



## Challenges of Child Nutrition: An Analysis of School Feeding Programmes (SFP) in South Eastern Nigeria

Ozioma C. Azubuike and Patricia E. Mbah

Department of Home Science/Hospitality and Tourism

Michael Okpara University of Agriculture Umudike Abia State, Nigeria

### ABSTRACT

This work seeks to assess the challenges of school feeding programmes in Southeastern Nigeria with reference to Anambra State. A multi stage cluster sampling technique was used to select 15 public primary schools from 15 different local government areas in Anambra State. A systematic random sampling technique was used to select the 316 children from the schools register. A convenience sampling technique was used to select 50 teachers and 30 caterers. SPSS (Version 21) was used for the analysis. Descriptive statistics (frequency and percentage, Mean and standard deviation) and chi-square tests were obtained. Results show that 84.0% of the teachers graded the school feeding program average. Majority (70.9%) of the children skipped meals. Many (36.7%) of the caterers reported inadequate supply of food stuffs as a major challenge to the effectiveness of school feeding program while 23.3% reported regular hike in food prices and inadequate storage facility as the major challenge to the effectiveness of school feeding program. Majority (94.0%) of them agreed that school farm could contribute to school feeding program. This study recommends government's urgent investment in school farms as this will also enhance learning while also providing produce which could be channeled to the school feeding program thereby ensuring sustainability.

**Keywords:** Effectiveness of SFP, Impact of SFP, Challenges to effective implementation of SFP, Strategies for effective implementation of SFP.

### INTRODUCTION

School feeding is defined here as one aspect of child nutrition with regards to the provision of food to school children. School feeding has its origins in the 1930s, when schemes were introduced in the United Kingdom (UK) and the United States (US) with the explicit aim of improving the growth of children (Richter *et al.*, 2000). School feeding programme has been adopted in many countries throughout the world to fight short-term hunger by ensuring at least one daily nutritious meal to support access to education. Today, there are as many types of programmes as there are countries, but they can be classified into two main groups based on their modalities: (1) in-school feeding, where children are fed in school; and (2) take-home rations, where families are given food if their children attend school. In-school feeding can, in turn, be divided into two common categories: (1) programmes that provide meals; and (2) programmes that provide high-energy biscuits or snacks (Bundy *et al.*, 2009). School feeding programmes have been implemented in both developed and developing countries. Throughout the developing world, these programmes are implemented in collaboration with large organizations with national governments, bilateral arrangements, and non-government organizations (NGOs) (Sulemana *et al.*, 2013).

In 2005, the Federal Government of Nigeria launched the School Feeding Programme with the assistance of the United Nations' Children Education Fund (UNICEF) and the New Partnership for Africa's Development (NEPAD). The objective is to provide one meal per school day to all

primary school pupils in Nigeria with the objectives of improving the health of school children, increase their enrolment, retention and completion rate. Since then the enrolment rate had increased while the attendance of pupils in school is stable especially among girls who used to leave school for street trading and house-help jobs (NEPAD, 2009). In 2016 home grown school feeding programme took off successfully in Anambra state making it the number three state that have implemented the feeding programme including Osun and Kaduna (Vanguardngr.com, 2016). All together in Anambra State, an estimated 76, 690 pupils in 1050 schools would be served every day of school. The feeding programme caters for pupils from primary 1-3 (Vanguardngr.com, 2016). School feeding programmes attract children to school by providing nutritious meals in exchange for school participation. If children are undernourished, the programmes may also boost learning and cognitive development by improving attention spans and nutrition. The attraction of these programmes is their potential to improve both school participation, learning and cognitive outcomes by increasing the consumption of nutritious food by undernourished children. However, school feeding programmes also have their critics. They are often more expensive than other programmes that provide school inputs to increase school participation, and the nutrition benefits are small compared to those from nutrition programmes targeting younger children (Adelman *et al.*, 2008). As a result, governments and donors are in the midst of a debate about the future of school feeding programmes. It is in view of this criticism that this study seeks to assess

the challenges of school feeding programmes in Anambra State, Southeastern Nigeria.

Basically, this paper seeks to assess the following:

1. Effectiveness of school feeding program using school attendance and academic performance
2. Impact of school feeding program using food habits and child anthropometric status.
3. Challenges to effective implementation of SFP
4. Strategies for effective implementation of SFP.

