1Johnson A.T. Adetula O. ABook of Proceedings of 4th National Development Conference of The School of Pure and Applied Science, The Federal Polytechnic Ilaro, Ogun State, 2nd – 5th December, 2019 331-344

DIETARY HABIT, FOOD CONSUMPTION PATTERN AND NUTRITIONAL STATUS OF ADOLESCENTS IN PUBLIC AND PRIVATE SECONDARY SCHOOLS IN ILARO, YEWA SOUTH LOCAL GOVERNMENT OGUN STATE

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ABSTRACT
The health and wellbeing of adolescents are very crucial as they constitute tomorrow's adult population which is partly the strength of a nation. Hence, this study assessed the food consumption pattern and nutritional status of adolescent secondary school students in ilaro. A multi stage sampling technique was used in selecting 300 respondents from six secondary schools in ilaro. Anthropometric measurement of the respondents was assessed using height-o-meter (for measuring height) and weighing scale (for measuring Weight). Questionnaire was also administered to obtain socio-economic and demographic characteristics, food consumption pattern and nutritional status of the respondents. The data collected was subjected to both descriptive and inferential statistics using SPSS version 20.0.The results showed that more than half (65.7%) of the respondents were female , half (50.0%) of them were within the ages of 13 -15 years, and majority (88.3%) of them were Yoruba and Christian (76.0%) respectively. Also 33.7% and 23.3% of their fathers were HND/BSC holders andcivil servants, majority (67.7%) earned above 20,000 while 22.3% of the students received between #1000-#5000 as their monthly allowance. The results also revealed that majority (70.7%) of the respondents in private schools had normal height for age compare to those in public schools(59.3%). Also more than half of the respondents in private (67.3%) and public (58.0%) secondary schools had normal BMI for age while a significant relationshipwas observed between monthly stipend of the students and stunting. The results showed that considerable numbers of the respondents were stunted and underweight which is still a public health issue. There is a need for the health authorities to develop nutrition education programs that target, specifically, adolescent school children and their parents in the study area.

***Keywords**: Adolescents, Food Consumption Pattern, Nutritional status.*

INTRODUCTION
Adolescents are defined by the world Health Organization (WHO) as children between the ages of 10 and 19 (WHO, 2009). Adolescents make significant developments in physical growth, cognition, identity, family, peers, and sexuality in order to achieve emancipation, identity formation, and assumption of functional roles. (Hewitt, 2002). They are nutritionally vulnerable age group because of their increased nutritional needs, eating patterns, lifestyles and susceptibility to environmental influences. Adolescence is a period in which there is accelerated growth and increase demand for nutrients which results in greater risk of nutritional deficiencies. Also it is a period of increasing independence with respect to food choices and food habits and experimentation with diets which may increase vulnerability to nutritional problems if unhealthy eating behaviors are adopted (Savige *et al.,* 2007).

This group of children experience growth spurts associated with rapid physical growth and gain up to 50% of their adult weight and skeletal mass and more than 20% of their adult height (Rogol et al., 2003). As a result of the rapid growth, increased muscle mass, and fat mass during the peak of the adolescents' growth spurt, the requirements for some nutrients are higher than in other stages of life. Girls in this age group are mostly vulnerable to malnutrition because of the increased requirements to complement their growth spurt and meet the high demand for iron to compensate losses through menstruation as it is a period of preparing nutritionally for their productive role. Therefore adolescent girls need to be adequately nourished to ensure their own optimal growth and maturation and in preparation for their future reproductive capacity. Consequently, healthy eating habits play a fundamental role in growth and development during adolescents.

According to Polnay (2002) these children have the highest prevalence of unacceptable dietary behaviors that can occur in any age group and are often observed in those whose diets are characterized by a low intake of dairy products, fruits, green vegetables, protein and iron and a high intake of sugar, soft drinks, sodium and energy dense food items both in developed and developing countries. This eating pattern is of major concern because it can lead to overweight and a higher probability of Chronic Non Communicable Disease (NCDS) Such as obesity, diabetes, high blood pressure, dyslipidemia, cardiovascular disease and cancer later in life. The early detection of health problems and intervention with respect to food intake and micronutrients supplementation at this stage of life are the fundamentals of good health in adulthood.

The question which now arises is why is it that improvement in the nutritional situation has been slow despite decades of nutrition programs and projects. Adolescence is associated with a number of important nutritional issues and it appears that the least attention is given to the adolescent stage in terms of nutritional interventions when compared to preschool children and pregnant women.
The purpose of this study was to assess the dietary habit, food consumption pattern and nutritional status of adolescents in ilaro. Findings from the study will inform intervention strategies by parents, caretakers, school authorities and the government to address the issue of malnutrition.

MATERIALS AND METHOD

Study Area
The study was carried out among adolescent secondary school students in ilaro area of Yewa South Local Government.

Study Design
The study was descriptive (frequency, mean and standard deviation) and cross sectional (chi square) in nature .

