THE PROGRESS
Vol.4, No.2 (June, 2023), Pp.13-22
ISSN (Online): 2958-292X, ISSN (Print): 2958-2911

Human Nature Research Publisher

Original Article **http://hnpublisher.com**

Eating Patterns and Daily Dietary Recall of Primary School Pupils: An Empirical Evidence from a School Feeding Scheme

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ABSTRACT

Aim of the Study: The objective of this study was to experimentally evaluate children's daily food memory and eating habits. The study found that the gender and school location had an impact on the nutritional condition of primary school students as well as the school food scheme.

Methodology: The investigations were based on three hypotheses and three research questions. In this study, the Eating Habits and Daily Dietary Recall Scale was the tool utilized to gather data (EPDDRS). Four experts—three from the department of vocational education and one lecturer in test and measurement evaluation—validated the instrument's face. The dependability indices of EPDDRS were calculated using Cronbach's Alpha. While delivering the instruments, the researcher used the direct administration and retrieval approach. 58 instructors and a sample size of (N=1240) students were selected using a systematic random selection approach. The obtained data was examined using mean and standard deviation to address the research objectives, and the null hypotheses were tested using t-test statistics and Analysis of variance (ANOVA) at the 0.05 level of significance.

Findings: Findings revealed a substantial difference in the mean assessments of male and female students about their eating patterns. On the school meal program's dietary recall list, students from high, middle, and low socioeconomic status differ significantly. Recommendations were given to the government, schools, and parents based on the study's findings. The study's shortcomings were discussed, and recommendations for more research were made.

Conclusion: The main conclusions of this study were that the school meal program had a favorable impact on the students' nutritional status. Also, a balanced ration of nutrient-dense meals that were suitably varied was supplied for the students via the school food program.

Keywords: Eating Patterns, Daily Dietary Recall, Nutritional Status, Pupil, School, Feeding Scheme.

Article History

Received:
April 18, 2023

Revised:
June 13, 2023

Accepted:
June 20, 2023

Published:
June 30, 2023

Introduction

Over the years, both rich and poor nations have introduced School feeding schemes at one point or the other in their national history. Large organizations frequently carry out these programs in conjunction with the national government and non-governmental groups. School feeding schemes have a long history of more than a century of development, testing, and evaluation as well as ongoing research to provide the best in nutrition, nutrition education, and food services for the country's millions of school-aged children (Okolo-Obasi & Uduji, 2022). School feeding schemes did not emerge overnight or even during the previous decades. The School feeding scheme in Nigeria is a significant national initiative with the goal of giving all students between the ages of 5 and 13 one meal each day while they are in class. The primary school students' nutritional state, enrollment, attendance, academic performance, and completion rate are all predicted to improve as a result of this initiative (Aurino, Gelli, Adamba, Osei-Akoto, & Alderman, 2023).

The school feeding scheme is divided into two categories: take-home rations and on-site meals or snacks. Historically, on-site meals have been the most common type of school food intervention. They are primarily introduced to encourage access to education and improve learning. The major on-site meal options are breakfast, mid-morning snacks, lunch, and supper, which is exclusively available to boarding school students. The on-site feeding program offers hot meals in the morning or at lunch to provide students energy for the day. The meals are either made nearby or on the school's grounds (Nhlapo, Lues, Kativu & Groenewald, 2015). The snacks are often ready-made, high-energy, fortified snack biscuits in regions where they are utilized in place of prepared meals. The take-home ration is a perk that promotes educational access. This approach is providing the kids with food to take home. This take-home ration is typically delivered at specific points during the school year, such as the conclusion of the school day, the end of the term, or even the end of the year, depending on the school or the authorities running the program (Cohen, Hecht, McLoughlin, Turner & Schwartz, 2021). Take home meals are designed for the whole family and act as a significant incentive for regular attendance at school and involvement in all educational activities to help students achieve better academically.

