



Journal of Clinical and Metabolism Studies (JCMS)

Assessment of the Nutritional Status among School Aged Children in Masaga ‘B’ Community, Bida Local Government Area, Niger State

 Abiodun, A. M.¹; &  Omachi, B. A.¹

¹Department of Nutrition and Dietetics, the Federal Polytechnic, Bida, Niger State

DOI: <https://doi.org/10.70382/ajcms.v8i3.006>

Abstract

The nutritional status of children is a proxy indicator that can be used to assess the entire community health status and one of the major predictors of child survival and academic competence. Despite the various efforts, malnutrition among children remains a major public health issue in Nigeria. The study objective was to assess the nutritional status among school aged children in Masaga ‘B’ community Bida Local Government Area, Niger State. **Methodology:** A descriptive cross-sectional study was conducted among 200 school aged children. Sociodemographic characteristics, usual dietary intake and anthropometric index of the children were collected by using semi-structured questionnaire. **Results:** age categorized into 5 – 10 years old were 60%, and 40% were 11 – 15 years old. Results showed that 10% of the children were severely malnourished, 9.5% moderately malnourished, 56% of the respondents were normal, 16% were overweight, and 8.5% were obese. **Conclusion:** The findings showed that malnutrition is still a major public health problem among young children due to poor socioeconomic status of their parents, and thus there is a need for better nutrition of the Nigeria child.

Keywords: nutritional status, anthropometrics, school aged children

Introduction

Nutrition plays a crucial role in the physical growth, cognitive development, and overall health of school-aged children. During this stage of life, adequate nutrient intake is

essential to support rapid developmental changes, maintain immune function, and enhance learning capacity (UNICEF, 2019). Malnutrition in childhood—whether

undernutrition, micronutrient deficiencies, or overnutrition—can have long-lasting effects, including impaired academic performance, increased susceptibility to infections, and higher risk of non-communicable diseases in adulthood (World Health Organization [WHO], 2020).

Despite global progress in reducing malnutrition, it remains a persistent public health concern in sub-Saharan Africa, including Nigeria. According to the National Demographic and Health Survey (NDHS), a significant proportion of Nigerian children continue to experience stunting, wasting, and underweight conditions, particularly in rural and underserved areas (National Population Commission [NPC] & ICF, 2019). However, national-level data often mask regional disparities, underscoring the need for localized assessments.

Masaga ‘B’, a rural community Ward in Bida Local Government Area of Niger State, Nigeria, faces multiple socio-economic and environmental challenges that may contribute to poor nutritional outcomes among children. Factors such as household poverty, food insecurity, limited access to healthcare, and inadequate dietary diversity are known contributors to malnutrition in similar contexts (Ogunba et al., 2021).

Malnutrition among school-aged children remains a global concern, particularly in low- and middle-income countries. The World Health Organization (WHO, 2020) highlights that both undernutrition (including stunting, wasting, and underweight) and overnutrition (overweight and obesity) are increasing problems in many regions. School-aged children, though often overlooked in nutrition interventions focused on younger children, are also vulnerable to the consequences of poor nutrition, including cognitive impairments, poor school performance, and reduced productivity in adulthood (UNICEF, 2019).

In Nigeria, malnutrition continues to pose a major public health challenge. According to the Nigeria Demographic and Health Survey (NDHS), approximately 37% of children under five years of age are stunted, and 7% are wasted (NPC & ICF, 2019). Although there is limited national data specifically focused on school-aged children, regional studies have revealed a high prevalence of malnutrition among this group. For instance, Odetola (2015) found that a significant proportion of school-aged children in southwestern Nigeria were underweight and exhibited signs of micronutrient deficiencies.

Local dietary habits, socio-economic factors, sanitation practices, and access to health care services have been identified as key determinants of child nutrition. Ogunba et al. (2021) observed that children in rural areas tend to have higher rates of undernutrition compared to their urban counterparts due to poorer food diversity and parental education levels. These findings underscore the importance of context-specific research to identify local drivers of malnutrition and tailor interventions accordingly.

Masaga ‘B’ community in Bida, Niger State, is characterized by low socio-economic status and limited health and nutrition services. Yet, there is a scarcity of empirical data on the nutritional status of children in this area. This study seeks to fill that gap by

providing updated, location-specific evidence that can inform local policies and community health programs.

This study aims to assess the nutritional status of school-aged children in Masaga ‘B’, Bida, using anthropometric indicators and dietary assessments. By identifying the prevalence and patterns of malnutrition in this population, the study seeks to inform community-specific interventions and support evidence-based policy decisions that promote child health and nutrition in the region.

