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# Ghanaian Junior High School Adolescents Dietary Practices and Food Preferences: Implications for Public Health Concern

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## Abstract

**Introduction:** The dietary practices of adolescents have been described as not the best, mainly as a result of their busy schedules, peer pressure and the independent nature of their behaviour. It is therefore important that adolescents have reliable nutrition information that will guide them to make informed decisions regarding their dietary patterns and practices. But, what are the gaps in their knowledge and practices regarding dietary intakes?

The aim of this study was to determine the eating patterns, meals skipping practices, snacking habits and the food preferences of adolescents in selected Junior High Schools in Ghana.

**Methods:** A total number of 820 adolescents were enrolled in this cross-sectional survey. A questionnaire assessing the background characteristics of the respondents, frequency of meals consumption, frequency of snacking between meals, type of snacks usually consumed, and frequency of eating outside the home and food preferences of respondents was administered to all the participants.

**Results:** Majority 515(62.8%) of the respondents indicated that they usually skipped breakfast before going to school. The common reason given by many 178(34.6%) of the breakfast skippers was that parents gave them money to buy food on their way to school, but they used the money to browse at the internet café after school. Nearly half 367(44.8%) of the respondents reported that they usually consumed an average of two cooked meals per day at home. About one-third (33.8%) of the respondents preferred a soft drink for snack during the day.

**Conclusions:** The findings of this study have demonstrated that Junior High School students, who are adolescents, do not have healthy eating patterns and habits – they usually skip breakfast and prefer high sugar and fat content food products as snack among other dietary habits.

**Keywords:** Adolescents; Dietary practices; Food preferences

## Introduction

Adolescence has been described as the period of life between 11 and 21 years of age in which profound and dramatic biological, emotional and cognitive maturity is attained [1]. In this transitional stage of life, adolescents may no longer benefit from the attention and care usually given to children; and they may not get the protection associated with adulthood either. This transitional period between childhood and adulthood provides an opportunity to prepare for a healthy productive and reproductive life, and to prevent the onset of nutrition-related chronic diseases in adult life. It also affords an opportunity to adolescence-specific nutrition issues and, possibly, also corrects some nutritional problems originating in the past (World Health Organization [2]. There is therefore the need to know and understand the eating habits of adolescents, because of the high tendency for eating habits acquired during adolescence to persist into adulthood [3-6]. The adolescence period of life is therefore a critical period for establishing good dietary habits that would aid in the prevention of diseases in later life [4].

It has been indicated that adolescents are particularly vulnerable to nutrient inadequacies as their bodies undergo various physiological changes, and as they begin to become more socially independent, which often impacts negatively on their dietary intakes [7,8]. Some studies have also indicated that as a result of the rapid changes in physical growth and psychosocial development and as a result of the unhealthy dietary practices that adolescents adopt, they are unable to meet their dietary requirements. In addition, research has shown that, in most cases, healthy eating is not a priority of adolescents [9-11].

It is common knowledge that children and adolescents who develop

healthy eating habits early in life are likely to maintain them into adulthood, and have a reduced risk of suffering from chronic diseases such as cardiovascular diseases, cancers, diabetes and osteoporosis [12]. Studies have also shown that adolescents who have healthy eating habits are more likely to have the ability to learn normally in school [13] and perform better academically than adolescents who have unhealthy eating habits [14,15].

Past studies have further revealed that adolescents frequently consume energy-dense diets which are of poor quality in terms of essential micronutrients [16-19]. The poor nutritional status of adolescents has been attributed to many factors, including low meal frequency, high consumption of sweetened beverages, increased consumption of energy-dense foods, increased consumption of foods away from home (with peers), skipping meals, particularly breakfast [16-18,20-24]. Other unhealthy practices include the consumption of high-dense fatty and sugary fast foods as the main meals of the day, eating meals characterized by a low content of fruits and vegetables, adopting unconventional dietary practices such as cutting down

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portion sizes of meals in an attempt to lose weight and attain a slim body figure, particularly among females [9-11,25].

