four from Gwagwalada area council, two from Kwali area council and two from Kuje area council.

Study design

This is a cross-sectional, descriptive study to investigate the childcare practices and nutritional status of children aged 6–59 months in selected orphanages in Abuja.

Study population

Participants were children aged 6–59 months residing in the selected orphanage homes in the FCT, Abuja, at the time of the study. Children with severe physical disabilities that pose difficulty during anthropometric measurement and whose caregivers did not give consent were excluded from the study.

Sample size estimation

The sample size was calculated using the formula

n = z2pq/ d2

Using a previous study by the National Nutrition and Health Survey [11] on the prevalence of Global acute malnutrition among under-fives in Nigeria.

n = [1.96]2 [0.07] [0.93] / (0.052)

n = 100.0353

Attrition of 20% =100.0353 + 20.0071 = 120.0424

Therefore, the minimum sample size was 120.

Sampling method

The multistage cluster sampling technique was used to recruit the participants. The list of orphanages in Abuja was obtained from the heads of social welfare departments in the area councils. Orphanages that gave consent for the study and had children within the study age group were selected through a simple random sampling technique from each area council. The orphanages were 20 in AMAC, 9 in Gwagwalada, 4 in Kwali, 4 in Kuje, and 8 in Bwari, totalling 45. There was no orphanage home in the Abaji Area Council.

AMAC – 20/45 = 0.45 (45%)

Gwagwalada – 9/45 = 0.2 (20%)

Kwali – 4/45 = 0.09 (9%)

Kuje – 4/45 = 0.09 (9%)

Bwari – 8/45 = 0.18 (18%)

The percentages were used to select the approximate number of orphanages recruited from each area council. Of the 20 orphanages recruited into the study, 8 were from AMAC, 4 from Gwagwalada, 2 from Kwali, 2 from Kuje and 4 from Bwari. The total number of children aged 6 and 59 months in the 20 selected orphanages was 360. Out of these, 118 were in AMAC, 75 in Gwagwalada, 60 in Kwali, 47 in Kuje and 60 in Bwari area councils. This was broken down to obtain the number of children to be selected from each area council.

AMAC – 118/360 = 32.8% (32.8% of 120 is approximately 40 children)

Gwagwalada – 75/360 = 20.8% (20.8% of 120 is approximately 25 children)

Kwali – 60/360 = 16.7% (16.7% of 120 is approximately 20 children)

Kuje- 47/360 = 13.1% (13.1% of 120 children is approximately 15 children)

Bwari – 60/360 = 16.7% (16.7% of 120 children is approximately 20 children)

Children aged between 6 and 59 months were further selected from the orphanages using a simple random sampling technique to meet the calculated sample size shown.

Study procedure: A structured interviewer - administered questionnaire was used to collect information from the designated orphanage personnel who was either the proprietor or chief administrative officer. The questionnaire had four sections: The first section included age of proprietor/ proprietress; ownership;

number of children in the orphanage and sources of obtaining them; sources of funding; the caregiver to child ratio; sanitary facility; sources of water and electricity; access to healthcare; recreational facilities, etc. The second section included the age of the orphans, obtained from their birth certificates or from the orphanage register, and anthropometric data. The third section was on child feeding practices and the fourth section on health intervention practices in the orphanage, including immunisation, deworming, use of insecticide-treated nets, vitamin A supplementation and growth monitoring.

Dietary assessment

A food frequency questionnaire was used to collect data on dietary diversity and frequency, which grouped foods as recommended by WHO into grains, roots and tubers; legumes and nuts; dairy; meat or fish (flesh foods); eggs; vitamin A-rich fruits and vegetables and other fruits and vegetables [12]. The information provided also gave an account of the frequency of consumption of the food groups.

Anthropometry

Weight and Length/Height determination

The weight of the child was measured using a digital bassinet weighing scale in infants and a standing weighing scale coupled with the digital stadiometer (SecaTM gmbh and co.kg made in Germany, with a sensitivity of 0.1kg) in children who could stand without support. The weight of the child was measured and recorded with minimal or no clothing. To take a weight measurement, the instrument was inspected and set at the zero mark before taking the reading, and the scale was standardised using known standard weights. The value was displayed on the scale.