Methodology

Study Area: The study was conducted in Masaga ‘B’, a densely populated rural community located in Bida Local Government Area of Niger State, Nigeria. The area is known for its diverse ethnic groups, traditional lifestyles, and limited access to health and educational resources.

Study Design: A cross-sectional descriptive survey design was employed to assess the nutritional status of school-aged children in the study area. This design allows for the collection of data at a single point in time to describe the current state of child nutrition in Masaga ‘B’.

Population and Sample Size: The target population included school-aged children (5–14 years) enrolled in both public and private primary schools in Masaga ‘B’. A multi-stage sampling technique was used to select a representative sample. Using the Cochran formula for sample size determination and an estimated prevalence of malnutrition from previous studies (Ogunba et al., 2021), a minimum of 200 children were selected for participation.

Data Collection Methods

Anthropometric Measurements: Weight and height were measured using standardized procedures. Weight was measured using a digital scale to the nearest 0.1 kg, and height was measured with a stadiometer to the nearest 0.1 cm. Body Mass Index (BMI)-for-age and Height-for-age Z-scores were calculated using the WHO AnthroPlus software.

Dietary Assessment: A structured questionnaire was used to assess dietary intake based on food frequency questionnaire (FFQ), adapted to reflect common local foods.

Socio-Demographic Data: Additional information was collected from caregivers regarding household income, parental education, occupation, and access to health and sanitation services.

Data Analysis: Data were entered into SPSS version 25 for statistical analysis. Descriptive statistics (means, standard deviations, frequencies) were used to summarize the data. Nutritional status was classified using WHO growth standards. Chi-square and t-tests were employed to explore associations between nutritional status and socio-demographic variables, with significance set at $p < 0.05$.

Ethical Considerations: Ethical approval was obtained from the relevant research ethics committee. Informed consent was sought from school authorities and parents/guardians, while verbal assent was obtained from the children. All data were treated with confidentiality and used solely for academic purposes.

Results and Discussion

The socio-economic and demographic profile of the respondents provides important context for understanding the nutritional status of school-aged children in Masaga 'B', Bida. The data highlights the diversity and distribution of key variables such as sex, religion, tribe, and age group.

Sex Distribution: Out of the 200 pupils surveyed, 98 (49%) were male, and 102 (51%) were female. This shows a fairly balanced gender distribution, with a slight predominance of female pupils. The near-equal representation enhances the reliability of comparative analysis of nutritional status across sexes and ensures that gender-related nutritional disparities can be appropriately examined.

Religious Affiliation: The majority of the pupils (75%) identified as Muslims, while 25% were Christians. No respondents reported adherence to traditional religions. This distribution reflects the dominant religious composition of the Masaga 'B' community, which is consistent with the broader cultural landscape of Bida, where Islam is the prevalent faith. Religious beliefs may influence dietary practices, fasting habits, and food choices, which are all relevant to nutritional assessment.

Tribal Affiliation: Nupe children constituted the majority of the sample, accounting for 74.5%, followed by Yoruba (13.5%) and Hausa (12%). This finding is expected, as the Nupe ethnic group is indigenous to Bida and forms the dominant population in the area. Understanding tribal composition is crucial, as cultural food preferences, traditional feeding practices, and access to household resources may vary among ethnic groups, thereby influencing nutritional outcomes.

Age Group: Children between the ages of 5 and 10 years made up 60% of the respondents, while those aged 11 to 14 years accounted for 40%. The larger representation of younger children may be due to higher school enrollment rates at lower primary levels. Age is a critical factor in nutritional studies because nutrient needs vary significantly with age due to differences in growth rate and energy requirements. This age distribution provides a good basis for comparing nutritional status between early and late school-age children.

Table 1: Socio-economic and Demographic Characteristics of Pupils

Sex	Frequency(F)	Percentage (%)
Male	98	49
Female	102	51
Total	200	100

RELIGION

Islam	150	75
Christianity	50	25
Traditional	00	00
Total	200	100

TRIBE

Nupe	149	74.5
Yoruba	27	13.5
Hausa	24	12
Total	200	100

AGE GROUP (YEARS)

5-10	120	60
11-14	80	40
Total	200	100

These demographic and socio-economic characteristics offer insights into the population under study and help contextualize the nutritional findings. The predominance of Nupe ethnicity and Islamic religion, as well as the balanced sex distribution and dominance of the 5–10-year age group, suggest that any targeted nutritional interventions should be culturally sensitive and age-appropriate. Additionally, considering these variables in data analysis will help identify any socio-demographic predictors of malnutrition among the children.

