FAST FOODS CONSUMPTION AND CONTRIBUTION TO NUTRIENT INTAKE OF NIGERIAN UNIVERSITY STUDENTS

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ABSTRACT

A cross-sectional study was carried out to determine the pattern of fast food consumption and contribution to nutrient intake of undergraduates. One hundred and forty undergraduate students of the Federal University of Agriculture, Abeokuta, Nigeria were randomly selected for the study. Data was collected on socioeconomic characteristics and food habit using a structured questionnaire while 24-hour diet recall and food frequency questionnaire were used to obtain information on nutrient intake and fast food consumption pattern respectively. Data was analyzed using SPSS 11.0; paired t-test was used to establish difference in mean nutrient intake between male and female students. All (100%) the students patronized fast food outlets and fast foods made from wheat flour were the most popular among them. Fast foods are often consumed with sweetened beverages. Carbonated and malted drinks, fruit juice and alcoholic beverages were consumed by 16.1%, 8.5% and 8.5% of males respectively while 10% and 38.3% of females consumed carbonated and malted drinks and fruit juices respectively. Meal skipping was common among males (53.6%) compared to their female (35%) counterparts. The male students had a significantly higher energy (3406kcal) intake than their female (2062kcal) counterpart. Fast foods contributed 20.3%, 59.9%, 29.2% and 19.6% to intake of energy, animal protein, fats and oil and carbohydrate respectively and 37.4% and 13.0% to calcium and iron intakes. Fast foods is a major contributor to the nutrient intake of undergraduates, however, excess energy and the low intake of micronutrient from fast foods places the students at risk of malnutrition.

Keywords: Fast Foods, Nutrient Intake, Adolescents, Nutrition

INTRODUCTION

Eating fast foods for meals or snacks is especially popular with adolescents and young adults. During early adulthood, many changes begin that lead to the development of diseases of aging several years later (Stang, 2008). Large increases in caloric intake have occurred in the past decade to match longer term shifts in eating patterns (Nielson et al., 2002). Among issues of great concern especially among adolescents have been the greater intake of sugar, fatty foods, and other caloric sweeteners, therefore, the greater consumption of foods consumed away from the home, the greater consumption of fast foods (Ludwig et al,2001).

Fast foods essentially refer to the mass production of speedy food which is of standardized size, shape, colour and taste (Schlosser, 2001).For all countries, current evidence suggests that the underlying determinants of non- communicable diseases (NCDs) are largely the same. These include increased consumption of energy-dense, nutrient-poor foods that are high in fat, sugar and salt, reduced levels of physical activity and of particular concern are increasingly unhealthy diets and reduced physical activity of children and adolescents (Haddad, 2003; Arulogun and Owolabi, 2011). Fast foods are commonly recognized to have poor nutritional quality (Ludwig et al 2001), they tend to be low in iron, Calcium, riboflavin, and vitamin A and C (Mahan and Escott-Stump, 2004). Consumption of high-fat fast foods contributes to higher energy and fat intake and lower intake of healthful nutrients (Paeratakul et al, 2003), it is also notable that changes in eating patterns such as increases in meals eaten away from home, portion sizes, meal-skipping and fast foods consumption may be involved in this trend (Young and Nestle,2002).

The consumption of fast foods plays lots of roles on health. In the same vein, nutritional habits acquired during adolescence have a significant impact in the short and long term; these include irregular meals, snacking, eating away from home and following other nutrition alternative dietary patterns which characterize the food habits of young adults, arising from adolescence (Story et al, 2002). The concept of fast food eating has expanded into food sales in schools (Arulogun and Owolabi, 2011). For many students the day is not complete without observing the “daily ritual” of visiting a fast food joint and most of the fast food restaurants in the cities have began to open centers within and very close to schools especially university campuses (Aladelokun, 2006; Arulogun and Owolabi, 2011).Results of several studies suggests that fast foods may be implicated in the cause of many chronic diseases which have a rising prevalence in Nigeria and a long term implication on the health of the younger adolescents who would grow up to become the productive economic force of the country, it is to this end that this study assessed the pattern of consumption and the contribution of fast foods to nutrient intake of undergraduates of the Federal University of Agriculture Abeokuta (FUNAAB).