The School feeding scheme is often targeted at rural children in underdeveloped nations, although most governments have made it mandatory for all students enrolled in public primary schools from low- to high-socioeconomic status households. Insuring that students have access to meals at school can be essential to ensuring that kids study effectively (Chakrabarti, Scott, Alderman, Menon & Gilligan, 2021). The Nigerian stakeholders applauded the school feeding initiative because it would help millions of Nigerian children who leave their homes for school without food and don't get back until late in the afternoon eat. Through this program, the children would be able to eat a meal that would meet at least one-third (1/3) of their daily nutritional needs, which would enhance their academic performance. Many school food programs have a greater influence on students' nutritional health, according to several research. Kids who have access to a school breakfast program eat a better diet overall. The existence of school breakfast programs either promotes better results for every outcome investigated or, at the very least, does not promote poorer outcomes (Adekunle & Christiana, 2016). A society's health and the eating habits of its children depend on its population receiving a healthy diet.

In other words, students who are raised in such circumstances show signs of lifestyle influences on their eating habits. A child's academic performance is strongly influenced by their nutritional and physical health state, Children who lack specific nutrients in their meals, especially iron and iodine, or who have protein-energy malnutrition hunger, parasite infection, or other disorders may not have the same capacity for learning as healthy, well-nourished children, claim. Studies have shown that children of school age who are in poor health and who eat poorly have lessened cognitive development, either through physiological changes or by limiting their capacity to engage in learning experiences, or both (Chakraborty & Jayaraman, 2019; Atta, & Manu, 2015). Hence, it is crucial to experimentally assess the daily dietary memory and eating habits of primary school students as they relate to a typical school food program. The study will assist identify youngsters from the streets, which will be helpful to the students.

Knowing that a healthy supper must be had at school will encourage frequent attendance. The availability of meals, which would lessen health issues and also boost academic performance of students, has encouraged the students' regularity. Given the outcomes of the School feeding scheme and how crucial a lunch supplied to children while they are in school has been in improving the children's health and academic performance, the study would also be significant to the broader public.

Statement of the Problem

Children are among the most susceptible people in any society, and they would be disproportionately affected by poverty and inequality. Eating patterns or behaviors are known as feeding habits. One to three meals each day are possible. The proper approach makes reference to a diet that is well-balanced. A balanced diet includes all six necessary elements in the proper quantities as needed by the body. The six nutrients are necessary because they include the different nutritious components intended to maintain and advance overall health. In terms of eating habits, primary school students face a variety of influences and difficulties, including their appetites, peer pressure, parental influence, and early-learned eating habits. There are indications that economic considerations, particularly the price of food in relation to income, have a significant role in determining the kind and quantity of food that individuals eat. The majority of people are shown to have switched from consuming more carbs like rice and corn to more protein-rich foods like dairy and meat as the level of life keeps rising.

When it comes to a child's academic achievement in school, nutrition and health have a significant role. Children who are malnourished in terms of protein, energy, or other nutrients—particularly iron and iodine—or who have other illnesses such hunger parasite infections or other diseases are unlikely to have the same capacity for learning as children who are healthy and well-fed. Children who are in poor physical and nutritional health are less able to participate in learning experiences, which has an impact on their cognitive development. One in ten children in Nigeria do not attend school, making it one of the countries with the lowest rates of school enrollment in the world. The reasons for this include poverty, socio-religious prejudice, geographic location, apathy, and neglect of the need for adequate educational opportunities and a welcoming environment. These young people are typically seen peddling various things on crowded city streets in exchange for cash. In rural locations, you can find others working on farms or assisting their parents with their varied jobs. As a result, the focus of this study is on examining the daily food memory and eating habits of primary school students as determined by a School feeding scheme.

Research Questions

This study answered the following research questions:-

1. What are the eating patterns of primary school pupils?
2. What is a day dietary recall list of primary school pupils in low, middle and high social economic status?
3. What influence has School feeding scheme on the nutritional status of the primary school pupils?

