

**THE INFLUENCE OF AGE ON DIETARY HABITS OF SECONDARY SCHOOL ADOLESCENTS, ITS EDUCATION IMPLICATION IN CALABAR EDUCATION ZONE OF CROSS RIVER STATE, NIGERIA.****<sup>1</sup>Chabo, Joy Awu U., <sup>2</sup>Dr. Esuong, A E. and <sup>3</sup>Paulina Ackley Akpan-Idiok**<sup>1</sup>Cross River State Primary Health Care Development Agency, Calabar.<sup>2</sup>Department of Educational Foundations, University of Calabar.<sup>3</sup>Department of Nursing, University of Calabar.**\*Corresponding Author: Chabo, Joy Awu U.**

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**ABSTRACT**

This study was conducted to determine the influence of age on dietary habits of secondary school adolescents in Calabar education zone of Cross River State, Nigeria. Two research questions and one hypothesis were formulated to guide the study. The descriptive survey design was employed. The stratified sampling technique was used to select the sample size. The population comprised of secondary school students in public secondary schools in Calabar Education zone. A sample of 24 secondary schools was selected for the study which had a total of 2,709 SS 2 students from which 542 were selected as sample. A validated four point Likert scale Adolescents' Dietary Habits Questionnaire (ADHQ) was used for data collection. The data gathered were analyzed using analysis of variance (ANOVA). The only hypothesis was tested at 0.05 level of significance. The result of the study revealed that age does not significantly influence the dietary habits of adolescents ( $P > 0.05$  level of significance). The test of the second research question using percentage and mean score revealed that the students who demonstrated abnormal dietary habits were 50.6% for sugar consumption, 62.2% for skipping of breakfast, 50.4% for the habit of eating out of the house, 61.1% for snacking most often and 43.3% for poor consumption of fruits and vegetables. More of the students within ages 15-17 years (71%) skipped their breakfast often while more of those within ages 18-20 and above (80.7%) consumed snacks often. Based on the findings, recommendations made included that the Government of Cross River State should take a step forward and implement the National policy on School Health Programme which includes making available healthy foods for the students and that school administrators should employ the services of Nutrition Educators to provide sound nutrition information for the students and parents.

**KEYWORDS:** Age, dietary habits, secondary school, adolescents.**INTRODUCTION**

Adolescence is a period of rapid growth and maturation in human development and thus, extra nutrients are needed to support their growth spurt. Wardlaw and Hampl (2007), observed that the initiation of the rapid growth characteristics is more related to body composition (weight) than to age; thus, stresses the importance of nutritional status to physiological maturity. Extracts from a report on dietary assessment of adolescents by Livingstone and Robson (2000) clearly stated that adolescents' need for energy and all other nutrients significantly increase to support the rapid rate of growth and development.

In an attempt to reach personal goals and standard of peer group acceptance, adolescent girls may eat dangerously very little, select just a few items and frequently skip meals altogether. They also have a fat

phobia, focusing only on foods that are fat-free to keep slim. Adolescents most commonly take mineral water alongside their lunch, supper or snacks instead of more nourishing drinks like fruits juice or milk. This situation is made worse by the fact that milk drink is regarded as "babyish" among their peers, thus exposing them to the risk of calcium deficiency. The more adolescents eat at fast food restaurants, the fewer servings of fruits, vegetables and milk they eat or drink (Whitney & Rolfes, 2005).

With the onset of adolescence, the steady growth of childhood speeds up abruptly and dramatically, and the growth patterns of females and males become distinct. Most girls begin a rapid growth spurt between the ages of 10 and 13 and most boys between the age of 12 and 15; as the growth spurt begins, adolescents begin to eat more. Energy and nutrient needs are greater during this time than at any other time in life apart from during

pregnancy and lactation for the females (Wardlaw & Hampl, 2007). Unfortunately, this is the stage according to Whitney and Rolfes (2005) when their food is most compromised; most of them consume less fruits and vegetables, less milk but more salt and sugar.