## METHODOLOGY

A cross sectional design was used. Anambra State is a State in south eastern Nigeria, the name was derived from the Anambra River (Omambala) which flows through the area and is a tributary of the River Niger. The indigenous ethnic groups in Anambra state are the Igbos (98% of population) and a small population of Igalas (2% of the population), who live mainly in the north-western part of the state. Boundaries are formed by Delta State to the west, Imo State and Rivers State to the south, Enugu State to the east, and Kogi State to the north. Anambra is the eighth-most populated state in the Federal Republic of Nigeria and the second-most densely populated state in Nigeria after Lagos State. The stretch of more than 45 km between the towns of Oba and Amorka contains a cluster of numerous thickly populated villages and small towns, giving the area an estimated average density of 1,500–2,000 persons per square kilometer.

## POPULATION OF STUDY

This paper emanated from a study which included only public school children in primary 1-3, their teachers and the caterers.

## SAMPLING AND SAMPLING TECHNIQUES

The sample size for the school children was calculated with the prevalence formula method:

$$\text{Sample size } (n) = \frac{Z^2 \times p \times (100-p)}{X^2}$$

Where p= prevalence of childhood underweight in Nigeria (29%) (NDHS, 2013).

Z= Accepted margin error of 1.5 at 95% confidence level is 1.96.

100-p= Number of people who are not underweight.

X<sup>2</sup>= width of confidence interval at 5% level probability

$$\frac{(n) = 1.96^2 \times 29(100-29)}{5^2} = 316$$

A multi stage cluster sampling technique was used to select 15 public primary schools from 15 different local government areas in Anambra State. A systematic random

Table 2 shows the level of effectiveness of school feeding program. Majority (84.0%) of the teachers graded the school feeding program average whereas, 10.0% rated the program poor while few (6.0%) rated it high. On their opinion whether school feeding program improved school attendance, the result showed that all (100%) of the

sampling technique was used to select the 316 children from the schools register. A convenience sampling technique was used to select 50 teachers and 30 caterers.

Four research assistants were trained for data collection. The purpose and objectives of the research was communicated and thoroughly explained to them, as well as the methods of administering the questionnaire.

## DATA COLLECTION

A structured and validated questionnaire was used to collect information on the weights of the subjects were taken using the bathroom scale. The pupils stood on the scale without shoes wearing light cotton material. The scale was adjusted to zero before each measurement. Body mass index (BMI) was calculated as weight in kilograms divided by height in meter squared (kg/m<sup>2</sup>). This was achieved with the use of a height meter. Body height measurement was taken with the subject standing on barefoot. Their heads were comfortably erect, looking straight ahead, the wooden rod gently lowered, crushing the hair and making contact with the top of the head. The measured was read to the nearest 0.1cm

## DATA ANALYSIS

Height-for-age, weight-for-age, and BMI-for-age indices were calculated with WHO Anthro Plus (v1.0.4, World Health Organization, Geneva 2009) and expressed in Z-scores. The children were classified into the following categories: “underweight” (low weight-for-age <-2 Z-scores for children ≤ 10 years old); “stunting” (low height-for-age <-2 Z-scores), “wasting” (low BMI-for-age <-2 Z-scores), “overweight” (BMI-for-age Z-score >+1 and ≤+2), “obese” (BMI-for-age Z-score >+2), and “normal weight” (BMI-for-age Z-score - 2 to + 1). Children with height-for-age Z-scores <-3.00 were defined as severely stunted. Those with BMI-for-age <-3 Z-scores were defined as severely wasted. Children with BMI-for-age Z-score >3 were severely obese. The values were set from the median values of the WHO international growth reference 2007 for 5–19-year-old children (De Onis *et al.*, 2007; WHO, 2009). Statistical Package for Service Solution (SPSS version 21) was used to code and analyze the data.

## RESULTS AND DISCUSSIONS

### Effectiveness of School Feeding Program

The background information of the teachers is presented in table 4.1. Majority (84.0%) of the teachers were females while 16.0% were males. Most (76.0%) of the teachers were above 40 years of age while 24.0% were between 36-40 years of age.

teachers agreed that the school feeding program has improved school attendance. On whether the program improved academic performance, many (60.0%) of the teachers agreed that the program has improved the performance of the school children while 40.0% disagreed.

