



**Research Article**

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# Analysis of the Behavioral and Physiological Impacts of Basic Nutrition Among Children in an Orphanage Home in Enugu State, Nigeria



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## Abstract

**Objectives:** This study aimed to analyze the awareness of nutrition among orphanage children in Enugu State, Nigeria, evaluate the factors influencing their nutritional status, and assess both the behavioral and physiological impacts of basic nutrition on these children.

**Methods:** Cross-sectional, quantitative study was conducted at Father Monti Home for Orphans and Needy Children in Enugu North Local Government Area. A total of 19 orphaned children above the age of 8 were randomly selected, with an effective sample size of 20 after accounting for attrition. Data were collected using a structured questionnaire covering sociodemographics, nutritional awareness, influencing factors, and perceived behavioral and physiological impacts. Descriptive statistical analysis was carried out using SPSS version 23.

**Results:** The majority of participants (73.7%) were aged 8–13 years, and 72.2% were male. All were single orphans and actively schooling. Nutritional awareness was high, with 88.9% recognizing nutrition as essential for body function and 84.2% feeling they received adequate nutrients, though the same percentage expressed a need for more nutrient-rich meals. Key factors influencing nutrition included overcrowding and caregiver education, with 72.2% agreeing that overcrowding reduced food supply, and 83.4% linking better nutrition outcomes to caregiver education. While behavioral effects such as sadness or perceived inferiority were minimal, 52.9% reported sleep disruption due to hunger. Physiologically, 33.3% experienced vomiting or diarrhea after meals, and 68.4% felt their peers were taller than them, suggesting possible growth delays.

**Discussion:** The study reveals that while behavioral impacts of poor nutrition are less prominent among orphans, physiological effects such as stunted growth and gastrointestinal disturbances are more prevalent. Nutritional awareness is relatively high, but underlying challenges persist, particularly related to caregiver literacy, sanitation, and food quality. These findings emphasize the need for enhanced caregiver training, government support, and regular health monitoring by professionals to improve the wellbeing of children in orphanages.

**Keywords:** Malnutrition; Orphanage Children; Stunted Growth; Nutritional Status; Behavioral Impacts; Physiological Impacts; Caregiver Education; Protein Intake; Child Development

## Introduction

Orphans are children with one or both parents deceased, and in need of care and protection [1]. These group of children are divided into maternal orphans: those who have lost their mothers; paternal orphans: those who have lost their fathers; and double orphans: those that have lost both parents [2]. According to The United Nations Children's Fund, an estimated 153 million children are orphans worldwide, and 63 million children suffer from malnutrition [3]. "Nutrition is the sum total of the processes

involved in the taking in and the utilization of food substances by which growth, repair and maintenance of the body is accomplished" [4]. Nutritional status is the condition of the human body as an outcome of the foods consumed and their utilization by the body; it can be seen as good quality, moderate and deprived [5]. Nutrition affects the brain by influencing our mental abilities, cognitive performance, concentration, memory and vigilance. Therefore, poor nutrition causes a decline in mental health due to

dysfunction in the production of the neurotransmitters needed for proper brain function [6].

### **Factors Influencing Orphanage Nutrition**

Teklemariam et al. showed in their paper that the major contributing factors for malnutrition were family size, age of children, education status of caregivers, main source of income and number of orphans and vulnerable children. 95% of their respondents showed that the education of the guardians overseeing the children influences the level of malnutrition. It also showed that the prevalence of diarrheal disease increased due to poor hygiene and sanitation in 48.3% respondents who had had no access to a toilet [7]. Another study revealed that out of 1576 respondents in Anambra and 1594 respondents in Imo Stats, only 69.5% and 59.4% respectively can afford two square meals a day. It further showed that just 17.4% of Anambra respondents and 26.8% Imo respondents take protein meals twice weekly, for which can contribute largely to the stunting and wasting observed in these children [8]. Most orphanage children in the study published by Abhishek S and Sayeed U. were happy to be in the orphanage home because they had access to food, clothing, shelter, health, and educational facilities [9]. Malnutrition causes a wide range of growth disorders like stunting, underweight, overweight and obesity. Out of 160 respondents in a study undertaken by Shiva RA et al., 80% of the respondents were malnourished with 55.1% presenting with stunted growth, 13.8% were underweight and 6.9% were overweight [10]. Izuka MO et al. showed in their study that wasting was much more common in community's children when compared with those in orphanage homes (14.4% vs 5.6%) [11]. Malnutrition in early childhood causes a disruption in behavior as evidenced by the study carried out by Janina RG et al. where they showed that children between ages 5-11 years will have continuity of disruptive behaviors like aggression, school problems and attention deficit growing up [12]. The capacity of caregivers in an orphanage has a great influence on the outcome of the children under their care [13], so it is important new programs are established to support their training and professional growth to enhance the developmental wellbeing of the children under them [14]. Irrespective of the involvement of some government agencies, the conditions in orphanage homes are still poor [15]. Studies have shown that NGOs in Zimbabwe went as far as building nutritional gardens for food security and establishing psychosocial support programs for orphans faced with various issues [16]. It has however become a national burden for such NGOs to collaborate with the government and social workers who are seen as positive agents of change [17] in putting efforts together to create awareness on the importance of caregiving in orphanages [18]. It is also the primary role of the professional social worker to to screen, sensitize, counsel, network and bring changes for achieving a healthy nation [19].