Sample Size
Yamane formula was used to determine the sample size.
Yamane (WHO 2008) formula: $n = \frac{Z^2 P (1-P)}{d^2}$

P= prevalence from previous study
d= desired level of precision at 5% (0.05)
Z = confidence interval (1.96)
$n = \frac{(1.96)^2 0.142(1-0.142)}{(0.05)^2} = 187$

Initially, the minimum sample size was 187; however, 300 sample size was used in this study.
The sample size was rounded up to 300 to take care of attrition.

Sampling Procedure
Multistage sampling procedure was used to select the respondents. The first step involved the stratification of the secondary schools in ilaro into public and private secondary schools. There were 6 secondary schools in each stratum. The next step involved the selection of three schools each from the private and public secondary schools using simple random sampling by balloting. The last step involved the selection of 50 students from each school using proportionate method.

Data Collection
A semi structured questionnaire was administered for data collection, questions were asked on areas peculiar to the study. Section A contains socio-economic and demographic characteristics of the respondents which include; sex, age, ethnic group, religion, and also personal information of the parents. Section B contains anthropometry assessment. Section C contains their dietary habits, and section D contains food frequency questionnaire respectively. Also,weighing scale was used to determine the weight of the respondents while height-O-meter was used to determine the height of the respondents respectively.

Data Analysis

The data collected from this study was subjected to both descriptive and inferential statistics using statistical package for social scientist (SPSS) version 20.0. Also,anthro plus was used to analyze the nutritional status of the respondents.

RESULT

Table 1 shows socioeconomic and demographic characteristics of the respondents. It was revealed that more than half (65.7%) of the respondents were female, half (50.0%) of them were within the ages of 13 -15 years, majority (88.3%) of them were Yoruba and Christian (76.0%) respectively. Also 29% of their mothers were HND/BSC holders, while 33.7% of their fathers were HND/BSC holders and 23.3% of the respondents' fathers' occupations were self-employed and civil servants (23.3%), while 23.7% of the mothers' occupation were personal business. Majority (67.7%) of their fathers earned above 20,000 and more than half (55.7%) of the respondents' mothers earned above 20,000 and 38.3% of the student collected above 20,000 as their monthly allowance.

Table 1; Socio -economic and demographic characteristics of the respondents

Variables	Frequency	Percentage
Sex		
Male	103	34.3
Female	197	65.7
TOTAL	300	100.0
Age		
10-12	45	15.0
13-15	150	50.0
16-19	105	35.0
TOTAL	300	100.0
Ethnic Group		
Yoruba	265	88.3
Igbo	26	8.7
Hausa	5	1.7
French	1	0.3
Idoma	2	0.7
Igala	1	0.3
TOTAL	300	100.0
Religion		
Christianity	228	76.0
Islam	71	23.7
Traditional	1	0.3
TOTAL	300	100.0
Educational Level of Mothers		
No Formal Education	11	3.7
Primary Education	96	32.0
Secondary Education	66	22.0
NCE/ND	40	13.3
HND/B.sc	87	29.0
TOTAL	300	100.0
Educational Level of Father		
No Formal Education	17	5.7
Primary Education	50	16.7
Secondary Education	64	21.3
NCE/ND	64	21.3
HND/B.sc	101	33.7
Msc	1	0.3
Phd	3	10
TOTAL	300	100.0
Occupation of Father		

Retired	35	11.7
Self Employed	70	23.3
Farming	39	13.0
Civil-Servant	70	23.3
Petty trading	15	5.0
Employee Private Organization	35	11.7
Personal Business	35	11.7
Can no longer work	1	0.3
TOTAL	300	100.0
Occupation of Mother		
Retired	14	4.7
Self Employed	39	13.0
Farming	31	7.0
Civil-Servant	65	21.7
Petty trading	64	21.3
Employee Private Organization	26	8.7
Personal Business	71	23.7
TOTAL	300	100.0
Estimated Monthly Income of Father		
₦1,000 – 5,000	29	9.7
₦6,000 – 10,000	23	7.7
₦11,000 – 15,000	10	3.3
₦16,000 – 20,000	35	11.7
Above 20,000	203	67.7
TOTAL	300	100.0
Estimated Monthly Income of Mother		
₦1,000 – 5,000	32	10.7
₦6,000 – 10,000	28	9.3
₦11,000 – 15,000	29	97
₦16,000 – 20,000	44	14.7
Above 20,000	167	55.7
TOTAL	300	100.0
Estimated Monthly Allowance of Student		
₦1,000 – 5,000	67	22.3
₦6,000 – 10,000	30	10.0
₦11,000 – 15,000	11	3.7
₦16,000 – 20,000	77	25.7
Above 20,000	115	38.3
TOTAL	300	100.0

Table 2 shows dietary habit of the respondents. It was revealed that majority (84.7%) of the respondents ate thrice in a day and more than half (50.7%) do skip their meals. Also majority (80.7%) of the respondents use to take their breakfast and 28.0% consumed their breakfast at 7:01-8:00 am while more than two third (78.3%) took their lunch at 2:01-3:00 pm and 33.3% of them took their dinner at 7:01-8:00 pm. Also, nearly all (83.3%) of them ate snacks as their in -between meals and more than half (57.7%) use to buy their foods from the vendors. Majority (85.3%) of them did not prefer food from vendors to their family diet. Almost all of them (97.7% and 81.7%) were not smokers and alcoholics.