**Table 1:** Background information of the teachers

Variables	Frequency	Percent
<b>Sex</b>		
Male	8	16.0
Female	42	84.0
<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Age</b>		
36-40 years	12	24.0
Above 40 years	38	76.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

**Table 2:** Level of effectiveness of school feeding program

Variables	Frequency	Percent
<b>Level of effectiveness of SFP</b>		
Poor	5	10.0
Average	42	84.0
High	3	6.0
<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Improved school attendance</b>		
Yes	50	100.0
<b>Improved academic performance</b>		
Yes	30	60.0
No	20	40.0
<b>Total</b>	<b>50</b>	<b>100.0</b>

### Impact of School Feeding Program

The background information of the children studied is presented in table 4.3. More than half (55.7%) of the children were females, 44.3% were males. Majority (72.5%) of the children were between 4-6 years of age, 26.6% between 7-9 years of age while few (0.9%) were between 10-12 years. Less than half (46.2%) of the children were in primary 2, 28.5% were in primary 3 while 25.3% were in primary 1.

**Table 3:** Background information of the children studied

Variables	Frequency	Percent (%)
<b>SEX</b>		
Male	140	44.3
Female	176	55.7
<b>Total</b>	<b>316</b>	<b>100.0</b>
<b>Age</b>		
4-6 years	229	72.5
7-9 years	84	26.6
10-12 years	3	.9
<b>Total</b>	<b>316</b>	<b>100.0</b>
<b>CLASS</b>		
Primary 1	80	25.3
Primary 2	146	46.2
Primary 3	90	28.5
<b>Total</b>	<b>316</b>	<b>100.0</b>

Table 4 shows the food habit of the children studied. Majority (70.9%) of the children skipped meals while 29.1% do not. Many (45.6%) of those who skip meals do so always while 25.3% skip meals sometimes but not all the time. Breakfast was the meal skipped by majority (72.8%) of the children while 27.2% skipped dinner.

Table 5 shows the mean anthropometric characteristics of the children. The result showed that the children had a mean height of  $128.79 \pm 11.34$ , weight of  $26.15 \pm 5.47$ , weight for age of  $1.65 \pm 1.73$ , height for age of  $2.98 \pm 2.86$  and BMI for age of  $0.08 \pm 1.23$ .

The anthropometric status of the children by gender is presented in table 4.6. Underweight 2.8% was more in females than their male counterparts (1.4%). More females (3.9%) were stunted than their male counterparts (1.4%). However, more (5.7%) of the males were wasted than 2.3% of their female counterparts. More females (17.6%) than males (12.9%) were overweight whereas, more males (2.1%) than females (1.7%) were obese. In general the prevalence of underweight, stunting, wasting, overweight and obesity observed in this study was 2.2%, 2.9%, 3.7%, 15.5% and 1.9% respectively.

**Table 4:** Food habit of the children studied.

Variables	Frequency	Percent (%)
<b>Skip meals</b>		
Yes	224	70.9
No	92	29.1
<b>Total</b>	<b>316</b>	<b>100.0</b>
<b>Frequency of meal skipping</b>		
Sometimes	80	25.3
Always	144	45.6
Never	92	29.1
<b>Total</b>	<b>316</b>	<b>100.0</b>
<b>Meal skipped</b>		
Breakfast	163	72.8
Dinner	61	27.2
<b>Total</b>	<b>224</b>	<b>100.0</b>

**Table 5:** Mean Anthropometric characteristics of the children

Variables	Mean	Std. Deviation
Height of child	128.79	11.34
Weight of child	26.15	5.47
Weight-for-age	1.65	1.73
Height-for-age	2.98	2.86
BMI-for-age	0.08	1.23

**Table 6:** Anthropometric status of the children by gender.

VARIABLES	MALE		FEMALE		TOTAL		X <sup>2</sup> -VALUE	P-VALUE
	F	%	F	%	F	%		
<b>WEIGHT-FOR-AGE</b>							1.644	0.439
Severe underweight	0	0.0	2	1.1	2	0.6		
Underweight	2	1.4	3	1.7	5	1.6		
Normal	138	98.6	171	97.2	309	97.8		
<b>Total</b>	<b>140</b>	<b>100</b>	<b>176</b>	<b>100</b>	<b>316</b>	<b>100</b>		
<b>HEIGHT-FOR-AGE</b>							4.082	0.130
Severe stunting	2	1.4	2	1.1	4	1.3		
Stunting	0	0.0	5	2.8	5	1.6		
Normal	138	98.6	169	96.0	307	97.2		
<b>Total</b>	<b>140</b>	<b>100</b>	<b>176</b>	<b>100</b>	<b>316</b>	<b>100</b>		
<b>BMI-FOR-AGE</b>							3.656	0.455
Severe wasting	2	1.4	1	0.6	3	0.9		
Wasting	6	4.3	3	1.7	9	2.8		
Normal	111	79.3	138	78.4	249	78.8		
Overweight	18	12.9	31	17.6	49	15.5		
Obese	3	2.1	3	1.7	6	1.9		
<b>Total</b>	<b>140</b>	<b>100</b>	<b>176</b>	<b>100</b>	<b>316</b>	<b>100</b>		

