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Original Article

ASSESSING THE ROLE OF HEALTH EDUCATION IN IMPROVING SCHOOL FEEDING PROGRAM OUTCOME IN SOUTH-EAST NIGERIA

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ABSTRACT

Background: School feeding programs (SFPs) have been implemented globally to improve school-age children's educational outcomes, nutrition, and health. In Nigeria, SFPs have been integrated into the national education policy to address the challenges of hunger, malnutrition, and poor educational outcomes. Enugu State, located in southeastern Nigeria, has many school-age children benefiting from SFPs. However, the effectiveness of these programs is influenced by various factors, including caregivers' willingness to pay, nutrition knowledge, and socioeconomic status. Health education plays a crucial role in improving SFP outcomes by: Increasing nutrition knowledge and educating caregivers about the importance of nutrition and healthy eating habits. Enhancing willingness to pay: Raising awareness about the benefits of SFPs, leading to increased willingness to pay for these programs. Improving health outcomes: Reducing the incidence of nutrition-related health problems among school-age children. Despite the importance of health education in improving SFP outcomes, there is a limited understanding of its specific role in Enugu State. This study aims to bridge this knowledge gap by assessing the impact of health education on SFP outcomes in Enugu State.

Methodology: This study was a comparative, cross-sectional descriptive study carried out in the households of four (two urban and two rural) communities in Enugu State, South East Nigeria., involving. The sample size was 422 and participants were selected using a multistage sampling technique the questionnaire was pre-tested semi-structured interviewer administered in the English language. It was adapted from the National Health Demographic Health Survey. Data

were collated, assembled and analysed using (IBM), Statistical Package for Social Science (SPSS) version 23. Descriptive statistics as percentages and frequency were presented in tables. The mean and standard deviation of parameters in each community were obtained and statistical tests of association between the dependent and independent variables were also carried out and the level of statistical significance was set at $P \leq 0.05$. The research protocol was reviewed and ethical approval Institutional Health Ethics Review Committee of Nnamdi Azikiwe University Teaching Hospital. Written consents were gotten from traditional rulers/ village heads before the commencement of the study and oral consent were sought from respondents. All participating respondents had the right to withdraw from the study anytime they wish without explanation and no consequences to them Confidentiality was maintained throughout the study.

Results: Most of the respondents were female 262 (62.4%) and 158 (37.6%) were males with majority of the respondents having formal education 401 (95.48%) and 194(46.19%) completed tertiary education. Majority of the respondents were household representatives 254(60.5%). On Marital status of respondents 371(88.3) were married, followed by 34(8.1%) respondents that were single parents. 159 of the 420(37.9%) respondents were government employee, 113(37%) respondents were self-employed and 70(16.7%) of the respondents were unemployed. most of the care givers in urban areas feed their children at school daily 151(72.25%) before health education and 146(69.86%) after health education. On why the care givers will like to enrol their child with school feeding program 156(74.64%) respondents indicated that it is based on the free provision of food for their children before health education and 143(68.42%) still indicated that after health education. On the likely reason that will make the care givers enrol their children for school feeding program, 164(78.47%) respondents were of the opinion that children look very tired after school. Most of the care givers in rural areas feed their children at school daily 52(24.64%) before health education and 4(1.90%) after health education. On the likely reason that will make the caregivers enrol their children for school feeding program 66(31.28%) respondents opined that children look very tired after school Most respondents believed that the people needed to be involved in school feeding should be the school authority 163(77.99%) before health education and parents 124(59.33%) after health education. On likely place where the food should be prepared, 53(25.36%) of the respondents before and after health education felt it should be done within the school premises.

Conclusion: Assessing the role of health education in improving school feeding program outcomes in South-East Nigeria reveals its significance in enhancing the overall effectiveness of the program. Health education plays a crucial role in promoting healthy eating habits, improving nutrition knowledge, and encouraging positive lifestyle choices among school children. Health education is a vital component of school feeding programs in South-East Nigeria. By incorporating health education into these programs, policymakers and educators can promote healthy lifestyles, improve nutrition knowledge, and enhance the overall effectiveness of school feeding initiatives.

Keywords: Health education, school feeding program, school age, Caregivers.