Table 2; **dietary habit of the respondents**

Variables	Frequency	Percentage
How many times do you eat in a day		
Once	2	0.7
Twice	35	11.7
Thrice	254	84.7
Four	9	3.7
TOTAL	300	100.0
Do you skip Meal		
Yes	152	50.7
No	148	49.3
TOTAL	300	100.0
If Yes, State The Meals you usually skip		
Breakfast	58	19.3
Lunch	65	21.7
Dinner	30	10.0
No Applicable	147	49.0
TOTAL	300	100.0
What is the reason for skipping meal		
Not Applicable	148	49.3
Running Stomach	6	2.0
Domestic work	18	6.0
To avoid lateness	33	11.0
Loss of Appétit	60	20.0
Sometimes no money	13	4.3
Because of late meal	8	2.0
Because of school activity	14	4.7
TOTAL	300	100.0
Do you take breakfast		
Yes	242	80.7
No	58	19.3
TOTAL	300	100.0
What time do you take Breakfast		
6:00 – 7:00am	90	3.0
7:01 – 8:00am	84	28.0
8:01 – 9:00am	44	14.7
9:01 – 10:00am	24	8.0
Not Applicable	58	19.3
TOTAL	300	100.0
Do you take Lunch		
Yes	235	78.3
No	65	21.7
TOTAL	300	100.0
What time do you take Lunch		

12:00 – 1:00pm	56	18.7
1:01 – 2:00pm	47	15.7
2:01 – 3:00pm	90	30.0
3:01 – 4:00pm	42	14.0
Not Applicable	65	21.7
TOTAL	300	100.0
Do you take Dinner		
Yes	270	90.7
No	30	10.0
TOTAL	300	100.0
What time do you take Dinner		
6:00 – 7:00pm	89	29.7
7:01 – 8:00pm	100	33.3
8:01 – 9:00pm	70	23.3
Above – 9:01pm	11	3.7
Not Applicable	30	10.0
TOTAL	300	100.0
Do you eat between meals		
Yes	250	83.3
No	50	16.7
TOTAL	300	100.0
If yes, what do you usually eat		
Not applicable	50	16.7
Snacks	193	64.3
Garri	37	12.3
Rice	5	1.7
Bread	14	4.7
Plantain Chips	1	0.3
TOTAL	300	100.0
If No, Why		
Not Applicable	250	833
Not Feeling Hungary	32	10.7
No Money	18	6.0
TOTAL	300	100.0
Do you buy food from Vendors		
Yes	173	57.7
No	127	42.3
TOTAL	300	100.0
If Yes, How often		
Everyday	25	8.3
Frequently	72	24.0
Occasionally	76	25.3
Not Applicable	127	42.3
TOTAL	300	100.0
Which Meal do you usually buy from food Vendors		
Breakfast	54	8.0
Lunch	14	38.0
Dinner	5	1.7
Not Applicable	127	42.3
TOTAL	300	100.0
Do you prefer Meal from Food Vendors to your family diet		
Yes	44	14.7
No	256	85.3

TOTAL	300	100.0
How often do you prepare food in the house		
Everyday	215	71.7
Frequently	59	19.7
Occasionally	22	7.3
Not applicable	4	1.3
TOTAL	300	100.0
Do you Smoke		
Yes	7	2.3
No	293	97.7
TOTAL	300	100.0
If yes, How often do you smoke		
Once	3	1.0
Twice	1	0.3
More than twice	3	1.0
Not Applicable	293	9.7
TOTAL	300	100.0
Do you take alcohol		
Yes	25	8.3
No	275	81.7
TOTAL	300	100.0
If yes, how often		
Once	17	57
Twice	2	0.7
More than twice	6	2.0
Not Applicable	27	9.7
TOTAL	300	100.0

Table 3 showed the height for age of the respondents. Majority (70.7%) of the respondents in private schools had normal height for age, 20.7% were mildly stunted, 3.3% were moderately stunted, and 5.3% were severely stunted, Also more than half (59.3%) of those in public schools had normal height for age, 26.0% were mildly stunted, 10.7% were moderately stunted, and 4.0% were severely stunted respectively

Table 3: Percentage distribution of the respondents' height for age.

HAZ

Variable	**Public Frequency**	**(%)**	**Private Frequency**	**(%)**
Normal	89	59.3	106	70.7
Mildly stunted	39	26.0	31	20.7
Moderately stunted	16	10.7	5	3.3
Severely stunted	6	4.0	8	5.3
TOTAL	150	100	150	100.0

Table 4 showed the BMI for age of the respondents. More than half (67.3%) of the respondents in private schools had normal BMI for age, 22.0% were underweight, 8.7% were overweight, and 2.0% were obese. Also 58.0% of those in public schools had normal BMI for age. 34.0% were underweight, 6.7% were overweight, and 1.3% were obese respectively.

Table 4; BMI for Age of the respondents.

