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Impact of Breakfast Consumption on Academic Performance among in-School Adolescents in Egbeda Local Government Area, Ibadan Oyo State

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Abstract

Background: Breakfast is considered the most important meal of the day and is thought to have several benefits for diet quality, general well-being, cognitive function, and academic performance. Children and adolescents, specifically, are highly affected by the nutritional value of breakfast in terms of brain activity and cognitive behavior.
Objectives: The general of this study was to assess the impact of breakfast consumption on academic performance of in-school adolescents in selected public secondary schools in Egbeda Local Government.
Methodology: This study adopted a descriptive cross-sectional study design. A systematic random sampling was used to select 285 students from 3 different schools in Egbeda Local Government, which are Bishop Phillips, Urban Day Grammar School and Christ Anglican Secondary School. Ninety-five students were selected from each of the schools and this gave a 285 respondents as the sample size. Sample size was determined using Leslie Kish formula.
Results: The study involved 285 secondary school students with a mean age of 14.59 ± 1.68 years. The majority were female (64.3%), while males constituted 34.7% of the respondents. The majority of the students (92.4%) reported consuming breakfast, while only 7.3% did not. Among those who consumed breakfast, 79.9% did so daily, and 19.1% rarely ate breakfast. . Among those who skipped breakfast, the most cited reason was lack of time (50.7%), followed by lack of appetite (25.0%) and food constraints (20.8%). Only 1.0% said they did not skip breakfast at all. Most respondents (88.5%) believed that breakfast consumption positively impacted their energy levels or focus in school.
Conclusion: A high prevalence breakfast consumption was observed with most students eating daily and preferring home-made meals.

Keywords: Breakfast, Academic Performance, Cognitive Function, Concentration, Adolescents.

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1. Introduction

Breakfast is considered the most important meal of the day and is thought to have several benefits for diet quality, general well-being, cognitive function, and academic performance [1] [2]. Children and adolescents, specifically, are highly affected by the nutritional value of breakfast in terms of brain activity and cognitive behavior. Thus, breakfast consumption should be a regular habit from early childhood. Although the benefits of breakfast are widely discussed, previous studies have shown that about 20% to 30% of children and adolescents miss out on breakfast, and the number is rising [3].

Unhealthy breakfast habits were reported to cause metabolic problems such as impaired insulin regulation, elevated fat oxidation, inflammatory changes, and disturbed glucose homeostasis.[4]Skipping breakfast was also found to be linked to psychological and behavioral disturbances, such as depression, bullying, and emotional distress. Other meals cannot compensate for the micronutrient deficiency caused by skipping breakfast. The importance of breakfast, especially during childhood, arises from the fact that brain glucose metabolism in children is higher than in adults. Furthermore, children have higher sleep demands than adults and overnight fasting can consume stored glycogen. Breakfast compensates for the higher metabolic rate and provides glucose needed for supplying energy demands.

Therefore, a breakfast meal can be fundamental for maintaining an adequate metabolic process. Children and adolescents who regularly have breakfasts were proven to have

enhanced micro- and macronutrient intake, optimum body weights, and good physical activity. Previous studies have linked consuming breakfast to low cholesterol levels, low rates of obesity, and cognitive behavior.

Impact of Breakfast on Students' Level of Cognition refers to the results obtained when students partake of the first meal of the day which is used in measuring their height of comprehension and assimilation in classroom activities. Recent studies have reported that breakfast intake enhances concentration, improves thinking and aids comprehension. Breakfast has been considered as an important meal of the day whose nutritional contribution would not be met by any other meal of the day. Breakfast is recommended as part of a healthy diet because it is associated with healthier macro and micronutrient intakes, Body Mass Index (BMI) and lifestyle. Breakfast is also widely promoted to improve cognitive function and academic achievements, Therefore, assumptions about the benefits of breakfast for undergraduate student's learning are based on evidence demonstrating the acute effects of breakfast on undergraduate student's cognitive test performance from laboratory-based studies.

Methodology

Study Design

This study adopted a descriptive cross-sectional study design.

Study Location

This study was conducted in three public secondary schools in Egbeda Local Government Ibadan, Nigeria, which are Urban Day Grammar School which was founded in September 1980 during the administration of the late Chief Bola Ige, governor of old Oyo state [1], Bishop Phillips Academy and Christ Anglican Secondary School which was established in 2007 [2]. These schools offer both junior education and senior education to the students. The schools have over 1000 students. The senior schools consist of three department which is the Science, Commercial, and the Art.

Study Population

This study was carried out among in-school adolescents aged 10-19 years attending selected public schools in Egbeda Local Government Area Ibadan Oyo State.

Sample Size Determination

Sample size was determined using Leslie Kish Formula.

Sampling Procedure

A systematic random sampling was used to select 285 students from 3 different schools in Egbeda Local Government, which are Bishop Phillips, Urban Day Grammar School and Christ Anglican Secondary School. Ninety-five students were selected from each of the schools and this gave a 285 respondents constituted the sample size.

Research Instruments

Self-administered questionnaires were used. Which are socio-demographic characteristics of the adolescents, breakfast consumption habit, breakfast consumption pattern and academic performance.

Data Analysis

The data analysis was carried out using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistical analysis will make frequency, percentage, and *p* value to describe the study population and breakfast consumption pattern.

Ethical Approval

Ethical approval was obtained from the Lead City University ethical review board with approval number LCU-REC/25/094.

Results

Socio-demographic Characteristics of the Respondents

The study involved 285 secondary school students with a mean age of 14.59 ± 1.68 years. The majority were female (64.3%), while males constituted 34.7% of the respondents. In terms of class distribution, most of the students were in SS1 (24.5%), followed by JSS3 (24.1%), and JSS2 (18.3%). A smaller proportion were in SS2 (19.4%) and SS3 (11.9%), with the least in JSS1 (1.8%). Regarding religion, Christianity was predominant (62.2%), followed by Islam (37.5%). The ethnic composition showed that most respondents were Yoruba (94.8%), with minorities from Igbo (2.8%), Hausa (1.0%), and other ethnic groups (1.4%).

