

Comparative Analysis of Body Mass Index of Male and Female Secondary School Students in Edo South, Edo State

By

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Abstract

This paper examined and compares anthropometric index using Body Mass Index of male and female secondary school students in Edo South in Nigeria. The population for the study comprised all senior secondary school students in public secondary schools in Edo South. The sample size for the study consisted of two hundred students using random sampling techniques to select five schools. 40 students from each school making a total number of two hundred students were utilized for the study. The instrument used for the study was Body Mass Index. It was used to determine the Nutritional status of the students. Student's Height and Weight were measured according to established standards. The findings shows that male and female students have equal numbers of normal weight, Male students have more underweight while female students have more over weight than male students. It was recommended among others that Government should provide a programme to enlighten the population on the implication of over Weight, under Weight obesity, and the importance of keeping normal weight.

Keywords: Anthropometry – Body Index –Adolescent – normal weight –overweight – normal weight.

Introduction

Anthropometry is the study and technique of taking body measurements, Anthropometric evaluation is inexpensive, non-invasive and provides detailed information on the different components of body structure, especially muscular and fat components. It assists in assessing the nutritional status of a population, (Sanchez – Garcia, Garcia – pefia, Duque-Lopez, Juarez-cedilkio, Wunez, & Revesbeaman, 2007).

Anthropometric measurements are combined with each other or with other data to calculate anthropometric indices Anthropometric measurements include body height, body weight, hip

circumference, waist – to hip, triceps or skin fold thickness, scapular skin fold thickness and wrist girth. The most common indices used include height –for- age, weight-for - age, weight-for- height. Most emergency nutrition surveys measure sex, heights, weight and age. (Chuang & Pam, 2009). The use of anthropometry requires two essential items, an anthropometric indicator which is also called an anthropometric index and cut-off point. Anthropometric index is a measurement or measurements with additional data such as age. Cut off points for anthropometric indices can be determined statistically when measured child is compared to the reference population (Woodruff & Duffild, 2000). The basic anthropometric measurements are, simple, straight forward, inexpensive and safe – Anyone can do them for growth and research purposes, weight and height are measured, for clinical work, other measurements such as urine test, blood test are made (Trust well, 2007). Body Mass Index is the number calculated from height and weight to investigate weight problem. Body Mass Index is a tool used for nutritional assessment. World Health Organization (WHO, 2007)

BMI provide a simple numeric measure of a person's fatness or thinness, allowing health professionals to discuss over and under height weight problems, more objectively with their patients. The higher the BMI, the higher the risk of certain diseases, such as heart disease, high blood pressure, type 2 diabetics, gallstones, breathing problems and certain cancers (Woodruff and Dufield, 2000). BMI number is plotted on the BMI for-age growth charts for either boys or girls to obtain a percentile ranking. BMI is calculated for teens and children and classified their nutritional status as normal weight, underweight, over weight and Obese (Kuczmarsk; 2001).

The calculated BMI and the age are related to the World Health Organization (WHO) recommended percentile chart because adolescent are still growing. The BMI from age percentile is used to interpret the BMI number because it includes both sex and age specifics for teenagers and children which are not the same used to interpret BMI for adults. BMI for adult do not take sex or age into consideration (Maruf, Akinpelu, Aronu & Akinpelu, 2011).

Sex and age are considered for teens and children due to the amount of body fat which is different between boys and girls, also the amount of body fat changes with age, when BMI – for – age weight status categories and the corresponding percentiles are less than 5th percentiles is under weight, 5th percentiles to less than 85th percentiles is Healthy weight which is also called normal weight, 85th to less than 95th percentiles is overweight, and Equal to or greater than 95th percentiles is Obese (CDC 2012).

Kuan, Ho, Shuhaili, Siti, and Gudum (2011) carried out a research work on gender Differences in Body Mass Index, Body Weight, Perception and weight loss strategies among undergraduates in University Malaysia sarawak. The population consisted of 600 undergraduates (300 males and 300 females) findings showed that 52.8% students had normal Body Mass Index, with approximately an equal number of both sexes. More males than females were overweight (33.7%) while more females were underweight (25.3%).

Rafael and Mikolajczyk (2010) carried out a research work on the relationship between percentage body weight and body mass index based on self –reported height and weight among University students, a cross –sectional study in seven European countries. The findings showed that majority of the students have a normal BMI (72 – 84%) of males, 65-83% of females), only 32% to 68% of students considered their weight “just right” around 20% of females with BMI of 20 Kg/M² considered themselves a little too fat” or “too fat” below BMI of 22.5kg/M². Male students rarely felt a little “too fat” or too fat below BMI of 22.5 kg/M², but most felt two thin with a BMI of 20kg/M². They found gender differences with regards to perceive weight related to BMI. Female students were more likely than male students to perceive themselves as “too fat”, while male students were more likely to perceive themselves as “too thin”.

Alblooshi, Shaban, Altunaiji, Fares, Alshehhi, Alshehhi, Almazrouei (2016) carried out a research work on increasing obesity rates in school children in United Arab Emirates. The study investigated the prevalence of obesity in 44, 942 students attending governmental schools in Ras Al-khamah. Body Mass Index was calculated. World Health Organization and centers for disease control (CDC) reference methods were used to identify overweight, obesity, and extremely obesity, the findings revealed that BMI 95th percentile 24.3% and BMI 99th percentile, 5.7%. The rate of extremely obesity was 9.6 fold higher in boys than girls.(0.58% vs 0.06%). The result confirmed a steady rise in obesity in children 3 – 18 years, the rising rate of extreme obesity is also alarming especially among boys. Under-weight can result to low immune system, Osteoporosis and general weakness of the body. Therefore, there is need to have adequate knowledge on the important of keeping normal weight.