Introduction: School feeding programs (SFPs) have been widely recognized as an effective strategy for improving educational outcomes, nutrition, and health among school-age children (Alderman & Bundy, 2012; Kristjansson et al., 2016). In Nigeria, SFPs have been integrated into the national education policy to address the challenges of hunger, malnutrition, and poor educational outcomes (Federal Republic of Nigeria, 2013). However, the effectiveness of these programs is influenced by various factors, including caregivers' willingness to pay, nutrition knowledge, and socioeconomic status (Gelli et al., 2016; WFP, 2017). Health education has been identified as a critical component of SFPs, as it enables caregivers and children to make informed decisions about healthy eating habits and nutrition (WHO, 2018). However, there is a limited understanding of the specific role of health education in improving SFP outcomes in Enugu State, Nigeria. School feeding is an established development aid intervention with multiple objectives including education, nutrition, and value transfer. It also helps to alleviate short-term hunger and cognitive abilities of school children. Traditionally run by international organizations in low-income settings, school feeding programs have had a substantial impact in many less-developed countries. However, recent rethinking by the World Bank and the World Food Programme has prompted a shift toward long-term, sustainable solutions that rely more upon local resources, local capacity, and community participation. Overcoming malnutrition disorders through regular school-feeding to improve the health/nutrition status and the education abilities of school children is one major aim of school feeding program. Malnutrition disorders affect more than 42% of school children in Nigeria and are responsible for 49% absenteeism of primary school age children (NDHS, 2018). Assessing the role of health education in improving school feeding program outcomes in South-East Nigeria reveals its significance in enhancing the overall effectiveness of the program. Health education plays a crucial role in promoting healthy eating habits, improving nutrition knowledge, and encouraging positive lifestyle choices among school children. The school feeding program in Nigeria aims to improve the health of school children, increase school enrollment, attendance, and completion rates, particularly in rural areas. By incorporating health education into the program, children can develop essential life skills, such as food safety handling, proper hygiene practices, and nutrition literacy.

In South-East Nigeria, studies have shown that health education can significantly impact the success of school feeding programs. Key benefits of health education in school feeding programs**:** Improved nutrition knowledge: Health education enables children to make informed choices about their diet, leading to better nutrition outcomes. Enhanced food safety practices: Children learn how to handle food safely, reducing the risk of foodborne illnesses. Increased school enrollment and attendance: Health education can contribute to improved health outcomes, leading to increased school enrollment and attendance. Better lifestyle choices: Health education promotes positive lifestyle choices, such as regular exercise and healthy eating habits. Nutrition is an environmental factor as it represents access to resources from the environment. In other words, nutrition is very crucial in a child's physical, emotional and cognitive development. Food has been acknowledged as life and a power in activating people's life as well as supporting various aspects of child development which is dependent upon correct amount and quality. As food supply becomes increasingly globalized, the need to strengthen food safety systems in and between all countries is becoming more and more evident (Bizari AR, Buxton C, Kwara L, Mensah-Homiah J, Armar-Klemesu M, Brouwer ID, 2014).

Malnutrition among school-age children remains a significant public health concern in Nigeria, particularly in Enugu State. Malnutrition can lead to impaired cognitive function, weakened immune systems, and increased susceptibility to illnesses, ultimately affecting children's academic performance and future prospects (Yunusa I, 2012). According to the Nigerian Demographic and Health Survey (NDHS) 2018, approximately 43.6% of children under the age of 5 in Enugu State suffer from chronic malnutrition (stunting), while 18.3% experience acute malnutrition (wasting). Research suggests that socio-economic factors play a significant role in determining the nutritional status of school-age children. These factors include: Poverty: Low-income households often struggle to provide adequate nutrition for their children. Education: Maternal education is a critical factor in determining children's nutritional status. Access to Healthcare: Limited access to healthcare services can exacerbate malnutrition. Food Security: Household food insecurity can lead to inadequate nutrition. Sanitation and Hygiene: Poor sanitation and hygiene practices can contribute to malnutrition. Cultural Practices: Certain cultural practices, such as food taboos, can affect children's nutritional status (Aliyar R, Gelli A, Hamdani SH, 2015).

Malnutrition among school-age children in Enugu State poses significant threats to their health, cognitive development, and academic performance. The prevalence of malnutrition varies across urban and rural areas, with rural areas generally exhibiting higher rates of malnutrition. However, the socio-economic factors driving these disparities remain poorly understood. Malnutrition, in all its forms, includes under-nutrition (wasting, stunting, underweight). Women, infants, children are at particular risk of malnutrition. Combating malnutrition in all its forms is one of the greatest global health challenges (Ogbebo W, 2016). Under-nutrition can see children dangerously thin for their height (wasting), or their growth permanently impeded (stunting). Inadequate intake of key nutrients may weaken immune systems, impair brain development, and worsen the risk of conditions such as anaemia and blindness. According to estimates, 52 million children under 5 years of age are wasted, 17 million are severely wasted and 155 million are stunted, while 41 million are overweight or obese (World Health Day, 2015)

The introduction of school feeding programme and the importance attached to the programme increased researcher interest to compare the willingness to pay for school meal between urban and rural educational zones in Enugu State. The findings of this study will also determine the value parents or care givers attach in supporting their communities for school feeding in monetary terms between rural and urban dwellers and across socio economic groups in Enugu State, thereby creating an atmosphere for sustainability of the school feeding programme within the state (Anderson P, Moreen JD, *et al*, 2016).

