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Nutritional Status and Academic Performance of Selected Primary School Children in Ogun State

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Abstract

Nutrition plays a crucial role in human immune function. This study examines nutritional status and academic performance of selected primary school children in Ogun State. This study was cross-sectional among 250 school children in Ewekoro Local Government Area, Ogun State. It explored the association between nutritional status and academic performance of selected primary school children. Anthropometry (weight & height) were determined which was imported into AnthroPlus software while academic performance was derived from pupils' report cards. Socio-economic data was gotten through a structured questionnaire. Data was subjected to both inferential and descriptive statistical analysis, using the Statistical Package for Social Sciences (SPSS version 23.0). Socio-economic characteristics reflected 50.4% of the respondents were males, mostly between 5-10 years, from monogamous families. Body-Mass-Index for age showed 42.4% and 3.2% were mildly and moderately stunted, 32.0% were underweight, 3.6% and 4.0% has overweight and severely low. Academic performance showed that 69%, 13%, 18% were excellent, above average and below average, respectively. Anthropometric mean for weight and height was 28.36±6.63 and 1.36±0.13 for males, but 27.50±7.37 and 1.35±0.13 for females with statistical significance of $p<0.05$ for both variables. There was no statistical significance observed between socio-economic status and nutritional status. The study recommends nutrition education be organized to educate mothers and teachers.

Keywords: Academic performance, school-age, Ewekoro, nutritional status, malnutrition

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Introduction

Here in Nigeria, undernutrition is a problem of public health concern among school age children (Ahmed and Elisha, 2023). Childhood malnutrition has been linked to poor intelligence, cognitive function and poor academic performance (Kirolos *et al*., 2022) . Malnutrition is a widespread global public health problem. In 2021, 149.2 million and 45.4 million children were recorded to have stunting and wasting (Kementeria, 2021). In sub- Saharan Africa, the rate of stunting is high 45% (Quamme & Iversen, 2022). Malnutrition in early childhood impairs functional performance in adulthood (Global Nutrition report, 2021). This impairment may be physical as well as cognitive. There is a link between nutritional status among school children and their health, cognition, and educational achievement (Kirolos *et al*., 2022). There is a window of opportunity for growth and development among school age children. Malnutrition impairs growth and cognitive development of primary school children (Zerga *et al*., 2022). In a study conducted in Osun State by (Ogbimi & Ogunba, 2011) reported that meals consumed by children has low

quality, lacks variety, low energy, and multiple nutrient deficiencies and nutrient density. Adequate nutrition involves appropriate intake of nutrients which are essentials for physical growth, development and good health of children (Morales-Ruán *et al*., 2012). Adequate nutrition is one of the most basic needs of humans; good nutrition is the key to good health, survival and development (Patricia & Olaide, 2017) . This adequate nutrition can be considered a fundamental right of every human being.

Nutrition enhances functional brain development (Nyaradi *et al*., 2015). Again, Nutrients Undernutrition and micronutrient deficiencies of iron, zinc, iodine and vitamin A among school age children (SAC) is a public health problem in developing countries (Getaneh *et al*., 2019) Undernutrition is common in developing countries affecting 20% and causing 50% of all child deaths globally (Abebe *et al*., 2017). After extensive search of literature, no related research has been conducted in this area, reason for this study. Therefore, it is important to assess the nutritional status and academic performance of selected primary school children in Ogun State. Thus, outcome of this study will give insight and information that could guide nutritional programme planning for the target children.

Materials and Methods

This study was conducted in selected primary schools in Ewekoro Local Government Area in Ogun State. Ogun State is located in the South Western region of Nigeria. It has a total of twenty (20) Local Government Area (LGAs). The headquarter of the area is in Itori. It shares border with Ifo, Abeokua North, and Obafemi Owode Local Government Area. The population of Ewekoro Local Government is estimated at 108,944 dwellers mostly Egba sub-division of the Yoruba tribe.