The measurement of length in children less than 2 years was taken in a recumbent position using an infantometer (seca 417). The child was placed flat on the horizontal board, with footwear removed. The head was placed against the fixed headboard, and the footboard adjusted so that it is against the base of the feet. The measurement was recorded to the nearest 1cm. For children who are able to stand, height measurement was taken using a stadiometer (Seca 213). While on bare feet, they were made to stand straight, arms hanging loosely to the side, feet loosely and with heels, buttocks and shoulder blades in contact with the vertical surface of the stadiometer and measurements were taken to the nearest 0.1cm

The values were plotted on the WHO child growth standards chart and interpreted thus [13]:

Weight/age z-score < -2 to -3 was classified as underweight.

Weight/age z score < -3 was classified as severely underweight.

Length or Height/age z-score < -2 to -3 was classified as stunted.

Length or Height/age z-score < -3 was classified as severely stunted.

Weight for length/height or BMI z-score < -2 to -3 was classified as wasted.

Weight for length/height or BMI z-score < -3 was classified as severely wasted.

Weight for length/height or BMI z-score was classified as possible risk of overweight, overweight or obese.

Data analysis

Data was analysed using the Statistical Package for Social Sciences (SPSS) version 24.0 for Windows. Categorical data were presented as frequencies and percentages, while continuous data were presented as means and standard deviations. The z scores were generated using the WHO anthropometric calculator, version 3.2.2. For categorical data, comparison of proportions was tested using Chi-square or Fisher's Exact tests as appropriate. Variables that showed significant association with bivariate analysis were subjected to Multivariate Logistic Regression analysis to control for confounders and identify significant predictors of malnutrition. A confidence interval of 95% was used, while a p-value of < 0.05 was considered statistically significant.

RESULTS

One hundred and twenty orphanages were recruited for this study. Table 1 shows the orphanage characteristics and administrative strength. Concerning the ownership of the orphanage homes in the FCT, Abuja, 15 (75.0%) of the orphanages were privately owned and 1 (5.0%) by a faith-based organization. Children in the orphanage homes were majorly (33.3%) obtained from the social welfare alone followed by surviving parents (23.3%), while the least source was 6 (3.3%) from the streets, bus, stream. Fourteen (70%) of the orphanages had 1–10 staffs, while 1 (5.0%) had more than 20 staffs. Of the staff strength, 120 (62.8%) were caregivers, 20 (10.5%) administrative staff, 2 (1.0%) supervisors and 2 (1.0%) teachers.

Table 1
Orphanage characteristics and administrative strength

Variables	Frequency	Percentage (%)
Ownership of the orphanage	n = 20	
Private	15	75.0
NGO	4	20.0
Faith based organisation	1	5.0
Sources of obtaining children*		
Police alone	18	10.0
Social welfare alone	60	33.3
Police & Social welfare	30	16.7
Surviving parent	42	23.3
Streets, dust bins, bush, stream	6	3.3
Relatives and outreaches	24	13.4
Staff strength of the orphanage	n = 20	
1–10	14	70.0
11–20	5	25.0
> 20	1	5.0
Position of staff*		
Caregivers	120	62.8
Security	18	9.4
Administrative staff	20	10.5
Cook	11	5.8
Health worker	4	2.1
Driver	4	2.1
Cleaner	10	5.2
Supervisor	2	1
Teacher	2	1

*Multiple response; NGO-Non-Governmental Organization

The caregiver characteristics of the orphanages is shown in Table 2. Concerning the age group of the caregivers, 59 (49.2%) fell within the age range 20–29 years, while 16 (13.3%) were between 40–50 years of age. Ninety-seven (80.2%) of the caregivers had secondary level of education. The caregiver to child ratio of 1: 4–6 account for the highest proportion (35.0%), while ratio 1:2–3 was the least (15.0%).

Table 2
Caregiver characteristics of the Orphanage Homes

Variables	Frequency	Percentage
Caregiver's age group(years)		
< 20	25	20.8
20–29	59	49.2
30–39	20	16.7
40–50	16	13.3
Caregiver's level of education		
Primary	10	9.0
Secondary	97	80.2
Tertiary	13	10.8
Caregiver to child ratio		
1:2–3	18	15.0
1:4–6	42	35.0
1:7–10	24	20.0
1:>10	36	30.0

The sources of funding, social amenities and medical care are as shown on Table 3. Concerning the sources of funding, 114 (54.3%) were from individual philanthropists, while 18 (8.6%) were from self-sponsorship by the proprietors. Borehole water alone constituted 72 (60.0%) of the sources of water supply. Water system was the major 114 (95.0%) sanitary facilities in the orphanages. Abuja Electricity Distribution Company (AEDC) with generator (75.0%) was main source of electricity. First aid care was available in 96 (80.0%) of the orphanage and 102 (85.0%) had functional health facility nearby. Recreational facilities were available in 102 (85.0%) of the orphanage and television was also available in 114 (95.0%).