Diet influences cognition and behavior in a number of ways, these include the condition of not having access to adequate food and insufficient intake of particular nutrients. Diet plays an important role in the life of adolescent. The body changes from childhood to adulthood, the nutrient intake influences mental and physical development. Adolescents that consume the right proportion

of foods both in quality and quantity can be a healthy person. Turconi, Euarcello Maccarrini, Cignoli, Setti, Bazzano & Roggi (2008).

Peer pressure about appearance and body size motivate adolescents a practice which can lead to negative health consequences. Bashour 2004 revealed from his work, that the evidence from studies of the eating habits of young people raises concern about the implication on the future health. Adolescents may not think of the long term consequences of their health practices, rather, they consider only short term consequences.

Varinil (2005) explained that adolescent prefer eating snacks, fast food including food items in advertisement. Many adolescents believed that being fat can affect them socially and damage self- esteem. These lead to many adolescents suffering from health problems. The study investigates the BMI of secondary schools students and comparative between body BMI of boys and girls students. The findings of this study could assist the parents to provide adequate food, both in quality and quantity to their adolescent children, the findings could also assist the adolescent on the improvement of taking healthy foods. Also the study could help the public to know what BMI is, the categories of BMI, and the consequences of not obtaining normal weight.

Purpose of the study

The purpose of the study is to compare the body Mass Index of male and female secondary school students.

Research Question

The research question that guided this study is:

Research Question 1: Is there any difference between the Body Mass Index of male and female secondary school students?

Methodology

The study used survey design. The population for this study comprised all senior secondary school (ss1) students in public secondary schools in Nigeria, in Edo South Senatorial district. The study focused mainly on food and nutrition students in senior secondary school (SSS1). The study focused mainly on food and nutrition students in senior secondary school (SSS1). The total population of students offering food and nutrition in senior secondary school one in Edo South was 8,687.

The sample of this study consisted of eight hundred and seventy students which is 10% of 8,687. Multistage sampling technique was used for the study, stratified random sampling technique was used in selecting schools from location, random sampling technique was used to select six schools, proportional technique were used to select students from each of the selected schools. The instrument used for the study was anthropometric measurement. It was used to measure the student weight and height to determine Body Mass Index of the students. BMI is used to determine nutritional status of the students. Student weight and height were measured according to established standards by World Health Organization (WHO). BMI was calculated as a ratio between weight and height in meters. The calculated BMI and age were related to the World Organization recommended percentile chart to classify the BMI result as normal weight, under -weight, overweight and obesity. The data collection was carried out by the researcher and two research assistants. The instruments were administered within a period of four weeks. The data used for this study was analyzed using T-test.

Is the significant difference in the BMI of male and female Home Economics students in secondary school in Edo state?

Table: t-test of Difference in The BMI of Male and Female, Food and Nutrition Secondary Schools Students in Edo South

Comparism of BMI	N	Mean	Std Dev	t-statistic	Df	P-value	Sig
Male	440	19.23	2,42	-5.157	868	.000	Significant
Female	430	20.19	3.08				

The t-test analysis revealed that there is no significant difference in the BMI of male and female food and nutrition secondary school students in Edo South.

The table 2 shows the T – test analysis of difference in the comparism of body mass index of male and female students secondary students in Edo state. The result shows that t – calculated is -5.157 while the P- value is .000 at 0.05 level of significance is less than t- calculated value of 1.96. Hence, the null hypothesis was rejected.

Discussion of Finding

The table above revealed that there is no significant difference in the BMI of male and female home economics students in secondary schools in Edo state. This study is in line with

pavlovic et al (2018), which carried out a study on the body composition analysis; Differences between students and the trend of their change. The study covered the students of high school in pale, East Sarajevo, (Bosnia and Herzegovina). They found in their study that BMI values of male and female students did not make a significant difference. This study is not in consonance with kuan et al (2011) which carried out research work on gender differences in body mass index, body weight, perception, and weight loss strategies among undergraduates in universities. Their findings revealed that more males than females were overweight while more females were underweight. This study is not in line with the result of Maruf et al (2013) who carried out a study on the influence of gender on prevalence of overweight in Nigerian school children and adolescents. The result revealed that females had significantly higher BMI than males at age groups of 11-18 years. Alblooshi, Shaban, Altunaiji, Fares, Alshehhi, Alshehhi, Almazrouei (2016) findings disagreed with the finding of this study, whose study investigated the prevalence of obesity in 44, 942 students attending governmental schools in Ras Al-khamah. World Health Organization and centers for disease control (CDC) reference methods were used to identify overweight, obesity, and extremely obesity, the findings revealed that BMI 95th percentile 24.3% and BMI 99th percentile, 5.7%. The rate of extremely obesity was 9.6 fold higher in boys than girls. (0.58% vs 0.06%). The result confirmed a steady rise in obesity in children 3 – 18 years, the rising rate of extreme obesity is also alarming especially among boys.

Conclusion

Based on the findings, the study has revealed that there is no significant difference between BMI of male and female secondary school students. Generally from the study some students are categorized under normal weight, overweight, underweight and obesity. Apart from normal weight others are associated with health consequences throughout life time, cardiovascular diseases can occur as a result of overweight and obesity, while underweight can result to low immune system and low performance.

Recommendations

Based on the findings of this study, the following recommendations are made

1. Government should provide more enlightenment on the implication of overweight underweight and Obese. For healthy nation is a wealthy nation.

2. Adequate effort should be made by every individual to keep normal weight.
3. Parents should ensure that every member of the family is well fed. With the right quality and quantity of diets.

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