This is a cross- sectional and descriptive study that involved children in selected primary school in Ewekoro Local Government. The children attended public government owned primary schools from class one (1) to class six (6) in the area. Consent was gotten from parents before involving children in the study.

A multistage sampling technique was used, the steps are as follows;

Stage 1: Schools that participated in study were selected in primary school in Ewekoro Local Government Area. No recent record of similar study has been conducted within the area.

Stage 2: Seven (9) schools were selected for the study but only five (5) schools gave consent after meeting with the Head teachers and representatives of Parent Teachers Association (PTA). Two hundred and fifty (250) children.

Stage 3: Participants were stratified by school, sex and class systematic selection followed using class register at regular interval.

The Sample size (n) was determined using Gibson formula (Gibson, 2004) using the formula below.

$$\frac{n = Z^2 \text{ X } Pq}{d^2} \qquad \text{(Gibson, 2004)}$$

where; n= the desired sample size

z = the standard normal deviate at the required 95% confidence level (1.96)

p = prevalence of the attribute (using the estimated prevalence of underweight in Ogun State of 17.4% by Idowu *et al*., 2011)

q = 1-p

d = precision = (0.05)

The minimum sample size for the present study was calculated as:

$$N = \frac{1.96 \text{ x } 1.96 \text{ x } 0.174 \text{ x } 0.826}{0.05 \text{ x } 0.05}$$

$$= 220.8 \text{ (Apprx 221)}$$

10% was added to account for non - responses

221/1 - 0.1 = 245 (It was rounded up to 250)

Method of Data Collection

A validated open and close ended questionnaire was administered to the school children which is in three sections. Three trained research assistants were involved in data collection. The researcher gave detailed information about the study to research assistants, parents/caregivers before being engaged in the study.

Questionnaire: Research assistants were stationed alongside the researcher to administer questionnaire to respondents to obtain data. A total of 250 validated questionnaires were administered. The questionnaire had questions on socio-demographic data, anthropometric measurements and academic performance

Section A: Socio demographic characteristics of child

This session explored information such gender, age, household size, religion, marital status, education of parents e.t.c.

Section B: Anthropometric measurements

This included the anthropometry measurement of the respondents such as age, height, and weight. It further classified the outcome after extracting results from AnthroPlus software into weight-for-age (WAZ), Height-for-age (HAZ) and BMI-for-age which accounted for Underweight, stunting and thinness.

Section C: Academic performance

This session explored the academic performance among children. It categorized pupil's academic performance into, excellent performance, above average and below average.

Statistical Analysis

Data was cleaned and analyzed using Statistical Package for Social Sciences (SPSS version 23). Data collected was represented in both descriptive and inferential statistics. Descriptive statistics such as percentage, frequency, graph, mean and standard deviation was used to present data. Chi - square was used to establish association between variables.

Results and Discussion

Table 1: Socio economic and socio demographic Characteristics of respondents

Variable	Frequency	Percentage	Variable	Frequency	Percentage
Age					
			Household size		
0-5 years	103	41.2	1-4	200	80.0
6-10 years	147	58.8	5-8	38	15.2
Total	**250**	**100.0**	>8	12	4.8
			Total	**250**	**100.0**
Gender					
Male	126	50.4			
			Father's education		
Female	124	49.6	No education	69	27.6
Total	**250**	**100.0**	Primary	32	12.8
			Secondary	91	36.4

Ethnic					
Yoruba	210	84.0	Tertiary	58	23.2
Hausa	12	4.8	**Total**	**250**	**100**
Igbo	28	11.2			
Total	**250**	**100.0**	**Marital status of parent**		
			Married	237	94.8
Religion					
Christian	121	48.8	Divorced	13	5.2
Islam	126	50.4	**Total**	**250**	**100.0**
Traditional	3	1.2			
Total	**250**	**100.0**	**Father's occupation**		
			Farming	28	11.2
Family					
Monogamy	214	85.6	Trader	32	12.8
Polygamy	36	14.4	Civil servant	46	18.4
Total	**250**	**100.0**	Artisan	58	23.2
			Fisherman	45	18.0
			Hunting	41	16.4
			Total	**250**	**100.0**