Table 2: Anthropometric Indices for Assessment of Nutritional Status

Age	Severe	Moderate	Normal	Overweight	Obese
Range	Malnutrition (<-3SD) BMI	Malnutrition (>=-3 to <-2SD)BMI	(>= -2 to <= +1SD) BMI	(> +1 <= +2SD) BMI	(> +2SD) BMI
5-10	9	4	53	26	17
11-14	11	15	59	6	0
Total	20	19	112	32	17

Nutritional Status Based on Z-Scores: The anthropometric assessment of 200 school-aged children in Masaga, Bida, using BMI-for-Age Z-scores (BAZ), reveals the following distribution:

Nutritional Category	Frequency	Percentage (%)
Severe malnutrition (< -3SD)	20	10.0%
Moderate malnutrition (-3 to -2SD)	19	9.5%
Normal (-2SD to +1SD)	112	56.0%
Overweight (+1 to +2SD)	32	16.0%
Obese (> +2SD)	17	8.5%

This indicates that: 19.5% of the children are undernourished (severe + moderate), 56% have a normal nutritional status, 24.5% are overnourished (overweight + obese).

Age Group Differences:

Ages 5–10 years

13 out of 109 children (approx. 11.9%) fall under moderate/severe malnutrition. 26 (23.9%) are overweight, and 17 (15.6%) are obese.

Ages 11–14 years

26 out of 91 children (28.6%) are moderately or severely malnourished. Only 6 (6.6%) are overweight and none are obese.

This shows a double burden of malnutrition: Younger children (5–10 years) are more likely to be overweight or obese, while the older children (11–14 years) are more affected by undernutrition, especially severe forms.

This disparity could reflect more parental feeding attention to younger children, increased food independence and possibly missed meals among older children, and puberty-related nutritional demands not being met in older age group

The anthropometric data align closely with the earlier observed dietary inadequacies: only 10% reported eating lunch regularly, 30% did not have dinner, no pupils reported snacking, and many depended on home-only meals, limiting dietary diversity.

These behaviors may explain the high prevalence of moderate to severe undernutrition, particularly in older children.

Similar studies by Onabanjo et al. (2016) found that skipping lunch significantly increased the risk of undernutrition among Nigerian schoolchildren. Odetola (2015) also reported a high prevalence of underweight and stunting in children aged 10–14 years due to inadequate meal frequency and low household income. Conversely, the rising trend of childhood overweight/obesity, particularly in the 5–10 age group, is consistent with findings by Adesina et al. (2016), who noted an increasing intake of energy-dense but nutrient-poor foods in urban areas of Nigeria. The coexistence of under- and over-nutrition represents a classic case of the "double burden of malnutrition"—a growing concern in

many low- and middle-income countries (LMICs), including Nigeria, as highlighted by the World Health Organization (WHO, 2021).

Table 3: Dietary Intake Pattern of the Pupils

Dietary Pattern		Frequency	Percentage
Do You Bring Food to School	Yes	150	75
	No	50	25
Number of Meals The Child Typically Eat In A Day	Breakfast	Yes	180
		n0	20
	Lunch	no	0
		yes	0
	Snacks	yes	20
		yes	120
	Dinner	no	60
			30
Where The Child Eat Most of His/Her Meal	Home	140	70
	School	60	30
How Many Main Meals Do You Take Per Day	1	0	0
	2	10	5
	3	180	90
	4	10	5
	TOTAL	200	100

Dietary Intake Pattern of Pupils: Table 3 provides insight into the daily dietary habits and meal patterns of school-aged children in Masaga ‘B’, Bida. Understanding these patterns is crucial for assessing potential nutritional deficiencies, caloric adequacy, and the quality of food intake, which directly affect the health and academic performance of children.

A significant majority of pupils (75%) reported bringing food to school, while 25% did not. This suggests that most children have access to packed meals, which may help sustain energy levels throughout the school day. However, the 25% who do not bring food may be at risk of hunger during school hours, which can impair concentration and learning.

Similar findings were reported by Ogunba and Oge (2012), who found that Nigerian children who brought food to school were less likely to exhibit signs of hunger or reduced academic focus. The study highlighted how school meal availability contributes to children’s daily nutrient intake and overall well-being.

Meal Frequency and Patterns:

Breakfast: An encouraging 90% of pupils consumed breakfast daily, while only 10% skipped it. Breakfast is a critical meal, especially for school-aged children, as it replenishes glucose levels and improves attention span and academic performance. This aligns with

Adesina et al. (2016), who found that regular breakfast consumption among Nigerian school children was associated with improved cognitive function and school attendance.

Lunch: Only 10% of pupils reported eating lunch, which is considerably low and concerning. This might be due to long commutes, lack of lunch provision at school, or economic limitations at home. Skipping lunch can contribute to fatigue and undernutrition, particularly in growing children.