Table 3
Funding, Social Amenities and Medical Care of the Orphanage Homes

Variables	Frequency (n = 120)	Percentage
Sources of funding*		
Self-sponsorship	18	8.6
Donations by private organizations	42	20.0
Donations by individual philanthropists	114	54.3
Mixed sources	36	17.1
Sources of water supply		
Pipe borne water alone	30	25.0
Borehole water alone	72	60.0
Well water	6	5.0
Pipe borne/ well water	6	5.0
Pipe borne water/Borehole	6	5.0
Sanitary facility		
Water system	114	95.0
Pit latrine	6	5.0
Sources of electricity		
AEDC	24	20.0
AEDC/Generator	90	75.0
AEDC/Generator/Solar Inverter	6	5.0
Access to health care		
First aid		
Yes	96	80.0
No	24	20.0
Availability of nearby functional health facility		
Yes	102	85.0
No	18	15.0
Recreational facilities		
Playground/ Games		
Yes	102	85.0
No	18	15.0
Television		
Yes	114	95.0
No	6	5.0

*Multiple response; AEDC- Abuja Electricity Distribution Company.

The anthropometry of the children in the orphanage is as displayed in Table 4. Ninety-four (78.3%) had normal weight for age and 8 (6.7%) were severely underweight. Fourteen (11.7%) were severely stunted and the majority (81.6%) had norma height for age. Regarding weight for height, 99 (82.5%) had normal range, while 5 (4.2%) had severe wasting and only 1 (0.8%) were overweight.

Table 4
The anthropometry of the children in the orphanages

Variables	Frequency(N = 120)	Percentage
Weight for age		
Underweight	18	15.0
Severe underweight	8	6.7
Normal	94	78.3
Height for age		
Stunting	8	6.7
Severe stunting	14	11.7
Normal	98	81.6
Weight for height		
Wasted	10	8.3
Severe wasting	5	4.2
Normal	99	82.5
Risk of overweight	5	4.2
Overweight	1	0.8

Table 5 shows the health intervention practices that were carried out in the orphanages. Of the 120 children, 102 (85.0%) of the children did not undergo growth monitoring but, 97 (80.8%) received Vitamin A supplementation and 108 (90.0%) had regular de-worming. All (100.0%) were immunized and 72 (60.0%) of the children slept under an insecticide treated net.

Table 5
Health Intervention Practices among the children in the Orphanage

Variables	Frequency(N = 120)	Percentage(%)
Growth Monitoring		
Yes	18	15.0
No	102	85.0
Vitamin A supplementation		
Yes	97	80.8
No	23	19.2
Regular de-worming		
Yes	108	90.0
No	12	10.0
Up to date immunisations		
Yes	120	100.0
No	0	0.0
Use of Insecticide treated net		
Yes	72	60.0
No	48	40.0

The relationship between the caregiver characteristics and the anthropometry of the children in the orphanage is shown in Table 6. Almost half (42.6%) of those with normal weight for age had caregiver aged 20-29years but there was no statistically significant difference ($p = 0.064$). There was also no statistically significant difference between the caregivers age and height for age ($p = 0.859$), and weight for height ($p = 0.235$). The caregivers' level of education had no statistically significant relationship with weight for age ($p = 0.511$), height for age ($p = 0.953$), and weight for height ($p = 0.106$). Similarly, the caregiver-staff ratio had no statistically significant relationship with weight for age ($p = 0.809$), height for age ($p = 0.486$), and weight for height ($p = 0.476$).

