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Dietary Pattern and Nutritional Status of in-School Adolescents of Selected Secondary Schools in Yala Local Government Area of Cross River State, Nigeria

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Abstract

Health status of adolescents is a cumulative effect of the health and nutritional problems occurring during early childhood as well as those originating during adolescent period. The objective of this study was to determine the dietary pattern and nutritional status of in school adolescents in Yala Local Government Area, Cross River State. The study was cross sectional - descriptive study and a multi - stage sampling techniques was used to include 403 in school adolescents' age 10-19 years from both day and boarding schools. More than half (80.6) were from day secondary schools and 19.4% were from boarding school. The mean age of the participants was 14.6 $\pm$ 1.8 and the mean height is 152.5 $\pm$ 8.7cm and the mean weight of the subjects in study was 48.2 $\pm$ 10.6kg. The result shows that most of the subjects 195(48.4%) followed a three-meal pattern and 225 (55.8%) eat fast food at least twice in a week because of lack of time to prepare breakfast. Consumption of high carbohydrate-based food was prevalent and many 227 (56.3) of the respondents do not consume fruit up to four times in a week. The study also revealed that the prevalence of malnutrition among in school adolescents in the study area is moderate as 28 (8.2%) and 40 (11.7%) were severely stunted and stunted. 65 (6.1%) of the respondents were underweight, 60 (14.9%) were slightly overweight; classified using BMI. The result also shows that malnourishment among the studied group is high between age 10 – 13 than age 14 – 17years. The study also revealed that out of 219 males surveyed, 6.8%, 7.8% and 13.7% were severely underweight, underweight and slightly overweight respectively. While out of 184 females sampled, 5.4%, 23% and 16% were severely underweight, underweight and at risk of obesity

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respectively. The study also revealed that out 325 respondents sampled from day school, 4.3%, 14.5%, 2.2% were underweight, overweight and at risk of obesity respectively. While out of 78 respondents that were sampled from boarding school 50% and 16.7% were underweight and overweight respectively. In conclusion, based on the findings of this study, it can be concluded that though most of the respondents follows three meal patterns, there is dietary inadequacy and gender period of adolescents including other factors are contributory factors in BMI of the adolescent and prevalence of malnutrition in the area is moderately. More so, there is a significant difference in dietary pattern and nutritional status between boarders and day school students in the study area.

Keywords: *adolescent nutrition, dietary habits, school-based health*

Introduction

Food is necessary for good health, eating a balance diet is vital for good health and wellbeing.[1] Food provides our body with energy, proteins, essentials fats, vitamins and minerals to live, grow and achieve optimal health throughout life (National Health and Medical Research Council.[2] A balanced diet during childhood and adolescent is crucial for growth and development.3 Good nutrition and healthy eating contributes to an overall sense of wellbeing and is the cornerstone in the prevention of many common chronic diseases.[4] Malnutrition is a global and devastating health problem.[5] Malnutrition is a serious condition that results when a person's diet does not contain the right proportions of nutrients. The term malnutrition is of two categories; under nutrition and over nutrition. Under nutrition is define as the insufficient provision of energy and nutrients, such as good quality protein with an adequate balance of essential amino acids, vitamins and minerals, and an inability to meet the body requirements to ensure growth, maintenance and specific function. Under nutrition is generally recognized by stunting (short-for-age), wasting (thin-for-weight), underweight (low-weight-for-age) and micro-nutrient deficiencies.[5] While over nutrition is excessive intake of nutrients relative to body needs of an individual to remain health over a period of time.[6] It leads to obesity, overweight and diet related non-communicable conditions such as diabetes, cancer, stroke and hypertension etc.