Post-Stagegard, Samuelson, Karlstrom, Mohsen and Bratteby (2002) who investigated the change in food habits in Swedish adolescents between 15 and 21 years of age with reference to age, sex, region and socioeconomic background, found out that Age was significantly a determinant of dietary habits. The study was done in two different regions of Sweden: the university city of Uppsala and the industrial town of Trollhattan in three different occasions; 1993, 1995 and 1999 and 208 adolescents, 96 males and 112 females were studied. Their study revealed that, at age 17 and 21 years, the adolescents consumed significantly more often, pasta, vegetables, coffee and tea compared to at age 15 while the frequency of consumption of fat spread, milk, bread, potatoes, carrots and buns and biscuits decreased. The changes that occurred between ages 15 and 17 years were smaller than those that occurred between age 17 and 21. The consumption of fast foods was observed to be on the increase from age 15 years and continues to increase until it peaks at age 21 years.

According to Armas-Narvarro (2006), cardiovascular diseases, cancer and diabetes are the most prominent among the many causes of mortality in the Canary Island. Explanations offered by experts include a combination of many factors including cultural changes and unhealthy eating habits. In search of a solution to this problem, a number of studies were done. One of them is a nutritional survey which was done in 2004. The survey revealed that obesity among 16 year olds and above was 17% whereas it was less among those below 16 years. Health behaviour in school aged children (HBSC) survey which was done in 2001 and 2002 showed that 13% of the subjects were missing dinner and most of them usually skip breakfast. Approximately, ¼ of the subjects reported low consumption of fruits and vegetables and an elevated consumption of sweet and sugar drinks. Generally, they reported that eating habits worsen as age increases.

Report of WHO (2006) on the HBSC study carried out in Norway in 2001 has it that intake of fruits and vegetables decreased while intake of sweets and mineral drinks increased. Age was found to be a strong indicator on the negative eating habits. Fruits and vegetable consumption decreased between age 11 and 15 years and intake of sweets and mineral drinks increased. Children and adolescents from higher socio-economic groups ate more fruits and vegetables than those in the lower group.

Looking at the Nigerian situation, the report on the HBSC study carried out in Nigerian schools in 1985 and 2001 revealed close to the same findings. Intake of fruits and vegetables decreased while intake of sweets and

mineral drinks increased within the same period. Age was specifically observed to be a strong indicator for negative development of eating habits. Dietary habits deviated greatly from normal as the children mature into their adolescence. Just like the Norwegians results, in 2001, the data showed that fruits and vegetable consumption decreased between the age of 11 and 15 years while intake of sweets and mineral drinks increased with boys consuming less fruits and vegetables and more mineral drinks than girls (WHO, 2004).

In 2001 and 2002, WHO carried out a survey on the health behaviour in school aged children (HBSC) which covered approximately 162,000 adolescents aged 11, 13 and 15 years in 35 countries of Europe and North America. The eating habits examined included meal frequency and stability, intake of sweets and soft drinks and intake of vegetables and fruits. Major geographical differences were found in relation to eating breakfast but gender differences became more pronounced with age. Breakfast consumption fell to 9% among boys and 17% among girls within the age of 11-15 years. The decrease with age was most evident among girls in the Netherlands with a 2.9% decrease. Almost one third of 11, 13 and 15 year olds used for the study ate sweets or chocolates one or more times every day and a similar proportion (29%) consumed such foods once a week or less. On the overall, age and gender differences in the consumption of sweets and chocolate were minor compared to those that applied to the other food and drink items surveyed (WHO, 2003).

#### **Purpose of the study**

The study was carried out to.

- (i) Determine the influence of age on adolescents' dietary habits.
- (ii) Determine individual dietary habits in terms of Sugar consumption, meal skipping, eating out, fruits and vegetable consumption and snacking.

