

PREVALENCE OF OBESITY AMONG UNDERGRADUATE STUDENTS, LIVING IN HALLS OF RESIDENCE, UNIVERSITY OF NIGERIA, NSUKKA CAMPUS, ENUGU STATE

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ABSTRACT

A study of the prevalence of obesity among undergraduate students was conducted at University of Nigeria Nsukka campus, Enugu, State, in the South Eastern part of Nigeria. A total of 620 male and female students were randomly selected for the study. A structured and validated questionnaire and anthropometry were used for data collection. The study elicited information on the sex distribution of the subjects who were obese, their marital status, dietary pattern, activity pattern and their health status. Information obtained was analyzed using frequency distribution, percentages, means and cross tabulation. The result revealed that 21% of the participants were obese, (8.1% are males and 13.1% are females). Most of the participants who were obese were unmarried, a total of 93.4% of the of the study population. The result of the eating pattern showed that 40.6% of the subjects purchased their foods from eating houses within the campus, 46.6% cooked their meals with foods brought from their homes; 28.2% and 26.7% consumed fruits and vegetables daily respectively. Food choice was based on taste of the food, cultural demands and easy to prepare foods. Information on the activity level showed that 85.5% of the obese subjects occasionally engaged in physical activity. Assessment of the health status indicate that 6.1% had cardiovascular disease; 2.3% were diabetics, 3.8% had gall bladder disease and 51% had other illness like ulcer, irregular menstruation, fever and stomach ach.

Keywords: Obesity, Prevalence, University undergraduate students

INTRODUCTION

Obesity is a chronic disease that is characterized by excessive body fat in relation to lean body mass (Thiam *et al.*, 2006). It is a disease that results when excess body fat is accumulated to a point that health is adversely affected (WHO, 1996). Body Mass Index (BMI) is an important anthropometric index that is usually used for body fat storage status assessment and is used for body fat determination (Paknahad *et al.*, 2008). Thiam *et al.*, (2006) indicated that in Sub-Saharan Africa, overweight (BMI \geq 25) and obesity (BMI \geq 30) are becoming a problem especially among adult women. These two indicators vary in different countries. These authors indicated that between 10-30% of men and 15 – 45 % of women in West Africa are either overweight or obese.

Another indicator is the waist circumference or abdominal adiposity, which is associated with excess abdominal fat and total body fat. Abdominal adiposity is defined as a waist circumference of \geq 102cm for men and \geq 88 cm for women. The risk of cardiovascular disease (CVD) and non-insulin dependent diabetes is high in men and women with abdominal adiposity (WHO, 2000). Okosun *et al.*, (1999) showed in their study of six population of West African descent of which Nigeria is one, that the prevalence of hypertension was closely linked to abdominal adiposity. These authors further showed that the prevalence of abdominal adiposity and hypertension was more common in women than in men. The National Population Commission of Nigeria

(2003) showed that there was a 5.8 % prevalence rate of obesity in females within ages 15 – 49 years in both rural and urban areas.

The primary cause of obesity is an imbalance between energy intake and energy output leading to accumulation of fat in the body. There is very convincing evidence that lack of physical activity and high intake of foods rich in fat or sugar increase the risk of weight gain or obesity (Thiam *et al.*, 2006). The complications of obesity include CVD, high blood pressure, osteoarthritis, gout, gall bladder disease, respiratory problems, liver malfunction and complications in pregnancy and surgery (Whitmer, 2005).

The objective of this study is to determine the prevalence of obesity among undergraduates living in halls of residence in University of Nigeria Nsukka campus and to obtain information on their feeding pattern, physical activity and health status.

MATERIALS AND METHODS

Six hundred and twenty students of University of Nigeria, Nsukka campus living in halls of residents were interviewed. Two hundred males and four hundred and twenty females were studied. Halls of resident used for the study were randomly selected and every seventh room in each of the selected hostels was used. The participants were purposively selected and one hundred and thirty one of the respondents were obese.