Regarding snacking habits, it has been reported that adolescents usually cultivate the habit of consuming large portion sizes of fast food meals [26] and also consume high quantities of carbonated soft and energy drinks [27,28]. Although, ample evidence is not available, snacking has been linked to intakes of reduced portion sizes of meals, which makes it detrimental to health, since regular meal patterns are associated with healthier food choices and greater dietary diversity [29] and meeting recommended energy and nutrients intakes [30,31]. It has also been reported that adolescents who skip breakfast are most likely to have difficulty concentrating and remaining focused and alert in class by mid-morning. In addition, people who skip breakfast in particular are more likely to consume high sugar, fat and salt- dense snacks often during the day [32]. Similarly, other studies have shown that breakfast skipping is associated with substantially lower daily energy intakes [33,34]. In addition, other studies have found that children who practice unhealthy eating habits become more susceptible to obesity in early life, which later results in health defects such as cardiovascular diseases, diabetes and breast, colonic, endometrial and prostate cancers [35,36].

The dietary practice of increasing intake of fast foods, replacing naturally nutritious high fibre diet with western diets which contain high concentrations of sugar and fat, coupled with the tendency to a more sedentary lifestyle, has resulted in the epidemic of childhood obesity [37-40]. Overweight and obesity, which were considered problems in high-income countries only, are dramatically rising in low and middle-income countries, particularly in urban settings, and hence have become global public health problems [35,41,42].

It has been asserted that the rising trend of overweight and obesity cases and their associated diseases among Ghanaians is likely to worsen, given the influx of high-energy dense foods into the Ghanaian market, coupled with the huge change in the dietary habits of people, mainly as a result of improvements in socio-economic conditions [43].

For many years, the health of adolescents has not been a major concern, and consequently, there has been limited research in the area of adolescent nutrition, particularly in developing countries such as Ghana. This is mainly due to the fact that adolescents are less susceptible to diseases and suffer from fewer life-threatening conditions than children and the elderly. Indeed, adolescence is generally described as a period of relatively good health, with low prevalence of infection and chronic diseases. In addition, mortality and morbidity trends among adolescents are quite similar in developing and developed countries. In addition, most health services in developing countries focus on children and pregnant women. As a consequence, in most cases, the health needs of adolescents may not be adequately investigated and addressed. However, the upsurge in the prevalence of childhood obesity worldwide has drawn much attention to the diets of adolescents and children [9]. Furthermore, it has been reported that adolescents are now at a high risk of becoming overweight and obese and liable to suffer from chronic diseases – particularly diabetes – owing to their unhealthy eating habits [44,45].

Research on basic dietary practices of adolescents in Ghana is scarce and can be described as almost non-existent. It is in this regard that this study was conducted to assess the dietary practices and food preferences of adolescents in some selected Junior High Schools (JHS) in Ghana. The findings of this study will serve as baseline information for the development of effective nutrition and health intervention programmes which will help address issues relating to unhealthy eating

habits of adolescents not only in Ghana, but also in other developing countries battling with persistently upward trends in the incidence of non-communicable health conditions.

## Methods

### Study design and sample

This cross-sectional study was conducted in the Cape Coast Metropolis, in the Central Region of Ghana. In all, six JHS schools (three private and three public schools) were selected for the study. At the time of collecting the data all students at the school premises who consented to participate in the study completed the questionnaire administered.

### Instrument

The items on the questionnaire were modified forms of items used in three similar studies [9,11,34]. The first section, (A), consisted of questions to assess the background characteristics of the respondents. Background information included sex, age, and type of school, living arrangement and household size, among other variables. In addition, participants were required to provide information regarding whether they were satisfied with their current size/ weight or not, and whether they had been taught any lesson on nutrition. The second section, (B), comprised 17 question items which assessed the dietary practices of the respondents. The items assessed frequency of meals consumption, frequency of snacking between meals, type of snacks usually consumed, and frequency of eating outside the home. The last section, (C), consisted of 12 food items in pairs; and the respondents were required to indicate their preferences from the list of pairs of food items given.

### Data collection

The questionnaire was pretested prior to its administration in the study. The pretesting was among 60 adolescents in two other JHS schools not selected for the study; and it was modified for clarity on the basis of feedback obtained from the respondents. The questionnaire was administered by the researcher, with the help of trained research assistants and class teachers in all the six schools.