Adolescent is a significant period for physical growth and sexual maturity. Nutrition being an important determinant of physical growth or adolescents is an important area that needs attention.[7] Dietary pattern is defined as the quantities, proportion or combination of different foods, drinks and nutrients in diets, and the frequency with which they are habitually consumed.[8]. Adolescent represent an important life stage for the development of healthy nutrition behavior. The nutritional demands associated with rapid physical and cognitive development and maturation are substantial. In developed countries, adolescents increasingly demonstrate early signs of adverse nutrition-related conditions.[5] There is evidence that nutrition behavior trace from adolescents into adulthood.[9] The general objective of this study was to determine the dietary pattern and nutritional status of in-school adolescents in Yala Local Government Area of Cross River State.

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Materials And Methods

Study setting

This study was carried out in Yala Local Government Area, Cross River State with Headquarter at Okpoma.

Study Design

The study design was Cross- sectional descriptive study aimed at revealing the dietary pattern and nutritional status of in – school adolescents in Yala LGA, CRS.

Study Population

The study population consist of in – school adolescents between the ages of 10 – 19yrs in Yala LGA.

Sample Size Determination

The prevalence of stunting among adolescents was estimated to be 11.3%.[10] The population of error to be tolerated is 5%. Hence, formula use to determine sample size is the Zuts formula, 1982.

The formula is as follows;

$n = Z^2pq/d^2$

Where;

n = the desire sample size,

Z = the alpha level of the confidence interval at 95% which is 1.96

P = estimated proportion of the desired population = 50% =0.50

q = proportion of non- occurrence of stunting (1-p) = 1-0.50 = 0.50

d = level of precision required which is 5% = 0.05

Substituting the formula,

$$n = 1.96^2 \times \frac{0.05(0.05)}{0.05^2}$$

$$n = 3.841 \times \frac{0.25}{0.0025}$$

$$n \cong 384$$

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However, the possibility of non – response rate, the design sample size will be increase by 5%. That is n + 5% of the calculated sample size = 403.

Sampling Technique

Multi- stage sampling technique was used in selecting schools, classes, sub-class and respondents for the study.

Stage One; selection of the schools.

Eight (8) schools will be selected out of all the secondary school that is Government approved in the study area using simple random sampling technique. Numbers will be assigned to each school. The paper will be folded and thoroughly mixed by the researcher in a container and will be vigorously shaken. Eight persons will pick from the container. The process will be repeated until the desire eight schools are chosen.

Stage Two; selection of classes

In each of the selected schools, simple random sampling technique will be used to select two (2) classes (one from JSS 1 – 3 and the other from SSS 1 – 3). Each of the classes will be written on pieces of paper, fold and put in polythene bag and vigorously shaken before picking. This will give 16 classes in all.

Stage Three; selection of sub-class

In each of the selected class, random sampling will be use to select two sub-class in any class that have more than two sub-class.

Stage Four; selection of respondents

In each of the selected sub-class, respondents will be selected using random sampling technique. In the sub-class, numbers 1 and 2 will be written in pieces of papers, folded and put in a polythene bag, will be vigorously shaken and the students will be asked to pick one pieces of each without been told what each number represent. Any student that picks 1 will become the respondents for the study and this will be applied in all the selected schools.

Body Mass Index

BMI of all the respondents was calculated to determine their nutritional status (either overweight or underweight) using the formular as follows;

BMI is expressed as weight in kilogram (kg)/ height in metre squared (m^2).

Methods of Data Collection

Two research field assistant was trained to assist in administration of questionnaire and data collection as well as the height and weight measurement procedures. The principal researcher and the two field assistants visited the selected schools and administer the questionnaire as well as measures the height and weight of the respondents. Weight was measured to the nearest kg while the height will be measured in cm (to be converted to M^2).

Data analysis

Data generated were entered using Statistical Packages for Social Science (SPSS). Results were presented in percentages, frequency tables, and charts. The height and weight of the respondents were calculated to determine their BMI. BMI of < 16.5, 16.5 – 18.4, 18.5- 24.5, 25 – 30, 31 – 35, and 35 will be considered as severe underweight, normal, slightly overweight, moderate and morbid obesity respectively.