Table 6
The relationship between the caregiver characteristics and the anthropometry of the children in the orphanage

Variables	Weight for age		p-value	Height for age		p-value	Weight for height				p-value
	Normal n = 94 n(%)	Underweight n = 26 n(%)		Normal n = 98 n(%)	Stunting n = 22 n(%)		Wasted n = 15 n(%)	Normal n = 99 n(%)	Risk of overweight n = 5 n(%)	Overweight n = 1 n(%)	
Caregiver's age (years)											
< 20	22(23.4)	3(11.5)	0.064	21(21.4)	4(18.2)	0.859	1(6.7)	22(22.2)	1(20.0)	1(100.0)	0.235
20–29	40(42.6)	19(73.1)		49(50.0)	10(45.5)		12(80.0)	44(44.4)	3(60.0)	0(0.0)	
30–39	18(19.1)	2(7.7)		15(15.3)	5(22.7)		1(6.7)	19(19.3)	0(0.0)	0(0.0)	
> 40	14(14.9)	2(7.7)		13(13.3)	3(13.6)		1(6.7)	14(14.1)	1(20.0)	0(0.0)	
Caregiver's education											
Primary	9(9.6)	1(3.8)	0.511	8(8.2)	2(9.1)	0.953	0(0.0)	9(9.1)	0(0.0)	1(100.0)	0.106
Secondary	74(78.7)	23(88.5)		79(80.6)	18(81.8)		15(100.0)	78(78.8)	4(80.0)	0(0.0)	
Tertiary	11(11.7)	2(7.7)		11(11.2)	2(9.1)		0(0.0)	12(12.1)	1(20.0)	0(0.0)	
Caregiver-staff ratio											
1:2–3	14(14.9)	4(15.4)	0.809	13(13.3)	5(22.7)	0.486	1(6.7)	16(16.2)	1(20.0)	0(0.0)	0.476
1:4–6	31(33.0)	11(42.3)		34(34.7)	8(36.4)		7(46.7)	35(35.3)	0(0.0)	0(0.0)	
1:7–10	20(21.2)	4(15.4)		19(19.4)	5(22.7)		3(20.0)	18(18.2)	2(40.0)	1(100.0)	
1:>10	29(30.9)	7(26.9)		32(32.7)	4(18.2)		4(26.7)	30(30.3)	2(40.0)	0(0.0)	

The relationship between the facilities and the anthropometry of the children in the orphanage is shown in Table 7. The majority (95.7%) of those with normal weight for age uses water system sewage waste disposal but there was no statistically significant difference (p = 0.609). There was also no statistically significant difference between the sewage disposal facility and height for age (p = 0.303), and weight for height (p = 0.440). The availability of first aid had no statistically significant relationship with weight for age (p = 0.405), height for age (p = 0.813), and weight for height (p = 0.589). Similarly, the availability of functional health facility had no statistically significant relationship with weight for age (p = 0.951), height for age (p = 0.741), and weight for height (p = 0.181). Also, the recreational facilities, sources of water supply, and sources of electricity had no statistically significant relationship with the children anthropometries.

Table 7
The relationship between the facilities and the anthropometry of the children in the orphanage

Variables	Weight for age		p-value	Height for age		p-value	Weight for height				p-value
	Normal	Underweight		Normal	Stunting		Wasted	Normal	Risk of overweight	Overweight	
	n = 94	n = 26		n = 98	n = 22		n = 15	n = 99	n = 5	n = 1	
	n(%)	n(%)		n(%)	n(%)		n(%)	n(%)	n(%)	n(%)	
Sewage disposal facility											
Water system	90(95.7)	24(92.3)	0.609[f]	94(95.9)	20(90.9)	0.303[f]	13(86.7)	95(96.0)	5(100.0)	1(100.0)	0.440[f]
Pit latrine	4(4.3)	2(7.7)		4(4.1)	2(9.1)		2(13.3)	4(4.0)	0(0.0)	0(0.0)	
First aid											
Yes	77(81.9)	19(73.1)	0.405	78(79.6)	18(81.8)	0.813[f]	11(73.3)	79(79.8)	5(100.0)	1(100.0)	0.589
No	17(18.1)	7(26.9)		20(20.4)	4(18.2)		4(26.7)	20(20.2)	0(0.0)	0(0.0)	
Functional health facility											
Yes	80(85.1)	22(84.6)	0.951[f]	84(85.7)	18(81.8)	0.741[f]	11(73.3)	87(87.9)	3(60.0)	1(100.0)	0.181
No	14(14.9)	4(15.4)		14(14.3)	4(18.2)		4(26.7)	12(12.1)	2(40.0)	0(0.0)	
Recreational facilities											
Yes	79(84.0)	23(88.5)	0.760[f]	84(85.7)	18(81.8)	0.741[f]	12(80.0)	86(86.9)	3(60.0)	1(100.0)	0.363
No	15(16.0)	3(11.5)		14(14.3)	4(18.2)		3(20.0)	13(13.1)	2(40.0)	0(0.0)	
Sources of water supply											
Pipe borne water	23(24.5)	7(26.9)	0.297	25(25.5)	5(22.7)	0.245	3(20.0)	26(26.3)	1(20.0)	0(0.0)	0.852
Borehole	60(63.7)	12(46.2)		61(62.2)	11(50.1)		7(46.7)	60(60.6)	4(80.0)	1(100.0)	
Well/Buy water	4(4.3)	2(7.7)		4(4.1)	2(9.1)		2(13.3)	4(4.0)	0(0.0)	0(0.0)	
Pipe borne/well	3(3.2)	3(11.5)		3(3.1)	3(13.6)		1(6.7)	5(5.1)	0(0.0)	0(0.0)	
Pipe borne water/Borehole	4(4.3)	2(7.7)		5(5.1)	1(4.5)		2(13.3)	4(4.0)	0(0.0)	0(0.0)	
Sources of electricity											
AEDC	18(19.2)	6(23.1)	0.877	18(18.3)	6(27.3)	0.354	5(33.3)	17(17.2)	2(40.0)	0(0.0)	0.310
Generator	5(5.3)	1(3.8)		4(4.1)	2(9.1)		0(0.0)	5(5.1)	1(20.0)	0(0.0)	
AEDC/Generator	71(75.5)	19(73.1)		76(77.6)	14(63.6)		10(66.7)	77(77.8)	2(40.0)	1(100.0)	