### Ethical considerations

Permission was sought from head-teachers in all the selected schools prior to administration of the questionnaire. Consent forms were sent to parents through their children for permission for the children to participate in the study. Parental consent was obtained for 820 students, constituting 76% of all the eligible students. Prior to obtaining participants' consent, information sheets explaining the purpose of the study were distributed and explained to the students by the researchers.

### Data analysis

Data collected was analyzed using the Statistical Package for Service Solution (SPSS) version 16.0. Descriptive statistics were run to summarize the data collected; and the results were displayed in frequencies and percentages for the variables being investigated. Chi-square tests were used to determine the presence of association between the variables. The chi-square test was run to assess for any statistical significant difference between males and females with respect to their dietary habits. The variables sex and all the different dietary practices variables were all categorical variables. A chi - square test which is a test for independence, evaluates statistically significant differences between proportions for two or more groups in a data set. A significance level

of ( $p > 0.05$ ) was used. If the  $P$ -value was less than the significance level (0.05), the null hypothesis was rejected and a conclusion that there is a statistical difference between sex and the other dietary practices variables was made.

## Results

### Background characteristics of the respondents

The background characteristics of the respondents are presented in Table 1. The respondents comprised 449(54.8%) and 371(45.2%) students from private schools and public schools respectively. Of the 820 adolescent participants, with ages ranging from 11 to 17 years, a greater proportion 485(59.1%) were males. The majority 590(72.0%) of the respondents indicated that they often ate alone. Another 176(21.5%) indicated that they often ate at table with their family members; and 54(6.6%) reported that they often ate with their peers or friends. As to whether participants were satisfied with their body size or not, a large majority (80.0%) indicated that they were satisfied with their current body weight and size. Most (97.1%) of the respondents indicated that they had been taught topics on nutrition in school.

A high proportion (65.5%) of the students indicated that they had not heard about the Regenerative Health and Nutrition (RHN) Programme. The RHN is a preventive and promotive health-care programme initiated by the Ministry of Health (MOH) which aims to improve the health status of Ghanaians by emphasizing lifestyle changes, including what people should eat and drink, the need to

Variables	n (%)
<b>Type of School</b>	
Private	449(54.8)
Public	371(45.2)
<b>Form</b>	
JHS1	219(26.7)
JHS2	265(32.3)
JHS3	336(41.0)
<b>Sex</b>	
Males	485(59.1)
Females	335(40.9)
<b>Age Group</b>	
13-11	396(48.3)
14-16	348(42.4)
>16	76(9.3)
<b>Eating companions</b>	
With family members	176(21.5)
With peers or friends	54(6.6)
Eats alone often	590(72.0)
<b>Satisfied with body weight/Size and Shape</b>	
No, wants to be bigger	84(10.2)
Yes, satisfied	656(80.0)
No, wants to be smaller	80(9.8)
<b>Have been taught Nutrition in School</b>	
Yes	796(97.1)
No	24(2.9)
<b>Have heard about RHN* programme</b>	
Yes	283(34.5)
No	537(65.5)

\*RHN (Regenerative Health and Nutrition Programme)

**Table 1:** Background Characteristics of Study Participants.

Summarized Questions	n (%)
<b>Always eat breakfast before going to school</b>	
Yes	305(37.2)
No	515(62.8)
<b>Reasons attributed to missing breakfast before school</b>	
Breakfast not prepared at home	123(23.9)
Parents give money to be used for buying food on way to school	178(34.6)
Fear of being late to school	133(25.8)
I prefer to buy food out from home as my breakfast	81(15.7)
<b>Number of times skipped breakfast in past week</b>	
Not skipped	305(37.2)
1-2 times/week	279(34.0)
3-4 times/week	130(15.9)
5-6 times/week	29(3.5)
7 times/week	77(9.4)
<b>Number of times skipped lunch in past week</b>	
Not skipped	491(59.8)
1-2 times/week	213(26.0)
3-4 times/week	69(8.4)
5-6 times/week	26(3.2)
7 times/week	21(2.6)
<b>Number of times skipped supper in past week</b>	
Not skipped	532(64.9)
1-2 times/week	195(23.8)
3-4 times/week	37(4.5)
5-6 times/week	21(2.6)
7 times/week	35(4.3)
<b>Average number of cooked meals usually consumed per day</b>	
1 meal	81(9.8)
2 meals	367(44.8)
3 meals	305(37.2)
4 meals	62(7.6)
>4 meals	5(0.6)

**Table 2:** Dietary Practices of Adolescents in Junior High Schools during the day.

increase one's physical activity levels, the importance of daily resting/sleeping and cleanliness.

