



Original Research Article

Prevalence of Overweight and Obesity - A Study among First Year Engineering Students in Tamilnadu

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ABSTRACT

Background: Obesity simply means an increase in body weight which reflects increase in the amount of adipose tissue (body fat). Overweight is a pre obese state. Both these conditions are basically due to an imbalance between food intake and the amount of energy consumed. Obesity has been reported to be a major health burden globally.

Methods: This study was conducted among the first year engineering students of a private engineering college in Chennai; a total number of 355 students in the age group of 17 - 19 years took part in this study. Anthropometric measurements were recorded using standard measuring scales and body mass index (BMI) was calculated. Blood pressure was recorded for all study subjects using sphygmomanometer.

Results: Out of 355 students, 69 (19.43%) were found to be overweight, 20 (5.63%) students were found to be Obese. 82 (23.09%) out of the total 355 were also found to be in the underweight category.

Conclusion: One fourth of our study population falling in the pre obese and obese category sends alarming signs of improper and unhealthy feeding habits and more importantly sedentary lifestyle both of which will lead to many morbid conditions. The instant results of this study was in itself an eye opener to our study subjects about their physical health status and it also spread among them an awareness on the benefits of healthy eating habits and doing regular exercise.

Key Words: Obesity, Body mass index, Morbidity.

INTRODUCTION

Obesity has more than doubled worldwide since 1980. In 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 600 million were obese. 39% of adults aged 18 years and over were overweight in 2014, and 13% were obese. ^[1] WHO fact sheet reports that a raised BMI is a major risk factor for non communicable diseases like cardiovascular

diseases, which were the leading cause of death in 2012; diabetes; musculoskeletal disorders especially osteoarthritis; some cancers. The risk for these non communicable diseases increases, with an increase in BMI. ^[1] Studies among university students show high prevalence of overweight and obesity in some of the Asian countries.

MATERIALS AND METHODS

This cross sectional study was conducted in a private engineering college in Chennai on eve of the World Health Day on 4th April 2015. The study sample comprise of 355 students pursuing first year bachelor of engineering. The aim of the study was briefed to all the participants and their consent was obtained. Anthropometric measurements were taken for calculating BMI, using a standardized weighing machine and a height measuring scale. Body mass index was calculated using the subject's weight in kilograms divided by the square of his/her height in meters (kg/m^2). As per the WHO classification (Table 1) a BMI of 30 or more is considered obese, a BMI of 25.0 - 29.9 is considered to be overweight. Blood pressure was measured using a sphygmomanometer in sitting position in left upper arm. Results were tabulated using Microsoft excel sheets and calculations were done.

RESULTS

A total of 355 students participated in the study out of which 249 (70.14%) were male and 106 (29.85%) were female. The mean age of the participant was 18.01years. The mean height in meters and weight in kilograms of the subjects were 1.66 and 60.53 respectively. Gender wise frequency of Age, Height, Weight and BMI are given in Table no.2. Out of the total 355 study subjects, 20 (5.63%) subjects were found to be in obese category, which means 17 (6.82%) male subjects and 3 (2.83%) female subjects were obese among the study participants. 69 (19.43%) subjects come under overweight category i.e., 47 (18.87%) male and 22 (20.75%) females among the total participants were overweight. 82 (23.09%) subjects were also found to be in the underweight category (Fig: 1 and Table: 3). 6 subjects falling under the overweight category recorded a mild increase in systolic

blood pressure, 3 of the normal BMI subjects also recorded a mild rise in their systolic blood pressure.

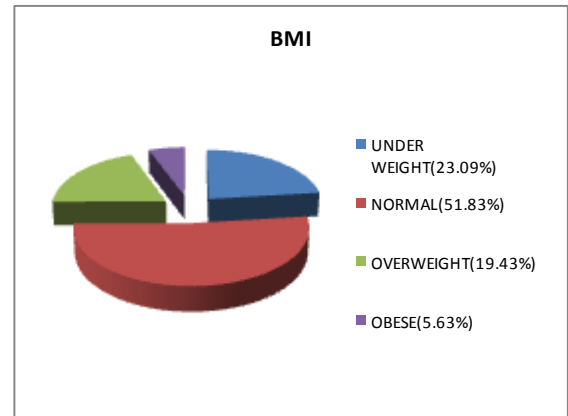


Figure 1: Prevalence of Overweight and Obesity among the study subjects

Table 1: The International Classification of adult underweight, overweight and obesity according to BMI