Designed school feeding programmes have been shown to increase access to education and learning and improve children's health and nutrition, especially when integrated into comprehensive school health and nutrition programme. However, School feeding programme has not been fully embraced within some schools in Nigeria and Africa in general. Considering the unstable economy and the poverty level in some countries in sub Saharan Africa, most of these schools receive children from disadvantaged households, who have no guarantee of daily meals, let alone the nutritious capacity of the food due to their poor socio economic background (Greenhalgh T, Kristjansson E, Robinson V, 2007)

From the available literatures, since the launch of school feeding in Nigeria, there have been studies on the type of food served to pupils as school meal, the serving size and proximate composition,(Bailey RL, Angell ME. 2004) but studies are yet to be carried out on the

willingness to pay for school feeding. Thus, the importance of carrying out this study cannot be overemphasized.

Since school feeding was launched in 2005 and re-launched in 2016 in Enugu State, no previous works have been carried out to determine the willingness to pay for school feeding programme among urban and rural dwellers in Enugu state. Also there are fewer studies on how keen, are people to pay for school feeding across socioeconomic groups, therefore there is need for this study. This study aims to contribute to the existing body of knowledge on assessing the effect of health education on school feeding program outcome in Enugu State. The findings of this study will provide valuable insights for policymakers, healthcare professionals, and stakeholders involved in the development of nutrition interventions aimed at mitigating poor feeding among school-age children in Enugu State.

Aim of the study was to assess the role of health education in improving school feeding program outcome in south-east Nigeria.

Methodology

Study Area

This study was carried out in the selected households within communities in Enugu State, South East Nigeria. Enugu State has a population 3,257,298 people with children under 14 years making up to 41 percent of the entire population according to national census of 2006. Enugu state has one thousand two hundred and twenty three (1223) public primary schools scattered throughout Enugu State with enrolment of 177,185 pupils in public primary schools. Enugu State launched school feeding in 2005 and re-launched in 2016. The state is bounded on the south by Abia State, Ebonyi State by the east, Anambra State at the west, Kogi and Benue States on the north with a total land area of 7,161 sq. km. It is made up of 17 Local Government Areas (LGAs) divided into three (3) ssenatorial districts. Of the 17 LGAs, three (Enugu North, Enugu South and Nsukka) are urban LGAs while the remaining 14 are rural. Most of the urban dwellers are civil servants, traders, transporters or artisans while rural dwellers are largely subsistence farmers and petty traders. The people are mostly Igbo and are predominantly Christians. The language commonly spoken are Igbo, English language.

Study Design: The study was a cross-sectional comparative descriptive study

Study Population: The study population consists of households that have primary school children in the selected four (two urban and two rural) communities in Enugu State.

Inclusion criteria: Respondent must be a caregiver of school age child, residing in the selected community and a child (6-11 years) in primary school

Exclusion criterion: Parents or guardians who declined consent

Sample Size Determination

The sample size using the formula for calculating sample size for infinite population (population > greater than 10,000). The prevalence of practice of the subject was assumed to be 50% (0.5)

$n = z^2pq/d^2$.

Where:

n = Sample size,
z = Standard normal deviate set at 95% ≈ (1.96)
p = Prevalence of practice of the subject assumed to 50% (0.5),
q = Complementary probability of p (1-P)
d = Error margin at 5% (0.05).

$$n = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2}$$

$$n = \frac{3.8416 \times 0.5 \times 0.5}{0.0025}$$

$$n = \frac{0.9604}{0.0025}$$

$$n = 384.16 \approx 384$$

An attrition rate of 10% (38.4) was added. The minimum sample size was 422

Sampling Technique:

Multistage sampling technique was employed in the study

Stage 1: Selection of Local Government Areas: Enugu States has 17 Local Government Areas (LGAs), 3 Urban LGAs and 14 Rural LGAs. Two LGAs comprising of one urban Enugu South and one rural Nkanu West were randomly selected from the17 LGAs in the state.

Stage 2: Selection of communities: Two communities were selected from each of the LGAs by balloting. The two selected communities from Enugu South LGA were Amechi and Ugwuaji while Akpugo and Ozalla communities were selected from Nkanu West LGA.