Ethical considerations

A letter of introduction was obtained from the Head of Department of Public Health, University of Calabar, Calabar. The letter was used to obtain an ethical clearance from the Ethics Committee, Public Health Department, University of Calabar and was given to the principal of each selected school. A letter was also dispatched to all the parents of the selected respondents to seek for their approval (through the principal of each selected schools) to allow their children to participate in the study, stating clearly the purpose of the study as well as letting them know that research will not pose any potential harm to their children. The respondents were brief on the purpose of the study and verbal informed consent was duly obtained from all the respondents and will be assure of strict confidentiality. The subjects will be informed that their participation is voluntary and have right to pull out from the study any time without fear of any consequences.

Results

From the table on the socio demographic variable of respondent on eye, the majority of the respondent eye lies between 14-16yrs representing 226 (56.17) followed by 10-13years responsibly 101(25.1) of the respondent and 17-19 years 76(18.9) respondents. The result also reveals that majority of the respondents 222(55.1%) were male while 181(44.9%) were female. Relating to place of residence, majority of the respondent 302(74.9) reside with the both parents while 58(14.4) reside with a single parent. About 391 which account for more than two third of the residents were Christian. More so, more than half 325(80.6%) of the respondent reported not living in the boarding house while few 78(19.4) were boarding students. majority of the respondent 163(40.4%) reported that their father attained secondary education while 104(25.8) and 70(17.4) respondents fathers have primary and tertiary level of education respectively. Regarding to education level of mothers 163(40.4%) attained secondary education while 136(33.7) and 55(73.6)

attained primary none and do not have any formal education respectively. The majority of the respondents family size fall between 6-10 and 11 and above respectively. More than half 240(59.6) of the respondents father occupation was farming and similarly in majority of the respondents 187(46.4) mothers occupation was farming.

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Table 1: Socio-Demographic Characteristics of Respondents (n=403)

Variable	Frequency	Percentage (%)
Age:		
10 -13 years	101	25.1
14- 16 years	**226**	**56.1**
17 - 19 years	76	18.8
Total	403	100
Sex:		
Male	**222**	**55.1**
Female	181	44.9
Total	403	100
Residential Status:		
Live alone	22	5.4
Live with both parents	**302**	**74.9**
Live with single parents	58	14.4
Live with peers	21	5.3
Total	403	100
Religion:		
Christianity	391	97.0
Muslim/Islam	8	2.0
Traditional	2	
Total	403	100
Boarding Student :		
Yes	78	19.4
No	**325**	**80.6**
Total	403	100
Fathers level of education		
No formal Education	41	10.2
Primary Education	104	25.8
Secondary Education	**188**	**46.7**
Tertiary Education	70	17.4
Total	403	100

Mothers level of Education		
No formal Education	56	13.6
Primary Education	136	33.7
Secondary Education	**163**	**40.4**
Tertiary Education	49	12.2
Total	403	100
Father's Occupation		
Civil Servant	78	19.4
Self employed	76	18.9
Farmer	**240**	**59.6**
Unemployed	15	2.2
Total	403	100
Mothers Occupation		
Civil Servant	71	17.6
Self employed	132	32.8
Farmer	**187**	**46.4**
Unemployed	13	3.2
Total	403	100

