

# Assessment of the Osun Elementary School Feeding and Health Programme on the Nutritional Status of Rural Primary School Pupils in Osun State

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## ABSTRACT

The nutritional status of Osun State's rural primary school students was evaluated in relation to the Osun Elementary School Feeding and Health Programme (O-MEALS). Two-thirds of the State's senatorial districts were used to choose a sample size of 188 respondents using a multi-stage sampling process. Anthropometric measurements, interview schedules, and structured questionnaires were used to collect data, which was then analyzed using PPMC and Chi-square. Findings revealed that rice ( $\bar{x}=3.08$ ), beef ( $\bar{x}=2.51$ ), egg ( $\bar{x}=2.20$ ), and bread ( $\bar{x}=2.00$ ) were mostly consumed in O-MEALS. Constraints faced by school children in the programme included diets void of fruits ( $\bar{x}=1.40$ ), a small quantity of food served ( $\bar{x}=0.88$ ), serving of spoiled fruits ( $\bar{x}=0.35$ ) and lack of drinkable water ( $\bar{x}=0.16$ ). The BMI-for-age (weight-for-height) indicated that 3.7% of the respondents were severely wasted and 10.1% were wasted, while height-for-age (an indicator of stunting) reveals that 16.5% were severely stunted and 30.9% were stunted. Frequency of food consumption in the programme ( $r = 0.185$ ) had an influence on the pupils' nutritional status. Their nutritional status decreased as their family size ( $r = -0.003$ ) and the constraints faced ( $r = -0.027$ ) increased. To ensure that students receive daily fruits and meals with the expected quality and quantity, food vendors should be under the supervision of the school. The administration should also put more effort into reducing the State's present rate of stunting and wasting.

**Keywords:** School feeding programme, O-MEALS, safety net, nutritional status

## INTRODUCTION

In many developed and developing countries, school feeding programs (SFPs) have been adopted as crucial safety net measures to combat hunger, promote cognitive growth, and boost attendance among vulnerable school children (Zenebe et al., 2018). SFPs help to increase access to wholesome foods and decrease child food insecurity (McLoughlin, et.al. 2020). It is a popular multisectoral intervention that benefits food security, health and nutrition, and education.

Over \$70 billion is invested annually in SFPs, which serve 368 million students globally. The significance of SFPs varies and depends on the setting, depending on the state of the economy and the effectiveness of program delivery (Gelli et. al., 2019). School feeding programs have been implemented in a number of African countries to improve children's nutrition and create the most effective feeding techniques (Chabite, et.al. 2018).

According to Ogunnaike (2020), one of the biggest global and Nigerian public health issues is child malnutrition. Ekholuenetale, et al. (2020) assert that malnutrition has a detrimental effect on children's cognitive development. About 40% of the 60 million children who go to school hungry each day in poor countries are African (Appollm and Braima, 2021), with Sub-Saharan Africa having the greatest

malnutrition rates (Giancola, et al., 2022). Despite a decrease in childhood stunting globally in 2018, the proportion of children on the African continent increased from 50.3 million to 58.8 million (Obasohan, et.al. 2020). Inadequate nutrition may result in low immunity, delayed physical and mental development, and decreased productivity in children under five and throughout life (Drammeh, Hamid and Rohana, 2019). Height-for-age, weight-for-height, and weight-for-age are three anthropometric indices that the World Health Organization (WHO) commonly employs to measure nutritional status. These indices assess stunting, wasting, and underweight, respectively (Ferreira, 2020).

The 2018 Nigeria Demographic Survey reported that 45% of rural children were stunted (too short for age), compared to their urban counterpart (27%). Also, 8% rural and 5% urban children were wasted (too thin for height) and 27% rural and 15% urban children were underweight (too thin for age) (National Population Commission and ICF, 2019). Similarly, Agbozo et al., (2017) reported that pupils attending schools in rural areas had a higher proportion of underweight students than students attending schools in urban areas. Additionally, it was discovered that compared to pupils in urban areas, students in rural areas had a five-fold higher probability of stunting. Osun state has 7.5% severely stunted and 23.7% severely stunted children, 0.8% severely wasted and 4.5% wasted children, and 4.8% severely underweight and 14.4% underweight children, per the 2018 Nigeria Demographic and Health Survey (National Population Commission and ICF, 2019).