Stage 3: Selection of households: The households were selected by modified cluster random sampling. In each of the selected communities, a central location (eg the major market or meeting area) was the starting point for sampling. The direction that was taken in selecting the first household to be visited was determined by spinning a bottle on an even ground and where the bottle pointed when it stopped was the direction taken. In the direction of point of the bottle, consecutive houses were selected until the required 106 households per community were completed, (urban and rural) of the selected community using the NPC house listing.

Pretesting

Reactions from the questions were observed to determine their understanding and acceptability and their willingness to participate in the study as the study instrument was pretested in 40 households, 10 households each from urban and rural communities outside the selected Local Government Areas. Pretesting enables the validity of the data collection tools and the time needed to administer the questionnaire to each participant.

Data Collection

Two research assistants who are degree holders were recruited and trained for the study. They were trained in a private school in Enugu for two days on the administration and filling of the questionnaire by the principal investigator. They took part in the pretesting in order to assess the success of the training. The questionnaire was adapted semi-structured interviewer administered in English language. The questionnaire was divided into sub-sections. The collection of data was preceded by courtesy visits to the traditional rulers of the selected communities where the purpose and details of the study were fully explained.

Data Analysis

Data were collated, assembled and analysed using International Business Machine (IBM), Statistical Package for Social Science (SPSS) version 23. Descriptive statistics as percentages and frequency were presented in tables. The mean and standard deviation of parameters in each community were obtained and statistical tests of association between the dependent and independent variables were also carried out and the level of statistical significance was set at $P \leq 0.05$. An asset-based socio-economic status (SES) index developed using principal components analysis were used to examine whether there were systematic SES differences in the variables. The SES groups were quantified according to the average number of respondents for this study.

Ethical Considerations

The research protocol was reviewed and approval for the project was sought from the Ethics Review Committee of Nnamdi Azikiwe University Teaching Hospital. Consents were obtained from traditional rulers/ village heads before the commencement of the study. All subjects had the right to withdraw from the study at any time they wished without explanation. Confidentiality was maintained throughout the study.

RESULTS

Table 1: Socio-demographics characteristic of respondents

Variables	Frequency(N=420)	Percentage
Sex		
Male	158	37.6
Female	262	62.4
Marital status		
Married	371	88.3
Single	34	8.1
Divorced	7	1.7
Widowed	8	1.9
Educational status		
Formal Education	401	95.48
No Formal Education	19	4.52
Position in household		
Household Head	166	39.5
Household Representation	254	60.5
Highest level of education		
Primary	43	10.72
Secondary	164	40.90
Tertiary	194	48.37
Major source of income		
Government Employed	160	37.9
Privately Employed	38	9.1
Self Employed	113	27.0
Retired	23	5.7
Student	14	3.3
Unemployed	70	16.7
Others	1	0.2
No Response	1	0.2

Table 1, Majority of the respondents were household representatives 254(60.5%) as against household heads 166(39.5%). most of the respondents were female 262 (62.4%) and 158 (37.6%) were males with majority of the respondents having formal education 401 (95.48%) and 194(46.19%) completed tertiary education. On Marital status of respondents 371(88.3) were married, followed by 34(8.1%) respondents that were single parents. 159 of the 420(37.9%)

respondents were government employee, 113(37%) respondents were self-employed and 70(16.7%) of the respondents were unemployed.

Table 2: Socio-demographics between rural and urban respondents

	Urban		**Rural**	
Variables	**Frequency (N=209)**	**Percentage**	**Frequency (N=211)**	**Percentage**
Marital status				
Married	178	88.3	193	91.5
Single	22	8.1	12	5.7
Divorced	6	1.7	1	0.5
Widowed	3	1.9	5	2.4
Educational status				
Formal Education	200	95.7	201	95.3
No Formal Education	9	4.3	10	4.7
Position in household				
Household Head	113	54.1	53	25.1
Household Representation	96	45.9	158	74.9
Highest level of education				
Primary	17	8.1	26	12.3
Secondary	119	56.9	45	21.3
Tertiary	64	30.6	130	61.6
Major source of income				
Government Employed	43	20.6	117	55.5
Privately Employed	19	9.1	19	9.0
Self Employed	67	32.1	46	21.8
Retired	2	1.0	21	10.0
Student	13	6.2	1	0.5
Unemployed	64	30.6	6	2.8
Others	0	0	1	0.5
No Response	1	0.5	0	0
Total	209	100.0	211	100

Table 2, The household heads were 113(54.1%) and 53(25.1%) in urban and rural areas respectively while the household representatives were 96(45.9%) and 158(74.9%) in urban and rural areas respectively. The major source of income in the Urban areas was through self-employment 67(32.1%) followed by unemployed 64(30.67%) while in the Rural we have Government employee 117(55.8%) as the highest followed by self-employed 46(21.8%).