Table 2 below showed the response of students based on awareness and consumption of food derivatives. Response on whether the respondents have been told about the importance of good food, more than two third 390(96.8) of the respondent have awareness on the importance of goof food. The majority of respondents medium of information 214(54) came from school while 109(27.7) from hospital or clinic. More so, majority of the respondent 305(75.7) ate thrice a day, 56(13.9) ate more than three times a day. The study result also revealed that 185(45.9) consume animal products 1-3times weekly while 118(29.3) and 81(20.1) consume 4-6 and more than 6 times respectively. Root and tubers derivatives are consume mostly for about 1-3times 137(34.0), 4-6times, 131(32.5) and more than 6times weekly 128(3.7). majority of the respondents 160(39.7) consume cereal derivatives 1-3times weekly, 122(30.3) consume more than 6times and 110(27.3) consume at 4-6times weekly. Similarly, more than half of the students 207(51.4) consume legumes derivatives 1-3times weekly, 75(18.6) 4-6 times 73(18.1) consume for more than 6times weekly. More so, majority of the respondent 207(51.4) consume vegetables 1-3times weekly, 75(18.6) 4-6times weekly, 73(18.1) more than 6timea and 48(11.9) do not consume vegetable weekly. Similarly, most respondents 207(51.4) consume fruit 1-3times weekly, 75(18.6) 4-6times and 73(18.1) more than 6 times and 48(11.9) do not consume fruits weekly. Result on the frequency of consumption of beverages revealed also that about two third of the respondents 247(61.8) consume beverages for bout 1-3 times weekly, 66(16.8) consume 4-6 times weekly and about 58(14.5%) do not consume beverages weekly. More than half of the respondents 221 (7928%) said their school do not provide food while 82 (20.8%) of the respondents reported that their school provides them with food.

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Table 2: Awareness on the importance of good food to health

Variable	Frequency	Percentage (%)
Yes	**390**	**96.8**
No	13	3.2
Total	403	100
Medium of awareness		
Radio/Tv	35	8.8
Newsprint	1	.3
Hospital/Clinic	109	27.5
School	**214**	**54.0**
Relatives/Friends	37	9.4
Total	403	100
Number of meals in a day		
Once	28	7.0
Twice	86	21.3
Thrice	**195**	**48.4**
More than three times	94	23.3
Total	403	100
Eats during school hours		
Yes	82	20.8
No	**321**	**79.2**
Total	403	100

The study result revealed that 276 (68.5) of the total respondents said yes while 127(31.5) of the same population said no, that continuous skipping of breakfast increases the risk of ulcer. Majority of the respondents 349 (86.6) said yes, that eating enough fruit and vegetables is essential for body maintenance, while 54 (13.4) said no to the same statement. Majority of respondents 220 (54.6%) also said Yes while 183 (45.4%) of the same population said no to the statement that high dependent on processed/packaged food is a risk factor of overweight, diabetes and other non-communicable diseases . The study also reveal that majority of the respondents 345 (85.6%) said Yes that it is better to focus on eating healthy rather than focusing on building body desire, whereas, 56 (14.4%) of the same population responded no to the same statement

Table 3: Diet and Health/Disease

Variable	Frequency	Percentage (%)
Continuous Skipping of breakfast increase the risk of ulcer		
Yes	**276**	**68.5**
No	127	31.5
Total	403	100
Eating enough fruit and vegetables essential for body maintenance		
Yes	**349**	**86.6**
No	54	13.4
Total	403	100
High dependent on processed food is risk factor of overweight, diabetes and other non-communicable diseases?		
Yes	220	54.6
No	**183**	**45.4**
Total	403	100
Eating healthy rather than focusing on building body desire		
Yes	**345**	**85.6**
No	58	14.4
Total	403	100

Table 4: Frequency of consumption of food items in different food groups

Variable	Frequency	Percentage (%)
Animal products/derivatives:		
0	19	4.7
1-3	**185**	**45.9**
4-6	81	20.1
>6	118	29.3
Total	403	100
Roots and tuber derivatives		
0	7	1.7
1-3	**137**	**34.0**
4-6	131	32.5
>6	128	31.7
Total	403	100
Cereal derivatives		
0	11	2.7
1-3	**160**	**39.7**
4-6	110	27.3
>6	122	30.3
Total	403	100
Legume Derivatives		
0	48	11.9
1-3	**207**	**51.4**
4-6	75	18.6
>6	73	18.1
Total	403	100
Vegetables		
0	48	11.9
1-3	**207**	**51.4**
4-6	75	18.6
>6	73	18.1
Total	403	100
Fruits		
0	6	1.5
1-3	**227**	**56.3**
4-6	93	23.1
>6	77	17.1
Total	403	100
Beverages		

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0	58	14.5
1-3	**247**	**61.8**
4-6	66	16.5
>6	66	7.0
Total	403	100

