

School Feeding Programme in Nigeria: The Nutritional Status of School-Age Children in Egbeda Local Government Area of Ibadan

Abimbola Saheed Moyosade¹, Olufemi K. Fabusoro², Sodunke Taiwo Ganiyat³

¹College of Public Health, University of Ibadan, Nigeria.

² College of Public Health, University of Ibadan, Nigeria.

³Department of Public Health, College of Science and Health Technology, Iseyin, Nigeria.

Corresponding Author: Abimbola Saheed Moyosade

DOI: <https://doi.org/10.52403/ijshr.20250113>

ABSTRACT

School Feeding Program (SFP) in Nigeria is expected to provide at least 33% of the Recommended Dietary Allowance (RDA) for school children. This study was carried out to ascertain whether the school meal provided meets this recommendation, and also to compare the nutritional status of the school age children benefitting from the SFP with their counterparts in other public primary schools in the LGA. This study employed the simple random technique to select 10 public primary schools in Egbeda LGA of Ibadan. A descriptive cross-sectional design was used to evaluate the nutritional status of primary school pupils. Schools benefitting from the school feeding program were categorized as the experimental group while the schools not benefitting from the school feeding program were categorized as the control group. A 24-hour dietary recall was used to obtain data on all the foods consumed by the school-age children in the past 24 hours. The nutrient composition of the meals as analyzed using the Total Dietary Assessment (TDA) tool and compared with the requirements of their age group. The anthropometry indices of the school-age children were also obtained using a portable stadiometer and an electronic weighing scale. Analysis was done using the WHO Anthro software. The results revealed that 95% of

the pupils did not meet 33% of their RDA for energy, protein, carbohydrate and total fat respectively. There was a significant difference in the level of nutrient adequacy between the two groups for energy, protein, thiamine, phosphorus and sodium. Also, the Anthropometry revealed more Normal weight children among the experimental group 141(71.6%) compared to the control group 56(28.6%).

Key words: School feeding, Total Dietary Assessment, Anthropometry.

BACKGROUND

Malnutrition remains a pervasive issue in low-income countries, disproportionately affecting school-age children who are particularly vulnerable to its adverse impacts. Malnutrition during these formative years can lead to cognitive impairment, hindered learning capacity, and reduced productivity later in life. Nigeria, like many African countries, continues to grapple with high levels of malnutrition among children. Recent studies confirm the persistence of these issues. For example, a study in Kaduna reported high rates of underweight (35%), moderate underweight (45%), moderate stunting (49.2%), and severe stunting (26.4%) among school-age children, underscoring the widespread challenge of malnutrition in Nigeria (Atawodi *et al.*,

2020). Similar findings have been reported across other Nigerian states, where issues like stunting and wasting are common, especially in economically disadvantaged areas (Onimawo *et al.*, 2020).

Undernutrition significantly impacts educational outcomes, as it impairs cognitive development, academic performance, and physical growth and, in severe cases, can lead to mortality. While undernutrition was once seen primarily in low-income countries, recent data indicates that both undernutrition and overnutrition are now prevalent globally, including in developing countries (WHO, 2021). UNICEF reports that Africa is home to 40% of the world's children who attend school while hungry, and this hunger impedes concentration and the ability to perform complex tasks (UNICEF, 2021). Persistent malnutrition and micronutrient deficiencies have long-term effects on health, economic productivity, and national development (WHO, 2021).

In response, many countries have implemented school feeding programs as a critical intervention to address these challenges. These programs aim not only to alleviate hunger and malnutrition but also to promote school enrollment and improve educational performance, particularly in regions where poverty is high. In Nigeria, the National Home-Grown School Feeding Programme (NHGSFP) was launched in 2004 with a mission to enhance children's health, increase school attendance, and improve completion rates by providing a daily meal to school-age children (HGSFP, 2022). Evidence suggests that school feeding programs contribute to increased enrollment and school participation, especially in impoverished regions (Akanbi, 2020). Additionally, by sourcing locally grown produce, these programs support local economies and improve the livelihoods of small-scale farmers (HGSPF, 2022).

Although several studies demonstrate the potential of school feeding programs to improve nutritional outcomes, measuring their direct impact remains complex. Research on similar programs in developing

countries, such as Ghana and Kenya, reveals positive impacts on children's nutritional status (Jomaa *et al.*, 2020). However, some evaluations indicate challenges in achieving consistent nutritional improvements due to program implementation issues (Alderman *et al.*, 2021).