184 (88.3%) of caregivers in urban areas and 193(91.5%) in rural areas were married. 200(95.7%) respondents in urban and 201(95.3%) respondents in rural areas had formal education. In Urban area, the level of education with the highest frequency is Secondary 119(56.9%), followed by Tertiary 64(30.6%), then Primary 17(8.1%) while in rural, we have Tertiary as the highest 130(61.6%), followed by Secondary 45(21.3) and Primary 26(12.3%).

Table 3: Knowledge and Perception before and after health education

Urban (N=209)

		Before		**After**
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
Ever heard of School Feeding				
Yes	169	80.86	197	94.26
No	39	19.14	12	5.74
Where first heard about school feeding				
School	87	41.626	98	46.889
Teacher	21	10.047	15	7.177
Radio	21	10.047	21	10.047
Television	17	8.133	13	6.220
Relative or Friends	27	12.875	19	9.090
Purpose of School Feeding				
Improve School Attendance	167	79.90	145	69.38
Improve School Enrolment	160	76.56	141	67.46
To Improve Growth	173	82.78	159	76.08
To Reduce Sickness	152	72.73	131	62.68
All of the above	121	57.90	125	59.68
None of the	11	5.26	7	3.35

In table 3, 169(80.86%) of the respondents in urban area have heard about school feeding before health education. After health education, the number increased to 197(94.86%). On where they heard about school feeding, majority of the respondents heard about school feeding at school before 87(41.63%) and after 98(46.88%) health education.

On the purpose of school feeding, majority 173(82.78%) felt that it helps to improve growth, followed by 167(79.9) to improve school attendance before health education, after health education majority 159(76.08%) still believe it helps to improve growth followed by, to improve school attendance 145(69.38%).

Table 4: Knowledge and Perception before and after health education

Rural (N = 211)

		Before		After
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
Ever heard of School Feeding				
Yes	176	83.41	208	98.58
No	35	16.59	3	1.42
Where first heard about school feeding n=176 (Before) and 208(After)				
School	28	13.90	28	13.27
Teacher	19	10.80	51	24.52
Radio	26	14.77	26	12.50
Television	66	37.50	66	31.73
Relative or Friends	37	21.02	37	17.79
Purpose of School Feeding				
Improve School Attendance	155	73.46	32	15.17
Improve School Enrolment	96	45.50	12	5.69
To Improve Growth	35	16.59	51	24.17
To Reduce Sickness	29	13.74	30	14.22

In Table 4, 176(83.41%) of the respondents in rural area have heard about school feeding before health education. After health education, the number increased to 208(98.58%). On were they heard about school feeding, majority of the respondents heard about school feeding on television 66(31.28%) before and after health education.

On the purpose of school feeding, majority 155(73.46%) felt that it helps to improve school attendance, followed by 96(45.50) to improve school enrolment before health education, after health education 51(24.17%) believe it helps to improve growth followed by to improve school attendance 32(15.17%).

Table 5: Factors influencing school feeding practice before and after health education Urban (N=209)

		Before		After
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
How often do your children feed at school				
Daily	151	72.25	146	69.86
Every two days	3	1.44	3	1.44
Weekly	31	14.83	47	22.49
As the program demands	24	11.48	9	4.31
Why will you like to enrol your child?				
To have good health	152	72.73	130	62.20
Improve retentive memory	129	61.72	116	55.50
Free food is provided	156	74.64	143	68.42
Balanced diet	148	70.81	136	65.07
All of the above	124	59.33	127	60.77
None of the above	15	7.18	9	4.31
What are the likely reasons that will make you to enrol your child?				
Child not feeding well at home	135	64.60	115	55.02
Need for balanced diet	125	59.80	108	51.67
Poor retentive memory	119	56.94	114	54.55
Falls sick often	121	57.89	110	52.63
Looks very tired after school	164	78.47	163	77.99
All of the above	83	39.71	93	44.50
None of the above	5	2.39	7	3.35
What are the likely features that will make you not to enrol your child?				
Inability to pay for the food	137	65.55	117	55.98
Not properly supervised	155	74.16	123	58.85
Not a balanced diet	163	77.99	144	68.89
Small ration of food	145	69.38	138	66.03
Not evenly distributed	150	71.77	147	70.33
All of the above	104	49.76	99	47.37
None of the above	8	3.83	9	4.31

