Prevalence of Obesity amongst Staff and Students of a Tertiary Institution in Nigeria

Utoo Priscilla Mwuese¹, Okpara Ihunanya Chinyere²

Department of Community Medicine, P. M. B. 102119, Benue State University, Makurdi, Nigeria.

Department of Internal Medicine, P. M. B. 102119, Benue State University, Makurdi, Nigeria.

Abstract:
Background: Obesity and overweight have reached epidemic levels in developed countries and the prevalence is rising in developing nations. This study seeks to determine the prevalence of obesity in a tertiary institution in Nigeria and its association with socio-demographic factors.

Method: In a cross-sectional survey, by a cluster sampling method, 471 subjects were selected between the ages of 16 – 68 years. A structured questionnaire was used to collect socio-demographic data. The body weight (kg) and height (m) of subjects were measured and the body mass index (BMI) calculated.

Results: The prevalence of obesity was 9.1% and that of overweight was 26.2%. Obesity was significantly associated with female gender (χ² = 27.884, p < 0.001); age < 40 years (χ² = 25.915, p < 0.001); being married (χ² = 46.819, p < 0.001) and low socioeconomic status (χ² = 18.314, p = 0.005). Obesity was not significantly associated with educational status (χ² = 5.404, p = 0.145).

Conclusion: The determinants of obesity in this tertiary institution are female sex, young age, marriage and low socioeconomic status.

Key words: Obesity, overweight, prevalence, socio-demographic, tertiary institution.

I. Introduction

Obesity and overweight abnormal are conditions in which weight gain has reached the point where it poses significant risk to health. This excessive fat build up results from an imbalance between calories consumed on one hand and calories expended on the other hand[1]. Obese individuals are therefore predisposed to adverse health conditions such as cardiovascular diseases, type 2 diabetes mellitus, osteoarthritis and cancers[2,3].

The World Health Organisation (WHO) estimated that by 2005, at least 1.6 billion and 400 million people aged above 15 years were overweight and obese respectively. It further projected that by 2015, these statistics will increase to 2.3 billion for overweight and 700 million for obesity unless drastic measures are taken[4]. In Africa, despite a high prevalence of undernutrition, the prevalence of overweight and obesity are increasing at an alarming rate. It is estimated that 25% to 60% of urban women in Africa are overweight[5]. In Nigeria a study carried out in 2008, reported a prevalence of 3.2% for overweight and 0.5% for obesity among adolescents in Osun state[6].

Obesity was previously a problem of high-income countries but is now dramatically on the rise in low and middle income countries, especially in urban settings[7]. The rise in the prevalence of overweight and obesity in these countries results from increased consumption of energy dense foods that are high in fat and sugars. This dietary change is referred to as the nutritional transition[7]. Besides the nutritional transition, obesity is also caused by decreased physical activity because of increasingly sedentary nature of many forms of work and changing methods of transportation and increasing urbanization[8-10].

Obesity may be classified as generalized obesity or central obesity. In adults, the body mass index (BMI) is used as a measure of generalized obesity while waist circumference (WC) and waist to hip ratio are measures of central obesity. The BMI is calculated by dividing the weight in kilograms by the square of the height in meters[11]. The WHO classifies a BMI of 25 kg/m² – 29.9 kg/m² as overweight while that of 30 kg/m² and above is classified as obese[12]. A BMI of 40 kg/m² and above is classified as morbid obesity[12].

The prevalence of overweight and obesity and the comorbidities associated with them are well documented in developed countries. However the same cannot be said of developing countries. Obesity leads to increase in morbidity and mortality worldwide and it is important to have good understanding of the burden and distribution of the disease in our environment. More so it is necessary to assess the prevalence of overweight and obesity in a tertiary institution to see whether the nutritional transition has caught up with them as they are expected to know better than the rest of the society. This study sought to determine the prevalence of overweight and obesity in a tertiary institution in Nigeria and the socio-demographic determinants of obesity in this institution.
II. Materials And Method

In a cross-sectional study of staff and students of the Benue State University aged 16 years and above, subjects were selected for the study between March 2011 and June 2011. The Benue State University is located in Makurdi town which is the most urbanised area in Benue state.