AEDC- Abuja Electricity Distribution Company.

The majority (84.0%) of those with normal weight for age did not have their growth monitored but there was no statistically significant difference (p = 0.760). There was also no statistically significant difference between the growth monitoring and height for age (p = 0.843), and weight for height (p = 0.958). The Vitamin A supplementation also had no statistically significant relationship with weight for age (p = 0.399), height for age (p = 0.563), and weight for height (p = 0.888). Similarly, the De-worming of the children had no statistically significant relationship with weight for age (p = 0.289), height for age (p = 0.157), and weight for height (p = 0.489). Also, the immunization to date and sleeping under the insecticides treated net had no statistically significant relationship with the children anthropometries. The relationship between the health intervention practices in the orphanage and the anthropometry of the children is shown in Table 8.

Table 8
The relationship between the health intervention practices in the orphanage and the anthropometry of the children

Variables	Weight for age		p-value	Height for age		p-value	Weight for height				p-valu
	Normal	Underweight		Normal	Stunting		Wasted	Normal	Risk of overweight	Overweight	
	n = 94	n = 26		n = 98	n = 22		n = 15	n = 99	n = 5	n = 1	
	n(%)	n(%)		n(%)	n(%)		n(%)	n(%)	n(%)	n(%)	
Growth Monitoring											
Yes	15(16.0)	3(11.5)	0.760[f]	15(15.3)	3(13.6)	0.843[f]	2(13.3)	15(15.2)	1(20.0)	0(0.0)	0.95
No	79(84.0)	23(88.5)		83(84.7)	19(8.6)		13(86.7)	84(84.8)	4(80.0)	1(100.0)	
Vitamin A supplementation											
Yes	74(78.7)	23(88.5)	0.399[f]	78(79.6)	19(86.4)	0.563[f]	13(86.7)	79(79.8)	4(80.0)	1(100.0)	0.88
No	20(21.3)	3(11.5)		20(20.4)	3(13.6)		2(13.3)	20(20.2)	1(20.0)	0(0.0)	
De-Worming											
Yes	86(91.5)	22(84.6)	0.289[f]	90(91.8)	18(81.8)	0.157[f]	12(80.0)	90(90.9)	5(100.0)	1(100.0)	0.48
No	8(8.5)	4(15.4)		8(8.2)	4(18.2)		3(20.0)	9(9.1)	0(0.0)	0(0.0)	
Child receive his/her immunization to date											
Yes	94(100.0)	26(100.0)	1.000[f]	98(100.0)	22(100.0)	1.000	15(100.0)	99(100.0)	5(100.0)	1(100.0)	1.00
No	0(0.0)	0(0.0)		0(0.0)	0(0.0)		0(0.0)	0(0.0)	0(0.0)	0(0.0)	
Children sleeping under Insecticides Treated Net (ITN)											
Yes	58(61.7)	14(53.8)	0.469	60(61.2)	12(54.5)	0.563	6(40.0)	61(61.6)	5(100.0)	0(0.0)	0.05
No	36(38.3)	12(46.2)		38(38.8)	10(45.5)		9(60.0)	38(38.4)	0(0.0)	1(100.0)	