Table 7 shows the anthropometric status of the children by age. The result revealed that underweight (3.1%) and stunting (3.9%) were observed among young children (4-6 years) of age. Wasting was observed to increase with age and reached its peak (4.8%) among children 7-9 years of age. Also overweight and obesity increased with age and reached its peak 20.2% and 2.4% respectively, among children 7-9 years of age.

#### Challenges to Effective Implementation of SFP

Table 8 shows the challenges to effective implementation of SFP. Many (36.7%) of the caterers reported inadequate supply of food stuffs as a major challenge to the effectiveness of school feeding program while 23.3% reported regular hike in food prices and inadequate storage facility as the major challenge to the effectiveness of school feeding program. All of the caterers reported not having been trained on the requirements of school children.

**Table 7:** Anthropometric status of the children by age

VARIABLES	4-6 year		7-9 years		10-12 years		Total		X <sup>2</sup> - Value	P-Value
	F	%	F	%	F	%	F	%		
<b>WEIGHT-FOR-AGE</b>									2.720	0.606
Severe underweight	2	0.9	0	0.0	0	0.0	2	0.6		
Underweight	5	2.2	0	0.0	0	0.0	5	1.6		
Normal	222	96.9	84	100	3	100	309	97.8		
<b>Total</b>	<b>229</b>	<b>100</b>	<b>84</b>	<b>100</b>	<b>3</b>	<b>100</b>	<b>316</b>	<b>100</b>		
<b>HEIGHT-FOR-AGE</b>									3.519	0.475
Severe stunting	4	1.7	0	0.0	0	0.0	4	1.3		
Stunting	5	2.2	0	0.0	0	0.0	5	1.6		
Normal	220	96.1	84	100	3	100	307	97.2		
<b>Total</b>	<b>229</b>	<b>100</b>	<b>84</b>	<b>100</b>	<b>3</b>	<b>100</b>	<b>316</b>	<b>100</b>		
<b>BMI-FOR-AGE</b>									3.281	0.916
Severe wasting	2	0.9	1	1.2	0	0.0	3	0.9		
Wasting	6	2.6	3	3.6	0	0.0	9	2.8		
Normal	185	80.8	61	72.6	3	100	249	78.8		
Overweight	32	14.0	17	20.2	0	0.0	49	15.5		
Obese	4	1.7	2	2.4	0	0.0	6	1.9		
<b>Total</b>	<b>229</b>	<b>100</b>	<b>84</b>	<b>100</b>	<b>3</b>	<b>100</b>	<b>316</b>	<b>100</b>		

**Table 8:** Challenges to effective implementation of SFP

Variables	Frequency	Percent
Regular hike in food prices	7	23.3
Inadequate storage facility	7	23.3
Inadequate supply of food stuffs	11	36.7
Seasonality	5	16.7
<b>Total</b>	<b>30</b>	<b>100.0</b>
<b>Training, on requirement of school children</b>		
No	30	100.0

**Strategies for Effective Implementation of SFP**

The strategies for effective implementation of school feeding program is presented in table 9. All the teachers reported having school farms while majority (94.0%) of them agreed that school farm could contribute to school feeding program, only few (6.0%) disagreed. All the respondents agreed that government investment in school farms can sustain school feeding program.

