

MEAL PATTERN AND SOFT DRINK CONSUMPTION AMONG IN-SCHOOL ADOLESCENTS IN BENIN-CITY, EDO STATE, NIGERIA.

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ABSTRACT

Meal pattern and soft drink consumption among in-school adolescents in Benin City, Edo State, Nigeria. Healthy meal pattern is very important in the maintenance of the highest level of physical, mental and social well-being of an individual, more so during the adolescence period which is characterized by dramatic physical, psychological and cognitive development. This study aimed to determine the pattern of meal consumption among in-school adolescents in Benin-City, Nigeria. This descriptive, cross sectional study was carried out between January - June 2013 among in-school adolescents in Benin-City, Edo State, Nigeria. The participants were selected using a multi-stage sampling method. The tool for data collection was a pre-tested, structured, interviewer-administered questionnaire. Data was analyzed using IBM SPSS 20.0 and significant level was set at p less than 0.05. A total of 797 in-school adolescents with mean age of 15.4 ± 3.6 years participated in the study. The highest proportion of them were 14-15 years (66.9%) and males (51.8%). Majority of the respondents (71.6%) ate three times a day. Dinner was the meal eaten most often by the highest proportion of them (95.5%), followed by lunch (90.2%) and breakfast (85.9%). Eighty-eight percent of them skipped meals and this was significantly higher among the females (90.7%) than the males (86.0%), $p = 0.041$ and those in the mid-adolescent (14-15 years) age group (92.3%), $p < 0.001$. The reasons given for skipping meals included staying for after-school activities (45.1%), time constraint in the morning (43.4%), not being hungry (25.2%) and waking up late (11.5%). Six hundred and ninety-three (87.0%) of them were involved in snacking and this pattern was significantly higher among the male adolescents ($p = 0.037$), those in the highest social economic class ($p = 0.003$) and among those in the senior class ($p < 0.001$). Eighty-seven percent of the respondents had consumed soft drinks on a daily basis in the past one week preceding the survey. Conclusion: The study revealed that meal skipping, snacking and soft drink consumption were common among this adolescent population. Public enlightenment campaign and school food policies that promote healthy eating habits are recommended.

INTRODUCTION

Healthy meal pattern is very important in the maintenance of the highest level of physical, mental and social well being of an individual, more so during the adolescence period (a transitional period between childhood and adulthood) which is characterized by dramatic physical, psychological and cognitive development.¹ The period is also accompanied by increase in energy and nutritional requirement.¹ There is also the growing autonomy of adolescents to make their own decision about the foods they consume.^{2, 3} While there is evidence that food intake patterns are established before adolescence, they may also change substantially during adolescence.^{4,5} These modified meal and food consumption patterns are likely to influence health and disease pattern in later life.^{6, 7} Dietary quality has been shown to decline from childhood to adolescence with dietary habits that are likely to promote fatness being actively adopted.⁸

Trends have been identified not only in what adolescents are eating but where and under what circumstances they are eating. It has been reported that school-age children are struggling with a number of issues related to healthy eating including skipping of breakfast, increase reliance on snacks and increase consumption of soft drinks.^{9,10} This results in an increase in the number of available alternative food options and sources and has been associated with increasing trend

of overweight and obesity among adolescents over the past decades.¹¹ In-school adolescents spend most of their day at school, often staying for after-school activities, therefore, the foods and beverages available to them can contribute a number of calories to their total daily consumption.

Factors affecting the meal pattern of adolescents have been examined in several studies.¹² These factors include family circumstances and practices, changing nature of the food supply, increased reliance on foods consumed away from home, food advertising, marketing, promotion and food prices. The family plays an important role in determining adolescents' meal pattern. Sharing meals with other family members have been reported to positively influence healthy eating behaviours such as more frequent intake of fruits and vegetables and with less skipping of breakfast.^{12,13}

The importance of targeting adolescents with nutrition education on healthy eating cannot be over-emphasized as a healthy food consumption pattern among adolescents can be beneficial in the following ways: improves cognitive function, attentiveness, social interaction and overall nutrient balance. They are also more likely to be better prepared to learn, be active and maintain good health as adults.^{14,15}

Due to the dearth of published information on meal pattern of adolescents in the study area, this study was carried out to determine the meal pattern and soft drink consumption among in-school adolescents in Benin-City, Edo State, Nigeria. The findings from this study will provide baseline data that will aid in developing appropriate intervention

KEYWORDS: Meal pattern; Soft drink; Adolescents.