What are the likely factors that will make it easier for you to enrol your child?				
Affordable food	154	73.68	131	62.68
Free food	172	82.80	141	67.46
Balance diet	168	80.38	80	23.92
Sizeable portions	48	22.97	138	66.02
Equally distributed	132	63.16	120	57.42
All of the above	109	52.15	104	49.76
None of the above	4	1.91	5	2.39
How would you like the fee for the school feeding to be like?				
Full payment by parents	19	9.09	21	10.05
Full payment by government	129	61.72	116	55.50
Equally shared between parents and government	36	17.22	38	18.18
Subsidized payment by government	16	7.66	20	9.57
All of the above	6	2.87	6	2.87
None of the above				
Have you ever paid for school l feeding?				
Yes	46	22.01	39	18.66
No	163	77.99	170	81.34
How did you pay?				
Out of pocket	25	54.35	19	48.71
Sponsored by someone else	0	0.00	0	0.00
Borrowed	2	4.35	3	7.69
Sold assets	3	6.52	3	7.69
Savings	15	32.61	14	35.90

In Table 5, most of the care givers in urban areas feed their children at school daily 151(72.25%) before health education and 146(69.86%) after health education. On why the care givers will like to enrol their child with school feeding program 156(74.64%) respondents indicated that it is based on the free provision of food for their children before health education and 143(68.42%) still indicated that after health education. On the likely reason that will make the care givers enrol their children on school feeding programs, 164(78.47%) respondents thought that children look very tired after school.

Table 6: Factors influencing school feeding practice before and after health education

Rural (N=211)

	Before		After	
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
How often do your children feed at school				
Daily	52	24.64	4	1.90
Every two days	4	1.90	0	0
Weekly	18	8.53	1	4.74
As the program demands	4	1.90	5	2.36
Why will you like to enrol your child?				
To have good health	28	13.27	45	21.33
Improve retentive memory	18	8.53	23	10.90
Free food is provided	53	25.12	25	11.85
Balanced diet	22	10.42	25	11.85
All of the above	20	9.48	4	1.90
None of the above	93	44.08	2	0.95
What are the likely reasons that will make you to enrol your child?				
Child not feeding well at home	12	5.69	19	9.00
Need for balanced diet	19	9.00	31	14.69
Poor retentive memory	20	9.48	24	11.48
Falls sick often	20	9.48	14	6.64
Looks very tired after school	66	31.28	33	15.64
All of the above	10	4.74	2	0.95
None of the above	88	42.11	0	0
What are the likely features that will make you not to enrol your child?				
Inability to pay for the food	63	29.86	26	12.32
Not properly supervised	26	12.32	27	12.80
Not a balanced diet	30	14.22	30	14.22
Small ration of food	16	7.58	13	6.16
Not evenly distributed	28	13.27	19	9.00
All of the above	2	0.95	1	0.47
None of the above	94	44.55	1	0.47
What are the likely factors that will make it easier for you to enrol your child?				
Affordable food	39	18.48	42	19.90
Free food	53	25.12	28	13.27
Balance diet	96	45.50	23	10.90

Sizeable portions	5	2.37	13	6.16
Equally distributed	8	3.80	6	2.84
All of the above	4	1.90	2	0.95
None of the above	11	5.21	1	0.47
How would you like the fee for the school feeding to be like?				
Full payment by parents	6	2.84	1	0.47
Full payment by government	182	86.26	22	10.43
Equally shared between parents and government	10	4.74	23	10.90
Subsidized payment by government	8	3.80	12	5.69
All of the above	4	1.90	0	0
None of the above	1	0.47	0	0
Have you ever paid for school feeding?				
Yes	3	1.42	3	1.42
No	208	98.58	208	98.58
How did you pay?				
Out of pocket	3	100.00	3	100.00
Sponsored by someone else	0	0.00	0	0.00
Borrowed	0	0.00	0	0.00
Sold assets	0	0.00	0	0.00
Saves	0	0.00	0	0.00

In Table 6, most of the care givers in rural areas feed their children at school daily 52(24.64%) before health education and 4(1.90%) after health education. On why the care givers will like to enrol their child with school feeding program 53(25.12%) respondents indicated that it is based on their children will get free food and 45(21.33%) for good health, after health education. On the likely reason that will make the caregivers enrol their children for school feeding program 66(31.28%) respondents were of the opinion that children look very tired after school before health education and 33(15.64%) after health education.