DISCUSSION

The present study determined the association between childcare practices and the nutritional status of children aged 6 to 59 months in orphanage homes. Eighty percent of the caregivers had at least a secondary level of education, which is important as education is intrinsically linked with, and considered a strong determinant of health, life expectancy and morbidity [14]. In our study, the caregiver-to-child ratio of 1:4–6 was in keeping with findings from other studies, such as in Nigeria, where the ratio was 1:5 and in Kenya, 1:4–6 was the predominant ratio [15,16]. The previous study in Nigeria had a similar caregiver-to-child ratio due to the same geographical area. While 35.0% of orphanages in our study had a caregiver-to-child ratio of 1:4–6, 65.5% had a similar caregiver-to-child ratio in Kenya [16].

In our study, the orphanages were mostly funded by individual philanthropists and private organizations with no government subsidies to aid the running of the orphanages, which may worsen the condition of the orphanages in the face of the prevailing economic hardship. The United Nation guideline for alternative care states that financial and material poverty, or conditions directly and uniquely imputable to such poverty, should never be the only justification for the removal of a child from parental care, for receiving a child into alternative care, or for preventing his/her reintegration, but should be seen as a signal for the need to provide appropriate support to the family [17]. Unfortunately, poverty remains a promoter causing the transfer of children to orphanage homes, as some children were taken to these homes by relatives who were unable to cater for them following the demise of their biological parents.

The recorded percentages for immunisation and deworming in our study were higher than those recorded in a study in Nigeria [15], but similar to vitamin A supplementation in the same study [15]. Growth monitoring allows for early detection of malnutrition; thus, lack of regular growth monitoring could contribute to increased prevalence of malnutrition. Increased awareness and availability of nearby health facilities which offered free immunisation services, was likely to be responsible for all the children being fully vaccinated. In this present study, 60.0% of children sleep under an insecticide treated net. This was similar to the findings of the national demographic health survey (NDHS) but lower than a previous study in Nigeria [11,15]. It is likely that there was more availability of insecticide treated nets due to the free distribution as part of the malaria control strategies.

The number of participants with wasting, underweight and stunting was 12.5%, 21.7% and 18.4%, respectively, in the present study. This was similar to the studies in Nigeria and Ethiopia [11,18]. This may be because Nigeria and Ethiopia are both African countries with a high number of orphaned children. In our

study, there was no significant association between the orphanage characteristics/administrative features and the anthropometries of the children. This was similar to another study in Nigeria, with no association reported between the orphanage homes and the anthropometries of the children. The study and our study were conducted in the same geopolitical zone, Abuja, in Nigeria. Hence, it could be a reflection of the orphanage homes in the location. Similarly, it could be that the monitoring of the orphanage homes in the location by the regulatory bodies was efficient and ensured an adequate standard of operations.

The limitation of this study is the reporting bias of the respondents, as well as withholding some information by the proprietors/proprietress.

In conclusion, there is a need for further studies on institutionalised children in Nigeria and an urgent need for the Government and other stakeholders to ensure adequate support and monitoring of children in orphanage homes. The Government and stakeholders should strengthen the policy framework to support children in orphanages in areas of nutrition, health care, welfare and education. Furthermore, the public-private partnership in the operation of orphanages should be encouraged.

Declarations

Ethical approval and consent to participate:

The study was approved by the Health Research and Ethics Committee (HREC) of the University of Abuja Teaching Hospital, Nigeria with the number UATH/HREC/PR/2021/005/013. The written informed consent was obtained from the proprietor or chief administrative officer following the provision of a detailed explanation of the study as well as assurance of the freedom to participate without any threat of sanction or unfavourable treatment. The data collection instrument had no personal identification information. All participants were identified using only serial numbers. Data was secured by password-protecting the research-related data. The study adhered to the Declaration of Helsinki.

Consent for publication:

The consent for publication has been obtained.

Availability of data and materials:

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interest

The authors declare that they have no competing interests.

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Authors' contribution:

VNO, AAO, APF: Concept and design of the study, acquisition of data, analysis of data, interpretation of data, drafting the article, and final approval of the version to be published.

ITA, AJK: Concept and design of the study, interpretation of data, drafting the article, revising it critically for important intellectual content, and final approval of the version to be published.

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