	BMI AZ			
	Public		Private	
Variable	Frequency (%)		Frequency (%)	
Healthy weight	87	58.0	101	67.3
Underweight	51	34.0	33	22.0
Overweight	10	6.7	13	8.7
Obese	2	1.3	3	2.0
TOTAL	150	100.0	150	100.0

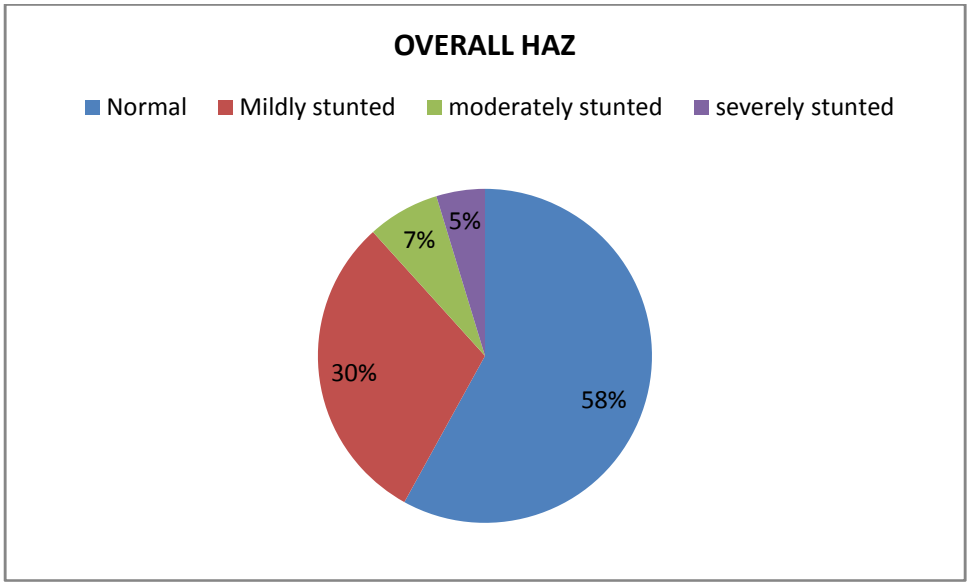

Fig 1: overall Height for age

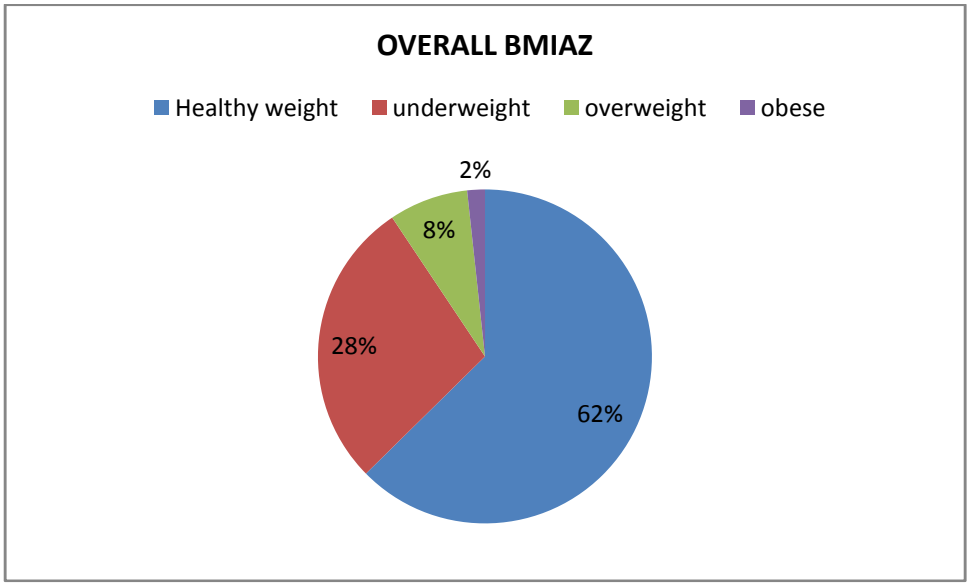

Fig 2: overall BMI for age

Table 5 shows the relationship between socioeconomic characteristics of the respondents and their nutritional status. It shows that the education level of the parent had no significant relationship ($p>0.05$) with BMI for age and height for age. Also, occupation of the mothers was significantly associated ($p<0.05$) with BMI for age while the estimated monthly income of the students had significant relationship ($p<0.05$) with stunting.

Table 5; Association between socio-economic and demographic characteristics of the respondents and nutritional status

Socioeconomic characteristics	Stunting			BMI AZ		
	X2	Df	Pvalue	X2	Df	P-value
Mothers Education	17.269	12	0.14	13.324	12	0.34
Fathers Education	15.46	18	0.63	11.79	18	0.85
Mothers occupation	19.02	21	0.58	34.13	21	0.03*
Fathers occupation	17.69	18	0.47	20.51	18	0.30
Mothers income	8.10	12	0.77	16.09	12	0.18
Fathers income	10.75	12	0.55	8.80	12	0.71
Students income	21.45	12	0.04	18.30	12	0.10

**Significant at p< 0.05*

Figuresbelow show the food consumption pattern of the respondents.