### Dietary practices of adolescents

**Meal consumption and skipping behaviors:** Table 2 shows the distribution of participants by frequency of meals consumption and meals skipping practices during the day.

Regarding consumption of breakfast, a large majority of the respondents 515(62.8%) indicated that they usually skipped breakfast served at home before going to school. When students were asked to indicate the number of times they skipped breakfast in the past one week prior to the study, 305(37.2%) reported that they did not skip breakfast throughout the week. Another 279(34.0%) skipped once or twice during the week; and 130(15.9%) skipped three or four times.

The common reason given by 178(34.6%) of the students who skipped breakfast was that their parents gave them money to buy food on their way to school. However, in most cases, but saved the money to browse on the internet after school. Another 133(25.8) indicated that they skipped breakfast because of the fear of getting to school late. Some 123(23.9%) also reported that breakfast was not usually prepared

Summarized Questions	n (%)
<b>Food is usually brought from home to school</b>	
Yes	276(33.7)
No	544(66.3)
<b>Do you usually buy snacks/food at school during break time</b>	
Yes	706(86.1)
No	114(13.9)
<b>Type of food usually brought from the house to school</b>	
Packaged or canned Fruit juice (eg. Kalypso)	62(22.5)
Cocoa/Milo drink	11(4.0)
Pastries (eg. cookies, biscuits, cakes)	76(27.5)
Candies (toffee), chocolate	34(12.3)
Cooked food	93(33.7)
<b>Type of snack/food usually bought in school</b>	
Yogurt/fan ice, fan chocolate	112(13.7)
Soft drink (coke, fanta, sprite etc)	107(13.0)
Canned/packaged fruit juice (eg. Kalypso)	96(11.7)
Fruit (eg. orange, banana, pineapple)	28(3.4)
Pastries (eg. cake, meat pie, sausage roll, doughnut)	135(16.5)
Cooked food (eg. Waakye <sup>1</sup> , kenkey <sup>2</sup> and fish, fried rice and fried chicken)	342(41.7)
<b>Who influences your decision on what you buy in school</b>	
Parents	216(26.3)
Elder sibling	74(9.0)
Friends/class mate	82(10.0)
No one (I decide on my own)	448(54.6)
<b>Snack preferences during the day</b>	
Soft drink	287(35.0)
Ice cream/fan ice, yoghurt)	208(25.4)
Pastries(meat pie, doughnut, cakes, cookies)	177(21.6)
Fruit (banana, orange, water melon, pineapple)	119(14.5)
No preference	29(3.5)
<b>Frequency of soft drink consumption (no. of bottles consumed per week)</b>	
None	277(33.8)
1-2 bottles/week	301(36.7)
3-4 bottles/week	163(19.8)
5-6 bottles/week	35(4.3)
>7 bottles/week	44(5.4)
<b>Place where soft drink was consumed (n = 543)</b>	
At School	287(52.9)
At Fast food setting/ restaurant/ supermarket/shop	164(30.2)
At Home	92(16.9)
<b>Main reason for drinking soft drink (n = 543)</b>	
Like flavour/taste	327(60.2)
Satisfy thirst	104(19.2)
Served or readily available at home	64(11.8)
Served at friend's house during a visit/party etc	48(8.8)

<sup>1</sup>Waakye: A combination of rice and beans mixed together and boiled

<sup>2</sup>Kenkey: Maize dough/corn dough mixed with water into a thick paste and boiled

**Table 3:** Information on Snacking habits and Food Consumption Practices during School Hours.

at home in the morning. The remaining 81(15.7%) preferred to buy breakfast on their way to school.

With regard to lunch, the majority 491(59.8%) ate lunch daily. Some of them (26.0%) skipped lunch once or twice in the previous

week before the study. In addition 69(8.4%) and 26(3.2%) skipped 3 or 4 times per week and 5 and 6 times per week respectively. As in the case of lunch, the majority 532(64.9%) did not skip supper during the week. With respect to the average number of cooked meals usually consumed per day, a large number of the respondents 367(44.8%) indicated that they usually consumed two meals per day on the average; and less than half of the respondents 305(37.2%) usually consumed all three meals per day.