SUBJECTS AND METHODS

This study was conducted on undergraduates selected from a total of seven colleges from FUNAAB. A total of 140 students comprising 56 females and 84 males representing 2.5% of the total population of undergraduates in the university at the time of research were selected using stratified random sampling technique. The number of college students was used as the stratifying factor with male: female ratio of 60:40.

A structured questionnaire was administered to each of the respondents. The questionnaire sought information on the socio-economic characteristic and food habit of the respondents. A total of 19 fast foods were included in the questionnaire requesting the respondents to state the number of times a week each of these fast foods was consumed. A 24-hr diet recall procedure was administered each to the respondents, they were asked to recall meals including drinks taken the previous day, the cost/estimated cost, the source of the food/drink consumed as well as the time of consumption. This was carried out for two days; comprising a weekday and a weekend. Estimates of serving sizes and quantities of foods consumed were collected using common household measures, utensils and standard portion sizes of fast foods were purchased and weighed. The nutrient intake values were obtained using food two food composition tables (Oguntona and Akinyele 1995;Mcance and Widdowson 1960) while other data was subjected to descriptive and inferential statistical analysis using SPSS (statistical package for social sciences) version 11.0

RESULTS AND DISCUSSION

The results are presented on a total of 140 respondents. The socio-economic characteristics and pattern of fast food consumption of the respondents are presented in table 1.

Food habit and Pattern of fast food consumption

The results showed that the respondents (100%) patronized fast foods though majority (46.7%) do so at no specific time of the day. 42.9% males and 32.9% females patronize and consume fast food at least 1-2 times weekly while only 0.7% of the female respondents do not patronize it at all. The three major reasons adduced by students for patronizing fast food outlets as shown in Table 1 are availability (22%), accessibility (18.9%), and being nutritious (18.2%). Meal skipping was common especially among the male respondents (53.6%) and only 35 % of the female respondents skipped meals. Snacking was also observed to be common among those who skipped meals. Lack of time was responsible for meal skipping among 48% of the students, while 19% reported having no appetite, 13% cannot cook, 3% reported illness, while 6% reported financial constraints, and this finding is similar to the report of Young and Nestle (2003) that fast food consumption had increased among consumers due to its ready availability. More males (28%) compared to females (20%) preferred snacks to meals prepared at home, this value is

higher than that reported (6.5%) by Arulogun and Owolabi (2011) among similar undergraduate students of University of Ibadan, Nigeria. The distribution of students according to types of fast food and drinks usually purchased shown in Table 1 revealed that flour- based fast foods was more popular among the students (males:42%, females: 30%) and similar to the findings of Arulogun and Owolabi (2011) which revealed that the most commonly consumed fast foods among undergraduates was flour-based products. More females (38%) compared to males (8.5%) purchase highly sweetened fruit juice/ drinks and this is in agreement with Rolls et al (1999) report that fast food consumption often do not go without consumption of highly sugared beverages. About 20% of the students reported purchasing meat-based fast foods and dairy products while 8.5 % of males consume alcoholic beverages. Eleven percent of the students spent less than $1.00 on fast food and drink per day while 46% spent between $1.00 and $2.50, 27% spent between $2.51 and $5.00 and 16% spent above $5.00.

Frequency of fast food consumption

The results revealed that fast food consumption has become popular among undergraduates in the Federal University of Agriculture, Abeokuta. A high frequency of consumption was observed among the respondents (up to four times a week) for biscuits, cakes, puff-puff/buns, fruit juices/ drinks, yoghurt, ice-cream, sweets and chewing gum. Although, suya (peppered steak), soft drinks, malted drinks and chin-chin were consumed by more than half of the students, the frequency of consumption varies from one to two in a week. Scotch egg, sausage, burgers, doughnut and chocolate drinks were consumed by a reduced number (<20%), with frequency of consumption varying between 1-2 times weekly. Other frequently consumed fast foods are meat/fish pie, groundnuts and alcoholic drinks.