Children's nutritional state is a sign of society's general health, claim Eze et al. (2017). The WHO member states committed to achieving nine global targets by 2025, including a 40% decrease in childhood stunting, a less than 5% prevalence of childhood wasting, to ensure there is no rise in the number of overweight children, and to end all forms of malnutrition by 2030, in an effort to combat the global problem of malnutrition (Obasohan, et al., 2020). To achieve some of the Sustainable Development Goals, Nigeria and other African nations like Cote d'Ivoire, Ghana, Kenya, Mali, Tanzania, Ethiopia, Malawi, Zimbabwe, and Mozambique have implemented SFPs (Chabite, et.al. 2018). The SFP was first implemented in Nigeria under the Millennium Development Goals (MDGs) project, where Nigeria was one of the twelve pilot nations selected to carry out the program (Oluwakemi and Ogunrinde, 2021). Through the Universal Basic Education Act, the Federal Government of Nigeria provided enabling legal support for the Home Grown School Feeding and Health Programme's implementation throughout this time (Iyanmu and Isizah, 2021). This Act mandated that each student get a minimum of one meal each day in all State primary schools (Adekeye, 2022) the Federal Capital Territory, Imo, Kano, Kebbi, Kogi, Nasarawa, Ogun, Rivers, Yobe, and Osun state; and in 2006, the national program began a phased-pilot with 13 States (Alonge and Ige, 2018). One of the few school meal programs remaining in operation in Nigeria is the Osun Elementary School Feeding and Health Programme (O-MEALS), which is considered as a model for excellent practices among other school feeding programs (Olajubutu and Olajubutu, 2021).

The Osun Elementary School Feeding and Health Programme (O-MEALS) has reportedly undergone few evaluation studies in Osun State, although little attention has been given to evaluating the program's nutritional impact on students in rural primary schools. To overcome this gap, this study will evaluate the nutritional condition of rural primary school students participating in the Osun Elementary School Feeding and Health Programme (O-MEALS) in the state of Osun.

## Research objectives

The main goal of the study was to evaluate the impact of the Osun Elementary School Feeding and Health Programme (O-MEALS) on the dietary status of students attending rural primary schools in the state of Osun.

Specifically, the following objectives would be achieved to:

1. assess the frequency of food consumption of school meals

2. identify the constraints faced by the respondents in O-MEALS programme
3. ascertain the nutritional status of respondents in the O-MEALS programme

### Research hypotheses

For the study, the following hypotheses stated in the null form were tested:

*H01: There is no significant relationship between the frequency of food consumption of school meals and respondents' nutritional status. (PPMC was used to determine the relationship)*

*H02: There is no significant relationship between constraints faced by the respondents on O-MEALS and their nutritional status. (PPMC was used to determine the relationship)*

### METHODOLOGY

This study was conducted in Osun State, Nigeria, which has a population of about 3.5 million people and an area of nearly 14,875 square kilometers (Adebayo, 2018). (Obasanjo, et.al. 2021). The state is divided into three federal senatorial districts, each of which has two administrative zones, and is predominately agricultural (Adedayo, 2018).

The study's participants are pupils attending rural primary schools in Osun state. Osun West and Osun Central were the two districts selected at random in the first round, making up two-thirds of the three senatorial districts in Osun State. Following the random selection of 10% of each senatorial district's ten local government areas—Isokan South and Boripe Local Government Areas, respectively—the elementary schools in these local government areas were divided into rural and urban schools. Additionally, 10% of the remote schools were randomly selected (Baptist Day Primary School, Irewolede Primary School, St. Paul Anglican Primary School, St. Mary Catholic primary school, and Community elementary school were selected from Isokan south Local Government Area). Additionally, the major two, three, and four classes were specifically picked based on their ability to understand and reply to the enumerators' queries. Finally, a sample size of 188 respondents was obtained by randomly selecting 30% of kids in grades two through four. Primary data were gathered utilizing an interview schedule and in-depth interviews, while secondary data were obtained through school records. The data were analyzed using the Chi-square and Pearson Product Moment Correlation.