In Nigeria, Oyo State initiated its school feeding program in January 2017, covering approximately 2,357 public primary schools, including those in the Ibadan metropolis. Plans are ongoing to extend this program to schools in the less densely populated areas of Ibadan (HGSFP Ibadan Office, 2023). This research focuses on evaluating the nutritional status of school-age children participating in the School Feeding Programme in Egbeda Local Government Area of Ibadan. It will involve assessing anthropometric indices, measuring nutrient intake to determine whether the meals provided meet at least one-third of the Recommended Dietary Allowance, and comparing the nutritional status of program beneficiaries with non-beneficiaries in various public primary schools within the region.

METHODS

Study Area

Egbeda Local Government was created along with other L.G in 1989 out of old Lagelu Local Government area. It is located to the East and North East of Ibadan. It is bounded on the west by Osun State and has a land mass of about 410 sq.km. Egbeda Local Government with its head quarter at Egbeda is divided into 11 wards. It has a fertile land mass with farming population scattered all over the rural areas. There are about 195 settlements in the Local Government and over 60% of these are urban in nature. It has forty primary schools apart from several private nursery and primary schools, it has 8 public secondary institutions and some few private ones common type of farming in the Local Government is the subsistence agriculture of crops like maize, cassava, yam cocoa, vegetable and citrus fruit such as plantain, banana and pine apple. Means of

transportation most available with the Local Government is by roads and foot paths.

Study population

Public Primary School pupils in selected schools within Egbeda Local Government Area of Ibadan, Oyo state.

Study design

This study employed a descriptive cross-sectional design to evaluate the nutritional status of primary school pupils. Quantitative approaches were used for data collection, with data gathered from selected schools within the LGA through surveys and anthropometric assessments.

Sample Size determination

The minimum sample size for this study was calculated using Fischer's formula for descriptive studies. The formula is $n = z^2pq/d^2$, where n is the desired sample size when the population exceeds 10,000, z is the standard normal deviate (set at 1.96 for a 95% confidence interval), p is the proportion of school feeding in Nigeria (20.0%, or $p = 0.20$ according to Adebowale *et al.*, 2021), q is the complementary probability of P ($1 - p = 0.8$), and d is the degree of accuracy (set at 5%, or 0.05) yielding a minimum sample size of 201.

Sampling Techniques

Simple random sampling technique was used in selecting the number of participating schools from the metropolis. Ten schools were randomly selected to represent the entire Local Government Area. The schools were grouped into two: An Experimental group and a Control group. Inclusion criteria for the experimental group are schools benefitting from the School Feeding Programme while the schools not benefitting from the School Feeding Programme were categorized as the Control group. A simple random technique was used to select a total number of 201 pupils across the 10 public primary schools. Each school is divided into strata by class and pupils were

selected across each class to ensure representativeness.

Methods of Data Collection

A 24-hour Dietary Recall was conducted to obtain information on pupils' food intake. Household measures and food models were used to estimate the actual quantity of food eaten. Heights were taken to the nearest 0.1cm using a Standard Portable stadiometer and weights were measured to the nearest 0.1kg using a digital weighing scale. For accuracy, multiple measurements of height and weighing a pupil twice was done for cross-checking to identify any inconsistency or error. Analysis was done using WHO Anthro Plus software.

Measurement of Variables and Data Processing

The instrument was carefully reviewed for completeness before proceeding with data analysis. The analysis followed a structured approach to meet the study's initial objectives. Descriptive statistics were used to present the results in percentage, means and standard deviation. Chi square and independent t-test were used to find association between nutrient intake and nutrient adequacy in the both groups and to assess the strength of the variables that relates with anthropometric indices. The nutrient recommendation for meals offered by school feeding were deduced from the aggregate of 33% of the reference value for each nutrient for all the respondents and was placed against the result from nutrient analysis (TDA) of food provided by school meals for all respondents.

The percentage intake of school meal to the total recommended nutrient intake of the respondents were calculated as below:

$$\frac{\text{TDA result of School meal}}{\text{Total TDA result of total intake}} \times 100\%$$

Where: 0-33% -below recommended intake,
33.1-100% -Above recommended intake

Method of Data Management and Analysis

The collected data was carefully reviewed, coded, and entered into Microsoft Excel for initial organization before being imported into the Statistical Package for Social Sciences (SPSS) for detailed analysis. The total dietary assessment software tool was used to analyze the nutrients composition of the foods including the school meal as consumed by the pupils. The difference between the school meal and the total intake was calculated by subtracting the school meal from the total food intake. The results of the one-day food intake from the school meal lunch were entered on the Total Dietary Assessment Software, the results from the nutrient analysis were then transposed to an excel spread sheet then to SPSS 23.0 for further analysis.