The educational background of parents revealed that 50.7% of mothers had secondary education, and 36.1% had tertiary education. Only 5.2% of mothers had no formal education. Similarly, 47.0% of fathers had secondary education, and 46.3% had tertiary education, while a small fraction had no formal education (3.2%). Family income distribution showed that 43.1% earned between ₦20,000 and ₦50,000, while 27.0% earned ₦51,000–₦100,000. Only 19.3% earned above ₦100,000, and 10.6% earned below ₦20,000. A large proportion (72.2%) of respondents lived with both parents, while others lived with only their mother (16.3%), relatives (8.3%), or other guardians (2.4%). Very few lived with only their father (0.3%).

Table 1: Socio-demographic Characteristics of the Respondents

Variables	Frequency (N)	Percentage (%)
Age **14.59 ± 1.68 years**		
Sex		
Male	100	34.7
Female	185	64.3
Class		
JSS1	5	1.8
JSS2	51	18.3
JSS3	67	24.1
SS1	68	24.5
SS2	54	19.4
SS3	33	11.9
Religion		
Christianity	179	62.2
Islam	108	37.5
Ethnicity		
Hausa	3	1.0
Igbo	8	2.8
Yoruba	273	94.8
Others	4	1.4

Table 1 Cont'd

Mother's education		
No formal education	15	5.2
Primary	21	7.3
Secondary	146	50.7
Tertiary education	104	36.1
Father's education		
No formal education	9	3.2
Primary	10	3.6
Secondary	132	47.0
Tertiary education	130	46.3
Family income		
<20,000	29	10.6
20,000-50,000	118	43.1
51,000-100,000	74	27.0
>100,000	53	19.3
Who do you live with?	208	72.2
Both parents	47	16.3
Mother only	1	0.3
Father only	24	8.3
Relatives	7	2.4
Others		

2. Breakfast Consumption Habit of the Respondents

The majority of the students (92.4%) reported consuming breakfast, while only 7.3% did not. Among those who consumed breakfast, 79.9% did so daily, and 19.1% rarely ate breakfast. On school days and weekends, most respondents (72.6%) ate breakfast between 7 am and 9 am, while 24.0% ate between 10 am and 12 noon. A small proportion (3.5%) did not take breakfast at all. Most students (91.7%) got their breakfast from home, with only a few depending on roadside vendors (3.8%) or school cafeterias (3.8%). When asked about their preferences, a large majority (89.2%) preferred home-made breakfasts over ready-to-eat foods like cereals and snacks. Only 8.3% preferred ready-to-eat foods, while 1.7% did not like either option.

Regarding hunger in the morning, 59.4% reported feeling hungry in the morning, 25.7% did not, and 14.6% rarely felt hungry. Among those who skipped breakfast, the most cited reason was lack of time (50.7%), followed by lack of appetite (25.0%) and food constraints (20.8%). Only 1.0% said they did not skip breakfast at all. Most respondents (88.5%) believed that breakfast consumption positively impacted their energy levels or focus in school. Additionally, 245 respondents reported consuming quality breakfast, and only 21 indicated they did not. When breakfast was skipped, 59.3% of students felt weak, 20.7% reported feeling strong, and 17.5% felt no change.

Table 2: Breakfast Consumption Habit of the Respondents

Variable	Frequency (N)	Percentage (%)
Do you consume breakfast?	266	92.4
Yes	21	7.3
No		
How often do you eat breakfast?	230	79.9
Daily	2	0.7
Never	55	19.1
Rarely		
What time do you usually eat breakfast on school days and weekends?	209	72.6
7 am – 9 am	69	24.0
10 am – 12 am	10	3.5
I don't take breakfast		
Where do you get your breakfast from		
Home	264	91.7
Roadside food vendor	11	3.8
School cafeteria	11	3.8
Do you prefer home-made breakfast or ready-to-eat foods like cereals and snacks?	5	1.7
I don't like both	257	89.2
I prefer home-made breakfast	24	8.3
I prefer ready-to-eat foods		
Do you feel hungry in the morning?	74	25.7
No	171	59.4
Yes	42	14.6
Rarely		
Why do you skip breakfast?	60	20.8
Food constraints	3	1.0
I don't skip breakfast	72	25.0
Lack of appetite	146	50.7
Lack of time		
Do you think consumption of breakfast impacts your energy levels or focus in school?	16	5.6
	14	4.9
I don't know	255	88.5
No, it doesn't		
Yes, it does		
Do you consume quality breakfast?	245	87.2
Yes	21	7.5
No	15	5.3
Rarely		
How do you feel when you skip breakfast?		
I don't feel anything	50	17.9
Strong	59	21.2
Weak	169	60.8