It was revealed from the figures that majority 43.7%, 46.3% and 48% of the respondents consumed Boiled Rice, fried rice and bread 1-3 times per week. Also consumption of rice per week was found to be high as more than half (56.7%) of them consumed boiled rice 1-3 times per week while the intake of fufu was also considerably high as 64% of them were found to consume it 1-3 times per week. Almost half(44.7%) of the respondents consumed boiled beans and Akara (49.0%) while 51.7% consumed Moin-moin 1-3 time per week. It was also found out from the study that 41%, 36.5%, 54.6% and 52. % usually takes cheese, evaporated milk, iced-cream and yoghurt 1-3 times per week. It was also revealed that about half 43.7%, 53.3% and 42% of the respondents consumed Beef, chicken, and fish 1-3 times per week. The result further showed that intake of sweetened drink was high (49.7%) while more than half of the respondents never consumed alcoholic drinks. There was also reduction in the daily consumption of fruits and vegetables.

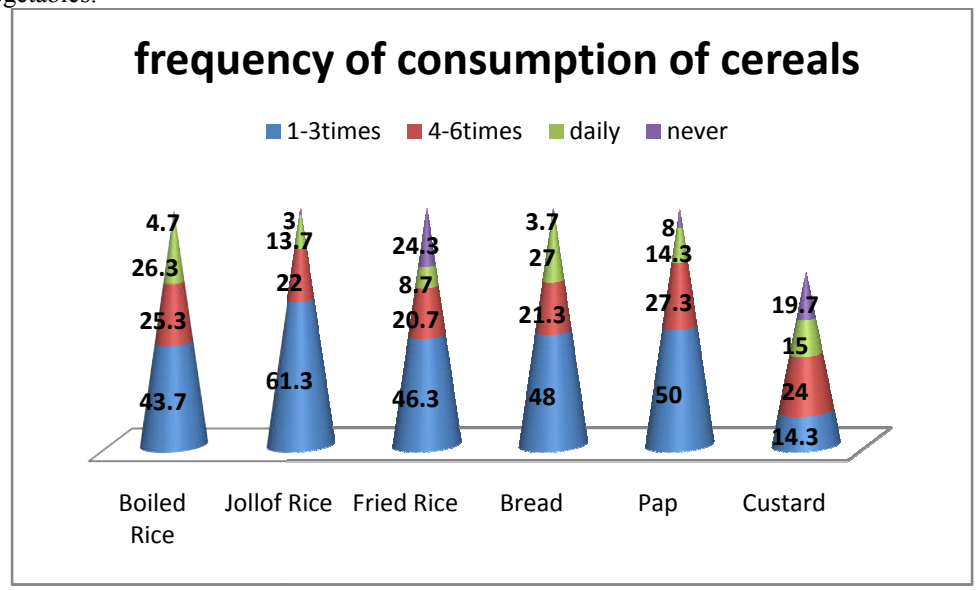

Fig 3: frequency of consumption of cereals

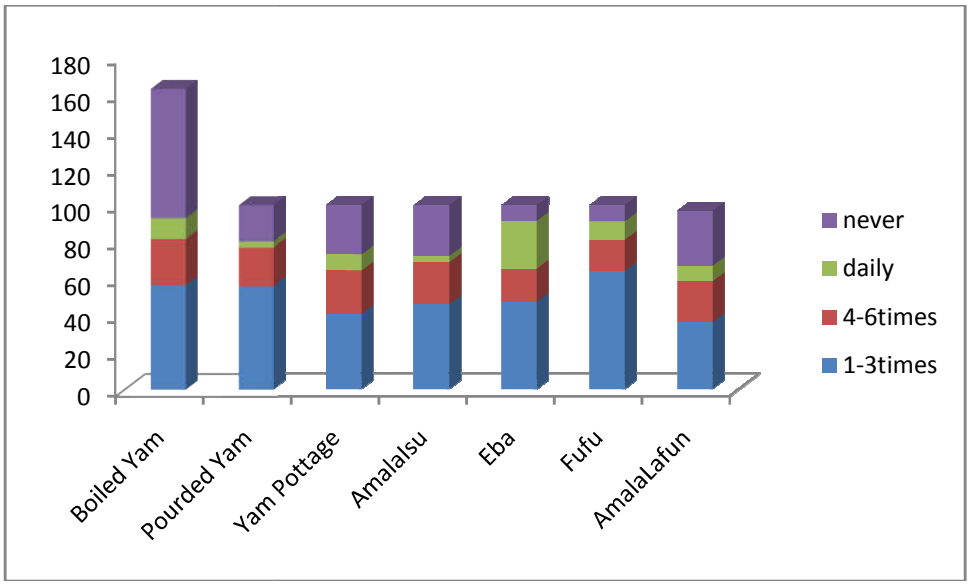

Fig 4: Frequency of consumption of roots and tubers

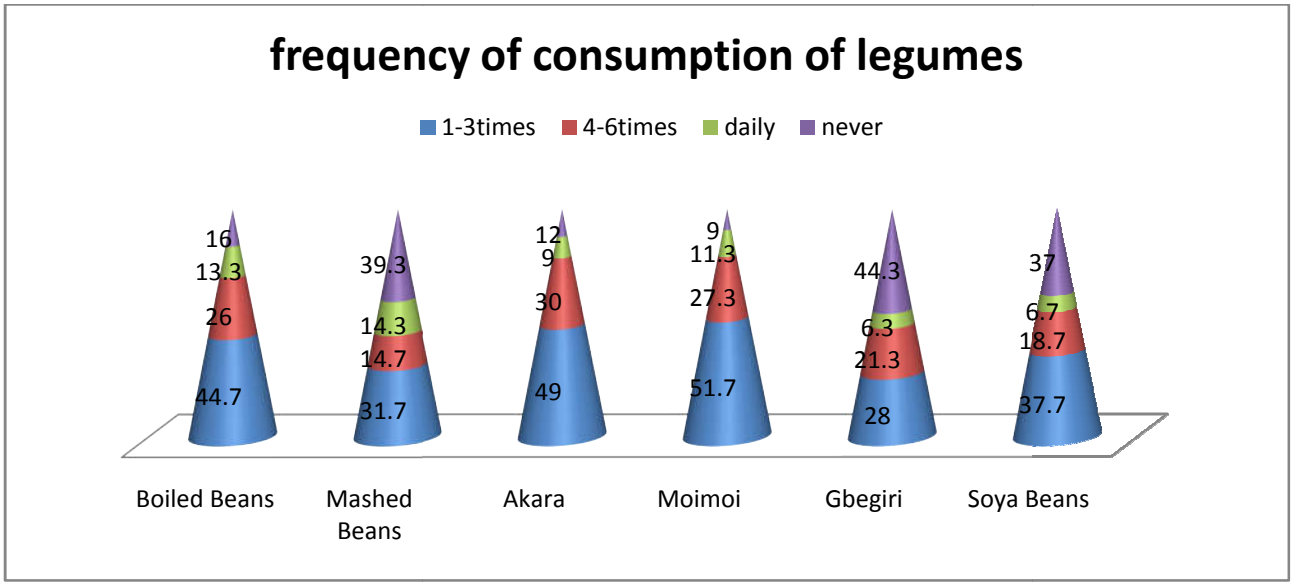

Fig 5: Frequency of consumption of legumes

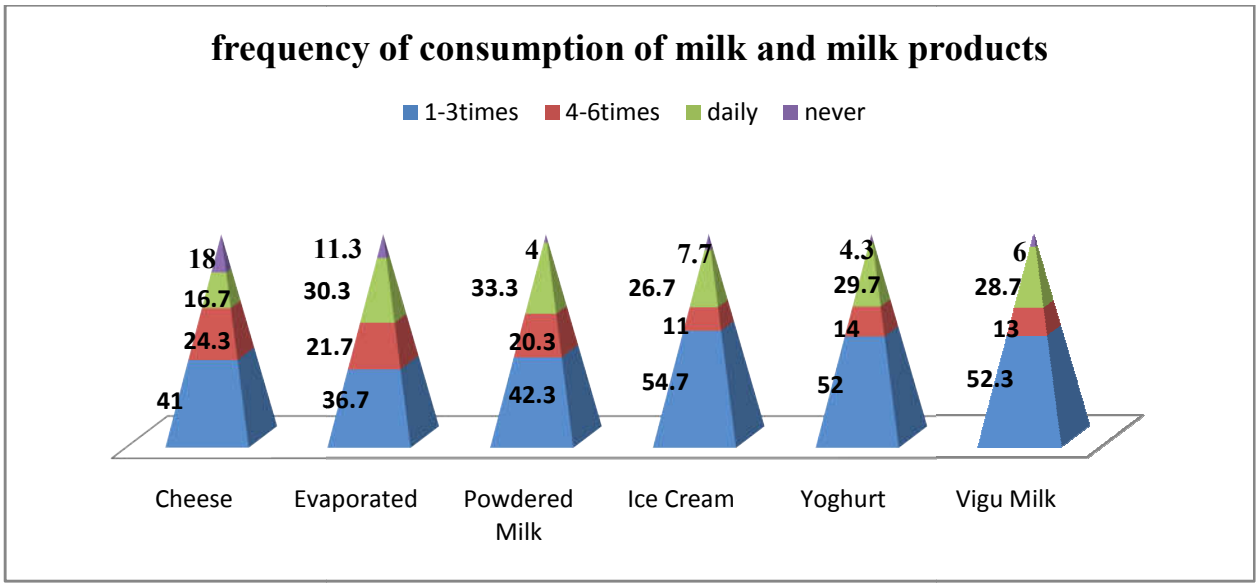

Fig 6: frequency of consumption of milk and milk products

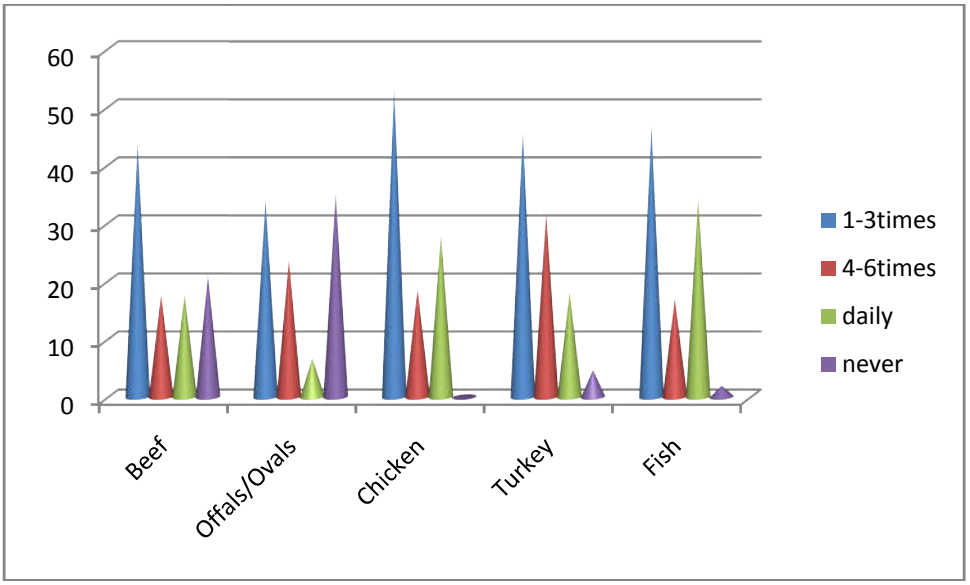