**Table 9:** Strategies for effective implementation of school feeding program

Variables	Frequency	Percent
<b>Have school farm</b>		
Yes	50	100.0
<b>School farm can contribute to SFP</b>		
Yes	47	94.0
No	3	6.0
<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Government investment in school farm can sustain SFP</b>		
Yes	50	100.0

**DISCUSSION**

The home grown school feeding (HGFSF) program is a multi-sector coordination across various government ministries which include the Federal Ministries of Agriculture, Education, Health, Justice, and Budget and National Planning. However, the objectives of the school feeding program focus on three major sectors: agriculture,

health and education and the program intends to generate a positive, integrated impact across all three. It aims to do this by employing local women to work as food vendors in schools, working with farmers so they can provide the necessary produce to local food vendors, involving health workers to monitor the health of school pupils and ensure they receive a nutritious meal prepared in a hygienic way

each day. The program is managed and funded by the federal government but should mainly be implemented by local school communities in every State. This paper revealed an average level of effectiveness of the school feeding program in Anambra State. The program was observed to improve school attendance and the academic performance of the school children. A systematic review of 216 education programs in 52 low- and middle-income countries found that school feeding programs are one of the few education interventions that show positive impact in both school participation (enrolment, attendance, completion) and learning (scores on cognitive, language and mathematics tests) - the standardized mean differences are respectively +0.11, +0.10 and +0.09 (Sniltveit *et al.*, 2015). The food habits of the children showed that meal skipping was prevalent as 70.9% of the children skipped meals while breakfast was the meal skipped by many (72.8%) of those who skip meals. Missing breakfast has been associated with many health problems and reduced performance in cognitive and psychosocial functions, as well as academic learning and achievement (Nakade *et al.*, 2012; Kawafheh *et al.*, 2014). Moreover, children who skip breakfast have difficulty concentrating in the afternoon, as well as feel tired due to reduced energy levels at the end of the day (Nakade *et al.*, 2012; Kawafha, 2013; Kawafheh *et al.*, 2014). This effect is for sure cushioned by the school meal provided, this many have accounted for the improved attendance and performance of the school children in this study.

In general the prevalence of underweight, stunting, wasting, overweight and obesity observed in this study was 2.2%, 2.9%, 3.7%, 15.5% and 1.9% respectively. The figures obtained for stunting (2.9%) and wasting (3.7%) in this study were lower than 37% and 18% reported by Nigerian Demographic and Health Survey (NDHS, 2013). More females in this study were underweight, stunted and overweight than their male counterparts while more males were wasted and obese than their female counterparts. This result may be attributed to the cultural practices in Nigeria where male children are preferred and served better meal portions than females (Oguizu and Nnadede, 2016; Oguizu and Okoro, 2016). Underweight (3.1%) and stunting (3.9%) were observed among young children (4-6 years) of age. This result disagreed with Eze *et al.* (2017) who reported that underweight was more in children 7-9 years of age and Senbanjo *et al.* (2016) who also reported increase in stunting with age. These differences may be from the data as more of the children studied were between 4-6 years of age or as a result of multiple other circumstances and determinants, including antenatal, intrauterine, and postnatal malnutrition, more commonly due to inadequate or inappropriate nutrition and the impact of infectious disease (Willey *et al.*, 2009; De Onis *et al.*, 2012). On the challenges to effective implementation of SFP, many (36.7%) of the caterers reported inadequate supply of food stuffs as a major challenge to the effectiveness of school feeding program while 23.3% reported regular hike in food prices and inadequate storage facility as the major challenge to the effectiveness of school feeding program. Findings from three states (Osun, Anambra and Kaduna) showed that the general quality and quantity of the food served have been affected by the current economic

downturn. The food vendors contracted to feed the children are calling for an increase in the amount earmarked for each child to at least N100, to enable them to provide enough and quality food for the children (Oluwole, 2017). All the public schools studied had school farms while majority (94.0%) of the respondents agreed that school farm could contribute to the sustainability of the program. All the respondents agreed that government's investment in school farms can sustain school feeding program.

## CONCLUSION AND RECOMMENDATION

The study revealed an average level of effectiveness of the school feeding program in Anambra State. Meal skipping was prevalent as many of the children skipped meals while breakfast was the meal skipped by many of those who skipped meals. A vast majority of the children studied were normal while various forms of malnutrition were also present. School feeding program was found to improve attendance and academic performance. Inadequate supply of food stuffs as a major challenge to the effectiveness of school feeding program while regular hike in food prices and inadequate storage facility were also reported. All the respondents agreed that government's investment in school farms can sustain school feeding program.

This work recommends government's urgent investment in school farms as this in turn will not only boost agriculture but can also enhance learning by inculcating the rudiments of agriculture in school children while also providing produce which could be channeled to the school feeding program thereby ensuring sustainability.

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