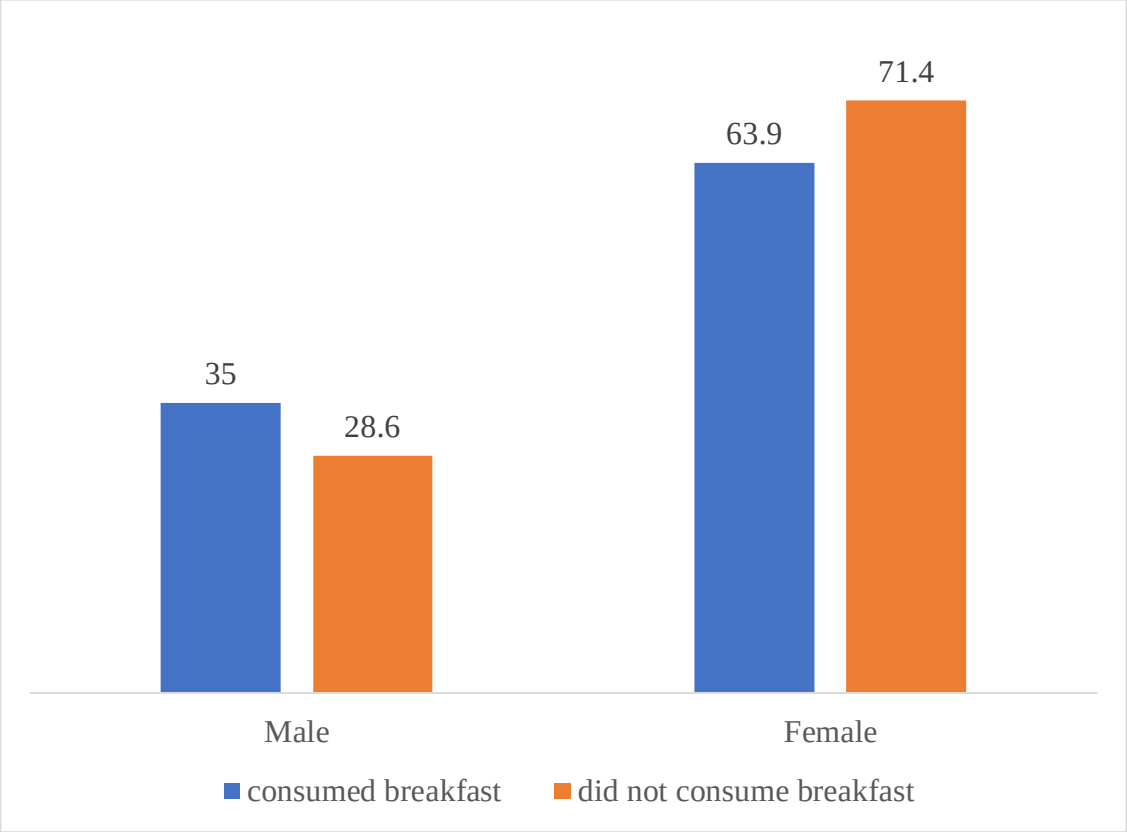

Figure 1: Breakfast consumption by Gender (in percentage)

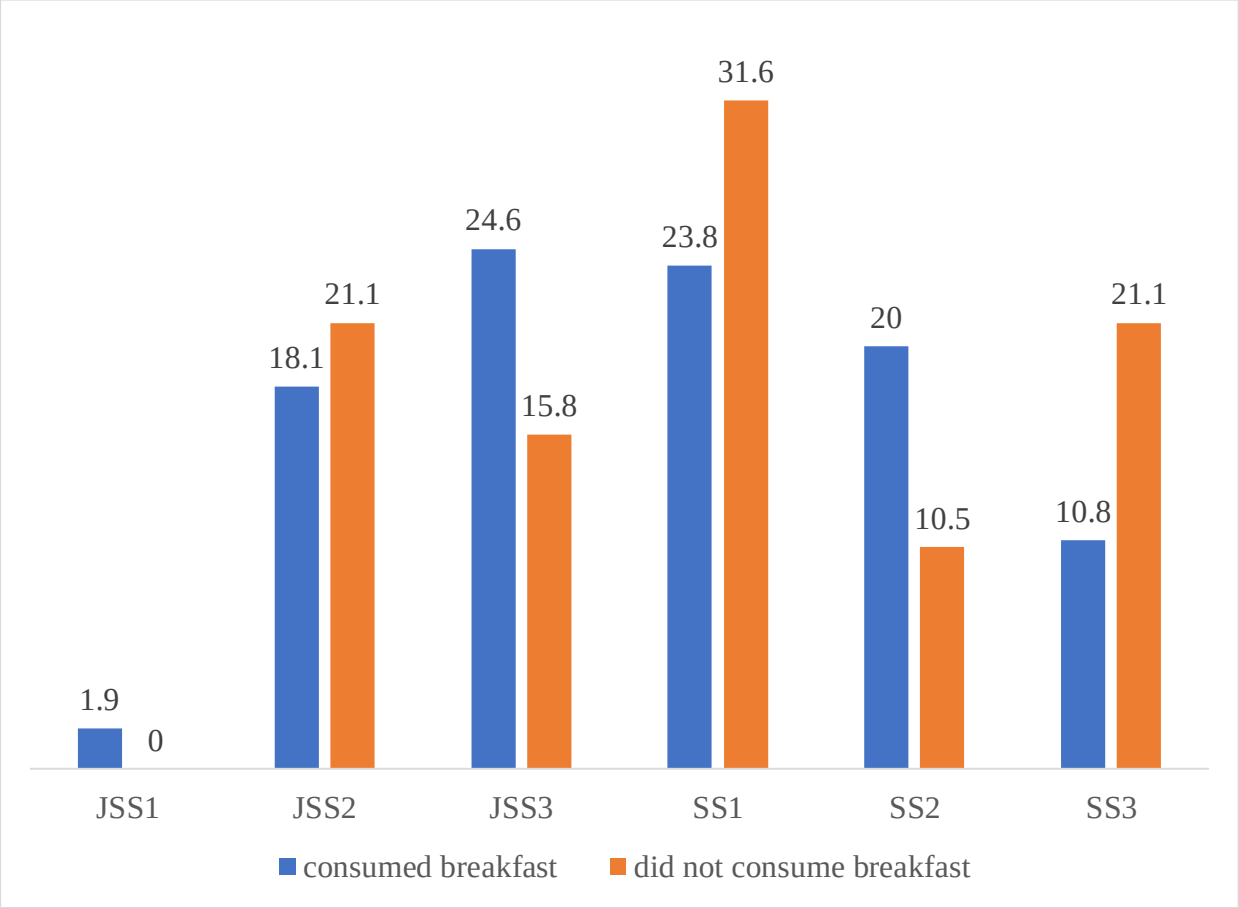

Figure 2: Breakfast Consumption by Class (%)