#### **Research questions**

- (i) To what extent does age influence adolescents' dietary habits?
- (ii) To what extent do adolescents consume sugar, skip meals, eat out, consume fruits and vegetables and partake in snacking?

#### **Statement of hypotheses**

- i) Age does not significantly influence adolescents' dietary habits.

#### **Research Methodology**

The research design for this study is the descriptive survey design. The study was carried out in the Calabar education zone of Cross River State, Nigeria. Calabar Education Zone where the study was focused is in the southern senatorial district and comprised seven Local Government Areas viz: Akamkpa, Biase, Odukpani, Calabar Municipality, Calabar South, Akpabuyo and Bakassi.

The population of the study consisted of all Senior Secondary School two students (SS 2) in the Public Secondary Schools in Calabar Education Zone of Cross River State. The stratified random sampling technique was employed. Stratification was on the basis of Local Government Area. To select the number of schools for the study, each Local Government Area was used as a stratum. The selection criterion was based on the number of schools in the stratum. The researcher decided to select the schools in the ratio of 1:3 which is equivalent to 33%. Thus in each stratum, 33% of the secondary schools were randomly selected for the study. The sample size for the study was 542 students. These were drawn from 24 randomly selected public secondary schools in Calabar Education Zone.

## RESULTS

**Table 1: Characteristics of the study subjects with their mean and standard deviation.**

Characteristics	No.	%	Mean	SD
Dietary habits	542	100	41.72	5.80
<b>Age</b>				
12-14 years	164	30.3	41.20	5.60
15-17 years	321	59.2	42.05	5.69
18-20 years and above	57	10.5	40.77	6.44

The result presented in Table 1 shows the mean rating of respondents according to the different sub-variables. For the variable age, the group 12-14 years had a mean of 41.20, the group 15-17 years had a mean of 42.05 while the group 18-20 years and above had a mean of 40.77. This also implies that the age group 15-17 years had better dietary habits than the other two groups. The variable dietary habits yielded a mean of 41.72. This implies that the respondents generally have positive dietary habits.

### Hypothesis

Age does not significantly influence adolescents' dietary habits. The data collected were analyzed with one way analysis of variance (ANOVA). The result is presented in Table 2.

The upper part of Table 2 presents the mean values and standard deviation of the different groups according to their responses to the questionnaire items. The lower part of the table shows the actual result of ANOVA. The

### Instrumentation

The instrument for data collection is a questionnaire called the Adolescents' Dietary Habits Questionnaire (ADHQ). The response scale was the Likert response scale with a four point scale rated as follows: 1 (strongly disagree), 2 (disagree), 3 (agree) and 4 (strongly agree). The split-half method was used to determine the reliability estimate of the instrument and the scores from the two halves (odd and even) were correlated using the Pearson Product Moment Correlation Coefficient while the Spearman, Brown prophecy formula was used to correct the result. The result yielded a reliability coefficient of 0.85.

comparison of the means of the three groups using ANOVA yielded an F-ratio of 1.9441 which is lower than the critical F-ratio of 3.020 at 0.05 level of significance with degree of freedom of 2 and 539. With this result, the null hypothesis was retained, which implies that age does not significantly influence adolescents' dietary habits. The mean values of their dietary habits shown in the upper part of the table revealed that the respondents who are 12-14 years, had a mean value of 41.20; it rose to 42.05 for 15-17 years old respondents and dropped down to 40.77 for respondents who are 18-20 years and above.

For a better understanding of the influence of age on specific dietary habits of adolescents, the mean values of the different age groups for the individual dietary habits examined in this study were compared using ANOVA. The mean values and standard deviation of the three groups and the result of ANOVA are presented in Table 3 and 4. The result revealed that, the analysis of variance of.