Table 1: Sampling procedure and sample size

Selected Senatorial Districts	No of L.G.A	Selected L.G.A (10%)	Total No of Pry. School	No of Rural Schools	10% of Rural Schools	30% of pupils in Pry 2 – 4
Osun West	10	Isokan	58	32	3	94
Osun Central	10	Boripe	34	19	2	94
Total	20	2	92	62	5	188

Source: Osun state Primary Education Board; Field Survey, 2018

### RESULTS AND DISCUSSION

#### Frequency of Food Consumption in O-MEALS Programme

According to Table 2, the Osun Elementary School Feeding and Health Programme's main food source was rice ( $x=3.08$ ) (O-MEALS). Beef ( $x=2.51$ ), eggs ( $x=2.20$ ), and bread ( $x=2.00$ ) came after that. This shows that pupils ate more protein and carbohydrates. In their study, Oyewole and Eforuoku (2018) found that

students ate fewer fruits and vegetables but more items high in carbohydrates, fats, and oils. Children of all ages should have 130 grams of carbohydrates per day, according to Coleman (2018). Children ages 4 to 9 need 19 grams of protein per day, which climbs to 34 grams from age 9 to 13 years. Boys in this age range normally need 52 grams of protein per day, but teenage females typically need 46 grams.

The respondents also ate chicken ( $x=0.77$ ), fish ( $x=1.43$ ), melon ( $x=1.16$ ), beans ( $x=1.44$ ), maize ( $x=1.74$ ), and fruits ( $x=1.00$ ). The least consumed foods are yam ( $x=0.74$ ), vegetables ( $x=0.61$ ), and cocoyam ( $x=0.08$ ). For school-age children, important nutrients include calcium, which can be found in dairy products and dairy-free calcium-fortified beverages, iron, which can be found in meats and grains that have been fortified with iron, vitamin A, which can be found in fruits, vegetables, and dairy products, vitamin D, which can be found in fish and dairy products, and iodine, which is found in large amounts in seafood, dairy products, enriched grains, and iodized salt (Coleman, 2018). However, respondents consume the least amount of fruits and vegetables, despite the fact that they are considered to be the main suppliers of vitamins and minerals. This can be supported by the claim made by a few of the respondents that they haven't received any fruits since the session began, which was roughly six months prior to the commencement of this study.

Table 2: Distribution of respondents by frequency of food consumption in O-MEALS

	Thrice per week (%)	Twice per week (%)	Once per week (%)	Occasionally (%)	Never (%)	Mean	± S.D
Rice	8.00	92.0	0.00	0.00	0.00	3.08	± 0.27
Beef	9.00	33.0	58.0	0.00	0.00	2.51	± 0.66
Egg	0.00	19.7	80.3	0.00	0.00	2.20	± 0.40
Bread	0.00	0.00	100	0.00	0.00	2.00	± 0.00
Maize	0.00	0.00	83.0	8.00	9.00	1.74	± 0.61
Beans	9.00	0.00	50.0	8.00	33.0	1.44	± 1.21
Fish	0.00	0.00	71.3	0.00	28.7	1.43	± 0.91
Melon	0.00	0.00	58.0	0.00	42.0	1.16	± 0.99
Fruits	0.00	0.00	0.00	100	0.00	1.00	± 0.00
Chicken	0.00	0.00	38.3	0.00	61.7	0.77	± 0.97
Yam	0.00	0.00	33.0	8.00	59.0	0.74	± 0.93
Vegetables	0.00	0.00	30.3	0.00	69.7	0.61	± 0.92
Cocoyam	0.00	0.00	0.00	8.00	92.0	0.08	± 0.27

Source: Field Survey, 2018

### Constraints Faced by Respondents' in O-MEALS programme

The result in Table 3 indicates that the two most prominent constraints faced by respondents include fruits not being served ( $(\bar{x} = 1.40)$ ) and low quantity of food served ( $(\bar{x} = 0.88)$ ). Other constraints include serving of spoiled fruits ( $(\bar{x} = 0.35)$ ) and lack of drinkable water ( $(\bar{x} = 0.16)$ ). This resonates with findings by Olajubutu and Olajubutu (2021) that some rural school children in Osun State had unfavourable perception of O-MEALS and blamed it on the inadequate services provided by the food vendors.