The various departments in the institution were considered as clusters and were subjected to simple random sampling to obtain the sample size.

Each of the subjects gave informed consent in written form before they were used for the study. Ethical approval was obtained from the ethical committee of the Benue State University before the study was carried out. Consented subjects who were pregnant or unwilling to remove their heavy garments for measurements were excluded from the study.

A structured questionnaire designed to obtain information regarding age, sex, marital status, educational level and salary scale was administered to the participants by trained assistants. The body weight was measured to the nearest 0.5kg using a weighing scale with the participants wearing minimal clothing. Height was measured to the nearest 0.5m using a stadiometer. The BMI was calculated by dividing the weight by the square of the height in meters\(^2\). The WHO diagnostic criteria was used in classifying the subjects as overweight and obese\(^{[11]}\).

The data was analysed using the Statistical Packages for Social Sciences (SPSS) version 19 statistical software. For continuous variables, means and standard deviations were calculated and the means compared using the independent samples t test. Cross tabulation was used to calculate prevalent rates and Pearson Chi Square was used to test the association between obesity and socio-demographic factors. Values of \(p < 0.05\) were considered statistically significant.

III. Results

3.1 Demographic characteristics of the study population.

There were a total of 471 participants in the study aged 16 – 68 years. Males were 315 in number while females were 156 in number. The mean age of the population was 28.65 ± 9.10 years. The mean age of the males was 28.83 ± 9.38 years while that of the females was 28.30 ± 8.53 years. With respect to gender, there was no significant difference in the mean age or weight of the participants. However there was a significant difference in the mean height and BMI of males versus females. Males were significantly taller than females (\(p = 0.010\)), while females had significantly higher BMI (\(p = 0.001\)) than males. The majority of the study population were ≤ 35 years (n = 374). These are shown in TABLE 1 and fig. 1.

3.2 Prevalence of obesity and overweight in the study population

The prevalence of overweight was 26.2% and that of obesity was 9.1%. Obesity was more prevalent in females than males with rates of 16.1% versus 5.7% respectively (\(p < 0.001\)). The distribution of BMI in the study population was as follows: 1.7% were underweight, 63.0% had normal BMI, 26.2% were overweight and 9.1% were obese. This is shown in TABLE 2. The prevalence of obesity peaked in the 26 – 35 age group and that of overweight peaked in the 16 – 25 age group. This is shown in fig. 2.

3.3 Association with socio-demographic factors

Obesity was significantly associated with young age. It occurred more in the younger age group that were less than 40 years than in older age group of greater than or equal to 40 years (\(\chi^2 = 9.141, p = 0.002\)). It was significantly associated with female sex (\(\chi^2 = 27.884, p < 0.001\)); being married (\(\chi^2 = 46.819, p < 0.001\)); low socio-economic status (\(\chi^2 = 18.314, p = 0.005\)). It was not significantly associated with educational status (\(\chi^2 = 5.404, p = 0.145\)).

IV. Discussion

The prevalence of obesity in this study was 9.1% and that of overweight was 26.2%. It was more prevalent in females than males and also more prevalent in the younger age group than the older age group.

The obesity prevalence of 9.1% in this study is close to the 9.3% reported in Tanzania but higher than the 4.2% reported in a study done 6 years ago in Jos Nigeria. It is also higher than 7.2% in Nepal in Asia. However less than 16.4% in Australia and 34% in the United States of America (USA)\(^{[13-16]}\).

The prevalence of obesity in our study was low compared to developed and high income countries. This is probably because the majority of the population consisted of young people and mainly students, less than or equal to 35 years who are usually trekking to their destination reducing the use of transport system and sedentary lifestyle. Students are usually physically active.