The aim of this study is to methodically:

- 1) Analyze the awareness of nutrition amongst orphanage children.

- 2) Evaluate the factors influencing orphanage nutrition.
- 3) Assess the perception of the behavioral impacts of basic nutrition among children in orphanage homes.
- 4) Assess the perception of the physiological impacts of basic nutrition among children in orphanage homes.

### **Method**

The study was carried out in Enugu North Local Government Area of Enugu State, Nigeria. The people in this area are predominantly traders, students at tertiary institutions, and civil servants, though some are self-employed. The population comprised all orphan children above 8 years of age living in Father Monti Home for Orphans and Needy Children in Enugu State, Nigeria. The study populations were randomly selected, and a cross-sectional study design was adopted for the study. The sample size for this study was determined using the Cochrane formula, assuming a confidence limit of 95% and a 9% margin of error.

$$N = Z^2 D^2 / E^2$$

Where

N= sample size

Z= confidence limit (1.96)

D= standard deviation (20)

E= error rate (9)

$$N = (1.96)^2 (20)^2 / 9^2$$

$$N = (3.84) (400) / 81$$

$$N = 1536 / 81$$

$$N = 19$$

The sample size for this study is 19.

Effective sample size= sample size + attrition (10% of sample size)

$$\text{I.e. } 10(19) / 100 = 1.9$$

$$\text{Effective sample size} = 19 + 1.9 = 20$$

### **Study Design**

A home-based cross-sectional study using a quantitative method was done. The population was from orphan children above 8 years of age living in Father Monti home for orphans and needy children in Enugu State, Nigeria. The study populations were randomly selected.

### **Data Analysis**

Data analysis was done using the software statistical package for social science (SPSS) version 23. The data was subjected to descriptive analysis in the form of frequencies, percentages, cross-

tabulations, mean and standard deviation.

### **Ethical Consideration**

Ethical clearance was obtained from the College of Medicine Research Ethics Committee (COMREC) for ethical approval. A written informed consent was obtained from the respondents, and they were assured of their confidentiality and were made to understand that they were free to withdraw at any point during the study without any consequences. The participants were also assured of anonymity during and after the study, non-disclosure of personal information and hence respect for their privacy.

### **Patient and Public Involvement**

The study comprises orphan children above 8 years of age randomly selected and a cross-sectional study design was adopted for the study. The sample size for this study was determined using the Cochrane formula, assuming a confidence limit of 95% and a 9% margin of error. A questionnaire captioned "ANALYSIS OF THE BEHAVIORAL AND PHYSIOLOGICAL IMPACTS OF BASIC NUTRITION AMONG CHILDREN IN AN ORPHANAGE HOME IN ENUGU STATE, NIGERIA" was developed for the study. It consisted of 28 items organized into 5 sections. Participants were required to fill all parts with the aid of the authors. Section 1 sought to collect sociodemographic data of the respondents such as age, gender, orphanage and academic statuses, and number of children in a room. Section 2 assessed the nutritional awareness of orphanage children, section 3 obtained data on the factors influencing the nutritional status of orphans, while sections 4 and

5 assessed the behavioral and physiological impacts of nutrition on orphanage children. Data analysis was done using the software statistical package for social science (SPSS) version 23. The data was subjected to descriptive analysis in the form of frequencies, percentages, cross-tabulations, mean and standard deviation.

### **Result**

(Table 1) Majority of the participants (73.7%) fell in the 8-13 years age group and most were males (72.2%). All participants (100%) were single orphans and currently attending school. The level of education noted among most participants was primary (63.2%). The number of occupants in a room ranged from two to six. Majority of the participants were 3 or more in a room (72.2%) (Table 2). Majority of the participants agreed that nutrition is a requirement for normal body function and that they get enough nutrients from their food. (88.9% and 84.2%) respectively. Majority of the participants eat more than two times a day (94.7%). Majority of the participants (84.2%) admitted that they need more nutrients in their food. All the participants (100%) agreed that there is protein (meat/egg/fish) in their meal (Table 3). A total of 'five' four Likert scale questions were used to assess the factors influencing orphanage nutrition. The Strongly agree and agree responses were merged, the disagree and strongly disagree responses were also merged. Majority of the participants (72.2%) agreed that an increased number of children in the orphanage's home reduces the food supply. Most of the participants (83.4%) accepted that basic nutrition will be better observed if the caregivers are well educated (Table 4a, Table 4b).