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strategies to improve meal pattern of adolescents.

METHODOLOGY

This study was a cross-sectional, descriptive design carried out between January – June, 2013 in Benin-city, Edo State in the Southern part of Nigeria with co-ordinates 6°19N, 5°36E, 6.137°N, 5.6°E. Benin-City with a total population of 1,147,188 is the capital of Edo State and is made up of three Local Government Areas (LGAs). Being a metropolitan city, it has a mix of ethnic groups from different parts of the state and country. There are 32 public secondary schools in Benin-City out of which 12 are co-educational (4 each in the three LGAs).

The study population comprised in-school adolescents aged 10 to 19 years in public co-educational secondary schools in Benin-City. A multistage sampling technique was used to select the participants. In the first stage, simple random sampling method was used to select one out of the four co-educational secondary schools in each of the three LGAs. In the second stage, eligible adolescents were selected by systematic sampling method.

Approval was sought and obtained from the State Ministry of Education and the Principals of the schools who acted as proxy for the parents. Verbal informed consent was obtained from the participants after explaining the purpose of the study to them. They were informed that participation in the study was voluntary and assured of anonymity and strict confidentiality.

Data was collected with the aid of pre-tested, structured, interviewer-administered questionnaire. Information

was sought on socio-demographic characteristics (age at last birthday, date of birth, class, parents' level of education and occupation), meal pattern, skipping of meal, snacking and soft drinks consumption habits in the past one week preceding the survey.

Snacking was defined as consumption of foods and drinks including soft drinks, milk drinks, energy drinks, etc. between meals in the past one week preceding the survey.¹⁰ Consumption of soft drink was defined as intake of any sugar-sweetened beverages including regular sweetened carbonated soft drinks, fruit drinks, etc.¹⁶

Age was categorized according to the World Health Organization sub-classification of adolescents into: early (10-14 years), middle (15-16 years) and late adolescents (17-19 years).¹⁷ Socio-economic status was classified using each participant's mother's educational status and father's occupation based on the method described by Olusanya et al.¹⁸ Data was analysed using IBM SPSS version 20.0. Descriptive estimates of socio-demographic characteristics was done using proportions and means. Chi-square test was used to determine association between socio-demographic characteristics and meal pattern, meal skipping, snacking and soft drink consumption. The differences were considered significant at p less than 0.05.

RESULTS

Seven hundred and ninety-seven adolescents aged 10 to 19 years made up of 51.8% males and 48.2% females participated in the study. The highest proportion of them were aged 15 to 16 years (66.9%), in the senior secondary class (63.5%) and belonged to Social Class 5 (36.1%). Table 1

Table 1: Socio-demographic characteristics of respondents.

Variable	Frequency (n = 797)	Percent
Age group (years)		
10-14	152	19.1
15-16	533	66.9
17-19	112	14.0
Mean age (SD)	15.4 ± 3.6	
Sex		
Male	413	51.8
Female	384	48.2
Class		
JSS 1-3	291	36.5
SSS 1-3	506	63.5
Socio-economic status		
I	47	5.9
II	136	17.1
III	168	21.1
IV	158	19.8
V	288	36.1

Table 2: Meal pattern of respondents by socio-demographic characteristics.

Variable	Breakfast	Lunch	Dinner
	Freq. (%)	Freq. (%)	Freq. (%)
Total	685 (85.9)	719 (90.2)	761 (95.5)
Age-group (years)			
10-14	136 (89.5)	150 (98.7)	142 (93.4)
15-16	458 (85.9)	474 (88.9)	509 (95.5)
17-19	91 (81.3)	95 (84.8)	110 (98.2)
<i>p-value</i>	<i>0.164</i>	<i>0.001*</i>	<i>0.179</i>
Sex			
Male	380 (92.0)	361 (87.4)	399 (96.6)
Female	305 (79.4)	358 (93.2)	362 (94.3)
<i>p-value</i>	<i>0.001*</i>	<i>0.006*</i>	<i>0.112</i>
Class			
JSS 1-3	262 (90.0)	273 (93.8)	272 (93.5)
SSS 1-3	423 (83.6)	446 (88.1)	489 (96.6)
<i>p-value</i>	<i>0.012*</i>	<i>0.009*</i>	<i>0.038*</i>
Socio-economic status			
I	45 (95.7)	40 (85.1)	44 (93.6)
II	124 (91.2)	114 (83.8)	132 (97.1)
III	142 (84.5)	156 (92.9)	159 (94.6)
IV	132 (83.5)	138 (87.3)	150 (94.9)
V	242 (84.0)	271 (94.1)	276 (95.8)
<i>p-value</i>	<i>0.036*</i>	<i>0.005*</i>	<i>0.795</i>

