

**PREVALENCE AND ASSESSMENT OF OVERWEIGHT AND OBESITY FACTORS IN ADULT
POPULATION RESIDENT IN UYO METROPOLIS - NIGERIA**

Ekpenyong, C. E., Akpan, U. P., Nyebuk E. Daniel and John O. Ibu
Department of Physiology
College of Health Science, University of Uyo, Akwa Ibom State, Nigeria

ABSTRACT

Obesity has become one of the major health care problems in Uyo metropolis, Akwa Ibom State, South Eastern Nigeria for the past few years. This followed the rapid human and infrastructural development witnessed within this period. To determine the prevalence of obesity in Uyo Metropolis and to assess possible associated factors, a multistage stratified cluster sampling of 3500 subjects from their different conveying centers, (1532 men and 1968 women) aged between 18 and 60 years, living within the metropolis were investigated using some anthropometric indices measures. We followed the standard from WHO Technical report series - 854 on physical status 1995. The crude prevalence of overweight and obesity in Uyo metropolis were 20.9% and 7.8% respectively. 21.9% and 8% for men and 20.2% and 7.7% for women. Overweight and obesity were higher in males than females, individuals with poor dietary habit, high social class, middle aged (36 – 45 years), stopped smoking, currently drinking and physically inactive. Therefore, the significant factors associated with newly diagnosed obesity were: Age, Sex, Eating habit, Social Class, Physical activity status, smoking and drinking habit.

Keywords: Prevalence, Obesity factors, Adults, Uyo, Nigeria

INTRODUCTION

Obesity rate is escalating everywhere, currently there are more than 1 billion overweight adults and at least 300,000 of them are clinically obese. Most of them are suffering from weight related illnesses like diabetes mellitus, hypertension, heart disease and sleeping disorders (Ania 2004, WHO 2004). The spread of obesity is faster in developing countries of the world including Nigeria (Popkin 2002). It has reached an epidemic proportion both in adults and children. It affects more people than malnutrition and hunger (Flegal et al, 2002, WHO 2004). At an individual level, this rapid upsurge in overweight and obesity spread is fueled by a number of factors such as: sedentary life style, poor dietary habit, smoking, genetic, drugs, alcoholism and social factors. At the societal level, the increase is blamed on Westernized life style. Combination of these factors therefore results in a more rapid increase in prevalence of obesity, more than the influence of a single factor (WHO 2000). Records have shown that, extensive research have been carried out on obesity in different parts of the world mainly developed nations, but there has not been enough research involving a considerable sample of the third world nations (WHO 2004), and even less so in Nigeria. It has therefore become an absolute necessity that critical assessment of the prevalence as well as associated obesity factors in adult Nigerians resident in Uyo metropolis, Akwa Ibom State be carried out. This is timely as the state is now witnessing intensive rapid human and infrastructural development, with a concomitant nutritional transition, more fast food points, less space and time for exercise, less labour intensive jobs and the flare for western life style. It is important that developing countries especially those in rapid transitions such as Nigeria make immediate efforts to collect data on the prevalence of obesity in their populations and then set goals or targets to reduce its prevalence (Sharda et al 2002). This work therefore was aimed at reporting the prevalence and associated factors of obesity in adult Nigerian population resident in Uyo metropolis.

METHODS:

Study Population and Sampling Methods: A total of 3500 participants ages between 18 and 60 years took part in this study. 1532 (43.77%) were males while 1968 (56.23%) were females. They were selected by a multistage stratified cluster sampling design from their various converging centers within Uyo metropolis. Informed consent was obtained from each participant, and the study protocol was approved by the University of Uyo medical research and ethics committee. Exclusion criteria were: individuals < 18 years or >60 years, athletes, pregnant women and physically deformed.

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A semi structured questionnaire was the instrument of survey. These were distributed to the participants by a member of the study group for them to fill out. The questionnaire seeks to elicit information on the following areas: Socio-demographic data (age, sex, marital status, ethnicity, and educational level), dietary habit, smoking status, physical activity status (at work and leisure time physical activity), family history and use of alcohol.