Research Hypotheses

The research hypotheses for this study were tested at the 0.05 level of significance. They are as follows:-

HO_1 There is no significant difference between the eating pattern of male and female primary school pupils.

HO_2 There is no significant difference in dietary recall list among primary school pupils of low, middle, and high social economic status

HO_3 There is no significant difference between the influence of School feeding scheme on the nutritional status of pupils in urban and rural area.

Research Methodology

Research Design

This study employed a descriptive ex-post facto research design. When the dependent variable has already been impacted by the independent variable, this research design is used. As a result, no variable was altered.

Population

The population of this study consisted of teachers and pupils from primary one to three in public primary schools. There were twelve thousand four hundred (12,400) pupils and five hundred and seventy-eight (578) teachers present.

Sample

A sample of 1240 kids and 58 teachers, representing 10% of the entire student and teacher population participating in the school meal program in the research region, were chosen using Primary 1, 2, and 3. A method of systematic random sampling was used in the investigation. Five schools from urban regions and five from rural areas were randomly selected. Local government offices were located in metropolitan regions, while other locations were in rural ones. The items on the instruments for the Faculty of Education at Delta State University Abraka were validated by four experts—three from the Vocational Education Department and one lecturer in test and measurement assessment. They provided input, and the instrument was improved.

Validity and Reliability

To evaluate the trustworthiness of the device, a pilot study was carried out. In this approach, students and instructors received sixty copies of the tests. The pilot exam was taken by sixty respondents, comprising thirty (30) teachers and students from urban regions and thirty (30) from rural areas. The pilot test was divided into two equal halves, and the correlation between the two halves' findings was used to establish the internal dependability. The internal consistency of the tool was assessed using Cronbach's alpha statistics. The results of the pilot research showed that the r value coefficient was 0.74. The instrument is believed to be appropriate for the inquiry as evidenced by the high coefficient.

Data Collection Tool

The structured questionnaire that comprised the major component of the study was called the Eating Patterns and Daily Dietary Recall Scale (EPDDRS). Section A of the questionnaire, which was broken up into sections, included questions on the demographics of the students, including their sex and the location of their school. Although Part B collected data on Daily Dietary Recall, Section C collected information on Eating Habits. Each of the selected schools received a total of 1298 copies of the questionnaire, which were hand distributed with the help of research assistants and classroom teachers.

Data Analysis

Frequency counts, percentages, means, and standard deviation were used to address the study's topical issues. On the scale in use, the cutoff was 2.50. Hence, mean scores of 2.50 and above were considered to be in agreement, whilst scores of 2.50 or lower were considered to be in disagreement. T-tests with a 0.05 threshold of significance were employed to evaluate hypotheses. Analysis of Variance (ANOVA) was used to assess Hypothesis 2 at the 0.05 level of significance.

The goal of the School feeding scheme was to guarantee that students ate at least one square, balanced meal each day that provided at least 33% of the daily required intake of important vitamins and minerals. The program requires a meal that is based on the national recommendations but modified to take seasonality and local availability into account, as indicated in table 1.

Table1: *Weekly Standard Menu as Originally Planned and as Currently Implemented*

Day	
Monday	Maize, beans, fish stew
Tuesday	Yam and beans with fish vegetable stew
Wednesday	Rice beans, vegetable with egusi + fish + coco drink
Thursday	Maize, beans egg stew
Friday	Rice, beans, fish vegetable stew

Results

RQ 1: What are the eating patterns of primary school pupils?