Snacks: Interestingly, no children reported consuming snacks. This could indicate limited access to snack items either due to economic reasons or lack of availability at school. While unhealthy snacking should be avoided, nutritious snacks (e.g., fruits, nuts) can be a valuable source of micronutrients.

Dinner: 60% of pupils had dinner regularly, while 30% did not. This indicates that a considerable number of children may go to bed hungry, increasing the risk of undernutrition and its associated complications. Regular dinner is important for balancing daily caloric needs and preventing night-time hunger.

These results point to gaps in mid-day and evening nutrition, suggesting that while breakfast is prioritized, many pupils may be experiencing meal skipping that can hinder healthy growth.

Place of Meal Consumption: Most children (70%) reported eating the majority of their meals at home, while 30% ate primarily at school. This reflects the family's role in providing nutrition and suggests that home-based interventions (like nutrition education for parents) could be effective in improving child nutrition.

According to Abizari et al. (2014) in Ghana, children who ate most of their meals at home had more consistent dietary quality compared to those dependent on school meals or vendors, underlining the importance of parental awareness and household food security.

Number of Main Meals per Day: An overwhelming 90% of pupils reported consuming three meals per day, 5% reported taking two, and another 5% had four meals. No pupils reported eating only once per day. This suggests that, on average, meal frequency is adequate among the majority. However, as seen from the earlier data, not all meals (particularly lunch and dinner) are consistently consumed, indicating a possible discrepancy between reported meal frequency and actual consumption behavior.

Meal frequency is a critical marker of dietary adequacy. According to Onabanjo et al. (2016), children who consumed three balanced meals daily had better anthropometric outcomes than those with irregular or fewer meals.

While the data shows a relatively high level of breakfast consumption and average meal frequency, there are notable concerns: Low lunch and dinner intake among a significant portion of children raises concerns about potential undernutrition., zero snack consumption could imply limited dietary diversity, and children not bringing food to school or relying heavily on home meals may face nutritional insecurity depending on family income and food availability.

These findings suggest the need for nutrition education programs targeting parents and caregivers, school-based feeding initiatives to provide at least one nutritious mid-day meal; and further investigation into the quality and nutrient composition of meals consumed.

Recommendations

1. Targeted Nutritional Interventions: Undernourished older children should be prioritized for school feeding programs, which can ensure at least one nutritious meal daily; Younger overweight children need nutrition education focused on healthy portion sizes and balanced diets.
2. Promote Age-Specific Dietary Practices: Encourage adolescents to maintain structured eating habits and avoid meal skipping, particularly lunch and dinner; and educate parents to balance between calorie-dense and nutrient-rich foods for younger children to curb excessive weight gain.
3. Routine Growth Monitoring: Schools should implement regular BMI checks and growth assessments to detect early signs of under- or over-nutrition.
4. Policy Inclusion: The findings should inform local health and education policies, ensuring school-aged nutrition is no longer overlooked compared to under-five programs.

References

- Abizari, A. R., Buxton, C., Kwara, L., Jones, A., & Zotor, F. B. (2014). School feeding contributes to micronutrient adequacy of Ghanaian schoolchildren. *British Journal of Nutrition*, 112(6), 1019–1033. <https://doi.org/10.1017/S0007114514001528>
- Adesina, A. F., Adebayo, O. S., & Oladele, T. M. (2016). The effect of breakfast consumption on academic performance of students in public secondary schools in Ogbomosho, Nigeria. *International Journal of Nutrition and Metabolism*, 8(6), 60–65.
- National Population Commission (NPC) [Nigeria] & ICF. (2019). *Nigeria demographic and health survey 2018*. NPC and ICF.
- Ogunba, B. O., & Oge, M. O. (2012). Feeding practices and nutritional status of under-five children in urban Lagos, Nigeria. *Nigerian Journal of Paediatrics*, 39(3), 97–102.
- Ogunba, B. O., Akinsola, O. J., & Olude, O. (2021). Determinants of nutritional status among school-aged children in selected rural and urban communities in Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*, 21(3), 17521–17539. <https://doi.org/10.18697/ajfand.97.18345>
- Onabanjo, O. O., Quadri, J. A., & Oguntona, C. R. B. (2016). Meal pattern and nutritional status of school children in Abeokuta, Ogun State, Nigeria. *International Journal of Child Health and Nutrition*, 5(2), 82–89.
- UNICEF. (2019). *The state of the world's children 2019: Children, food and nutrition – Growing well in a changing world*. UNICEF.
- World Health Organization. (2020). *Malnutrition*. <https://www.who.int/news-room/fact-sheets/detail/malnutrition>