**Table 1:** Sociodemographic Information.

Variable	Frequency	Percentage
Age		
Aug-13	14	73.7
14-19	5	26.3
	Mean=11.58	SD=3.271
Sex		
Male	13	72.2
Female	5	27.8
Total	18	100
Orphanage Status		
Single	19	100
Schooling Status		
Attending	19	100
Level of Education		
Nursery	1	5.3
Primary	12	63.2
Secondary	5	26.3
Tertiary	1	5.3

Total	19	100
Number of occupants in room		
</=2	5	27.8
>/=3	13	72.2
	Mean=3.39	SD=1.195

**Table 2:** Nutritional Awareness.

Variable	Frequency	Percentage
Is Nutrition a requirement for normal body function		
Yes	16	88.9
No	2	11.1
Do you think you are getting enough nutrients from your food?		
Yes	16	84.2
Maybe	3	15.8
How many times do you eat in a day?		
<2	1	5.3
>2	18	94.7
Do you think you need more nutrients in your food?		
Yes	16	84.2
No	2	10.5
Maybe	1	5.3
Is there protein (meat/fish/egg) in your meal?		
Yes	19	100
How many times is one required to eat in a day?		
>2	19	100

**Table 3:** Factors Influencing Orphanage Nutrition.

Variable	SA/A (%)	D/SD (%)
Increased number of children in the orphanage home reduces the food supply	13(72.2)	5(27.8)
Younger children in the orphanage home receive preferential treatment in food supply	8(47)	9(53)
Basic nutrition will be better observed if the caregivers are well educated	15(83.4)	3(16.7)
Poor sanitary conditions are a major cause of poor nutrition	12(63.2)	7(36.8)
Negligence of the orphanage home is a major cause of poor nutrition	10(52.6)	9(47.4)

**Table 4 (a):** Behavioral Impacts: Perception of the Behavioral and Physiological Impacts of Basic Nutrition Among Children in Orphanage Homes.

Variable	SA/A (%)	D/SD (%)
Eating less than 3 times a day makes no difference on how I feel on that particular day	6(31.6)	13(68.4)
I don't often think about the next meal because I eat whenever I want	19(100)	0(0)
I sleep less than 8 hours a day because of hunger	9(52.9)	8(47.1)
I have a feeling I may fall sick because I don't get enough food	5(26.3)	14(73.7)
I feel other kids are smarter than me because they eat better food	5(26.3)	14(73.7)
I become unhappy whenever I think about the next meal	6(31.6)	13(68.4)

**Table 4 (b):** Physiological Impacts: On perception of the physiological impacts of basic nutrition among children in orphanage homes, most (94.4%) of the participants disagreed with feeling sick after eating. Only 33.3% of respondents agreed to stooling and vomiting immediately after eating. 38.9% became sick due to sleep deprivation caused by hunger.

Variable	SA/A (%)	D/SD (%)
I feel sick most days of the week even after eating	1(5.6)	17(94.4)
I sometimes vomit and stool uncontrollably immediately after eating	6(33.3)	12(66.7)
I have fallen sick ever since I started losing sleep over hunger	7(38.9)	11(61.1)
I have not gained much weight since this year	8(47.1)	9(52.9)
My peers are much taller than me	6(31.6)	13(68.4)

### **Behavioral Impacts:**

With regards to perception of the behavioral impacts of basic nutrition among children in orphanage homes, all participants (100%) agreed that they don't often think about the next meal because they eat whenever they want. Majority of the participants (73.7%) disagreed with having the feeling that they will fall sick because they don't get enough food, however, over 52.9% of the children received <8 hours sleep due to hunger, and only 31.6% of the respondents feel unhappy when they think about the next meal.

### **Physiological Impacts**

On perception of the physiological impacts of basic nutrition among children in orphanage homes, most (94.4%) of the participants disagreed with feeling sick after eating. Only 33.3% of respondents agreed to stooling and vomiting immediately after eating. 38.9% became sick due to sleep deprivation caused by hunger.