**Information on snacking habits and foods consumption practices during school hours:** Information regarding the snacking habits and food consumption practices of the respondents during school hours is presented in Table 3. When students were asked whether they usually brought food to school from their homes, the majority 544(66.3%) of them responded negatively. Of the 276(33.7%) students who usually brought food from home, 93(33.7%) brought cooked food such as boiled rice and stew/sauce. Another 76(27.5%) brought pastries (cookies, meat pie or cakes); and another 62(22.5%) brought canned/packaged fruit juice to school. A large majority 706(86.1%) of the students indicated that they usually bought a snack during break. Of the students who usually bought a snack or food at school, 41.7% indicated that they bought cooked food such as *waakye* (a combination of boiled rice and beans), *kenkey* (boiled corn dough) and fried fish, fried rice and fried chicken. Others 16.5% bought pastries; (13.7%), ice cream; 13.0%, soft drinks; and 11.7%, canned/packaged fruit juice. A majority (54.6%) of the respondents reported that they took their own decisions regarding what to buy in school. However, with some 26.3% of them, parents gave instructions as to what their children should buy. Other respondents 10.0% were influenced by friends or classmates or elder siblings as to the food that they bought during break.

When asked about their snack preferences (the type of snack they would prefer during the day), about a third (35.0%) of them preferred a soft drink for snack. Others 25.4% preferred an ice cream, 21.6%, pastries, and 14.5%, a type of fruit. When asked about the usual frequency of soft drinks consumption, 36.7% of the students reported that they drank between 3 and 4 bottles/cans during the week. Another 33.8% indicated that they drank between 1 and 2 bottles/cans per week. Only a few (5.4%) reported that they usually drank a bottle of soft drink every day in school.

When asked where they most often consumed soft drinks, the majority (52.9%) of the respondents indicated that they drank soft drinks most often at school. Another 30.2% stated that they drank soft drinks at a fast food setting, a restaurant, a supermarket or a shop. In a few cases (16.9%), soft drinks were readily available at home and at the disposal of the respondents to consume anytime.

The majority (60.2%) of the respondents who drank at least a bottle of soft drinks in a week indicated that they drank a particular soft drink because they liked the flavour or taste. Another 19.2% had a wrong perception that soft drinks could quench a person's thirst and therefore drank them to satisfy a thirsty feeling. Some 11.8% reported that they drank a soft drink in the week prior to the study simply because it was available at home at that time. With some 8.8%, the soft drink was served at a friend's house during a visit or a party.

**Food preferences of respondents:** To give an idea about the food choices that adolescents are likely to make, the students were required to select their preferences from a list of food items that had been prepared in different ways. Respondents were asked to select 12 food items they preferred or would usually be attracted to, out of 24 food items. The responses of the students regarding their food preferences

Food items	n (%)
<b>Beverage</b>	
Natural fruit juice	228(27.8)
Soft drink/carbonated drink	592(72.2)
<b>Egg</b>	
Fried egg	445(54.3)
Boiled egg	375(45.7)
<b>Vegetable salad preparation</b>	
Vegetable salad with mayonnaise/salad cream	583(71.1)
Vegetable salad without salad cream/mayonnaise	237(28.9)
<b>Preparation of chicken/meat</b>	
Fried chicken/meat	645(78.7)
Roasted chicken/meat	175(21.3)
<b>Type of Biscuit</b>	
Creamy sandwiched biscuits/wafer	563(68.7)
Non-creamy sandwiched biscuits	257(31.3)
<b>Type of Bread</b>	
Sugar	536(65.4)
Brown/wheat	284(34.6)
<b>Type of cooked Yam</b>	
Fried Yam	436(53.2)
Boiled Yam	384(46.8)
<b>Type of Cooked Rice</b>	
Boiled rice	337(41.1)
Fried rice	483(58.9)
<b>Spread on bread</b>	
Groundnut paste on bread	389(47.4)
Butter on bread	431(52.6)
<b>Type of cooked plantain</b>	
Fried plantain	592(72.2)
Roasted plantain	228(27.8)
<b>Type of cooked corn</b>	
Pop corn (sugar or salt)	612(74.6)
Boiled corn	208(25.4)
<b>Breakfast beverage</b>	
Coffee beverage	169(20.6)
Milo/cocoa beverage	651(79.4)