Table 2: Nutritional Status of Children

Variable	Frequency	Percentage (%)
Weight-for-age		
Normal	165	66.0
Mildly Underweight	80	32.0
Overweight	5	2.0
Height-for-age		
Normal	136	54.4
Mildly stunted	106	42.4
Moderately stunted	8	3.2

BMI-for-age		
Normal	175	70.0
Mildly thin	56	22.4
Overweight	9	3.6
Sever	10	4.0

Table 3 shows the anthropometry measurement of respondents. It reveals that the male respondents have the mean weight and mean height of 28.36±6.63 and 1.36±0.13 and female has mean weight and height of 27.50±7.37 and 1.35±0.13. There is significant difference observed in the height and weight.

Table 3: Anthropometric measurement of the children

VARIABLE	WEIGHT	HEIGHT	P-VALUE
Gender			
Male	28.36±6.63	1.36±0.13	0.04*
Female	27.50±7.37	1.35±0.13	0.04*

P≤0.05 Statistically significant*

The figure 1 below shows frequency and percentage of the respondent's Academic performance. It shows that majority of the respondents has excellent performances which were 172 (68.8%), respondents above average were 32 (12.8%) and respondents below average were 46 (18.4%).

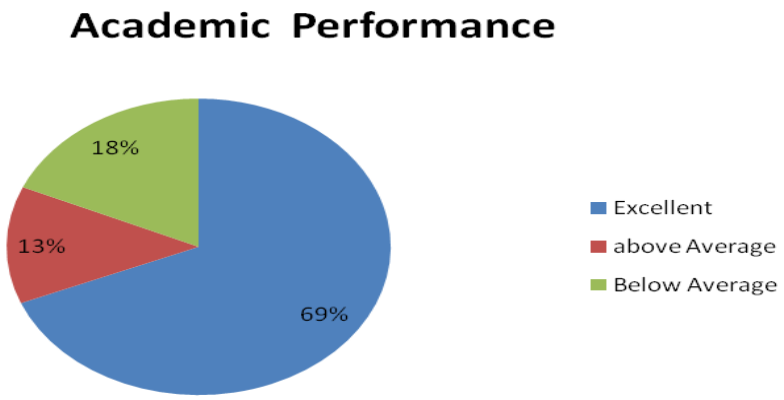

Fig 1: Academic performance of the children.

Table 4 shows association between the nutritional status and academic performance of the respondents. The result showed there was no significant association between nutritional status and academic performance of the respondents at $p \leq 0.05$.

Table 4: Association between nutritional status and academic Performance of children

Variables	**Academic performance**				
Variable	**Excellent**	**Ab. Average**	**B. average**	**χ^2**	**p- value**
Weight for age					
Normal	118(47.2)	17(6.8)	30(12.0)	4.153	0.39
Midly	50(20.0)	14(5.6)	16(6.42)		
Overweight	4(1.6)	1(0.4)	1.(0.4)		
Height for age					
Normal	98(39.2)	15(6.0)	23(9.2	3.270	0.51
Midly stunted	70(28.0)	16(6.4)	20(8.0)		
Moderately stunted	4(1.6)	1(0.4)	3(1.2)		
BMI for age					
Normal	120(48.0)	26(10.4)	29(11.6)	9.371	0.15
Mildly thin	40(16.0)	3(1.2)	13(5.2)		
Overweight	4(1.6)	3(1.2)	2(0.8)		
Sever	8(3.2)	0(0.0)	2(0.8)		

* Statistically significant $p \leq 0.05$*

Table 5 for BAZ below shows that there was no significant relationship between the nutritional status and socio demographic characteristics.