**Table 2: Result of analysis of variance (ANOVA) of the influence of age on adolescents' dietary habits.**

N 542				
Group	N	Mean	SD	
12-14 years	164	41.20	5.60	
15-17 years	321	42.05	5.69	
18-20 and above	57	40.77	6.44	
Total	542	41.72	5.80	
Source of variance	SS	DF	MS	F
Between group	128.3912	2	64.1956	1.9441
Within group	17798.0903	539	3.0206	
Total	17926.4815	541		

Not significant at 0.05, df = 2 and 539, critical F = 3.020.

**Table 3: Result of Mean and Standard deviation of the different age groups in relation to their dietary habits.**

Group	N	Mean	SD
<b>Sugar consumption</b>			
12-14 years	164	8.6524	2.0201
15-17 years	321	8.3240	1.9448
18-20 and above	57	8.5087	2.0799
Total	542	8.4632	2.1911
<b>Meal skipping</b>			
12-14	164	8.0180	1.7851
15-17	321	8.2150	1.7767
18-20 and above	57	8.1579	1.6986
Total	542	8.1476	1.7728
<b>Eating out</b>			
12-14	164	8.6826	2.0973
15-17	321	8.6355	2.2011
18-20 and above	57	8.0702	2.3057
Total	542	8.5979	2.1839
<b>Fruits and vegetable</b>			
12-14	164	7.0060	1.6987
15-17	321	7.4174	1.9138
18-20 and above	57	7.3684	1.9967
Total	542	7.2786	1.8676
<b>Snacking</b>			
12-14	164	6.8323	1.9777
15-17	321	7.1589	1.9096
18-20 and above	57	7.0351	2.0871
Total	542	7.0554	1.9468

**Table 4: Result of analysis of variance (ANOVA) of the influence of age on individual dietary habits (sugar consumption, meal skipping, eating out, fruits, snacking, and vegetable consumption).**

Source of variance	SS	DF	MS	F
<b>Sugar Consumption</b>				
Between group	11.9870	2	5.9935	1.53
Within group	2117.7399	539	3.9290	
Total	2129.7269	541		
<b>Meal Skipping</b>				
Between group	0.3566	2	0.1783	0.06
Within group	1504.3021	539	2.7909	
Total	1504.6587	541		
<b>Eating Out</b>				
Between group	25.1693	2	12.5847	2.89
Within group	2347.9525	539	4.3561	
Total	2373.1218	541		
<b>Fruits and Vegetable</b>				
Between group	8.8232	2	4.4116	1.38
Within group	1724.3742	539	3.1992	
Total	1733.1974	541		
<b>Snacking</b>				
Between group	4.5677	2	2.2839	0.64
Within group	1917.5282	539	3.5576	
Total	1922.0959	541		

Not significant at 0.05, critical F = 3.02, df = 2 and 539.

the mean values of the individual dietary habits yielded an F-ratio of 1.53 for sugar consumption, 0.06 for meal skipping, 2.89 for eating out, 1.38 for fruits and vegetable consumption and 0.64 for snacking habits. All the calculated values of F-ratio are less than the critical values of 3.020. This further confirmed the finding that

age does not significantly influence adolescents' dietary habits.

Research question 2: To what extent do adolescents consume sugar, skip meals, eat out, consume fruits and vegetables and partake in snacking? The result is presented in table 5 and 6.

**Table 5: Summary of the number of respondents demonstrating the individual dietary habits.**

Dietary habits	Mean	Normal		Abnormal	
		No	%	No	%
Sugar consumption	8.5	268	49.4	274	50.6
Skipping breakfast	8.1	205	37.8	337	62.2
Eating out	8.6	269	49.6	273	50.4
Fruits /vegetable consumption	7.3	308	56.8	234	43.2
Snacking	7.0	211	38.9	331	61.1

Normal = mean score of >8 for specific dietary habit; Abnormal = mean score of < or = 8 for specific dietary habit.