Table 2: *Mean responses of pupilson the eating patterns of male and female pupils(N=1240)*

S/N	Statement item	Mean	SD	Remark
	Eating Pattern at Home			
1	You eat three meals a day	2.83	0.63	Agreed
2	You eat breakfast before coming to school	2.51	0.55	Agreed
3	Your parents pack lunch for you to the school	2.05	0.64	Disagreed
4	Breakfast is not eaten at all in your house	2.13	0.89	Disagreed
	Food Eaten at School			
5	Your school gives you breakfast every school day	3.00	0.89	Agreed
6	Your school gives you lunch every school day	2.72	0.94	Disagreed
7	Food is given to you in school before classes begin	2.01	0.78	Disagreed
8	Your school gives you snacks every school day	1.56	0.64	Disagreed

According to the outcome shown in Table 2, the statement items' mean range was between 1.56 and 3.00. Four items had means that were higher than the 2.50 cutoff criterion. The means for items 1, 2, 5, and 6 were under 2.50. This showed that while some of the statement items were accepted by the responders, some were not. The items' standard deviations varied from 0.55 to 0.94. This demonstrated that respondents' replies were similar to one another since they were near to the mean.

RQ 2: What is the daily dietary recall list given to primary school pupils in schools?

Table 3: *Mean responses of pupils on the daily dietary recall list given to pupils in schools (N=1240)*

S/N	Statement item	Mean	SD	Remark
	Breakfast			
9	Tea and bread	3.09	0.89	Accepted
10	Quaker oat and bread	2.65	0.57	Accepted
11	Custard or pap with beans pudding (akara)	2.71	0.63	Accepted
12	Noodles and egg (indomie)	2.11	0.76	Rejected
13	Rice and with fish or beef stew	3.09	0.55	Accepted
14	Fried plantain or yam with egg sauce	2.52	0.64	Accepted
15	Beans pottage	1.72	0.79	Rejected
16	Water	4.10	0.93	Accepted
17	Orange	2.76	0.83	Accepted
18	Apple	2.01	0.67	Rejected
19	Watermelon	2.56	0.81	Accepted
20	Others	1.56	0.93	Rejected
	Lunch			
21	Beef or fish Egusi soup with Eba	4.01	0.77	Accepted
22	Meat/fish Jollof rice with spaghetti	3.42	0.56	Accepted

23	Fish vegetable soup and Eba	2.50	0.75	Accepted
24	Yam pottage	3.77	0.66	Accepted
25	Beans pottage	4.03	0.82	Accepted
26	Beef or fish stew with rice	3.33	0.95	Accepted
27	Ewedu soup with Amala	2.56	1.04	Accepted
28	Oranges	4.51	1.00	Accepted
29	Pineapple	3.32	0.69	Accepted
30	Apple	1.67	0.69	Rejected
31	Others	2.78	0.56	Accepted
	Dinner			
32	Beef or fish jollof rice	3.53	0.78	Accepted
33	Beef or fish Egusi soup with Eba	3.67	0.65	Accepted
34	Spaghetti	2.22	0.54	Rejected
35	Plantain pottage	3.10	0.71	Accepted
36	Bean pottage	1.93	0.92	Rejected
37	Oranges	4.05	0.66	Accepted
38	Apple	2.33	0.57	Rejected
39	Pineapple	3.89	0.91	Accepted
40	Water melon	3.73	0.68	Accepted
41	Water	4.56	0.78	Accepted
42	Others	1.65	0.63	Rejected

Table 3's results revealed a mean range of 1.56 to 4.56. Due to their means being more than 2.50, 31 of the 36 items were agreed upon. Whereas the mean scores for items 12, 15, 18, 20, 34, 36, and 42 were below the 2.50 cutoff. They didn't agree on this, thus. The items' standard deviations varied from 0.55 to 1.04. This revealed that the replies of respondents were similar to one another.

RQ 3: What influence has School feeding scheme on the nutritional status of the primary school pupils?