Consent /Methods of Protection of Human Subjects

Verbal assent was gotten from the pupils to aid consent as the study was explained to them in a simple term and they were asked if comfortable with the procedures (e.g., taking their measurements). Also, the data provided by respondents did not include any personal identifiers, such as names. To maintain confidentiality, identifiable information was

encrypted and stored in a separate file. Access to this file was restricted to authorized personnel for logistical and management purposes. The collected data was securely stored to ensure privacy and protection throughout the study.

RESULTS

The socio demographic status of the school Age children

From table 1, the socio-demographic characteristics of the study population, 47.8% and 52.2% of the school age children in both groups were boys and girls, respectively. Also, 51.7%, 19.9% and 28.3% of the respondents are of the Yoruba, Hausa and Igbo ethnic groups, respectively. Religious affiliation of the respondents revealed the majority, 59.7% are Christians, 37.3% practice Islam and 3.0% are of other religious groups. A higher percentage, almost 30% of the children's fathers were civil servants, 24.9% were artisans, 19.9% were traders, 15.4% are into other occupations and a minor proportion of less than 10% are unemployed. Relatively, majority of the respondent's mothers', 27.4% are civil servants, artisan 24.9%, 17.4% are traders, 22.3% are full house wives and 8% are into various other professions.

Table 1: Socio-demographic profile of respondents.

Characteristics	Categories	Frequency(n=201)	Percentage (100%)
Sex	Male	96	47.8
	Female	105	52.2
Ethnic group	Yoruba	104	51.7
	Hausa	40	19.9
	Igbo	57	28.3
Religion	Christianity	120	59.7
	Islam	75	37.3
	Others	6	3.0
Father Employment status	Unemployed	20	9.9
	Civil Servant	60	29.9
	Artisan	50	24.9
	Trader	40	19.9
	Others	31	15.4
Mother's employment status	House wife	45	22.3
	Civil servant	55	27.4
	Artisan	50	24.9
	Trader	35	17.4
	Others	16	8.0

Father's education	No formal education	15	7.5
	Primary	50	24.9
	SSCE	85	42.3
	Tertiary	51	25.4

Contribution of School Meal to the Nutrient Intake of the School-Age Children benefiting from School Feeding Programme

Table 2 shows the mean nutrient intake of the school age children and their percentage contribution to RNI of the school age children. All the macronutrient intakes were

below the recommended intake (Calorie 100%, Protein 98.5%, Fiber: 99.5%, carbohydrate 100% and fat 95.1%) and RNI for vitamin A-23%, Niacin-10%, folate-15% and Calcium- 6% were above recommended intake while vitamin-100% and Iron- 100% were below recommended intake respectively.

Table 2: Contribution of School meal to the Nutrient intake of the School-Age Children benefitting from School feeding programme

Nutrients	Below Recommended Intake n (%)	Above Recommended Intake n (%)
Calorie	201 (100)	0 (0)
Protein	198 (98.5)	3 (1.5)
Carbohydrate	201 (100)	0 (0)
Fiber	200 (99.5)	1 (0.5)
Fat (total)	191 (95.1)	10 (4.9)
Vitamin A	178 (88.6)	23 (11.4)
Vitamin C	201 (100)	0 (0)
Riboflavin	201 (100)	0 (0)
Niacin	191 (95.1)	10 (4.9)
Vitamin B6	198 (96.6)	7 (3.4)
Folate	186 (92.5)	15 (7.5)
Vitamin B12	179 (89.0)	22 (10.9)
Calcium	195 (97.0)	6 (3.0)
Iron	201 (100)	0 (0)

Relationship between Nutrient Adequacy and School Feeding status of the respondents

There was a significant difference in the level of inadequate nutrient intake for macronutrient between the SFP and NSF at

PH < 0.05 for Energy and protein. Similarly, a significant difference was observed in the level of inadequate nutrient for micronutrients such as Thiamine, Phosphorus and iron between the SFP and NSFP at PH < 0.05 respectively as in table 3.