The study showed that 238(59.5%) of the respondents said lack of time to prepare breakfast is a factor influencing the skipping of breakfast while 162(40.5) said time is not a factor. Based also on the findings, 148(36.7) said breakfast makes them sleep during the class hour while majority, 255(63.3) said it doesn't. Also, the table showed that 161(40.0) of the respondents eat less quantity of food for fear of getting fat while 242(60.0) do not see body image as a factor affecting the quantity of food they eat. Nevertheless, less than half 172 (42.7) of the respondents said they prefer fast food/snacks to home-made food because it taste sweeter and or fine while 23, (57.3) said it does not matter. Nevertheless, about two-third of the respondent 285(70.7%) said they prefer snacks to home prepared food because snacks do not take time while few others, 118(29.3) claimed otherwise. More so, the table revealed the influence of friends /peers on the choice of food. Result on the table showed that 87(21.6) of the respondents is influence by what their peers and friends eat but more than two third of the respondents 316(77.9) said they do not follow the choice of their friends. Significantly, 169(41.0%) of the respondent said they do not eat some food even though they know the nutrient worth because the culture/religion forbid it, while 234(59.0) said culture/religion does not matter. In addition, among those that don't like food serve to them during school hour, more than half, 53(58.9) said they don't like the way it is served, 16(17.8) said it is because their friends don't eat while 15(16.7) said they don't like eating in public.

Table 5: Factors influencing dietary pattern

Variable	Frequency	Percentage (%)
Lack of time to prepare food is the reason for skipping breakfast		
Yes	**238**	**59.5**
No	162	40.5
Total	403	100
I stop eating breakfast because it makes me sleep during the class hour		
Yes	148	36.7
No	**255**	**63.3**
Total	403	100
I eat less quantity of food daily because I don't want to get fat		
Yes	161	40.0
No	242	60.0
Total	403	100
I prefer fast food and snacks to home prepared food because it taste fine		
Yes	**172**	**42.7**
No	231	57.3
Total	403	100
I prefer to eat snacks to prepared food because it doesn't take time to prepare		
Yes	**285**	**70.7**
No	118	29.3
Total	403	100
Whatever my friends eat is what I like to eat		
Yes	87	21.6
No	316	78.4
Total	403	100
I select some food, even though I know the nutritional importance because of religion/Culture forbids it:		
Yes	169	41.0

No	234	59.0
Total	403	100

Result on the table below showed the nutritional status of respondents by Body Mass Index (BMI). The result revealed that 88(21.8%) of the respondent were underweight, two third of the respondent 306(75.9) had normal nutritional status, while few 7(1.7) and 2(0.5) were overweight and obese respectively.

Table 6 A: Body Mass Index of Respondents

Variables	**Frequency**	**Percentage**
Underweight	88	21.8
Normal	**306**	**75.9**
Overweight	7	1.7
Obese	2	.5
Total	**403**	**100**

The result in the table 6 below shows the BMI across age group of respondents. The result showed that out of 101 respondent that were aged 10-13, 18(17.8) were underweight and 83(82.2) have normal BMI. Also, out of 226 respondents within 14-16 age group, majority 165(73.0) have normal BMI, 57(25.2) were underweight while 4(1.8) were overweight respectively. More so, out of 76 respondent that were between age 17-19, majority 58(76.3%) had normal BMI, 13(17.2) were underweight while 3(3.9) and 2(2.6) were overweight and obese respectively.

Table 6 B: Body Mass Index across age group

	BMI (kg/m^2)				
Age (years)	<18 (underweight)	18.5-24.9 (Normal)	25.0-29.5 (overweight)	>30 (Obese)	Total
10-13	18 (17.8)	**83 (82.2)**	0(0)	0 (0)	101
14 – 16	57(25.2)	**165 (73.0)**	4(1.8)	0 (0)	**226**
17 – 19	13 (17.2)	**58 (76.3)**	3 (3.9)	2 (2.6)	76
Total	88	306	7	2	403

N/b: Numbers in parenthesis are percentage

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The result on table six shows the BMI status across the sex. The result revealed that out of 222 male, majority 171(77.0) had normal BMI status, 48(21.6) were underweight, and 3(1.4) were overweight. Nevertheless, out of 181 female respondents, nearly two-third 135(74.6) had normal BMI, 40(22.1) were underweight while 4(2.2) and 2(1.1) were overweight and obese respectively.