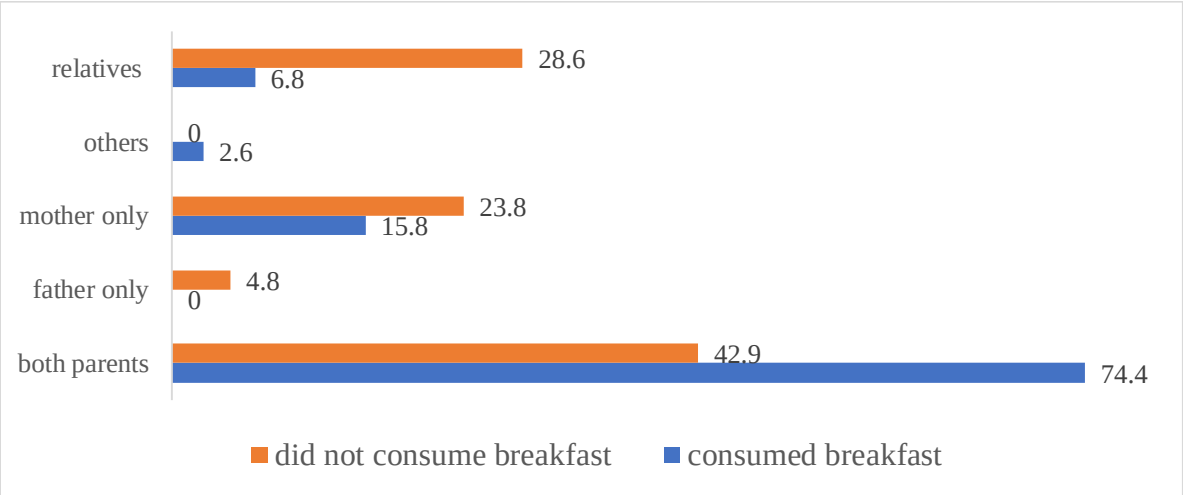

Figure 3: Breakfast Consumption by the people Respondents live with (%)

3. Breakfast Consumption Pattern of the Respondents

The breakfast consumption pattern revealed frequent intake of certain food items. For grains and cereals, maize products like pap and golden morn were consumed daily by 58.5%, while rice and wheat products like bread and spaghetti were also consumed regularly. Oats and millet were less commonly consumed. Among roots and tubers, yam and potatoes were consumed daily by 75.0% and 64.1%, respectively. Plantain and cocoyam were also popular, with daily consumption of 56.8% and 59.7%, respectively.

For legumes, soybeans and products like soy milk were consumed daily by 64.2%, while beans and locust beans had lower daily consumption rates. In the nuts and seeds group, peanuts and groundnuts were consumed daily by 47.3%, but other nuts like cashew, kolanut, and tiger nuts were consumed less frequently. Vegetables and fruits were generally well represented, with green leafy vegetables, tomatoes, pawpaw, banana, and pineapple having high daily intake rates, especially bananas (60.6%) and pineapples (55.6%).

Among beverages, tea was consumed daily by 44.2%, while Milo/Bournvita/Ovaltine and fresh drinks like yoghurt and NutriMilk were also commonly taken. Soft drinks and malt had lower daily consumption.

Table 3: Breakfast Consumption Pattern of the Respondents

Food Groups	Never	Daily	Weekly
Grains and Cereals			
Maize and maize product (pap, golden morn, cornflakes)	31 (11.0)	69 (24.6)	181 (64.4)
Rice	3 (1.3)	172 (75.8)	52 (22.9)
Wheat and wheat product (bread, spaghetti, semovita)	12 (4.3)	121 (43.7)	144 (52.0)
Oats	152 (58.5)	29 (11.2)	79 (30.4)
Millet	143 (56.3)	32 (12.6)	79 (31.1)
Roots and Tubers			
Cassava and cassava products (garri, eba, lafun, fufu)	41 (21.5)	66 (34.6)	84 (44.0)
Yam	14 (4.9)	100 (35.3)	169 (59.7)
Potato	18 (6.5)	51 (18.5)	207 (75.0)
Plantain	21 (7.7)	77 (28.2)	175 (64.1)
Cocoyam	47 (17.3)	70 (25.8)	154 (56.8)
Legumes			
Beans and products (moinmoin, akara, gbegiri)	71 (25.9)	49 (17.9)	154 (56.2)
Locus beans (iru woro, iru pete)	42 (22.5)	64 (34.2)	81 (43.3)
Soybeans and products	43 (15.1)	59 (20.7)	183 (64.2)
Nuts and Seeds			
Peanuts/groundnuts	31 (11.3)	130 (47.3)	114 (41.5)
Groundnut soup	136 (49.6)	26 (9.5)	112 (40.9)
Peanut butter	54 (29.3)	49 (26.6)	81 (44.0)
Cashew nuts	69 (25.7)	113 (42.0)	87 (32.3)
Melon	112 (41.3)	59 (21.8)	100 (36.9)
Kolanut	109 (40.2)	61 (22.5)	101 (37.3)
Tiger nuts and dates	123 (45.1)	55 (20.1)	95 (34.8)