Fig 7: Frequency of consumption of meat and fish products

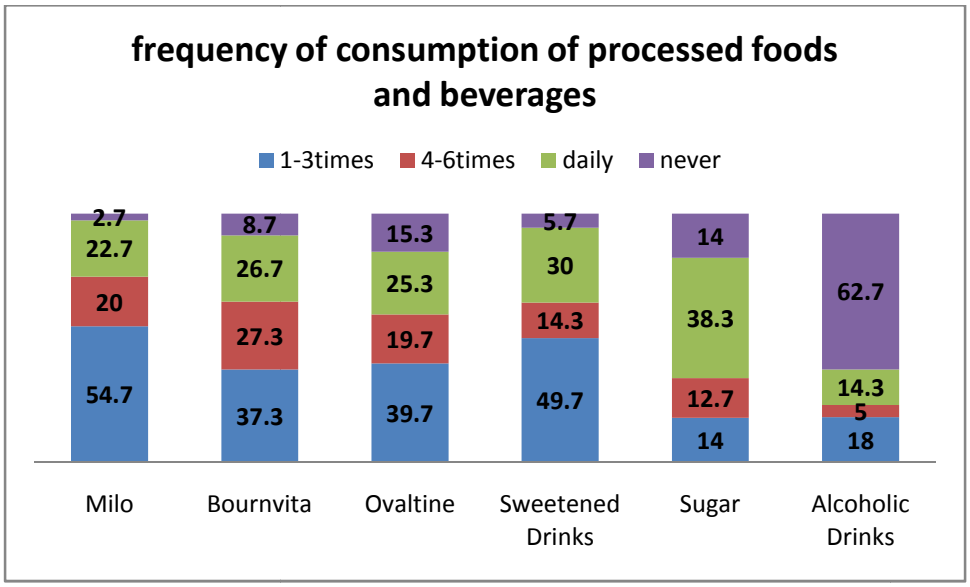

Fig 8: **frequency of consumption of processed foods and beverages**

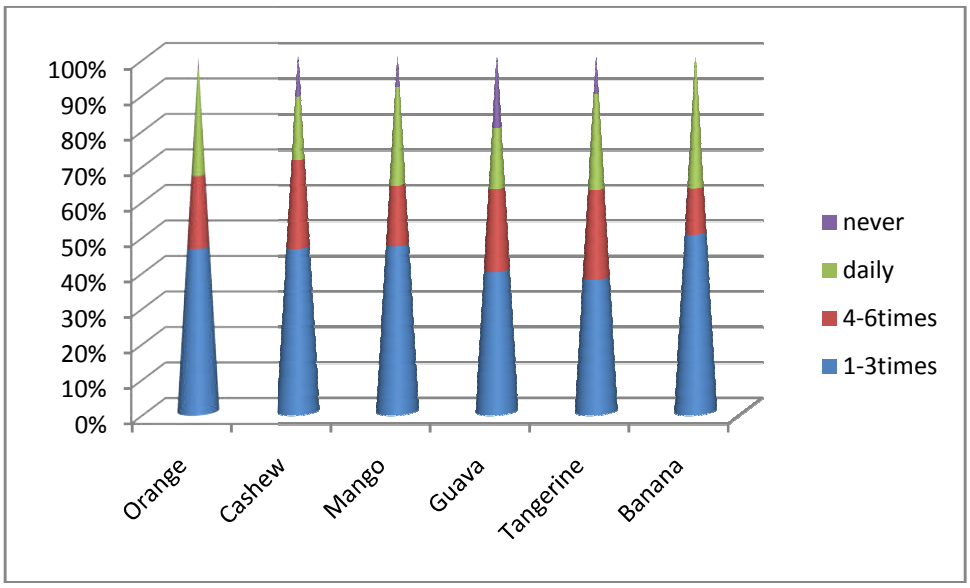

Fig 9: Frequency of consumption of fruits and vegetables

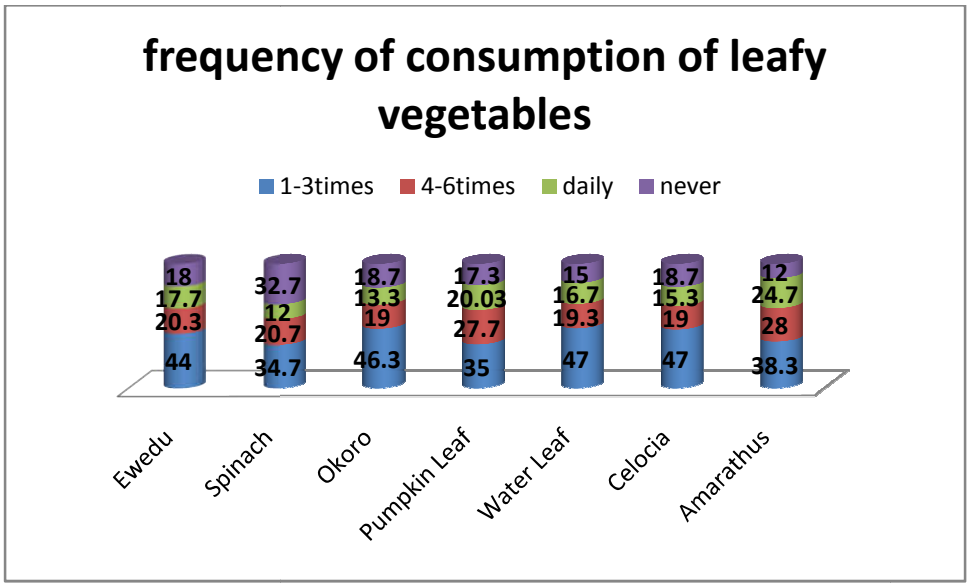

Fig 10: frequency of consumption of leafy vegetables

DISCUSSION

Healthy eating during adolescence is an important requirement for physical growth, psychosocial development and cognitive performance, as well as prevention of diet- related chronic diseases in adulthood (Millen *et al.,* 2002). In this study, unhealthy eating behavior among adolescents is a serious health issue as the results of this study showed that half (50.7%) of the respondents usually skip meals and the frequently skipped meal was breakfast which is in line with the report of Oman, (2013). AlsoOnyiriuka*et al.,* (2013) opined in their study that some of the reasons for skipping meals are lack of appetite in the morning, lack of time and no easily prepared food. The findings of this study concur with this observation as 19.3% usually skip breakfast and 20.0% of them attributed their skipping of meals to loss of appetite in the morning while 11.3% said there was no enough time for the preparation. Skipping of breakfast has been shown to adversely affect children's performance in problem solving tasks (Pollitt et al., 1981; Otuneye*et al*., 2017) and lead to higher probability of snacking during the day.