Classification	BMI(kg/m^2)
Underweight	<18.50
Severe thinness	<16.00
Moderate thinness	16.00 - 16.99
Mild thinness	17.00 - 18.49
Normal range	18.50 - 24.99
Overweight	≥ 25.00
Pre-obese	25.00 - 29.99
Obese	≥ 30.00
Obese class I	30.00 - 34.99
Obese class II	35.00 - 39.99
Obese class III	>40.00

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

Table 2: Gender wise distribution of mean Age, Height, Weight and BMI in our study.

Gender	Age in years	Height in Meters	Weight in Kg.	BMI
Male	18.09	1.70	64.03	22.07
Female	17.83	1.56	52.29	21.35

Table 3: Gender wise prevalence of Obesity, Overweight and Underweight in our study.

BMI Category	Total sample size = 355	
	Male (n=249)	Female (n=106)
Under weight	55 (22.08 %)	27 (25.47%)
Normal	130 (52.20 %)	54 (50.94%)
Over weight	47 (18.87 %)	22 (20.75%)
Obese	17 (6.82 %)	3 (2.83%)

DISCUSSION

The results of our study reveal that 69 (19.43%) subjects were overweight and 20 (5.63%) subjects obese. Obese and pre

obese subjects put together accounts to one fourth of our study population while another quarter falls in the underweight category. Similar results were reported in studies among medical students in Kancheepuram by Kokila Selvaraj et al [2] Jayaraj et al [3] in their study among medical students have reported 31.3% and 6.3% in overweight and obese category respectively. Overweight and obesity were found to be 6.1% and 7.2% respectively in another study by Varadappa ST et al [4] Gupta et al [5] has reported an overall prevalence of 17.5% overweight and 3.4% prevalence of obesity in his study conducted in West Bengal in India among undergraduate medical students while Chhabra et al. [6] in a similar study reported a prevalence of 11.7% overweight and 2% obesity among medical students of Delhi.

Studies by Lim et. al [7] in 2010, estimated overweight and obesity to cause 3.4 million deaths, 3.9% of years of life lost, and 3.8% of disability-adjusted life-years (DALYs) worldwide. A systematic analysis for the Global Burden of Disease. [8] A study in 2013 reports that prevalence of overweight and obesity combined rose by 27.5% for adults and 47.1% for children between 1980 and 2013 worldwide. Physical inactivity and low physical activity accounted for 3.2 million deaths and 2.8% of DALYs in 2010. This substantial increase in the prevalence of overweight and obesity pose a high risk in the development of non communicable diseases among the younger population. Realizing the burden of the disease, obesity is bound to cause; and recognizing the critical importance of reducing unhealthy diet and physical inactivity, the WHO has developed the "Global Action Plan for the prevention and control of non communicable diseases 2013-2020" which aims to achieve the commitments of the UN Political Declaration on non communicable diseases. This action plan aims to build on the WHO

Global Strategy on Diet, Physical Activity and Health.

In the current study, 6 subjects falling under the overweight category recorded a borderline increase in systolic blood pressure, 3 of the normal BMI subjects also showed a borderline rise in their systolic blood pressure. Though this one time recording would not be sufficient to brand them under hypertensive category, proper guidance regarding balanced food intake and regular physical activity were given and were also advised to follow up with their blood pressure monitoring at regular intervals.

CONCLUSION

The results of our study prove beyond doubt that this silent epidemic will have a negative impact on the health of the future generation of our country. The lack of physical activity and a shift towards fast food/junk food culture is the cause for this menace. Our study results were an eye opener to the participants regarding their physical health status and brought in a sense of awareness with regard to the need of regular exercise and a properly balanced diet pattern for better well being of the self and the society. The educational institutions and their governing body can consider incorporating physical activity and/or yoga sessions as part of the curriculum to inculcate the healthy way of living.

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