Table7. Body Mass Index (BMI) across male and female

BMI (Kg/M^2	**Gender**		**Total**
	Male	Female	
Underweight	48 (21.6)	40 (22.1)	
Normal	**171 (77.0)**	**135 (74.6**)	
Overweight	3 (1.4)	4 (2.2)	
Obese	0 (0)	2 (1.1)	
Total	222	181	403

Table 8: Anthropometry Assessment (Height – for - age)

Z-Score	Classification	Frequency (n= 101)	Percentage (%)
	Stunting (height – for – age)		
< - 3SD	Severely stunted	2	2.0
≥ - 2SD	Stunted	21	20. 8
>-1SD to + 3SD	Normal	**78**	**77.2**

Discussion

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The study revealed that 305 (75.7) ate thrice a day, 56 (13.9%) of the respondents ate more than thrice a day, and 25 (6.2) of the respondents ate twice a day respectively and that 82 (20.8) of the respondents ate their breakfast outside their home. These results correspond with the statement by Mullie et. Al (2006) that lack of parental guidance on how and what to eat is the reason why adolescents skip breakfast, thereby increasing the level of snacking during the day hence, compromising their health. The result on diet history/dietary pattern showed that 390 (96.8%) of the respondents have good knowledge and awareness of good dietary intake and the main medium of awareness on the importance of healthy diet was from schools 214 (54.0%), and 109 (27.5%) were from Hospital/clinic. The result further show that majority of the respondents eat fast food at least 2 times in a week. This study is in agreement with the study of Abdulkarim *et al;* (2014) that malnutrition among adolescents most especially over nutrition includes but not limited to lack of access to food but as a result of fast-food revolution as both parents work throughout the day, leaving little or no room for cooking, thereby causing adolescents to have more access to cheap sweetened drinks and sedentary live like watching television, playing video games.

The study result revealed that 185 (45.9%) consume animal products/ derivatives 1-3 times, 118 (29.3%) of the respondents consume more than 6 times and 81 (20.1%) respondents consume 1-4 times weekly. Majority of the respondents 137 (34.0%) consume roots and tuber 1-3 times a week while 131 (32.5%) of the respondents consume 4-6times also 128 (31.7%) consumed tuber derivatives more than 6 times a week. Majority of the respondents 160(39.7%) consume cereal derivatives 1-3 times a week and 122 (30.3%) respondents consume more than 6 times a week. Majority of the respondents 207 (51.4%) consume legumes derivatives product 1-3 times a week whereas 75 (18.16%) of the respondents consumes 4-6 times a week. More so, majority of the respondents 207 (51.9%) consumes vegetables 1-3 times a week, while 75 (18.6%) respondents consume 4-6 times a week and significantly, 48 (11.9%) of the respondents reported not consuming vegetables in a week. majority of the respondents 207 (51.9%) consumes fruits 1-3 times a week, while 75 (18.6%) respondents consume 4-6 times a week and significantly, 48 (11.9%) of the respondents reported not consuming fruits in a week. Finally, more than half of the respondents 247 (61.8%) consume beverages 1-3 times a week and 66 (16.5%) of respondents consumes 4-6 times a week while 58(14.5%) do not consume beverages in a week. These shows that most of the adolescents are not meeting their dietary fiber requirement of 400grams per day as recommended by WHO as up to 227 (56.3%) study sampled do not show that the respondents most consumed food items are those high in carbohydrate. These findings correspond with the study by Awosanya on the dietary pattern and nutritional status of selected in school adolescents in Abeokuta North and South L.G.A in Ogun state that two distinct dietary pattern labeled " Western" pattern highly loaded in pastries, beverages, diary, canned food and poultry and a " Mixed" pattern loaded highly in cereal, Legumes, Root and Tubers, Fruit and Vegetables as well as Processed Cereals.