**Table 6: Pattern of dietary habit among adolescents as influenced by age.**

Dietary habits	12-14 years			15-17 years			18-20 and above		
	No.	%	Mean	No.	%	Mean	No.	%	Mean
Sugar consumption			8.6			8.3			8.5
Normal	86	52.4		140	43.6		42	73.7	
Abnormal	78	47.6		181	56.4		15	26.3	
Skipping meals			8.0			8.2			8.2
Normal	74	45.1		93	29.0		38	66.7	
Abnormal	90	54.9		228	71.0		19	33.3	
Eating out			8.6			8.6			8.0
Normal	80	48.8		165	51.4		51	89.5	
Abnormal	84	51.2		156	48.6		6	10.5	
Fruit/vegetable consumption			7.0			7.4			7.4
Normal	94	57.3		187	58.3		27	47.4	
Abnormal	70	42.7		134	41.7		30	52.6	
Snacking habit			6.8			7.1			7.0
Normal	59	36.0		141	43.9		11	19.3	
Abnormal	105	64.0		180	56.1		46	80.7	

Normal = mean score of >8 for specific dietary habit; Abnormal = mean score of < or = 8 for specific dietary habit.

Table 5 shows the extent to which the subjects were demonstrating the dietary habits. The researcher's decision was to take all those with mean score above 8 as demonstrating the particular dietary habit within normal range whereas all those who's mean score was 8 or below was regarded as an abnormal demonstration of the dietary habit. The study revealed that 274 (50.6%) respondents were abnormally consuming sugar, 337 (62.2%) were skipping their breakfast, 273 (50.4%) most often ate out of their homes, 234 (43.2%) consumed less fruits and vegetables while 331 (61.1%) snacked often.

In Table 6, we see a display of the differentiation of the respondents' pattern of dietary habits by age group. More of the respondents within ages 15-17 years (71%) were observed to be skipping their breakfast, whereas snacking habit was observed to be more common among ages 18-20 and above (80.7%).

## DISCUSSION OF FINDINGS

The result of analysis showed that age does not significantly influence adolescents' dietary habits, both as a group and when considered individually such as sugar consumption, meal skipping, eating out, fruit and vegetable consumption and snacking habits. From the results of the analysis, subjects in all age groups possessed above average dietary habits (mean = 41.72) when scores of all five dietary habits considered in this study were merged together. On the contrary, when the dietary habits were singled out, the average mean score for fruits and vegetable consumption (7.28) and snaking (7.06) showed that they negatively demonstrated these habits, while the mean score for sugar consumption (8.47), meal skipping (8.15) and eating out (8.60) showed an average rate of demonstration of these habits.

The details of this analysis are not consistent with those of authors such as Post-Staggered *et al* (2002) and Armst-Narvarro (2006). Their study revealed that age is a significant determinant of dietary habits. They observed that eating habits generally worsen as age increases. The consumption of fast foods, according to them increase from age 15 years, fruits and vegetables, coffee and tea consumption increase between ages 17-21 years while fat spread consumption, milk, bread, potatoes, carrots, buns and biscuits consumption decrease.

In the same vein, WHO (2004) and (2006) HBSC study in Nigeria and other countries contravenes the position of the present study. In the 35 countries of Europe and North America where they examined the dietary habits of 11-15 years old adolescents, they observed a decrease in the rate of breakfast consumption and that subjects ate sweets or chocolate one or more times everyday. In Norway in particular, they found out that while intake of fruits and vegetables decreased intake of sweets and minerals drinks increased among adolescents between 11-15 years. Their findings in Nigeria were similar to that of Norway with age being a strong indicator for negative development of eating habits. This implies that as children mature into adolescence, dietary habits deviate greatly from normal to abnormal.

The researcher's opinion is that the non significant result may be because the self report questionnaire method was used to collect data. Adolescents used for the study may have either over or under reported, to boost their socio-economic background or ego.