Table 3: Distribution of respondents by constraints faced in O-MEALS programme

Constraints	Mean	± S.D
Fruits not being served	1.40	± 0.74
Low quantity of food served	0.88	± 0.86
Serving of spoilt fruits	0.35	± 0.68
Lack of drinkable water	0.16	± 0.54
Low quality of food served	0.09	± 0.41
Insufficient food served	0.07	± 0.32
Delay in serving of food	0.06	± 0.29

Source: Field Survey, 2018

### Nutritional Status of Pupils

Table 4 displays the categorization of respondents’ nutritional status. According to the Body Mass Index, BMI-for-age (weight-for-height), 10.1% and 3.7% of the respondents, respectively, were significantly wasted. According to the height-for-age measurement (indicator of stunting), 16.5% of respondents had severe stunting, and 30.9% had stunting. This suggests that 3.7%, 10.1%, 16.5%, and 30.9%, respectively, of Osun State’s rural primary school students are highly wasted, wasted, severely stunted, and stunted. There is a discrepancy between our findings and the results of the 2018 Nigeria Demographic and Health Survey (NDHS), which indicated that Osun state had 0.8% severely wasted and 4.5% wasted children, 7.5% severely stunted and 23.7% stunted children, and 7.5% severely stunted children (National Population Commission and ICF, 2019). The larger numbers we found may be explained by the fact that the 2018 NDHS used a state-level unit of analysis while our study was focused on rural schoolchildren. Agbozo, Atitto, and Abubakari (2017) agreed with the findings of our study, which showed evidence that rural schoolchildren are more prone to experience malnutrition.

Table 4: Distribution of respondents by nutritional status

Anthropometric indices	z-score value	Parameters
BMI-for-age (weight-for-height)		
Severe wasted	<-3SD	Mean: 15.19,
Wasted	< -2SD	Min 11.16, Max 20.48
Normal	-2SD to 2SD	
Height for age		
Severe stunted	<-3SD	Mean: 123.10,
Stunted	< -2SD	Min 99.00, Max 158.0
Normal	-2SD to 2SD	

Source: Field Survey, 2018

### Relationship between food consumption and respondents’ nutritional status?

The frequency of food consumption and nutritional status are significantly correlated ( $r = 0.185$ ,  $p = 0.011$ ), according to the correlation analysis of hypothesis one, which claimed that there is no significant association

dietary intake, it complements that which they consume at home. McLoughlin *et.al* (2020) explained that regular school meal consumption can enhance dietary intake and many students get one-third to half of their daily calorie intake from school meals.

### Relationship between constraints and respondents' nutritional status?

Table 5 also reveals that constraints faced by respondents ( $r = -0.027$ ) does not have a significant relationship with nutritional status, however, the inverse relationship between constraints and nutritional status implies that the more constraints faced by the students, the lower their nutritional status. As earlier mentioned, students complained that fruits were no longer being served and that low meal quantity was being provided. It was also reported that spoiled fruits were sometimes served and they lacked access to drinkable water. According to Gelli, *et.al.*(2019), school feeding can be partially linked to nutritional outcomes and implementation constraints could affect program outcomes.

Table 5: The relationship between food consumption, constraints and respondents' nutritional status

Variables	r value
Food consumption versus Nutritional status	0.185
Constraints versus Nutritional status	-0.027

Source: Field Survey, 2018; \* $P < 0.05$ ;  $n = 188$

## CONCLUSIONS AND RECOMMENDATIONS

The frequency of food consumption in O'MEALS had influence on their nutritional status. The foods mostly served to the pupils were rice, beef, egg, and bread. The constraints faced by respondents in the programme were the low quantity of meals served and that fruits were no longer being served in the programme). School-Based management committee should provide school-level supervision of food vendors to ensure that they adhere to the program plan of serving fruits daily and provide standard meal quality and quantity to the pupils.

The government should step up efforts to prevent nutritional deficiencies and enhance the state's schoolchildren's nutritional status.

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