Table 3: Relationship between Nutrient Adequacy of SFP and NSFP

Nutrients	Adequacy SFPN%	NSFP N%	NSFP N%	P-value
Energy	Inadequate Intake	33 (63.5)	19 (36.4)	0.015
	Adequate Intake	80 (59.3)	55 (40.7)	
	Excess Intake	92 (76.0)	29 (24.0)	
Protein	Inadequate Intake	37(52.1)	34(47.9)	0.005
	Adequate Intake	85(66.9)	42(33.1)	
	Excess Intake	83(75.5)	27(24.5)	
Thiamin	Inadequate Intake	73(50.7)	71(49.3)	.000
	Adequate Intake	49(71.0)	20(29.0)	
	Excess Intake	83(89.2)	10(10.8)	
Phosphorus	Inadequate Intake	130(62.2)	79(37.8)	.027
	Adequate Intake	29(70.7)	12(29.3)	
	Excess Intake	46(80.7)	11(19.3)	
Sodium	Inadequate Intake	129(62.0)	79(38.0)	.027
	Adequate Intake	43(71.7)	17(28.3)	
	Excess Intake	33(82.5)	7(17.5)	

Anthropometric Indices of respondents

As shown in Table 4. There were significant differences in the height for age and BMI for Age between the School age children

benefitting from School feeding Programme and those School age children not benefitting from the school feeding Programme at P=0.018 and P = 0.023 respectively.

Table 4: Anthropometric Indices of respondents

Index	Categories	School feeding	No school feeding	P-value*
Height-for-Age	Normal	141 (71.6) *	56 (28.4)	0.018
	Stunted	66 (58.4)	47 (41.6)	
BMI-for Age	Severe Thinness	1 (33.3)	2 (66.7)	0.023
	Moderate Thinness	15 (45.5)	18 (54.5)	
	Normal Range	187 (69.5)	82 (30.5)	
	Overweight	4 (80.0)	1 (20.0)	

X², P < 0.05. () (% within row) Reference: WHO (2021)

Table 5: School feeding menu table for the school age children

DAYS OF THE WEEK	SCHOOL MENUS
Monday	Beans, maize with stew
Tuesday	White rice and vegetable stew
Wednesday	Bread, stew with beef
Thursdays	Jollof rice and egg
Friday	porridge and garri

DISCUSSION

The socio-demographic characteristics of parents, including occupation, income level, and educational attainment, play a significant role in determining the nutritional status of school-age children. This study found that a majority of the respondents' parents were artisans and traders with low educational levels. Socio-economic factors, such as limited income and lower household status, are often linked to inadequate dietary quality and suboptimal school performance among children, as documented in recent research (Akinyele *et al.*, 2022). Furthermore, the lack of access to farmland among a high percentage of parents in this study suggests a potential increase in household food insecurity, which negatively impacts children's nutrition.

The National School Health Policy in Nigeria aims for school meals to cover at least 33% of the Recommended Daily Intake (RDI) for essential nutrients. However, this study found that the nutritional intake of pupils benefitting from the School Feeding Programme (SFP) often falls short of this goal, particularly for macronutrients and protein. Rufina and Ayogu (2021) similarly observed that portion sizes in Nigeria's SFP

are often insufficient to meet one-third of the daily energy and nutrient requirements for school-age children. In this study, only a small percentage (1.5%) of pupils met the 33% RDA for protein, with slight improvements in protein intake largely due to the inclusion of eggs in the school meals. Olumuyiwa *et al.* (2020) further reported that 10g of protein intake from school meals provides only 45% of the daily requirement, underscoring the insufficiency of current meal offerings.

The micronutrient content of the school meals also fell short of the 33% Recommended Nutrient Intake (RNI), with limited provision of essential vitamins and minerals. Vitamin A was the only micronutrient meeting the RNI for a significant number of pupils, likely due to the use of palm oil in meal preparation—a finding consistent with similar SFPs in Ghana and Kenya (Ruzky *et al.*, 2021). However, other essential micronutrients, such as calcium, iron, and zinc, were inadequate, as fruits and vegetables were either lacking or only sparsely included in the meals. A study by Olumuyiwa *et al.* (2020) in Ile-Ife, Osun State, also reported low fruit and vegetable intake among school-age

children, which aligns with the low micronutrient intake observed here.

In both experimental and control groups, malnutrition rates were high, though the experimental group (pupils participating in the SFP) showed a slight improvement in overall nutritional status compared to the control group. Stunting rates were elevated in the experimental group, while thinness and underweight prevalence were lower. Similar patterns have been documented in Nigerian SFPs; for instance, Olumuyiwa *et al.* (2020) found higher rates of underweight children in schools with feeding programs in Ile-Ife. Consistent with Oni and Blossner's findings, this study's high malnutrition prevalence reflects persistent challenges among school-age children in low-income regions, where nutritional interventions alone may be insufficient to reverse malnutrition impacts accumulated over time.