### **Discussion**

This study was conducted to assess the behavioral and physiological impacts of basic nutrition in orphans, the factors influencing their nutrition and the implications of malnutrition in orphanage homes. 73.7% of the participants were within 8-13 years old, and 72.2% males. Same percentage live 3 per room with 63.2% of them in primary school where they are already exposed to the basics of nutrition and some of the implications of any form of malnutrition. All respondents agreed to having protein in their meals each day with 94.7% of them eating more than 2 meals a day as against the finding by Uzondu C et al. that showed only 69.5% Anambra respondents, and 59.4% Imo respondents could afford two meals a day. Their protein intake was also way less than our finding (Anambra 17.4%; Imo 26.8% vs our study finding of 100% respondents agreeing to having proteins in their meal each day). 84.2%, however, still believed that their food required more nutrients [8]. 72.2% of the respondents agreed that an increased number of children in the orphanage home will further reduce the food supply available to them, which agrees with Teklemariam et al. who showed in their study that family size has an impact on the nutritional status of children [7]. 95% of their respondents agreed that the educational status of caregivers is a contributing factor for malnutrition, which agrees with 83.4% of our respondents who

agreed that basic nutrition will be better observed if the caregivers are well educated. Only 31.6% of respondents feel unhappy when the thought of what the next meal would be comes to mind, with 52.9% sleeping less than 8 hours a day due to hunger.

There is however insignificant evidence of any low IQ as 73.7% don't feel non-orphanage children are smarter than them, and they believe they are less likely to fall sick even if they don't get enough food as it would only be temporary since 100% of them agreed they get to eat whenever they want. This agrees with Abhishek S and Sayeed U. who showed that most children in orphanage homes were happy to be in the orphanage home because they had access to food among other things [9]. 66.7% agreed they frequently stool and vomit immediately after eating, which could be features of food poisoning, agreeing with Teklemariam et al. who showed in their study that 48.3% of their respondents also had diarrhea due to poor hygiene and sanitation, all of which are contributory to food poisoning [7]. 68.4% agreed that their peers are much taller than them which should be because 94.4% have malaise even after eating, which is almost similar to the findings in the study undertaken by Shiva RA et al. That showed 80% of their respondents were malnourished with 55.1% presenting with stunted growth [10]. The physiological impacts like diarrhea, vomiting, reduced growth, food poisoning, malaise and hunger from our study outweigh the behavioral impacts like sleeplessness, sadness and reduced IQ giving room for modification of policies guiding the care of children in orphanage homes with more interest in physiological improvements.

Findings in this study have made it clear that a budget should be set aside by the federal government to provide orphanage homes and vulnerable children in each state with essential resources for daily living like adequate clothing, sanitation, food and food supplements and essential healthcare. As the importance of government collaboration with NGOs have been buttressed, organizations like the Association of Orphanages and Homes Operators in Nigeria (ASOHON) should partner with NGOs to see to the training of caregivers to tackle illiteracy as a contributing factor to malnutrition [20,21]. 63.2% agreed that poor sanitary conditions are a major contributing factor for malnutrition, correlating with Andromeda et al. who showed there is a significant relationship between personal hygiene and nutritional status [22]. Caregivers must therefore adopt

the culture of teaching the orphan children healthy behaviors needed to maintain environmental sanitation and personal hygiene. Each orphanage home must have a counselor who will oversee assessing the mental state of the children and recommend appropriate interventions in cases of behavioral distress like hyperactivity, sleeplessness, depression, aggressiveness and other related issues to help them adjust emotionally and psychologically [23], as it has been shown in different studies that orphans do not receive adequate counseling [24]. Just as the caregiver's education and health have been recorded to be the most influential factors impacting a child's educational and health performance [25], the orphanage homes must also have nutritionists and family physicians whose duties will be to regularly assess the health of the children as a top requirement among orphans and vulnerable children [26], and make recommendations on any adjustments needed to meet one of the functions of the orphanage which is provision of adequate nutrition for optimal growth of the children [27].

## Conclusion

The prevalence of behavioral disorders related to nutrition in orphanage homes seems to be on a much lower scale, whereas physiological disruptions like diarrhea, slow growth and malaise are frequently associated with the food they consume. It is important to modify and implement policies that will ensure that the behavioral and physiological impacts the nutritional status of children living in orphanage homes have on them are continually monitored and necessary adjustments made to achieve the complete physical, mental, social and emotional wellbeing of these children.

## Strength and Limitation of the Study

This study bridges the gap between awareness of nutritional gaps in orphanage homes when compared to peers in functional homes, and the data collection was unbiased as responses were obtained after adequate explanation of each question contained in the questionnaire by the researchers. Any bias observed by the researchers while the respondents filled the questionnaires could not be independently determined. This bias was evident by their sad mood when they were asked questions that compared them to their non-orphanage peers.

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