There was not significant age group difference observed in the consumption of sugar among respondents. The number of students observed to be skipping their breakfast was significantly higher among ages 15-17 years (71%) than in the other age groups. This result gives credence to the WHO (2003) survey report on health behavior in school age children. The survey which was done in 35 countries of Europe and North America has it that breakfast consumption dropped to 9% among boys and 17% among girls aged 15 years. Also consistent with this study is the conclusion made by Armas-Narvarro (2006) that eating habits worsen as age increases. This conclusion was made after observing low breakfast consumption among one quarter ( $\frac{1}{4}$ ) of the subjects.

In line with the above conclusion by Armas-Narvarro (2006), this study revealed that snacking habit was more common among those in ages 18-20 and above (80.7%). This also confirms the findings of Post-Stagegard *et al* (2002) who observed among Swedish adolescents that consumption of fast foods increases from age 15 and continues until it peaks at 21 years.

#### **Implication for education**

Doing well in school is a top priority not only for the students themselves but their parents and teachers. It has

also become a priority for both the communities and country as a whole. This is because excellence in education is important for solving global problems faced by today's generation as well as the generation to come. It is necessary to extend this priority to the nutritional status because of the close correlation between good nutrition and academic performance.

It has been confirmed by researchers that intake of good and regular breakfast improves academic performance while those who frequently skipped their breakfast have been shown to have more days of absenteeism from school and more days of being tardy (late and sluggish) with resultant poor performance. Another truism is that diets with high level of saturated fats actually impair learning and memory function. Unfortunately, foods with saturated fats are often the most affordable and widely available in schools. Those who consume recommended dietary quantity of fruits and vegetables had lower risk of failure during Literacy test whereas the reverse is the case for those who ate less fruits and vegetables (Jyoti, Frongillo, & Jones, 2005).

Research reports have shown poorer performance on cognitive test (like recalling a long list of words) in individuals with poor blood sugar control. It has been evident that consumption of sugar-Laden foods (such as mineral drinks, ice cream, sweets and sodas, common among most participants in this study) is associated with impaired short-term memory (Chen, 2016).

#### **The aforementioned implies that**

- 1) School administrators should provide opportunities for staff/students to receive education on good nutrition and the right dietary habits.
- 2) Schools should establish committees that include parents and community members to promote a healthy school atmosphere by focusing on nutrition and vending policies.
- 3) Schools should help school children develop healthy habits by ensuring that healthy food choices are offered in school.
- 4) Schools need to educate parents and children on how to live healthy lifestyle that include proper nutrition and the right dietary habits.
- 5) Schools should make the commitment to offer quality meals that provide required energy/nutrients to achieve their maximum potential.
- 6) Parents should be taught to serve meals in a comfortable and friendly atmosphere to stimulate children's appetite.
- 7) Schools should provide materials for parents about nutrition and right dietary habits which they can use to talk with their children.
- 8) Schools should form nutrition clubs, made up of students who will be used to educate their peers on the right dietary habits.

**Recommendations**

Based on the findings of this study, the following recommendations were made.

- i. The Cross River State government should take a step forward to implement the national policy on school health programme which include food and nutrition services in schools. This will help check the quality of foods/snacks sold in the schools as the case is in some states in Nigeria.
- ii. The food safety unit of the state Ministry of Health should include in their schedule, school visits to inspect tuck shops and expunge all peddlers of unhealthy foods.
- iii. School administrators should employ the services of Nutrition Educators to provide sound nutrition information for the students and parents.
- iv. School Administrators should enforce policies that will promote the availability of nutritious foods such as fruits and vegetables in schools' tuck shops instead of cake, sweets, minerals drinks and other sugar coated snacks.
- v. Parents should control amount of money given to children to spend at school and where possible, guidelines on how it should be spent should be given. On the alternative, (for day students) parents should procure lunch box and give their children food from home to eat during break at school.
- vi. Since breakfast is considered to be the most important meal of the day and that it contributes to the nutritional and intellectual well-being of the adolescents. The federal and state government should consider implementing a school meal programme, specifically breakfast as a component of school health programme.

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