**Table 4:** Food Preferences of Study Participants.

are summarized in Table 4. A general observation made was that the majority of them had the tendency to opt for high fatty, sweetened and energy-dense foods. Regarding the intake of food items with high sugar content, for example, 72.2% preferred soft/carbonated drinks to natural fruit juices. Similarly, 65.4% preferred sugar bread to brown/wheat bread. Also, it was evident that, generally, most of the respondents preferred foods prepared by frying to those prepared by other healthier methods such as roasting or boiling which do not require the use of oil or fat. For example, the majority (78.7%) preferred fried chicken/meat to roasted chicken/meat. Similarly, a higher proportion (58.9%) of them preferred fried rice to plain boiled rice. Likewise, most of the surveyed students (72.2%) preferred fried plantain to roasted plantain.

Information regarding the differences between males and females with respect to some dietary practices is presented in Table 5. The Chi-square test statistics that was run indicated that there is no statistical significance difference between males and females with regard to whether the respondent ate breakfast or not before going to school. There was no statistical significance difference between males and females with respect to skipping breakfast, the average number of

meals consumed daily and the number of soft drinks consumed weekly. However, there was a statistical difference between males and females with regard to the number of times that lunch and supper meals were skipped in the past week prior to the study. Generally, the findings revealed that most male adolescents usually skipped their lunch and supper meals as compared to females. There was also a statistical difference (between males and females with respect to their snack preferences during the day as indicated in Table 5.

## Discussion

Addressing the increasing trends of overweight and obesity in the world remains a public health issue of great concern. This is because there is no evidence that the trends in the increasing cases of obesity are flattening off, let alone reversing. This study was conducted to assess the dietary practices and food preferences of Junior High School (JHS) children, because they are factors known to be associated with a person's weight status, and hence are potential causative factors of overweight and obesity in both children and adults. The majority 590(72.0%) of the respondents indicated that they often ate alone, compared with 176(21.5%) who often ate at table with their family members, 54(6.6%) reported that they often ate with their peers or friends. These findings are not encouraging, since they do not promote healthy eating patterns among children. It has been shown that when children eat together with their parents or other older family members at table, positive dietary practices are promoted among adolescents, to a greater extent [30,46-48].

The findings of this study showed that a majority of the school children did not always eat breakfast before going to school, consistent with the findings of previous studies which indicate that a typical habit of adolescents is skipping breakfast and meals in general [10,11,31,49,50]; and this habit has been reported to increase as they get older [51]. The reason given by most of the respondents for skipping breakfast before school was that they were given money to buy food on their way to school. A few other respondents said they were afraid of getting to school late or breakfast was never prepared at home. It has been reported that skipping breakfast has been employed as a means of saving time by most adolescents in the morning in order to get to school on time [11,52]. In addition, it has been reported that some adolescents skip meals, and in particular breakfast, in order to lose weight and maintain a slim body figure [52]. However, the implications of skipping breakfast are many. Some studies have shown that skipping breakfast is a potential cause of overeating at other meal-times, which could induce obesity and other lifestyle related chronic diseases [17,53,54]. For example, in a study involving a very large (N=10,000+) population-based sample of adolescents and their parents in Finland, the findings revealed that those who skipped breakfast most days of the week were significantly more likely to become overweight or obese than the regular breakfast eaters [55]. Similarly, other large (N=8000+) studies conducted in the United States have also shown that breakfast skippers are more likely to become overweight [53,54], or worse, become obese [56].

Several studies consistently relate consumption of breakfast to improvements in academics (test scores and grades) [57-59]. For example, in a study involving a sample of 6,463 teenagers from Korea, it was reported that teenagers who skipped breakfast regularly scored lower marks compared with the regular breakfast eaters [57]. Similarly, another study undertaken in Saudi Arabia [60], involving a sample of 800 students (aged 9-21) revealed that regular breakfast skippers had significantly lower school grades than regular breakfast eaters. Breakfast consumption has also been shown to improve alertness, mood, word recall, memory, cognition, physical and mental performance, and reduce behaviour problems [58,61].