Table 1: BMI, age, sex and marital status of the subjects that participated in the study (n= 620)

Variables	BMI (KG/M ²)	Frequency	Percentages
Underweight (less than 18.5kg/m ²)		8	1.3
Normal weight (18.5- 24.9kg/m ²)		376	60.6
Overweight (25-29.9kg/m ²)		105	16.9
Obese class 1 (30-34.9kg/m ²)		113	18.2
Obese class 11 (35.0-39.9kg/m ²)		11	1.8
Obese class 111 (40 and above)		7	1.1
Total		620	100
	Age		
17-21 years		196	31.6
22-26 years		263	42.4
27-31 years		132	21.3
32-36 years		29	4.7
Total		620	100
	Sex		
Male		200	32.3
Female		420	67.7
Total		620	100
	Marital status		
Single		602	97.1
Married		18	2.9
Total		620	100

Table 2: Feeding pattern and sources of food of obese undergraduate students that participated in the study (n=131)

Feeding pattern	Daily		Occasionally		Never	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Breakfast	85	64.9	31	23.7	15	11.5
Lunch	82	62.6	44	33.6	5	3.8
Supper	84	64.1	38	29.0	9	6.9
Snacks	44	33.6	76	58.0	11	8.4
Participants source of food						
Food cooked by self			61			46.6
Food bought			65			49.6
Purchase and self cooked			5			3.8
Total			131			100

A cross sectional study was carried out using a structured and validated questionnaires to elicit information on food consumption pattern, physical activity level of the subjects and the health status of the participants. The study was for a period of one year and the BMI of the subjects was calculated by measuring the weight (kg) and the height (m), the weight was divided by the value of the height squared (weight/height²)

Data Analysis: The subjects responses were coded, calculated and analyzed using SPSS (statistical package for social sciences). Frequency distribution means and percentages were computed. Cross tabulation was used to compare two variables.

RESULTS

The results in Table 1 showed general and background information of all the subjects that participated in the study. Table 2 showed the feeding pattern and the sources of food of the participants. This table reveal that a great percentage of the participants skip one type of meal. Table 2 showed the feeding pattern and the sources of food of the participants. This table revealed that a great percentage of the participants skip one type of meal.

Table 3 showed that a high percentage (73.7%) of the participants consumes fruits and vegetable occasionally or never.

A 24 hour dietary recall of the participants showed that their diet was mostly yam, indomie noodles, rice, bread and butter, meat pie, biscuits, roasted groundnuts and popcorn. Factors considered in food choice were taste and easy to cook foods. The result on the duration of the physical activity level of the respondents showed that 31 % of the respondents occasionally exercise; a large percentage (34.5%) exercise for 30 minutes; 46.7 % indicated that they do not engage in physical due to body pains, 40% due to lack of time,13.3% due to laziness (Table 4). The health status of the subjects is shown in Table 5.

Using cross tabulation it was revealed that more female respondents (52.7% and 4.6%) had class 1 obesity (BMI 30 - 34.9) and class 2 obesity BMI (35 - 39.9) respectively. This was compared to the male participants that showed that 33.6% had class 1 obesity while 3.8% had class 2 obesity. A high percentage of subjects (54.2%, 59.5%) with class 1 obesity occasionally consume fruits and vegetables respectively (Table 6).

Table 3: Fruits and vegetable consumption pattern of obese subjects that participated in the study (n=131)

Fruits consumption pattern	Frequency	Percentage
Everyday	37	28.2
Occasionally	78	59.5
Never	16	12.2
Total	131	100
Vegetable consumption pattern		
Daily	35	26.7
Occasionally	91	69.5
Never	5	3.8
Total	131	100

Table 4: Physical activities of the respondents that participated in each activity and time spent in exercise (n=131)

Type of Exercise	Frequency	Percentages
Long trekking	33	25.2
Jogging	36	22.9
Indoor exercise	28	21.4
All of the above	12	9.2
Others (basket ball, foot ball, volley ball, running)	13	9.9
None	15	11.5
Total	131	100
Time spent in exercise		
20 minutes	50	43
30 minutes	40	34.5
50 minutes	10	8.6
1 hour	6	5.2
Time varies	10	8.6
Total	116	100
Total	116	100

Table 5: Health status of obese respondents that took part in the study (n=131)

Disease conditions	Frequency	Percentages
Cardiovascular disease	8	6.1
Gall bladder disease	5	3.8
Diabetes	3	2.3
Other illnesses (ulcer, stomach ach, irregular menstruation, fever, Hypertension and frequent infection)	68	51.9
None	49	35.9
Total	131	100

DISUSSION

Our study showed that a greater percentage (13.1%) of the female undergraduates were obese compared to 8.15% of the male. This was in line with Monteriro *et al.* (2004) which showed that there were more obese women in thirty seven developing countries of which eight were West African countries. Thiam *et al.* (2006) also showed that a greater percentage of the adult women in West Africa are either overweight or obese.