Table 4: *Mean responses of teachers on the influence of school feeding programme on the nutritional status of the pupils (N=58)*

S/N	Statement item	Mean	SD	Remark
43	Meals prepared for the children are nutritionally adequate	3.17	0.78	Agreed
44	School feeding scheme has improved the nutritional status of pupils	2.93	0.69	Agreed
45	School feeding scheme has helped to improve the health status of the pupils and so they are more alert and attentive	3.03	0.81	Agreed
46	Good nutrition has been met due to School feeding scheme	4.10	0.84	Agreed
47	Pupils are regular to school because of good health	3.45	0.88	Agreed

According to Table 4, all of the components had mean ranges that were higher than the 2.50 cutoff mark, ranging from 2.93 to 3.03. Furthermore, it showed that the instructors were in agreement that the school meal program had a favorable impact on the students' nutritional health. The items' standard deviations varied from 0.69 to 0.88. This revealed that the replies of respondents were similar to one another.

Hypothesis 1

$HO_{1:}$ There is no significant difference between the eating pattern of male and female pupils.

Table 5: *t-test analysis of the mean responses of male and female pupils on eating pattern*

Gender	N	Mean	SD	t-value	t-tab	Decision
Males	578	2.56	0.78			
				3.32	1.96	Rejected
Females	662	2.61	0.56			
Total	1240					

The results of the t-test analysis on the average replies of the eating habits of male and female students were displayed in Table 5. The null hypothesis is rejected since the t-cal (3.32) is higher than the table value of 1.96. This demonstrates that male and female primary school students' eating habits differ significantly.

Hypothesis 2

$Ho_{2:}$ There is no significant difference in dietary recall list among primary school pupils of low, middle, and high social economic status

Table 6: *Analysis of variance of the mean responses of pupils on dietary recall list among pupils of low, middle, and high social economic status*

Source of variance	Df	SS	MS	F-cal	F-table	Decision
Between	2	5.55	2.77			
				4.85	3.28	Rejected
Within	34	19.63	0.57			
Total	36	25.18				

The finding in Table 6 indicated that, at the 0.05 level of significance, the F-cal value (4.85) is higher than the F-tab value (3.28). The null hypothesis is therefore disproved. This suggests that the mean assessments of students whose parents had low, middle, and high socioeconomic level varied significantly from one another.

Hypothesis 3

$HO_{3:}$ There is no significant difference between teachers from rural and urban schools on the influence of School feeding scheme on the nutritional status of primary school pupils.

Table 7: *t-test analysis of the mean responses of teachers from rural and urban schools on the influence of School feeding scheme on the nutritional status of pupils*

Location	N	Mean	SD	t-value	t-tab	Decision
Rural	24	3.44	0.69			
				3.77	1.98	Rejected
Urban	34	4.01	0.65			
Total	**58**					

The t-test analysis of the mean answer from teachers in rural and urban schools was displayed in Table 7 as a result. At the 0.05 threshold of significance, the t-value (3.77) was higher than the crucial t-tab (1.98). The stated null hypothesis (Ho) was disproved as a consequence. This demonstrates that the impact of the school food program on the nutritional condition of male and female students from urban and rural schools varied significantly on a mean basis.

Discussion

The results of the study were discussed based on the research questions and hypotheses formulated for the study. The findings in Table 5 showed that elementary school students' eating habits varied significantly. Children's mental and physical development, as well as growth and various hazards connected with both short-term and long-term health issues, are significantly influenced by their eating habits. Eating breakfast is crucial for humans since it improves one's ability to focus throughout the day. In the short term, it boosts the energy and concentration, while in the long run, it can help to better control the weight and lower chances of developing heart disease (Lesani, Mohammadpoorasl, Javadi, Esfeh, & Fakhari, 2016). Although though breakfast has numerous advantages for your health and wellness, many individuals frequently miss it for a number of reasons. Individuals who miss breakfast are more likely to struggle with concentration by midday and to perform worse intellectually. Moreover eating habits are formed early in infancy and are retained into adulthood. Healthy eating has many benefits, such as reducing the risk of heart disease, it helps the body and brain get the energy needed to think and be physically active (El-Ansari, Suominen & Samara, 2015).