Measurement of Anthropometric Variables: Another instrument of assessment employed in this study was the measurement of their anthropometric variables by a member of the study group using the standard from WHO technical report series – 854 on physical status 1995. These include: measurement of weight in Kilogram to the nearest 0.1kg using weighing scale (seca model, Germany) and ensuring that the individual wears light clothing and without shoes. Height was measured to the nearest centimeter using stadiometer. Waist circumference (WC) was measured using a non – stretchable measuring tape while the subject stood in erect posture. Measurement was taken at a point midway between the umbilicus and pubic symphysis. Hip circumference was measured to the nearest 0.1cm using bicep muscles. These measurements were taken two times each, and the average was used for data computation. BMI was computed using the standard formula of weight (Kg)/height (M²). We used BMI 18.5 – 24.99 as normal, 25 – 29.99 for overweight and ≥ 30 kg as obese. For WC, ≥ 88 cm for female and ≥ 102 cm for male were regarded as abdominal obesity while WC of ≥ 80 cm for female and ≥ 94 cm for males were regarded as abdominal overweight. For the dietary habit assessment, participants were grouped into two groups: good and poor dietary habit based on daily food intake, portion size, food types, and frequency of fast food intake, alcohol intake, sweetened diets, fruits juice and vegetable consumption. Socio economic status was assessed based on area of residence, marital status, educational level and household income. Physical activity status was classified as: physically active and physically inactive while smoking status was grouped into: never smoked, currently smoking and stopped smoking. For most age related comparison, participants were separated into four groups (18 – 35, 36 – 45, 46 – 55, ≥ 56). Drinking habit status was assessed by alcohol consumption (in grams of alcohol) which was defined as the weekly consumption of beer, wine and hard liquor. Current drinking was defined as alcohol consumption ≥ 8 g/week (Xingang et al 2008).

Statistical Analysis

Frequencies and simple percentages were computed to determine the prevalence of overweight and obesity among the study subjects. Also, prevalence of overweight and obesity was computed for males and females and their association tested using Chi-square test. Furthermore, the multiple logistic regression model was applied to test the contribution of various associated factors of obesity. Based on this model, the odd ratio and 95% C.I of the odd ratio was estimated. For all statistical analysis performed P <0.05 were considered to be statistically significant. All statistical computations were performed with statistical package for social sciences (SPSS) version 17.0.

RESULTS

Results of data collected using 3,500 randomly selected adult Nigerians residing in Uyo metropolis Akwa Ibom state, showed that 1532 (43.77%) were males and 1968 (56.23%) were females. Overall prevalence of overweight and obesity were 20.9% and 7.8% respectively. It was 21.9% and 8.0% in males and 20.2% and 7.7% in females respectively.

Moreover, association between incidence of obesity and overweight with sex, physical activity, dietary habit, genetic factor, drinking habit, smoking habit, social class and age as an associated factors of obesity showed that males had a greater risk of developing obesity (OR = 1.299) as compared to females.

Participants who were active in physical activity had less risk of being obese as compared to those who were inactive. Poor dietary habit was also investigated to increase chances of developing obesity (OR = 2.826).

Moreover, those with higher Education certificate were also at a higher risk of developing obesity (OR = 5.613). Those that stopped smoking and currently drinking also had a higher chances of being obese compared to those who are still or never smoke.

Finally, physical activity, dietary habit, social class, smoking habit and drinking habit showed a significant prediction of obesity (P<0.05).

Table 1. Prevalence of Obesity

Body Mass index	Frequency and Percentages
Underweight	175 (5.0%)
Normal weight	2319 (66.3%)
Overweight	732 (20.9%)
Obese	274 (7.8%)

Table 2: Prevalence in Relation to Sex

Body Mass Index	Sex		
	Male	Female	Total
Underweight	67 (44%)	108 (5.5%)	175
Normal weight	1007 (65.7%)	1312 (66.7%)	2319
Overweight	335 (21.9%)	397 (20.2%)	732
Obese	123 (8.0%)	151 (7.7%)	274
Total	1532	1968	3500

χ^2 calculated = 3.575, $P > 0.05$ not significant

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Table 3: Association between obesity/overweight and confounding factors.

VARIABLE	OR	95% C.I	P - Value
Sex			
Female	1.0 (reference)		
Male	1.299	0.882 – 1.914	0.186
Physical Activity			
Inactive	1.00 (reference)		
Active	0.598	0.405 – 0.882	0.010
Dietary Habit			
Good	1.00 (reference)		
Poor	2.826	1.873 – 4.265	P<0.001
Social Class			
No formal education	1.00 (reference)		
Primary School	1.624	1.055 – 2.500	0.027
SSCE	4.192	2.319 – 7.578	0.010
Higher Education	5.613	1.524 – 20.680	0.010
Age			
18 – 35	1.00 (reference)		
36 – 45	1.752	0.892 – 3.524	0.115
46 – 55	0.297	0.141 – 0.626	0.001
≥ 56	0.230	0.102 – 0.518	P<0.001
Smoking Habit			
Never smoke	1.00 (reference)		
Stopped smoking	13.388	2.843 – 63.005	0.001
Still smoking	2.830	1.40 – 5.203	0.001
Drinking Habit			
Never	1.00 (reference)		
Still	2.750	1.524 – 4.260	0.002
stop	3.520	1.205 – 7.82	0.004

DISCUSSION

The prevalence of obesity varies from one population to another, and from one race to another, this variation still exists throughout the world. Great variation occurs in different groups within a given country, even a small country as one ethnic group mixes or not with another. This demonstrates the multi factorial aetiology of obesity. From individuals' life style (eating, drinking, smoking habit) physical inactivity, culture environment, genetic to socio demographic variables (age, sex, marital status and educational levels). The role of each of these factors varies from one race, ethnic group and environment to the other.