Table 3: Meal skipping, snacking and soft drink intake of respondents by socio-demographic characteristics.

Variable	Meal skipping	Snacking	Soft drink intake
	Freq. (%)	Freq. (%)	Freq. (%)
Total	703 (88.2)	693 (87.0)	694 (87.1)
Age-group (years)			
10-14	130 (85.5)	125 (82.2)	101 (66.4)
15-16	492 (92.3)	466 (87.4)	485 (91.0)
17-19	81 (72.3)	102 (91.1)	108 (96.4)
<i>p-value</i>	0.001*	0.093	0.001*
Sex			
Male	355 (86.0)	369 (89.3)	341 (82.6)
Female	348 (90.7)	324 (84.4)	353 (91.9)
<i>p-value</i>	0.041*	0.037*	0.001*
Class			
JSS 1-3	257 (88.3)	236 (81.1)	213 (73.2)
SSS 1-3	446 (88.1)	457 (90.3)	481 (95.1)
<i>p-value</i>	0.942	0.001*	0.001*
Socio-economic status			
I	38 (80.9)	43 (91.5)	46 (97.9)
II	116 (85.3)	129 (94.9)	129 (94.9)
III	150 (89.3)	143 (85.1)	153 (91.1)
IV	138 (87.3)	126 (79.7)	141 (89.2)
V	261 (90.6)	252 (87.5)	225 (78.1)
<i>p-value</i>	0.242	0.003*	0.001*

The meal pattern of the respondents is shown on Table 2. Majority of the respondents (71.6%) ate the three main meals (breakfast, lunch and dinner) daily. The highest proportion of the respondents ate dinner (95.5%) followed by lunch (90.2%) and breakfast (85.9%). Conversely, breakfast was the meal most often skipped (14.1%).

Eating of breakfast was highest among the younger adolescents (89.5%), among the males (92.0%), those in the highest social class (95.7%) and those in the junior secondary class (90.0%). However, only gender, class and social class of the respondents were significantly associated with eating of breakfast ($p < 0.05$).

Eating of lunch was significantly highest among the younger adolescents (98.7%), among the females (93.2%), those in the lowest social class (94.1%) and those in the junior secondary class (93.8%).

Eating of dinner was highest among the oldest adolescents (98.2%), among the males (96.6%), those in the upper social class (97.1%) and those in the senior secondary class (96.6%) but class of respondents was the only factor significantly associated with eating of dinner ($p = 0.038$).

When all meals were considered together, 703 (88.2%) of the adolescents had skipped at least one meal in the past one week preceding the survey. (Table 3) The highest proportion of those who had skipped any meal was among those aged 14-15 years (92.3%). The female adolescents (90.7%) were more likely to report skipping meals than their male counterparts (86.0%). Skipping of meals was highest among those in the lowest social class compared to those in the highest social class. Reasons given for

skipping meals included: staying for after-school activities (45.1%), time constraint in the morning (43.4%), not being hungry (25.2%) and waking up late (11.5%).

The pattern of snacking among the adolescents is shown in Table 3. Eighty-seven percent of the adolescents snacked on a daily basis. The oldest adolescents (91.1%) snacked more than their younger counterparts (82.2%) but this was not statistically significant, $X^2 = 4.761$, $df = 2$, $p = 0.093$. The prevalence of snacking was significantly higher among the males (89.3%) than the females (84.4%), $X^2 = 4.334$, $df = 1$, $p = 0.037$. Those in the upper social class were significantly more likely to snack than those in the lower social class, $X^2 = 16.138$, $df = 4$, $p = 0.003$. Those in the senior class (90.3%) were significantly more likely to snack than those in the junior class, $X^2 = 13.832$, $df = 1$, $p = 0.001$.