Table 3 Breakfast Consumption Pattern of the Respondents Cont'd

Food Groups	Never	Daily	Weekly
Vegetables/Fruits			
Green leafy vegetables (ewedu, ugwu, soko)	31 (11.5)	97 (35.9)	142 (52.6)
Okro	111 (41.4)	58 (21.6)	99 (36.9)
Cabbage/cucumber	93 (34.4)	56 (20.7)	121 (44.8)
Carrot	33 (19.4)	54 (31.8)	83 (48.8)
Tomatoes/pepper/onions	12 (4.4)	140 (51.3)	121 (44.3)
Apple	68 (24.9)	58 (21.2)	147 (53.8)
Pawpaw	70 (26.2)	49 (18.4)	148 (55.4)
Banana	24 (8.8)	91 (33.5)	157 (57.7)
Agbalumo	16 (6.0)	160 (59.7)	92 (34.3)
Watermelon	40 (14.3)	70 (25.1)	169 (60.6)
Pineapple	45 (16.4)	77 (28.0)	153 (55.6)
Garden egg	47 (17.3)	100 (36.8)	125 (46.0)
Beverages			
Tea (lipton, black tea, top tea)	35 (12.8)	118 (43.1)	121 (44.2)
Milo/Bournvita/Ovatine/Cadbury	25 (9.2)	109 (39.9)	139 (50.9)
Soft drinks (coca-cola, pepsi, fanta)	34 (12.7)	83 (31.1)	150 (56.2)
Malt			
Fresh yo/caprisum/nutrimilk	68 (25.8)	54 (20.5)	142 (53.8)
	45 (24.6)	44 (24.0)	94 (51.4)

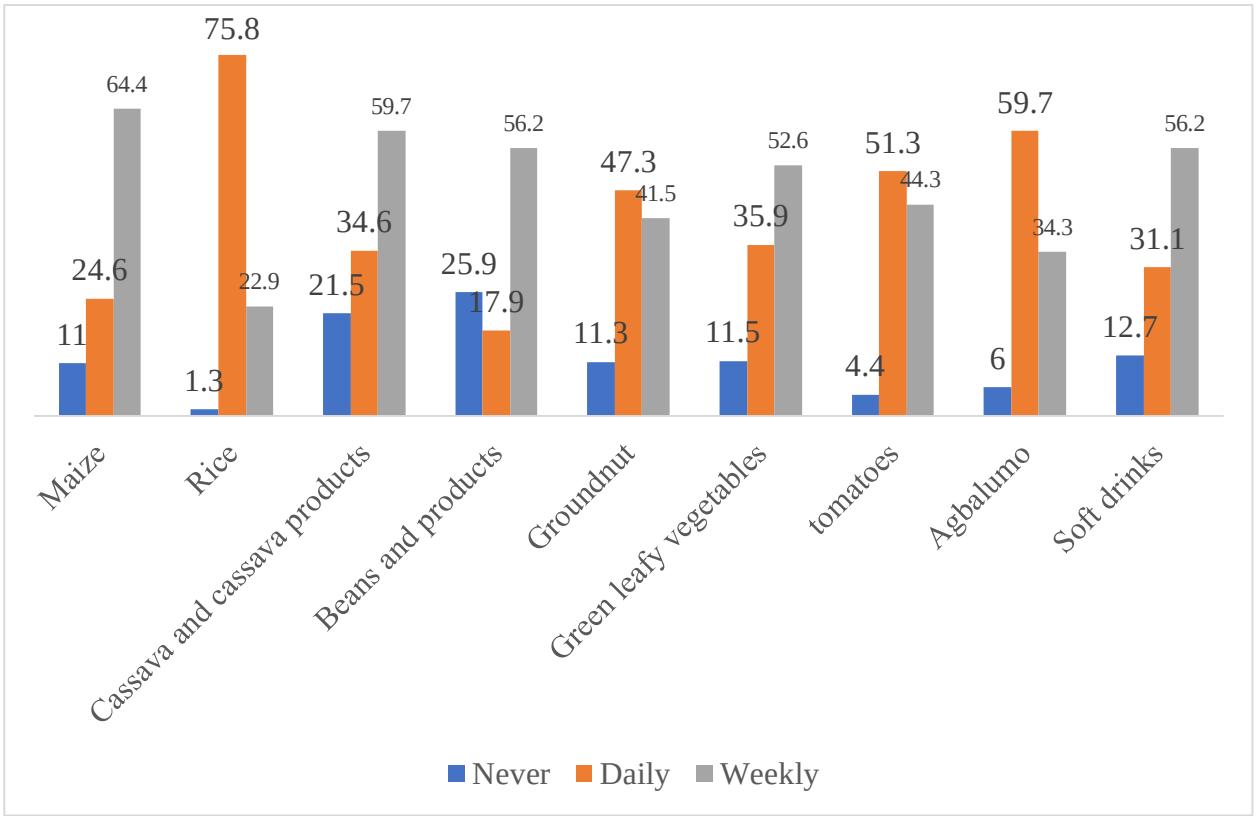

Figure 4: Frequency of consumption of some commonly consumed foods (%)