Contribution of fast food to daily food intake of undergraduates of FUNAAB

The results presented in Table 2 revealed that the major food groups consumed by the respondents include cereals, root and tubers, legumes/pulses, dairy products, meat, poultry and fish, fruits and vegetables. The results showed that cereals constituted the major (813g/day) food consumed by the respondents with 21% and 18% of the cereal food intake supplied by fast foods among male and female students respectively. The major cereal foods consumed include rice, maize, wheat and their products.

Root and tubers rated second in the daily food intake with mean intake per day being 529g and 28% of which was supplied by fast foods. Legume based foods intake averaged about 273g per day 18.6% being supplied by fast food. Major legumes and pulses consumed include cooked cowpea and steamed cowpea paste (*moi-moi*).

Mean intake of fruits and vegetables per student was 184g/day with 74% of this supplied by fast foods. Fast food supplied 84% of the animal protein intake while dairy product consumption was the lowest being 43.2g/day consumed by the respondents.

Contribution of fast foods to nutrient intake of undergraduates of FUNAAB

Table 3 shows the nutrient intake of the respondents and the proportion of these nutrients supplied by fast foods. The mean energy intake by the respondents was 2947±1567.9Kcal. Male respondents had a significantly higher ($p<0.05$) energy intake (3405.6 ±1387.7Kcal) than the female respondents (2061.9±838.6Kcal) with fast food supplying 20.3% of the total energy intake of both male and female respondents. Mean Protein intake was 85.7g with male students having a significantly higher ($p<0.05$) intake than their female counterpart. More than 50% of the protein intake was from plant source. Overall, fast food provided about 60% of the animal protein intake, although for male students the proportion (64%) is much higher supporting the report of Oniang'o et al (2003) that consumption of animal products especially milk and meat increases with income and urbanization. A mean value of almost 400g carbohydrate intake per day was reported among the respondents. Male students had a significantly higher ($p<0.05$) carbohydrate intake (371.7g± 116.2) than female students (255g±113.4) and fast foods supplied 18% of carbohydrate intake of the respondents. The average fats and oil intake of the respondents was 67.4g and 122.2g for males and females respectively while fast food supplied 29.17% of the intake. Fast food was a major contributor of animal protein and dietary fats and oils thus supplies a higher percentage of total caloric intake, this is in line with the reports that street foods contribute a considerable amount of dietary fats and oils, as well as protein intake of students (Oguntona and Kanye, 1995; Oguntona et al, 1998). Although consumption of flour-based fast foods was more favoured by male students than their female counterpart, this may be responsible for their higher energy intake in excess of requirement. The implication of this is that where such excess energy intake is not matched with corresponding energy expenditure may result in weight gain and consequently obesity. Calcium and iron intake was observed to be low among the students, however, fast foods contribute considerably more to calcium than iron intakes. The mean calcium intake of both male and female undergraduates was 463±189.9 with a lower proportion (38%) provided by fast foods. There is a wide variation in the iron intake of undergraduates with intake ranging between 6.8mg to 48.0mg among males and female undergraduates. Averagely, fast foods supplied 13% of total iron intake of the respondents. Generally, vitamin intake was low among the respondents except for the intake of riboflavin. Fast foods contributed more than 40% to ascorbic acid, 15% to riboflavin, 15% to Vitamin A, 32% of niacin and 36% of thiamin intake respectively. Female students had higher vitamin C intake compared to their male counterparts. The low vitamin intake may be attributed to low consumption of fruits and vegetables among the respondents. The findings of this study support reports of Steyn and Damasceno (2006) that fast foods are poor sources of micronutrients but associated with higher energy and fat intake.

In conclusion this study has shown that consumption of fast foods among undergraduates is increasingly becoming an emerging trend. It is a major source of energy, dietary fat and animal protein though it was shown to be a poor source of micronutrients which consequently increases the susceptibility to the already high prevalence of non-communicable diseases especially in developing countries. As a result, there is a need to incorporate nutrition education into students' curriculum with a view to equipping them with necessary nutritional knowledge on how to make rational and healthy fast food choices.