Table 3 shows reported daily intake of soft drinks by the respondents. Eighty-seven percent of the respondents reported consuming soft drinks on a daily basis. Soft drink consumption was significantly higher among the older adolescents (96.4%) than the younger adolescents (66.4%), $X^2 = 73.456$, $df = 2$, $p = 0.001$. The female adolescents (91.9%) had a significantly higher proportion of those who consumed soft drinks than their male counterparts (82.6%), $X^2 = 15.493$, $df = 1$, $p = 0.001$. Those in the higher social were significantly more likely to consume soft drink than those in the lower social class, $X^2 = 35.723$, $df = 4$, $p = 0.001$. Soft drink consumption was significantly higher among adolescents in the senior class (95.1%) than those in the junior class (73.2%), $X^2 = 78.477$, $df = 1$, $p = 0.001$.

DISCUSSION

This study revealed that though majority of the respondents reported eating the three main meals (breakfast, lunch and dinner), dinner was most often eaten and breakfast was the meal most often skipped. High levels of meal skipping particularly breakfast skipping has been reported among adolescents worldwide.^{19, 20} As was buttressed by this study, this is could be due to more mothers working away from home and the need to drop off children in school and get to their place of work early. Extended periods in school by adolescents as they stayed back for after-school activities such as extra lessons and sports/games could also be the reason why dinner was the meal most often eaten. There is need to emphasize the importance of eating breakfast since it is considered to be the most important meal of the day²¹ and it has been suggested that skipping breakfast could impair cognitive function and performance of school children.^{14, 15} as well as contributing to an increased body weight.²² In addition, healthy eating behavior is important for the prevention of diet-related chronic diseases in adulthood.²³

Meal skipping was higher among the female adolescents than the male adolescents as has been reported elsewhere¹⁰ though some studies have reported the reverse.¹ Females may tend to skip meals more since they are likely to be more conscious of their body weight and body image concerns. Those who feel they are overweight may want to intentionally skip meal as a way of dieting and maintaining a normal weight.

The high levels of meal skipping can results in higher snacking frequency^{10, 21} which was also the finding in this study where almost nine out of ten respondents

snacked on a daily basis. Snacking is commonly associated with undesirable health outcomes and dietary patterns.¹⁰ In the absence of home-cooked foods, adolescents are left with no choice but to get more readily available fast foods in the school premises. Foods prepared and consumed away from home including the school environment are frequently less nutritious; have a higher fat content compared with those at home.^{6, 10, 21, 24} In addition, this is associated with higher soft drink consumption and lower intake of fruits and vegetables.^{6, 10, 21, 24}

The implication of this is that these adolescents maybe at risk of diet-related chronic conditions including overweight and obesity, coronary heart disease, hypertension, diabetes, cancer.²⁵ Obese children and adolescents tend to become obese adults which puts them at greater risk of heart disease, hypertension, diabetes and cancer.²⁶ Furthermore, snacking may be associated with less frequent consumption of meals which may be detrimental to health since regular meal patterns are associated with greater dietary diversity, healthier food choices²⁷ and better nutrient intake.^{12, 21}

Snacking was higher among the older adolescents and male adolescents as has been reported elsewhere.¹ The high level soft drink consumption among the respondents in this study has also been reported among adolescents elsewhere^{28, 29} and the public health implications are diverse. Sugar sweetened soft drinks is a major source of added sugar³⁰ and have been linked to adverse nutritional and health consequences such as dental caries and obesity.^{30, 31} Furthermore, evidence also supports an association between soft drink consumption and decreased bone mineral density.^{31, 32}

The limitation of the study is that being cross-sectional makes it difficult to ascertain direction and causation. In addition, self reported information could lead to under- or over-reporting of food intake which is common among adolescents.³³ In conclusion, this study has revealed that majority of the adolescent population ate the three main meals, dinner was most often eaten and breakfast was the meal most often skipped. In addition, the study showed high levels of meal skipping, snacking and soft drink consumption among the study population.

It is recommended that health education programmes by the government targeting the populace should be undertaken to highlight the importance of healthy nutrition. Development of a school food policy which promotes healthy eating habits, mid-day school meals and certified food vendors within the school premises is suggested. In addition, school authorities should intensify efforts at adequate nutrition education to adolescents. Parents should also be encouraged to package nutritious home-made meals for adolescents to take to school.

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