The majority of the participants who were obese were unmarried (97.1%). Most of these subjects (74%) were between the ages of 17years and 26years. Forty-nine percent of the subjects purchased foods from commercial eating houses within the campus. In both developing and developed

countries of the world, there is an epidemic of obesity that is affecting the health and well being of millions of young adults world wide (SCN, 2006). There are many reasons for this, most importantly, is the high levels of commercial marketing of energy-dense, nutrient-poor foods that are specifically targeted to young adults (SCN, 2006). These are the type of foods available in most of the eating houses within the campus. This type of marketing strategy contributes to unhealthy diet that promotes obesity in young people. It also undermines the healthy eating messages in the dietary guidelines of every country and contrary to the objectives of the World Health Organization (WHO) global strategy on diet, physical activity and health (SCN, 2006).

The decreased level of activity and limited duration of time spent in exercise by the participants was contrary to WHO/FAO (2003). The recommendation is to increase physical activity and inclusion of endurance activity at moderate to great level of intensity 3 – 4 times per week. This will to prevent obesity and prevent development of some chronic diseases. Changes in life style and low physical activity in developing societies is a predisposing factor for adult weight increase and prevention of obesity is an important Public Health issue (Paknahad *et al.* 2008). The result of the study showed that (6.1%) of participants had CVD, 3.8% had diabetes and 51.9% suffer from other diseases which include hypertension. WHO estimated that CVD is the leading cause of deaths from chronic disease and it accounts for 10% of all deaths (SCN, 2006). In West Africa, there has been an increase in the prevalence of some CVD risk factors, particularly hypertension. Lisk *et al.* (1999) revealed in their study in rural Sierra Leone, an increase in the rate of high blood pressure. The study showed that there is 18% and 22% increase in blood pressure in men and women older than 15years. Astagneau *et al.* (2006) and Kane *et al.* (1998) have shown that 10-20% of the populations over 15 years of age are hypertensive. Risk factors among West African populations have been identified as age, obesity, high consumption of salt and being female (Cooper *et al.* 1997; Amoah *et al.* 2002).

Conclusion: The primary cause of obesity is an imbalance between energy intake and energy output leading to an accumulation of body fat (SCN, 2006). WHO/FAO (2003) made the following recommendations for the prevention of obesity which include, that the median BMI of adult population should be in the range of 21 – 23. At individual level BMI should be within 18.5 – 24. Excessive weight gain of more than 5kg should be avoided. Increase in physical activity at least for one hour daily 3-5days per week. A reduced intake of food high in fat and/or sugar and increased in take of low energy foods such as fruits and vegetables and whole grain cereals high in fibre and water are recommended. Based on the findings of this study nutrition education is highly important on the right choice of food, importance of regular exercise, increase consumption of fruits and

Table 6: Cross tabulation of obese subjects in relation to sex and BMI , fruits and vegetable consumption

Parameters	Class 1 BMI 30 - 34.9		Class of obesity Class 11 BMI 35 - 39.9		Class 111 BMI 40 and above		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Sex								
Male	44	33.6	5	3.8	1	0.8	50	38.2
Female	69	52.7	6	4.6	6	4.6	81	61.8
Total	113	86.3	11	8.4	7	5.3	131	100
Fruits consumption								
Everyday	30	22.9	7	5.3	0	0	37	28.2
Occasionally	71	54.2	3	2.3	4	3.1	78	59.5
Never	12	9.2	1	0.8	3	2.3	16	12.2
Total	113	86.3	11	8.4	7	5.3	131	100
Vegetable consumption								
Everyday	31	23.7	4	3.5	0	0	35	26.7
Occasionally	78	59.5	6	4.7	7	5.3	91	69.5
Never	4	3.1	1	0.8	0	0	5	3.8
Total	113	86.3	11	9.0	7	5.3	131	100

vegetables and regular medical checkups to reduce the risk of chronic diseases.

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