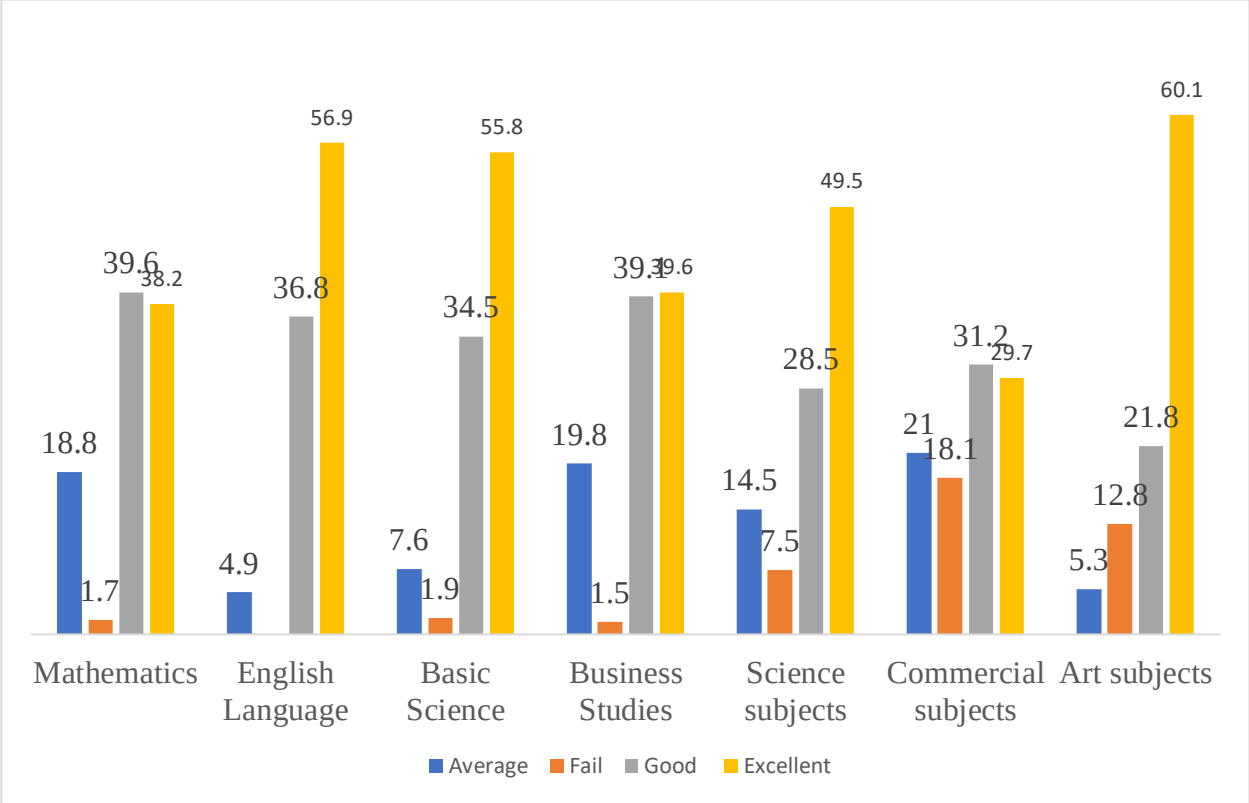

Figure 5: Academic Performance of Core Subjects

Table 4: Association between Breakfast Consumption Habit and Academic Performance of Basic Science among the Respondents

Basic Science	Average	Fail	Good	Excellent	P-value
Do you consume breakfast					
No	2 (9.5)	0 (0.0)	6 (28.6)	7 (33.3)	0.948
Yes	14 (5.3)	4 (1.5)	65 (24.4)	108 (40.6)	
How often do you consume breakfast					
Daily	9 (56.2)	3 (75.0)	54 (76.1)	99 (86.1)	0.262
Never	0 (0.0)	9 (0.0)	0 (0.0)	1 (0.9)	
Rarely	7 (43.8)	1 (25.0)	17 (23.9)	15 (13.0)	
Do you feel hungry in the morning					
No	4 (25.0)	3 (75.0)	21 (29.6)	28 (24.3)	
Rarely	2 (12.5)	0 (0.0)	11 (15.5)	12 (10.4)	
Yes	10 (62.5)	1 (25.0)	39 (54.9)	75 965.2)	
Reasons for Skipping breakfast					0.645
Food Constraints	3 (18.8)	1 (25.0)	16 (22.5)	15 (13.0)	
I don't skip breakfast	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.7)	
Lack of appetite	4 (25.0)	1 (25.0)	21 (29.6)	31 (27.0)	
Lack of time	9 (56.2)	2 (50.0)	33 (46.5)	64 (55.7)	

Table 5: Association between Breakfast Consumption Habit and Academic Performance of Science subjects among the Respondents

Science subjects	Average	Fail	Good	Excellent	P-value
Do you consume breakfast					
No	2 (6.9)	1 (6.7)	2 (3.5)	8 (8.1)	0.852
Yes	27 (93.1)	14 (93.3)	55 (96.5)	91 (91.9)	
How often do you consume breakfast					0.581
Daily	25 (86.2)	13 (86.7)	45 (78.9)	82 (82.8)	
Never	1 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)	
Rarely	3 (10.3)	2 (13.3)	12 (21.1)	17 (17.2)	
Do you feel hungry in the morning					0.793
No	9 (31.0)	5 (33.3)	12 (21.1)	25 (25.3)	
Rarely	2 (6.9)	0 (0.0)	9 (15.8)	16 (16.2)	
Yes	18 (62.1)	10 (66.7)	36 (63.2)	58 (58.6)	
Reasons for Skipping breakfast					0.031*
Food Constraints	9 (31.0)	1 (6.7)	13 (22.8)	11 (11.1)	
I don't skip breakfast	0 (0.0)	0 (0.0)	1 (1.8)	0 (0.0)	
Lack of appetite	5 (17.2)	7 (46.7)	17 (29.8)	31 (31.3)	
Lack of time	15 (51.7)	7 (46.7)	24 (42.1)	53 (53.5)	

Table 6: Association between Breakfast Consumption Habit and Academic Performance of Commercial subjects among the Respondents

Commercial subjects	Average	Fail	Good	Excellent	P-value
Do you consume breakfast					
No	0 (0.0)	2 (8.0)	2 (4.7)	1 (2.4)	0.464
Yes	29 (100.0)	23 (92.0)	41 (95.3)	40 (97.6)	
How often do you consume breakfast					
Daily	23 (79.3)	21 (84.0)	34 (79.1)	38 (92.7)	0.740
Never	0 (0.0)	0 (0.0)	1 (2.3)	0 (0.0)	
Rarely	6 (20.7)	4 (16.0)	8 (18.6)	3 (7.3)	
Do you feel hungry in the morning					
No	6 (20.7)	8 (32.0)	11 (25.6)	12 (29.3)	0.804
Rarely	4 (13.8)	2 (8.0)	6 (14.0)	2 (4.9)	
Yes	19 (65.5)	15 (60.0)	26 (60.5)	27 (65.9)	
Reasons for Skipping breakfast					
Food Constraints	10 (34.5)	6 (24.0)	5 (11.6)	10 (24.4)	0.016*
I don't skip breakfast	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Lack of appetite	9 (31.0)	12 (48.0)	8 (18.6)	5 (12.5)	
Lack of time	8 (27.6)	7 (28.0)	28 (65.1)	26 (63.4)	