Question item summarized	Males n(%)	Females n(%)	Statistics
<b>Always eat breakfast before going to school</b>			Pearson Chi-square = 1.299
(yes= 305)	186(61.0%)	119(39.0%)	Sig (p- value) = 0.250
<b>Always eat breakfast before going to school</b>	299(58.0%)	216(42.0%)	df=1
(no =515)			
<b>Number of times skipped breakfast in past week</b>			
Not skipped	193(63.3%)	112(36.7%)	Pearson Chi-square = 3.045
1-2 times/week	155(55.6%)	124(44.4%)	Sig (p- value) = 0.550
3-4 times/week	75(57.7%)	55(42.3%)	df=4
5-6 times/week	19(65.5%)	10(34.5%)	
7 times/week	43(55.8%)	34(44.2%)	
<b>Number of times skipped lunch in past week</b>			
Not skipped	263(53.6%)	228(46.4%)	Pearson Chi-square = 13.257
1-2 times/week	146(68.5%)	67(31.5%)	Sig (p- value) = 0.010
3-4 times/week	47(68.1%)	22(31.9%)	df=4
5-6 times/week	16(61.5%)	10(38.5%)	
7 times/week	13(61.9%)	8(38.1%)	
<b>Number of times skipped supper in past week</b>			
Not skipped	287(53.9%)	245(46.1%)	Pearson Chi-square = 14.784
1-2 times/week	128(65.6%)	67(34.4%)	Sig (p- value) = 0.005
3-4 times/week	30(81.1%)	7(18.9%)	df=4
5-6 times/week	16(76.2%)	5(23.8%)	
7 times/week	24(68.6%)	11(31.4%)	
<b>Average number of cooked meals usually consumed per day</b>			
1 meal			
2 meals	49(60.5%)	32(39.5%)	Pearson Chi-square = 5.462
3 meals	207(56.4%)	160(43.6%)	Sig (p- value) = 0.243
4 meals	191(62.6%)	114(37.4%)	df=4
>4 meals	35(56.5%)	27(43.5%)	
	3(60.0%)	2(40.0%)	
<b>Snack preferences during the day</b>			
Soft drink	175(61.0%)	112(39.0%)	Pearson Chi-square = 19.280
Ice cream/(fan ice, yoghurt)	128(61.5%)	80(38.5%)	Sig (p- value) = 0.004
Pastries(meat pie, doughnut, cakes, cookies)	98(55.4%)	79(44.6%)	df=4
Fruit (banana, orange, water melon, pineapple)	67(56.3%)	52(43.7%)	
No preference	17(58.6%)	12(41.4%)	
<b>Frequency of soft drink consumption (no. of bottles consumed per week)</b>			
None			
1-2 bottles/week	152(54.9%)	125(45.1%)	Pearson Chi-square = 8.143
3-4 bottles/week	185(61.5%)	116(38.5%)	Sig (p- value) = 0.086
5-6 bottles/week	101(62.0%)	62(38.0%)	df=4
>7 bottles/week	20(57.1%)	15(42.9%)	
	27(61.4%)	17(38.6%)	

**Table 5:** Comparison between Males and Females with respect to Dietary Practices.

It has also been indicated that even a short-term lack of breakfast can lead to a reduction in concentration, difficulties with recalling new information, and verbal fluency [58].

Regarding intake of carbonated soft drinks, approximately 66% of the study population reported that in the previous one week prior to the study they drank at least one bottle or can of a soft drink. Consumption of soft drinks merits some special consideration as a dietary habit of adolescents, because soft drinks, like other sugar-sweetened beverages, have a very high energy density due to their high sugar content, which when taken in excessive quantities, can increase one's susceptibility to become overweight or obese [62-64]. Ironically, in another study it was found out that soft drinks consumption is one of the behaviours adopted

by adolescents for the prevention of excessive weight gain, suggesting that some adolescents had a wrong perception and were ignorant that drinking soft drinks does not prevent excessive weight gain [65]. Similar studies which assessed the snacking habits of adolescents also reported a high prevalence of soft drinks intake among adolescents [24,34,66,67]. The effects of consuming soft drinks in excessive quantities are manifold. One effect of consuming soft drinks frequently is their ability to displace the micronutrients present in nutrient-dense beverages such as milk and fortified fruit juices [68-70]. Other studies all reported that adolescents tend to replace milk with soft drinks, both during meals and throughout the day [20,21,68-70]. It has also been reported that soft drinks consumption is significantly correlated with

the severity of dental erosion [71] which is mainly a result of the high concentrations of sugar and acids present in soft drinks which easily dissolve the tooth enamel.