Table 7: Willingness to pay before and after health education

Urban (N=209)

		Before HE		After HE
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
Are you willing to pay for school feeding				
Yes	136	65.07	136	65.07
No	73	34.93	73	34.93
Likely reasons for not willing to pay (n=73)				
Lack of money	25	34.25	25	34.25
Lack of interest	14	19.18	14	19.18
Lack of trust and confidence	13	17.81	13	17.81
Confusion and fear	5	6.85	5	6.85

In Table 7, 136(65.07%) respondents in urban areas were willing to pay for the school feeding program with the likely reason why they may not be willing to pay is due to lack of money 25(11.96%) before and after health education.

Table 8: Willingness to pay before and after health education

Rural (N=211)

		Before		After
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
Are you willing to pay for school feeding				
Yes	111	52.60	111	52.60
No	100	47.40	100	47.40
Likely reasons for not willing to pay (n=100)				
Lack of money	51	51.00	51	51.00
Lack of interest	19	19.00	19	19.00
Lack of trust and confidence	28	28.00	28	28.00
Confusion and fear	1	1.00	1	1.00

In Table 8, 111(52.60%) respondents in rural areas are willing to pay for the school feeding program with the likely reason why they may not be willing to pay is due to lack of money 51(24.17%) before and after health education.

Table 9: Measures for productive school feeding before and after health education

URBAN (N=209)

	Before		After	
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
Who do you think should be involved in school feeding?				
Government	188	89.95	161	77.03
School Authority	163	77.99	89	42.58
International Organization/Donors	128	61.24	67	32.06
Parents	124	59.33	124	59.33
Community	92	44.02	92	44.02
How will you like the food to be prepared?				
Cooked within school premises	53	23.36	53	25.36
Cooked outside and brought to the school	37	17.70	37	17.70
Cooked under the supervision of qualified dieticians	23	11.00	23	11.00
Cooked by caterers	46	22.01	46	22.01
Under supervision of school authority	13	6.22	13	6.22
How will you like the food to be served?				
One full whole portion of food	36	17.22	36	17.22
Two moderate portions of food	41	19.62	41	19.62
A portion with a snack	90	43.06	90	43.06
Snacks only	4	1.91	4	1.91
How do you think the food item should be sourced?				
From locally available foods only	52	24.88	52	24.88
Locally available foods and other sources	101	48.33	101	48.33
Other sources of food outside the community	11	5.26	11	5.26
Imported from outside the country	7	3.35	7	3.35
Who should ensure that the foods were served to all school children?				
School Authority	135	64.60	135	64.60
Parents representatives	25	11.96	25	11.96
Government officials	19	9.09	19	9.09
Community member	23	11.0	22	10.53

In Table 9, respondents in urban areas who believed that the people needed to be involved in school feeding should be the school authority 163(77.99%) before health education and parents 124(59.33%) after health education. On likely place where the food should be prepared,

53(25.36%) of the respondents before and after health education felt it should be done within the school premises. On how the food item should be sourced, 101(48.33%) of the respondents before and after health education felt it should be from locally available foods and other sources.

Table 10: Measures for productive school feeding before and after health education

Rural (N=211)

		Before		After
Variable	**Frequency**	**Percent**	**Frequency**	**Percent**
Who do you think should be involved in school feeding?				
Government	178	84.36	38	18.01
School Authority	38	18.01	35	16.59
International Organization/Donors	71	33.65	6	2.84
Parents	58	27.49	2	0.95
Community	8	3.79	7	3.32
How will you like the food to be prepared?				
Cooked within school premises	46	21.80	28	13.27
Cooked outside and brought to the school	24	11.37	8	3.79
Cooked under the supervision of qualified dieticians	84	39.81	18	8.53
Cooked by caterers	19	9.00	7	3.32
Under supervision of school authority	32	15.17	9	4.27
How will you like the food to be served?				
One full whole portion of food	51	24.17	26	12.32
Two moderate portions of food	48	22.74	20	9.48
A portion with a snack	103	48.82	17	8.06
Snacks only	3	1.42	3	1.42
How do you think the food item should be sourced?				
From locally available foods only	53	25.12	59	27.96
Locally available foods and other sources	105	49.76	109	51.66
Other sources of food outside the community	29	13.74	25	11.85
Imported from outside the country	13	6.16	8	3.79
Who should ensure that the foods were served to all school children?				
School Authority	97	45.97	100	47.40
Parents representatives	15	7.11	9	4.27
Government officials	88	41.71	96	45.5
Community member	1	0.5	4	1.90

In Table 10, respondents in rural areas who believed that the people needed to be involved in school feeding should be the government 178(84.36%) before health education and government 38(18.01) after health education. On the likely place where the food should be prepared, 84(39.81%) of the respondents before health education felt it should be done under the supervision of qualified dieticians followed by 46 (21.80%) who felt it should be prepared within the school premises. After health education 28 (13.27%) felt it should be within school premises followed by 18(8.53%) who felt it should be under the supervision of qualified dieticians. On how the food item should be sourced, 105(49.76%) of the respondents before health education and 109(51.66%) after health education felt it should be from locally available foods and other sources.