The male prevalence of obesity was 5.1% and the female prevalence was 16.1% and the difference was statistically significant. This female predominance agrees with studies from other developing nations like Iran, Tanzania, and Mauritius. Both sexes were almost equally affected in England, Germany and USA but in
Australia, Italy and Nepal, there was male predominance. In Nigeria, this female predominance agrees with the findings in Port Harcourt, and Ibadan. This may be related to gender differences in metabolism and hormonal balance. Besides students are increasingly susceptible to weight gain because they are less likely to engage in regular sporting activities partly due to lack of facilities that are gender sensitive. Also culturally females are constrained to taking care of domestic chores after school hours. Females are less likely to take a walk to their destination, preferring to be conveyed in vehicles.

The prevalence of obesity was more in the younger age group than in the older age group and the difference was statistically significant. Again this is likely due to the age distribution of the population as shown in fig. 1. The majority of the population is between 16 – 35 years. This finding agrees with those of a study done at Ilorin Nigeria where the prevalence of obesity peaked in the 30 – 39 age group. Our study showed a peak in the 26 – 35 age group (fig. 2). This may be an alert that young people are becoming obese and at older ages may become morbidly obese if not controlled. This may be a feature of the nutritional transition. Early education of young people especially those in their teens and twenties about risk factors for obesity and its complications, will delay the onset of obesity. Obesity in childhood is frequently associated with cardiovascular disease risk factors such as dyslipidemia, hypertension, increase in left ventricular mass and type 2 diabetes mellitus.

Our study showed that obesity was more prevalent in those with tertiary education or in a tertiary institution. This was because the study was carried out in a tertiary institution. This pattern differs from findings in some studies done in Australia and Spain. Obesity was also associated with low socio economic status and this finding agrees with other studies done in South Africa and Mexico.

Obesity was significantly associated with being married. Most females marry between the ages of 26 – 35 years during which we had the peak prevalence of obesity. This is probably because married people eat a lot in the process of cooking for their husbands and are less likely to engage in sporting activities or take a walk.

V. Conclusion

The prevalence of obesity was 9.1% and that of overweight was 26.2%. The socio-demographic determinants of obesity in this study were female sex, age < 40 years, low socioeconomic status and marriage. These determinants should form the areas of focus for interventional measures such as health education and exercises to reduce the prevalence of obesity in tertiary institutions.

Limitations

Obesity was only assessed by body mass index alone.

References


www.iosrjournals.org 26 | Page
Prevalence Of Obesity Amongst Staff And Students Of A Tertiary Institution In Nigeria


Table 1 – Demographic characteristics of the study population

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male n = 315 Mean (SD)</th>
<th>Female n =156 Mean (SD)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age(years)</td>
<td>28.83(9.38)</td>
<td>28.30(8.53)</td>
<td>0.60</td>
<td>0.551</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>67.76(10.77)</td>
<td>66.03(13.35)</td>
<td>1.51</td>
<td>0.131</td>
</tr>
<tr>
<td>Height (m)</td>
<td>1.69(0.08)</td>
<td>1.64(0.33)</td>
<td>2.59</td>
<td>0.010*</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.85(3.39)</td>
<td>25.17(4.60)</td>
<td>-3.50</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

* = statistically significant

Figure 1 – Age distribution of the study population

Table 2 - The distribution of body mass index in the study population

<table>
<thead>
<tr>
<th>Classification</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>8</td>
<td>1.7</td>
</tr>
<tr>
<td>Normal</td>
<td>296</td>
<td>63.0</td>
</tr>
<tr>
<td>Overweight</td>
<td>124</td>
<td>26.2</td>
</tr>
<tr>
<td>Obese</td>
<td>43</td>
<td>9.1</td>
</tr>
<tr>
<td>Total</td>
<td>471</td>
<td>100</td>
</tr>
</tbody>
</table>

www.iosrjournals.org 27 | Page
Figure 2 – Prevalence of overweight and obesity by age group