The major reason why the respondents drank soft drinks was because they liked its taste and flavour. In similar studies, the pleasant flavour and taste of soft drinks was mentioned as the main reason which led to the high consumption by adolescents [22-24]. It has also been reported that most adolescents choose their diet on the basis of taste rather than nutrition [72]. In the present study some students reported that they drank soft drinks in order to quench their thirst which has also been reported in similar studies [23,24].

Most of the respondents reported that the school setting is the most common setting in which soft drinks is consumed regularly. In the school environment, soft drinks are readily available and sold in an attractive manner – in school canteens and shops which encourages the consumption of these beverages [24,73]. For example, in a survey conducted by Fernandes [73] in 2,023 schools in the United States, it was found out that soft drinks were available at cafeterias or from vending machines in 40% of these schools. In the present study, the home was the second most common setting for the consumption of soft drinks. Grimm and his colleagues [70] also found out that intake of soft drinks among school-aged children was very highly correlated with taste preferences, availability in the home and school settings. Therefore, it was recommended in a study that parents and the home environment are important potential intervention targets which can help address the issue of excessive soft drinks consumption among adolescents [74]. In addition, the WHO global strategy on diet, physical activity and health suggests limiting access to unhealthy foods and soft drinks sales at schools [75].

When the study participants were asked about their snack preferences, the majority indicated that they preferred a soft drink for snack during the day. Others preferred ice creams and pastries. These food items are high-caloric, energy-dense foods containing high quantities of sugar and fats which increase the risk of becoming overweight and obese or suffering from a chronic disease like diabetes, later on in life.

Another noteworthy finding is that only a few of the respondents indicated that they preferred a fruit or usually bought a fruit for snack while in school. Similarly, other studies have reported that most adolescents do not usually eat fruits and vegetables on a daily basis and so are unable to meet the World Health Organization (WHO) goal of a daily intake of at least 400 grams of fruit and vegetables [76-79]. The findings of this study suggest that, maybe, fruits are not always available to be bought and consumed by students. Another inference that can be drawn is that parents may also not be providing fruits often at home perhaps because of their high prices, evident from the finding that most adolescents are often not given fruits to take to school. In a review paper, evidence from 98 quantitative studies on fruits and vegetables intake among children and adolescents revealed that the determinants for high consumption levels of fruits and vegetables among adolescents include high socioeconomic position (SEP), high parental intake of fruits and vegetables and high availability and accessibility of fruits and vegetables at home [80]. The findings of some other studies also reveal that, among adolescents, taste is a main reason for not liking fruits and vegetables, especially vegetables [81-84].

## Conclusions

In conclusion, this study revealed that Ghanaian adolescents in

Junior High Schools are practicing various unhealthy eating habits which include meal skipping, particularly breakfast, snacking daily on high-content fatty and energy-dense foods, such as soft drinks and pastries during school hours. It is imperative that frantic efforts are made to help adolescents cultivate an interest in eating healthy foods and developing healthy dietary practices. This will go a long way to help reduce the incidence of diet-related health conditions such as hypertension, stroke, and diabetes, the prevalence of which is increasing in Ghana, especially during the later stages of adulthood.

## Recommendations

Interventions to reduce the consumption of soft drinks should target availability in both the home and school environments, by limiting the sale of soft drinks and replacing them with more nutritive beverages such as natural fruit juices. Food vendors on school premises should be encouraged to provide at affordable prices a wide variety of healthy foods such as appealing fresh fruits and vegetables for students to buy. Also, it would be very prudent to include lessons on healthy nutrition (with practical aspects) in the curriculum of Primary, Junior High and Senior High Schools, as has been done in some developing countries [48,85,86].

There is also a need for further studies to obtain the views of school children on factors (barriers and promoters) at home and in school which affect their desire to eat healthy foods.

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