Table 7: Association between Breakfast Consumption Habit and Academic Performance of Arts subjects among the Respondents

Arts subjects	Average	Fail	Good	Excellent	P-value
Do you consume breakfast					
No	1 (10.0)	1 (4.2)	0 (0.0)	7 (6.2)	0.110
Yes	9 (90.0)	23 (95.8)	40 (97.6)	106 (93.8)	
How often do you consume breakfast					
Daily	9 (90.0)	22 (91.7)	34 (82.9)	92 (81.4)	0.181
Never	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.8)	
Rarely	1 (10.0)	2 (8.3)	6 (14.6)	19 (16.8)	
Do you feel hungry in the morning					
No	5 (50.0)	5 (20.8)	7 (17.1)	27 (23.9)	0.514
Rarely	0 (0.0)	2 (8.3)	5 (12.2)	18 (15.9)	
Yes	5 (50.0)	17 (70.8)	29 (70.7)	67 (59.3)	
Reasons for Skipping breakfast					
Food Constraints	0 (0.0)	7 (29.2)	9 (22.0)	26 (23.0)	
I don't skip breakfast	0 (0.0)	0 (0.0)	0 (0.0)	3 (2.7)	0.210
Lack of appetite	4 (40.0)	9 (37.5)	7 (17.1)	22 (19.5)	
Lack of time	6 (60.0)	8 (33.3)	25 (61.0)	57 (50.4)	

Discussion

The study involved 285 secondary school students with a mean age of 14.59 ± 1.68 years. The majority of the participants were female (64.3%), while males constituted 34.7%. This gender distribution is somewhat consistent with general enrollment trends in some Nigerian secondary schools, though specific regional or institutional factors could influence this balance. In terms of class distribution, the highest proportion of students were in SS1 (24.5%) and JSS3 (24.1%), with the lowest representation in JSS1 (1.8%). This distribution suggests a good spread across different levels of secondary education, allowing for observations across various developmental stages of adolescence.

Religiously, Christianity was predominant (62.2%), followed by Islam (37.5%). The ethnic composition revealed that most respondents were Yoruba (94.8%), with smaller percentages from Igbo (2.8%), Hausa (1.0%), and other ethnic groups (1.4%). This ethnic and religious demographic profile is highly indicative of a study conducted in the southwestern region of Nigeria, where the Yoruba ethnic group is numerically dominant.

The educational background of parents showed that a significant portion of mothers (50.7%) and fathers (47.0%) had secondary education, while a substantial number also had tertiary education (mothers: 36.1%; fathers: 46.3%). Only a small percentage of mothers (5.2%) and fathers (3.2%) had no formal education. These figures suggest that a large majority of the students come from homes where parents have at least a secondary level of education, which is generally considered a positive factor for academic support. Family income distribution indicated that 43.1% earned between ₦20,000 and ₦50,000, 27.0% earned ₦51,000–₦100,000, 19.3% earned above ₦100,000, and 10.6% earned below ₦20,000. The largest group falls within the middle-income bracket, which can influence access to educational resources and nutritional quality.

The study explored various aspects of students' breakfast consumption habits. A key finding was that the vast majority of students (92.4%) reported consuming breakfast, with only a small minority (7.3%) not doing so. Among those who consumed breakfast, a large proportion (79.9%) did so daily, while 19.1% rarely ate breakfast. This high prevalence of breakfast consumption is a positive indicator for the students' overall health and academic potential.

Regarding the timing of breakfast, most respondents (72.6%) ate between 7 am and 9 am on school days and weekends, which is an ideal time for morning energy and focus. A smaller percentage (24.0%) ate between 10 am and 12 noon, and only 3.5% did not take breakfast at all. The primary source of breakfast was home (91.7%), with very few depending on roadside vendors (3.8%) or school cafeterias (3.8%). This strong reliance on home-prepared meals suggests a level of parental involvement and potentially healthier options. A large majority (89.2%) preferred home-made breakfasts over ready-to-eat foods, indicating a preference for traditional or freshly prepared meals.

The study also investigated the feeling of hunger in the morning, with 59.4% reporting feeling hungry, 25.7% not feeling hungry, and 14.6% rarely feeling hungry. Among those who skipped breakfast, the most cited reason was lack of time (50.7%), followed by lack of appetite (25.0%) and food constraints (20.8%). Only 1.0% stated they did not skip breakfast at all. These reasons are consistent with findings from recent studies among adolescents, where factors like time constraints and not feeling hungry are common barriers to breakfast consumption [2, 10].

Most respondents (88.5%) believed that breakfast consumption positively impacted their energy levels or focus in school, reflecting a strong awareness of its benefits.

Additionally, 245 respondents reported consuming quality breakfast, and only 21 indicated they did not. When breakfast was skipped, 59.3% of students felt weak, 20.7% reported feeling strong, and 17.5% felt no change. This perception of weakness aligns with the physiological effects of prolonged fasting.

The breakfast consumption pattern revealed frequent intake of certain food items across various food groups. For grains and cereals, maize products like pap and golden morn were consumed daily by 58.5%, while rice and wheat products like bread and spaghetti were also consumed regularly. Oats and millet were less commonly consumed. Among roots and tubers, yam and potatoes were consumed daily by 75.0% and 64.1%, respectively. Plantain and cocoyam were also popular, with daily consumption of 56.8% and 59.7%, respectively.