In this study, which was carried out within Uyo metropolis, Akwa Ibom State, the overall prevalence of overweight and obesity were 20.9% and 7.8% respectively. Prevalence by gender was 21.9% and 8.0% of overweight and obesity among males and 20.2% and 7.7% among females respectively. These values are comparatively lower than values in other part of Nigeria. In Zaria the prevalence is 29.6%, higher in females with (16.1%) than males with 13.5%. In Jos, prevalence is 21.4%, more in females with 23.5% than in males with 19.4%. In Ile – Ife prevalence is 23.3% for males and 16.4% for females (Puepet et al 2002).

Values obtained from our studies agreed with the overall prevalence in Nigeria, which was put at between 6 and 8% (Arnie, 2004). Male – female prevalence in our study also showed a surprising result, though the gender prevalence is similar in pattern to that found in Ile – Ife, with more obese men than women (8 and 7.7%), most other studies within and outside Nigeria showed more obese women than men.

In Ghana, female–male prevalence was 23.0% and 14.1% (Adedoyin, et al 2009). In South Africa, one in three adults is overweight or obese. These are same levels as in the United State (Thandi, et al 2002). In Morocco, 40% of the populations are overweight while in Kenya, it's 12%. These values are higher than values obtained in our study with 20.2% overweight and 7.8% obese (Arnie 2004). In Tunisia, and other countries mentioned above, obesity was significantly higher in women than men. The prevalence among women was even tripled over the past 20 years. Half of the women are overweight or obese with 50.9% in Tunisia and 51.3% in Morocco (Aoyagi et al 2006).

A similar pattern of obesity explosion is observed in other continents. About 25% of people living in Middle East are obese or overweight. Similar to the findings in our study, prevalence of obesity in Japan was found to be higher among men than women (Aoyagi et al 2006).

The differences in life style and socio demographic variables, as well as genetic or behavioral factors could explain the observed sex differences (Xingang et al 2008). Also it could be interpreted that most women in this study belong to the group of women who are very conscious of their weight and shape. This assertion therefore agrees with the work of Kumanyiku and colleagues who reported that overweight black women are weight conscious (Kumanyiku et al 2003). However this disagrees with the work of Ntui (2000), who reported that most of the obese black women see their excess fat as evidence of good living.

Again, our study has shown that age, physical activity, dietary habit, smoking status, social class were associated factors of overweight and obesity. Highest prevalence rate of obesity was found within the age bracket of 36 – 45 years. In Europe, overweight and obesity was predominating within the age group of 35 – 64 years (WHO Monica Study 1989). The wider age bracket in Europe compared to that in our study could have been favored by a better standard of living and environment.

Increase physical activity has been found by researchers to combat overweight and obesity even in a genetically predisposed individuals especially when combine with diet. Caterson in his study observed that when exercise alone was used in their weight controlling programmes not much weight loss was achieved, but when combined with regulated dietary intake and life style adjustment, a remarkable weight was loss, alteration in the body fat composition were also enhanced and muscle mass increased (Caterson,1998). In our study, the physically inactive participants had higher odds of overweight and obesity than the physically active one. Again Hattingh and Colleagues observed in their study of anthropometric and biochemical profiles of black South African women that, almost all the women that participated in that study had a fat percentage higher than recommended value. That observation correlated significantly with the women's low level of physical activity, consumption of a high energy diet and a higher macronutrient intake (Hattingh et al 2006) and most of them were full time house wives as authorized by their culture. Therefore more obese men than women in our study could mean that, women in this part of Nigeria are more physically active than their male counterparts especially as agriculture is the main occupation in this area.

Ogunjimi and Colleagues in their study of the prevalence of overweight and obesity among nurses in Akwa Ibom State, Nigeria demonstrated a significant relationship between eating habit and their obesity level. That study indicated that, the more indiscriminate the eating habit of the nurses, the more obese they become (Ogunjimi et al 2010). In our study poor eating habit was strongly associated with obesity. We also found that higher levels of education have the risk of gaining weight. This is in agreement with findings by Lamez and colleagues who demonstrated that parent's education level was strongly associated with children's obesity (Lamez et al 2005).

Smoking status of participants was also significant in obesity. Those who stopped smoking 1 – 3 months prior to the survey added more weight than current or never smoked. This inverse relationship between smoking and obesity has been documented severally (Khosia 1971).

CONCLUSION:

The prevalence of overweight in this study was high, while that of obesity was not as high as that observed in other parts of Nigeria, and outside Nigeria. This could have been due to the effort of the state government who has instituted a mandatory monthly exercise for workers in the state service and has mounted a lot of enlightenment campaigns and workshops all in attempt to curb the menace of obesity. However a lot still has to be done since the high rate of overweight will culminate in a higher rate of obesity and its associated complications in future. Effort should therefore be directed more to the associated factors as detected in this survey.

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