REFERENCES

Aladelokun D., 2006. Health freedom activists warn of the dire consequences of abandoning natural foods. *Saturday Punch*, June 24:A5.

Arulogun O.A and Owolabi M.O., (2011) '*Fast Food Consumption Pattern among Undergraduates of the University of Ibadan, Nigeria*: Implications for Nutrition Education ***J. Agric. Food. Tech.*****, 1(6) 89-93**

Ludwig D.S.,Peterson K.E., Gortmaker S.L (2001) ' Relation between consumption of sugar-sweetened drink and childhood obesity; a prospective observational analysis'. *Lancet*. 357:505-508 [Cross ref[MEDLINE].

Haddad L., 2003. Redirecting the diet transition: what can food policy do? Development Policy Review, 21(5-6): 599-614

Stang J.,(2008) Nutrition in Adolescence In Mahan K., Escott- stump S.,(2008) *"Food And Nutrition Therapy"* 12th edition, Mc- Graw Hill USA pp 246-259

McCance R.A, and Widdowson E.M. 1960: the composition of foods- Medical Research Council Special. Report series No 290, H.S.M.O.

Nielsen SJ, Siega-Riz A.M, Popkin BM. 2002 'Trends in energy intake in US between 1977 and 1996': Similar shifts seen across age groups. *Obes Rev* 10: 370–8.

Oguntona E.B, Akinyele I.O,(1997) "Nutrient composition of commonly eaten foods in Nigeria- Raw, Processed and Prepared", *Food basket Foundation International Ibadan.*

Oguntona CRB, and Kanye O. 1995: Contribution of street foods to nutrient intake by Nigerian adolescents. *Nutr and Health* Vol. 10; 165-171.

Oguntona CRB, Razaq M.A, Akintola T.T 1998: Pattern of dietary intake and consumption of street foods among Nigeria students. *Nutr and Health* Vol 12; 247-256.

Oniang'o R.K. ,Mutuku J.M, , Malaba S.J (2003). 'Contemporary African Food Habits and their nutritional and Health Implications. *Asia Pacific Journal of Clinical Nutrition* . 12(3):231-236

Paeratakul, S. Ferdinand, D.P. Champagne, C.M. Ryan, D.H. Bray, G.A., (2003): Fast food consumption among US adults and children, dietary and nutrient intake profile. Am Diet Assoc. Oct; 103(10):1332-8 **Rolls BJ, Bell EA, Castellanos VH, Chow M, Pelkman CL, Thorwart ML. (**1999**).** Energy density but not fat content of foods affected energy intake in lean and obese women. *Am J ClinNutr.*69: 863–871. Abstract/FREE Full Text

Schlosser, E. 2001: Fast food Nation. Houghton Miffin Company.

SPSS for Windows, *Statistical Package for social Sciences,* version 11.0. Lead Technologies Inc.

Steyn K, Damasceno A., 2006, *Lifestyle and related risk factors for chronic diseases In Disease and mortality in Sub-saharan Africa*.,2nd Edition:Washington (DC):World bank. Bookshelf ID:NBK2290 PMID:21290651

Story, M. Neumark-Sztainer,D. French, S. 2002: Individual and environmental influences on on adolescent eating behaviours. *JADA* 102:S40-S51

Uusitalo U., Pietinen P., Puska P.,(2002). *'Dietary Transitions In Developing Countries: Challenges for Chronic Disease Prevention, In Globalization, Diets and Non communicable diseases.* WHO Library Cataloguing-in- Publication Data.NLM Classification: QT 235) pp. 6-23

Young, L.R and Nestle, M. 2002: the contribution of expanding portion sizes to the US obesity epidemic. *Am J Public Health*; 92: 246-249.

Table 1: Food habit and Pattern of Fast Food Consumption of University Undergraduates.