The outcome in Table 3 showed that a variety of meals were served to the students at breakfast or lunch as part of the School feeding scheme. According to the meal plan's recipe, each meal—breakfast or lunch—provided the necessary nutrients and balanced diet required by humans for development and survival (Penagini, Dilillo, Meneghin, Mameli, Fabiano, & Zuccotti, 2013). The major goal of the school feeding scheme in primary schools is to improve the health and nutritional status of all schoolchildren. The under-nutrition of children is one of issue that plague the nation. Malnutrition, a disorder brought on by poor nutrition, impairs the immune system, stunts growth, and impairs cognitive development (Adeyeye, Ashaolu, Bolaji, Abegunde & Omoyajowo, 2023). Also, school nutrition programs are essential to helping kids achieve and maintain a level of health that is best for their academic success. Proteins, carbs, lipids, vitamins, water, and roughages must all be consumed in suitable quantities and proportions to the body. Consistently demonstrated that milk, leafy green and bright yellow vegetables, whole grain or enriched breads, and cereals and toast should all be consumed in greater quantities for diet improvement.

According to Table 4, the instructors were in agreement that the school meal program improved the students' nutritional status. The results are consistent with Fontenelle, de-Araújo, da-Cunha-Soares, Cruz, Henriques & do-Nascimento-Marreiro, (2022) argument that weak health and poor nutrition among school-age children hindered their cognitive development, either through physiological changes or by reducing their ability to participate in learning experiences, or both. Also, proper nutrition is essential for the welfare of any community and of each individual within the society. School breakfast programs readily available either promoted better results or, at the very least, did not encourage the worst outcomes for every outcome assessed.

Hypotheses

The finding from tables 5, 6, and 7 showed that there were substantial differences in respondents' mean ratings of the School feeding scheme's impact on students' academic performance in terms of eating habits, dietary memory, nutritional status, and academic performance. The findings also showed that there was no statistically significant difference in the respondents' mean ratings of the School feeding scheme's impact on students' academic performance in terms of food diversity, students' attitudes about the program, and factors influencing it.

Conclusion

This study's primary goal was to assess how the School feeding scheme affected students' academic performance. The School feeding scheme gave the students a healthy eating schedule. They are able to concentrate throughout the educational activities because to this healthy eating routine. The School feeding scheme gave students a useful daily memory list of foods that satisfy the essential nutrients

required for their continued physical and intellectual or cognitive development. Also, the School feeding scheme offered nutritious lunches. Based on the analysis of data collected, the researcher found out that pupils were provided with either breakfast or lunch daily especially breakfast which was important for them to concentrate in the class throughout the day; the meal pattern (breakfast, or lunch) provided by the School feeding scheme, provided foods that will supply the basic nutrients (balance diet) needed by human for growth and survival; the School feeding scheme had a positive influence on the nutritional status of the pupils; the School feeding scheme provided rich meals for the pupils, meals that were properly diversified to provide a balance ration; there is significant difference between the mean ratings of male and female pupils on eating pattern; there is significant difference among pupils from high, middle and low on dietary recall list of the School feeding scheme.

The results of this study have important ramifications for all parties engaged in the management of public primary schools in Kaduna state, including parents, teachers, students, the government, researchers, and researchers. The School feeding scheme has to be sustained and the kids' regular attendance at school needs to be encouraged more by parents and instructors. The government and all parties involved may need to find ways to guarantee that the School feeding scheme is maintained and effectively run. The study has advanced knowledge by showing that a healthy eating pattern helps students stay alert during the day's educational activities and that effective School feeding schemes offer students a daily recall list of foods that satisfy the essential nutrients required for a child's physical and intellectual development.

Based on the study's findings, it is advised that the government fund the School feeding scheme adequately, that each school establish a management committee for the program's efficient and effective administration, that non-governmental organizations and wealthy individuals be permitted to contribute financially to the initiative, and that a committee for the School feeding scheme be formed. Also, physical facilities that make it simple to travel to the intended beneficiary schools can help ease some of the problems.

Acknowledgments

None

Conflict of Interest

Authors have no conflict of interest.

Funding Source

The authors received no funding to conduct this study.

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