Table 5: Association between socio demographic and nutritional status of children

	Body Mass Index		
Variable	**χ^2**	**df**	**p- value**
Age	1.800	3	0.62
Gender	2.839	3	0.42
Ethnic	8.573	6	0.20
Religion	8.441	6	0.21
Family type	1.828	3	0.61
Household size	3.325	6	0.77
Father's education	11.787	9	0.23

Mother's education		16.102		9		0.66
Father's religion	3.250		3		0.36	
Mother's religion	3.409		3		0.33	
Marital status of parent	5.080		3		0.17	
Father's occupation		23.944		15		0.66
Mother's occupation		7.393		9		0.56

Statistically significant $p \leq 0.05$

Discussion

Adequate nutrition is one of the most basic needs of humans; good nutrition is important to good health status, survival and development. Adequate nutrition is a fundamental right of every human being (Okika *et al.,* 2024). This study assessed the nutritional status and academic performance of primary school children in Ogun State. The findings of this study reflected majority (50.4%) were males while (49.6%) were females, this showed that more males are attending the school than females compared to previous reports form (NDHS, 2008). Also, (36.4%) of fathers had secondary education while the mother's had tertiary education. Most than half of the children (80.0%) had a family size of 1-4 members which was in contrary to study conducted by Ayogu *et al.* (2015), in Nsukka.

According to this result, Body mass index, of most of the respondents (70%) were within normal range which is similar to Oyeyoyin *et al*. (2012), 3.6% of them were overweight and 4.0% were obese it was slightly higher than (Gedamu, 2025). Furthermore, it was found that most of the pupils (54.4%) had normal height for age while 42.4% had stunted growth, this is lower than the 76.2% reported by (Gedamu, 2025). The study further reflected height for age has a weak correlation with weight for age and a weak correlation with Body Mass Index on (Table 5).

Undernutrition among school age children impact on their health, cognition, and educational achievement (Getaneh *et al*., 2019). A child with optimal nutritional status will focus better in classroom than a child with low nutritional status which translates to academic performance. This study also showed that about 42.4% were stunted and 32.0% were underweight and underweight was associated with cognitive test scores. This finding is consistent with other studies done in many developing countries (Umeokonkwo *et al*., 2020). A similar finding from Southern Ethiopia which assessed the effect of nutritional status and its association with cognitive function (Honj *et al*., 2021). A cross sectional study in Kelantan, Malaysia on nutritional status, academic performance and parental feeding practices of primary school children reported that 10.7% and 18.1% of the children were thin and overweight or obese, respectively (Lee & Wan, 2014). In this study among 840 children in Northern Ethiopia showed prevalence of stunting and thinness was 25.5 and 13.0% Sisay *et al*. (2022) and (WBG, 2021).

This study reported 41.2% were between ages 0-5 years and 58.8% were between age 6- 10 years. This is not similar to the study conducted in Owerri by Onyeneke, (2021) that reported Five (2%) of the respondents were between the ages of 6 to 12 months, 114 (45.6%) were aged between 1 to 3 years, and 130 (52%) were aged 3 to 5 years. The contrast in findings might be as result of difference in location.

Stunting reflect poor nutrient intake across lifecycle. Inflation has affected the socioeconomic status of many homes therefore causing hike in food prices in the market. It becomes very difficult for household to purchase nutritionally adequate food items enough to satisfy each member of the family thereby resulting in undernutrition. Similar outcome was reported by (Armstrong & Johnson, 2018; Ijarotimi, 2013). In the present study, nutritional status is not significantly

associated with academic performance of the school age children.

Conclusion

It could be concluded that nutritional status was not adequate among children in Ewekoro local government, Ogun State, as stunting was higher compare to other indicators (underweight and thinness). Nutritional status was not significantly associated with socio economic and academic performance of respondents in this study.

Recommendations

1. Nutrition education needs to be included in every school curriculum as learning to know "What to eat and Why" is an essential aspect of child's education.
2. Developing nutrition curriculum which incorporates innovative themes that influence both nutrition and academic performance.
3. Workshop should be organized on the developed nutrition curriculum for students, parents and teachers so as to help improve nutrition beliefs and behaviours.

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