Food habit	Male		Female	
Patronage of fast food outlets	F	%	F	%
Yes	84	60	56	40
No	-	-	-	-
Number of times(frequency) per week	60	42.9	46	32.9
1-2	14	10.0	9	6.4
3-4	10	7.1	-	-
>4	-	-	1	0.7
None				
Meal skipping				
Yes	75	53.6	49	35.0
No	9	6.4	7	5.0
Reason for skipping meals				
Lack of Available Time	41	29.3	26	18.6
Can't cook	12	8.6	6	4.3
No appetite	10	7.1	16	11.4
Illness	4	2.9	-	-
Finance	8	5.7	-	-
No reason	9	6.4	8	5.7
Preferred Meal				
Traditional meal/diet	37	26.4	23	16.4
Snacks/fast foods	40	28.6	28	20.0
Both	7	5.0	5	3.6
***Type of fast foods usually Purchased**				
Flour-based	155	42.3	132	30.1
Meat-based	48	13.1	32	7.3
Dairy products	34	9.3	45	10.3
Fruit juices/ malted sweetened drinks	59	16.1	168	38.3
Alcoholic drinks	31	8.5	-	-
Amount spent daily on fast foods and drinks (NGN)	Freq		%	
<$1.00	15		11.0	
$1.00-2.50	65		46	

$2.51-5.00	38	27
>$5.00	22	16
***Reason for patronizing fast food outlets**		
Accessibility	60	18.9
Availability	72	22.6
Advertisement	18	5.7
Leisure/socializing	52	16.4
Nutritious	58	18.2
Provides value for money	16	15.0
Hygiene/freefrom contamination	42	13.2

* multiple responses given

Table 2: Food Intake of Undergraduates and Contribution from Fast Foods.

	Dairy product	Root and tubers	Cereals	Legumes	Meat,Poultry and Fish	Fruits/ vegetable
Female (n=56)						
Mean Intake (g)	57.20	482.51	951.81	279.42	92.3	205.15
Supply by fast food (g)	35.00	150.00	178.40	46.10	83.57	197.2
F.Foods as % intake	61.19	31.17	18.74	17.05	90.54	96.12
Male (n=84) Mean Intake(g)	33.91	542.97	760.95	271.87	114.73	171.76
Supply by fast food (g)	28.72	150.00	161.35	55.50	94.32	123.64
F.foods as % intake	84.70	27.63	21.2	20.41	82.21	71.89
All Respondents (n=140)						
Mean Intake (g)	43.20	528.84	812.76	272.78	107.05	183.89
Supply by fast foods(g)	31.86	150.00	169.88	50.62	90.34	135.50
F.food as % intake	73.75	28.36	20.90	18.62	84.39	73.69

Table 3: Daily Mean Nutrient Intake of Undergraduates and Contribution from Fast Food

Nutrients	Mean Male intake	Supply by F.foods	%by F.foods	Female Intake	Supply by F.foods	%by F.foods	Total intake	% Total by F.foods
Energy (Kcal)	3405.6	690.2	20.3	2061.9	420.3	20.3	2947	18.8
Protein (g)	101.8	19.2	18.9	61.9	11.5	18.6	85.7	17.9
Animal Protein(g)	21.7	13.9	64.1	17.2	9.4	54.7	19.5	59.7
Carbohydrate(g)	371.7	72.7	19.6	255	44.5	17.5	324.2	18.1
Fats and oil (g)	67.4	23.7	35.2	122.2	31.6	25.9	99.9	27.7
Calcium (mg)	470.1	188.8	40.2	459.0	158.2	34.6	462.8	37.5
Iron (mg)	23.6	3.1	13.1	20.2	2.6	12.9	22.0	13.0
Vitamins A(mg)	487.0	78.0	16.1	490.3	75.1	15.3	491.2	15.6
Ascorbic acid (mg)	5.9	2.1	35.6	8.4	3.6	42.9	7.2	39.6
Thiamin (mg)	0.7	0.3	42.9	0.7	0.2	28.6	0.7	35.7
Riboflavin (mg)	3.0	0.5	16.7	2.5	0.3	12.0	2.7	14.8
Niacin (mg)	5.6	2.3	41.2	5.8	1.5	25.9	5.8	32.8