For legumes, soybeans and products like soy milk were consumed daily by 64.2%, while beans and locust beans had lower daily consumption rates. In the nuts and seeds group, peanuts and groundnuts were consumed daily by 47.3%, but other nuts like cashew, kolanut, and tiger nuts were consumed less frequently. Vegetables and fruits were generally well represented, with green leafy vegetables, tomatoes, pawpaw, banana, and pineapple having high daily intake rates, especially bananas (60.6%) and pineapples (55.6%). Among beverages, tea was consumed daily by 44.2%, while Milo/Bournvita/Ovaltine and fresh drinks like yoghurt and NutriMilk were also commonly taken. Soft drinks and malt had lower daily consumption.

These consumption patterns reflect a mix of traditional Nigerian breakfast staples and modern, convenient options. Recent reports on common Nigerian breakfast recipes include Akara (bean fritters) and Pap (corn meal custard), Yam and Egg sauce, Tea and bread, Instant noodles and egg, and Moi Moi (steamed bean pudding) with custard or pap [3]. The high consumption of staples like yam, potato, maize products, and beans indicates a reliance on carbohydrate-rich foods for energy, which is typical in many Nigerian diets. The significant intake of fruits and some vegetables is also a positive nutritional aspect. However, the relatively lower consumption of certain nuts and seeds, which are good sources of micronutrients, might indicate areas for dietary improvement.

The academic performance of core subjects among the students showed varied distributions of scores. In Basic Science, a large majority of students performed well or excellently, with 34.5% achieving a good score and 55.8% recording an excellent score, while only 1.9% failed. For Business Studies, the performance was also strong, with 39.1% having a good score and 39.6% an excellent score, and only 1.5% failing. For Art subjects, an impressive 60.1% recorded an excellent score, 21.8% attained a good score, and 12.8% failed. These figures generally indicate a high level of academic achievement across these core subjects within the studied population.

The study found no statistically significant association between breakfast consumption habits and academic performance in Basic Science ($p > 0.05$). Among respondents who consumed breakfast, 5.3% had average performance, 1.5% failed, 24.4% had good scores, and 40.6% performed excellently. Similarly, among those who did not consume breakfast, 9.5% had average scores, none failed, 28.6% had good performance, and 33.3% performed excellently.

When evaluating the frequency of breakfast consumption, those who ate breakfast daily had the highest proportion of excellent performance (86.1%), though the relationship was not statistically significant ($p = 0.262$). Students who rarely or never felt hungry in the morning were more likely to perform better in Basic Science, although the differences were not significant. Skipping breakfast due to food constraints, lack of appetite, or lack of time did not show a significant association with Basic Science scores ($p = 0.645$).

This lack of a statistically significant association in Basic Science, despite a trend towards better performance among breakfast consumers, might suggest that other factors (e.g., individual aptitude, teaching quality, study habits) play a more dominant role in this specific subject, or that the sample size was not large enough to detect a subtle effect. While recent studies suggest a general positive impact of breakfast on academic performance and cognition [4], subject-specific effects can vary. For instance, one study on breakfast skipping and academic performance in Lagos, Nigeria, generally found associations, but specific subject impacts might differ [6].

Similar to Basic Science, no significant association was found between overall breakfast consumption habits and performance in science subjects ($p > 0.05$). Among those who consumed breakfast, 91.9% had excellent performance, while among non-breakfast consumers, only 8.1% performed excellently. Frequency of breakfast consumption did not significantly influence performance, though daily consumers had slightly better outcomes. Respondents who rarely or never felt hungry in the morning tended to perform better academically than those who frequently felt hungry, though this was not statistically significant.

However, a notable exception was found: the reasons for skipping breakfast showed a statistically significant relationship with performance in science subjects ($p = 0.031$). Students who reported skipping breakfast due to lack of time or appetite had varied performance, with those citing food constraints performing notably lower. This suggests that while the general act of consuming breakfast might not show a direct statistical link, the underlying reasons for not consuming it can have a differential impact on science performance. This could imply that "food constraints" might be indicative of broader socio-economic challenges that affect learning in science subjects more acutely than other reasons for skipping. This finding is consistent with research indicating that socio-economic factors can influence access to resources and ultimately academic outcomes [7, 9, 13].

The results showed that all respondents who did not consume breakfast had excellent academic performance in commercial subjects. This finding is unusual and might be due to a very small sample size of non-breakfast consumers in this specific subject analysis, leading to a skewed percentage. Among those who consumed breakfast, 8.0% had an average performance, 4.7% performed well (good), and 2.4% had excellent performance. With respect to the frequency of breakfast consumption, 79.3% of daily breakfast consumers had average scores, while 20.7% had excellent performance. Among those who rarely ate breakfast, 18.6% had good scores, and 7.3% had excellent scores. Only one student who never consumed breakfast had a good performance.

Conclusion

A high prevalence of breakfast consumption was observed, with most students eating daily and preferring home-made meals. While many students reported feeling hungry in the morning, a strong belief in the positive impact of breakfast on energy levels and focus was evident. Reasons for skipping breakfast primarily included lack of time and appetite.

Regarding academic performance, the study found varying associations across subjects. Notably, a statistically significant association was observed between feelings of hunger and performance in Mathematics and English Language, indicating that hunger negatively impacts these subjects. Consistent daily breakfast consumption was also significantly linked to better performance in English Language. While a positive trend was generally observed for breakfast consumption and academic performance in other subjects like Business Studies, Basic Science, and overall Science subjects, the associations were not always statistically significant, suggesting that other factors might play a more dominant role or that the sample size was insufficient to detect subtle effects in these areas. However, the *reasons* for skipping breakfast, particularly "food constraints," showed a significant negative impact on Science and Commercial subjects.

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