The result showed low prevalence of obese, underweight and overweight. In 403 participants that were surveyed, 88 (21.8%) were underweight, 7 (1.7%) were overweight, 306 (75.9%) have normal BMI and 2 (1%) were slightly obese. This shows that malnutrition is controlled in the study area. This study is in disagreement with study carried out among secondary adolescent by Lamidi

et al., (2014) in Abuja that reflect high prevalence of overweight. The study also showed that out of 101 (25.1%) respondents between the age of 10-13, 18(17.8%) were underweight, and 83(82.2%) were normal and 42(23.6%). More so, between the age of 14-16 out of 226 respondents, 57(25.2%) of the respondents were underweight, 4(8.8) were slightly overweight and 165(73.0%) were normal. Furthermore, between the ages of 17-19 out of 76 respondents, 13(17.2%) were underweight, 3(3.9%) were overweight, 2(2.6%) were obese, and 58(76.3%) were normal. The study also showed that out of 222 males surveyed, 48 (21.6) were underweight, 171(77.0%) had normal weight while 3(1.4%) of them were slightly overweight. Nonetheless, in the female category, out of 181 respondents, 40(22.1) underweight, 4(2.2) were overweight, 135(74.6%) had normal BMI and 2(1.1) were at risk of obesity. This shows that females were slightly more malnourished (24.4%) than the male (22.9). The study is in line with the findings by Mirigen et al., (2015) that females were more malnourished in their findings.

The study showed that there was no significant difference between the school types of respondents and their dietary pattern/ Nutritional status using the BMI of respondents. The study revealed that out of 325 Respondents who were from day school, 78 (24%) of the respondents were underweight, 238 (73.2%) of the respondents were normal, 7 (2.2%) were overweight and 2(.6%) were slightly obese respectively. The result also shows that out of the 78 respondents who were Boarders, 10(12.8%) were underweight while 68(87.2) had normal BMI. These reveal that the prevalence of malnutrition (both under nutrition and over nutrition) is slightly high among day schools as compared boarding schools that were sampled. This discrepancy may be as a result of the meal they served while in school and high dependents on snacks during the day.

The study reveals lack of time to prepare food is the reason for skipping breakfast as 238 (59.5%) of the respondents revealed, also the study revealed that 157 (38.9%) of the respondents that they stop to eat breakfast before going to school because it makes them sleep during school hour, while 255(63.3%) do not accept it. The result also showed that 161 (40.0%) of the respondents said that they stop eating much quantity of food for fear of getting fat. The result further showed that 172 (42.7%) said that they prefer fast food and snacks to home prepared food because of its taste, while majority 223 (55.3%) said otherwise. This result corresponds with the statement of Mullie et al., (2006) that lack of time to prepare food and laziness are some reasons for skipping breakfast among adolescents. Thus, this study is in disagreement with the opinion of Kamaria *et al*.[11] that body image desire is the main factors that make adolescents to skip meals. The study also reveals that about 234 (59.0%) said they don't prefer what their friends want them to eat. Also, the study showed 169 (41.0%) said that they select food even though they know the nutritional value due to religion/culture. These findings are in contrary with the study of Hargreaves *et al*.[12] that loss of appetite, religious restriction and belief, sickness, body fit desire are the main factors contributing to inadequate dietary pattern.

Conclusion

The findings of this study concluded that though most of the respondent follows the meal pattern, there is dietary inadequacy among in-school adolescents in Yala local government area Cross

River state. This study also revealed no significant difference in nutritional status in day students over boarding students. Gender, age including other factors is a contributory factor in BMI of the adolescents. Hence, periodic assessment of adolescents in school is imperative in other to design a life course approach and preventive efforts to address their health and nutritional problems. Health education is necessary to control adolescent dietary pattern

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