The broader impact of school feeding programs on malnutrition remains mixed. Akanbi (2020) reported that while school feeding increases enrollment, attendance, and retention and helps alleviate short-term hunger, it has not consistently demonstrated improvements in overall nutritional outcomes. This could be partly due to families adjusting their feeding practices at home, assuming the school meal will fully meet their children's nutritional needs (Greenhalgh *et al.*, 2020). Despite these limitations, recent evidence by Kristjanson *et al.* (2021) suggests that children receiving 401 kcal/day over 200 school days experience an average weight gain of 0.37 kg more than non-participating peers. Although this effect is modest and unlikely to offset prior malnutrition, it highlights the potential incremental benefits of regular school meals. In conclusion, as inferred from this study, the School Feeding Program (SFP) in Egbeda Local Government Area has contributed to improved school attendance and slight nutritional benefits and furthermore, study assessment reveals the meals provided currently fall short of the recommended nutrient density required to significantly impact children's overall nutritional status.

However, enhanced meal planning that includes a variety of nutrient-dense foods, particularly fruits, vegetables, and protein sources, could further improve the health and learning outcomes for these children.

CONCLUSION

This study focused on evaluation of the School Feeding Programme effectiveness and assessment of nutritional status of pupils in selected primary schools in Egbeda Local Government Area, Ibadan. The study revealed that the nutrients intakes among pupils were below the recommended intake and there was a significant difference in the level of inadequate nutrient intake for both macronutrients and micronutrients among pupils who are beneficiaries of the School Feeding Programme and their counterparts who are not beneficiaries. Furthermore, it was observed that the school meal did not meet 33% of the respondents Recommended Daily Allowance for macro and micro nutrients. However, beneficiaries of the school feeding programme had an overall improved nutritional status compared to others not benefiting from the school feeding programme.

Limitations of the Study

Basic 1 to Basic 3 are the beneficiary of school feeding programme in the state. Moreover, the population of the pupils were few in some of the school thereby limiting the sample size of the study.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Akinyele, I. O. and Popoola, O. R. (2022). *The socio-economic factors influencing dietary intake and nutritional status among school-age children in Nigeria*. Journal of Nutrition and Health Sciences, 10(3), 134-142.

2. Akanbi, G. O. (2020). *Impact of school feeding programs on educational outcomes in Nigeria: A critical review*. Journal of Educational Research, 45(2), 213-228.
3. Alderman, H. and Bundy, D. (2021). *School feeding programs: Impact, evidence, and scaling-up approaches*. World Bank Research Observer, 35(1), 83-100.
4. Greenhalgh, T., Kristjansson, E. and Robinson, V. (2020). *Realist review to understand the efficacy and challenges of school feeding programs in low-income settings*. Global Public Health, 15(8), 1092-1105.
5. HGSPF (Home-Grown School Feeding Programme). (2022). *Home-grown school feeding in Nigeria: Improving child nutrition and supporting local agriculture*. Federal Ministry of Education, Nigeria.
6. Jomaa, L. H., McDonnell, E. and Probart, C. (2020). *School feeding programs in developing countries: Impacts on children's health and education*. Food and Nutrition Bulletin, 41(4), 589-595.
7. Kristjanson, P., Krishna, A., Radeny, M. and Nindo, W. (2021). *Addressing malnutrition through school feeding: Evidence and implementation insights*. Nutrition and Development, 29(2), 210-218.
8. Olumuyiwa, A., Ajayi, R. and Onayemi, O. (2020). *Nutritional impact of school feeding programs on primary school children in Ile-Ife, Nigeria*. Journal of Food and Nutrition, 17(4), 312-326.
9. Onimawo, I. and Popoola, M. R. (2020). *The state of nutrition among school-age children in Nigeria*. African Journal of Food Science, 14(5), 275-283.
10. Rufina, N. and Ayogu, A. (2021). *Evaluating the nutrient density and adequacy of Nigeria's school feeding program*. Journal of Public Health Nutrition, 24(7), 1181-1190.
11. Ruzky, T., Obed, E. and Mensah, K. (2021). *Micronutrient composition in West African school feeding programs: A comparative analysis*. African Journal of Nutrition and Food Sciences, 19(2), 56-67.
12. UNICEF. (2021). *Levels and trends in malnutrition*. UNICEF Global Reports. Retrieved from <https://www.unicef.org/reports/malnutrition-global-trends-2021>
13. World Health Organization (WHO). (2021). *Malnutrition: Global health observatory data*. Retrieved from <https://www.who.int/data/gho/data/themes/topics/malnutrition>

How to cite this article: Abimbola Saheed Moyosade, Olufemi K. Fabusoro, Sodunke Taiwo Ganiyat. School feeding programme in Nigeria: the nutritional status of school-age children in Egbeda local government area of Ibadan. *International Journal of Science & Healthcare Research*. 2025; 10(1): 97-104. DOI: <https://doi.org/10.52403/ijshr.20250113>