Discussion

The socio-economic factors for school feeding among urban and rural caregivers of school age children in Enugu State were x-rayed in this study. This study shows that most of the care givers had formal education 401 (95.48%). This is consistent with the study in Owerri, Nigeria where mothers had formal tertiary education (64.7%) The observation is in contrast with findings from similar previous study on school feeding conducted in Southern Ethiopia and Kenya which reported that the majority of the respondents' mothers did not attend formal education and have lower levels of household income. A higher female respondents 262(62.4%) was observed with greater majority of respondents married in the study 371(88.3%). This observation is in keeping with findings from previous studies in Southern Ethiopia and Owerri, Nigeria. Many studies on nutrition have shown that under nutrition in children stunts their growth and mental development, hence the relationship between nutrition and academic performance. It was found that in Bangladesh, the research carried out by the International Food Policy Research Institute on the effects of school feeding programme found that the programme raised school enrolment rates by 14.2%, reduced the probability of dropping out of school by 7.5% and increased school attendance by 1.3 days a month. Also in another study in Bangladesh, a programme of school based food distribution increased enrolment by 20% and a 2% decline in non-participating schools. The irregular school attendance of malnourished and unhealthy children is one of the key factors for poor performance. Another study noted that students in school feeding programme have the potential for improving their performance because it enabled them attend

school regularly and studied more effectively. He found that in study carried out in Jamaica, children in Grade 2 scored higher in Arithmetic when they started being fed at school. However, the impact of school feeding programme on the academic performance of pupils has been embraced with mixed feelings. It was observed that although h SFPs motivate parents to enrol their children in school, its impact on academic performance is mixed and depends on various factors within the context in which the programme is set.

Conclusion

Assessing the role of health education in improving school feeding program outcomes in South-East Nigeria reveals its significance in enhancing the overall effectiveness of the program. Health education plays a crucial role in promoting healthy eating habits, improving nutrition knowledge, and encouraging positive lifestyle choices among school children. Health education is a vital component of school feeding programs in South-East Nigeria. By incorporating health education into these programs, policymakers and educators can promote healthy lifestyles, improve nutrition knowledge, and enhance the overall effectiveness of school feeding initiatives.

Recommendation: Nutrition Education: Provide nutrition education to caregivers and school-age children to promote healthy eating habits and reduce the risk of malnutrition and poor performance among school age children.

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REFERENCES

Aguayo, V. M., & Baker, S. K. (2015). Vitamin and mineral deficiencies in developing countries: A review of the evidence. *Journal of Nutrition*, 145(11), 2535-2545.

Araoye MO. Research methodology with statistics for health and social sciences. (2004). 2nd ed. Ilorin: *Nathadex Publications*, 115-122.

Bundy, D. A., Burbano, C., & Groves, L. (2017). Rethinking school feeding: Social safety nets, child development, and the education sector. *World Bank Research Observer*, 32(1), 1-18.

Federal Government of Nigeria. (2016). National Home Grown School Feeding Programme. Abuja: Federal Ministry of Education.

Global Alliance for Improved Nutrition. (2019). School feeding programmes: A review of the evidence. Geneva: GAIN.

Greenhalgh T, Kristjansson E, Robinson V (2007). Realist review to understand the efficacy of school feeding programmes. *BMJ.* 335(7625):858–861.

IBM Corporation. IBM-SPSS Statistics for Windows, version 22.0. Armonk, NY: IBM Corporation, 2013.

Ogbebo W. Is School Feeding programme worth the attention? (2016). Available from: http://www.leadership.ng/news/497955/school-feeding-programme-worth attention.

The World Bank. Nigeria Demographic and Health Survey (NDHS) 2018. http://microdata.worldbank.org/index.php/catalog/2018

United Nations Children's Fund. (2020). Nigeria: Nutrition profile. New York: UNICEF.

World Health Organisation. How safe is your Food? World Health Day 2015: from Food Safety the global view, 2015. Available from: http://www.who.int/campaigns/world-health-day/2015/en.

World Health Organization. (2018). School health and nutrition: A foundation for social and economic development. Geneva:

WHO (2014). School feeding contributes to micronutrient adequacy of Ghanaian schoolchildren. *Br J Nutr;* 112(6):1019–1033.