According to the study conducted by Hogston and Simpson (2002), Consumption of starchy foods was found to be 33% among the adolescents. However intake of starchy foods is very high among the respondents in the study area as they were found to consume yam (56.7%) 1-3 times per week, boiled rice (43.7%) 1-3 times per week, bread (27.0%) daily and wheat (50.3%) 1-3 times per week respectively. This findings could be attributed to the fact that carbohydrate constitutes the staple food in Nigerian communities both rural and urban settlements. A low consumption of fruits and vegetables has been associated with overweight and other long-term adverse effects on health (Bernard *et al*., 1995). The daily consumption of fruits was considerably low as 29.7%, 6.0%, 12.0%, 24.7% 37.7%, 27.0%, 31.0% and 14.3% of the respondents were found to consume orange, lettuce, spinach, amaranths, banana, apple, watermelon, pawpaw and pineapple daily. This agrees with the findings of Montazerfar*et al*.,(2012). According to the submission ofHarnack*et al*., (1999), high soft drinks consumption rate could lead to poor intake of calcium, vitamin C and increased risk of bone fracture. However, the intake of sweetened drinks per week was considerably high (49.7%) among the respondents and this is in concurrence with the report of James et al., (2004).
Stunting remains a public health issue among the respondents as 20.7% of them were found to be mildly stunted in the selected private schools and 26.0% were mildly stunted in the public schools respectively. Also level of underweight was a little bit high among the respondents in the private (22.0%) and public (34.0%) secondary schools. There was a significant association ($p<0.05$) between mothers occupation and BMI for age which means that the mothers occupation plays a significant role on health and nutritional wellbeing of the children. Estimated monthly income of the students was also found to have significant relationship ($p<0.05$) with stunting. This could be attributed to the fact that stipend to school gives children opportunity to have access to food away from home especially for those that usually skip meals.

CONCLUSION

This research investigated the food consumption pattern and nutritional status of adolescents in public and private secondary schools. Although most adolescents reported eating three meals a day and snacks at schools, the nutritional quality of the foods consumed is a cause for concern. Meal skipping and low consumption of fruits and vegetables, dairy products as well as high intake of energy dense foods were the main unhealthy eating behavior among the adolescents in the study area. Also, the nutritional status of the respondents revealed that considerable numbers of them were stunted and underweight which is still a public health issue.

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