



To find out the BMI Distribution among the Male Medical Students, to define-Obese and Non-obese

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Abstract

Background: *Obesity in young adults has risen to significant levels globally with serious public health consequences. In addition to cardiovascular, emotional and social issues, it poses a serious hazard to the basic health care delivery system. Unless this epidemic is contained at a war footing, the implications of this global phenomenon on future generations will be serious. The reversibility of this disease with suitable intervention strategies should be seen as an opportunity and efforts pursued with vigour. Also, the medical literature available in the Indian population is limited, only 3 similar studies and died are available in India and only 2 International studies available 1 of West Bank, Libiyal and another of Slovakia to hence the need for the present study arose.*

Study Design: *Cross-sectional and observational study.*

Keywords: *BMI, Male, Obese & Non-Obese.*

Introduction

Obesity is a medical condition in which excess body fat accumulates to the extent that it has an adverse effect on health, leading to reduced life expectancy and/or increased health problems (WHO 2000). It is defined by Body Mass Index (BMI) and further evaluated in terms of fat distribution via the waist-hip ratio and total cardiovascular risk factors (Sweeting, 2007). Body Mass Index (BMI) defines people as underweight when their BMI is <18.5 kg/m, normal weight when BMI is between 18.5 kg/m and 24.9 kg/m, overweight (pre-obese) when their BMI is between 25 kg/m and 30 kg/m', and obese when it is greater than 30 kg/m (WHO, 2000).

BMI provides a simple, convenient measurement of obesity¹The WHO Global Database on Body Mass Index (BMI) was developed as part of WHO's commitment to implementing the recommendations of the WHO Expert Consultation on Obesity: Preventing and Managing the Global Epidemic (Geneva, 3-5 June 1997)⁸", which identified the lack of nationally representative cross-sectional data as an obstacle for facilitating international comparisons of adulthood obesity rates, monitoring the magnitude of the current and future obesity problems, and evaluating the effectiveness of intervention strategies.²

Aims and Objectives

The present study entitled "Comparative study of cardiovascular risk factors -Hypertension and lipid abnormalities, in Obese and Non-obese medical students of Index Medical College, Indore"., has been undertaken with the following aims and objectives:

1.To find out the BMI distribution among the male medical students, to define-Obese and Non-obese.

Material and Methods

The present study entitled "Comparative study of cardiovascular risk factors-Hypertension and lipid abnormalities, in Obese and Non-obese male medical students of Index Medical College, Indore will be conducted in the Department of Physiology, Index Medical College, Hospital and Research Centre, Indore for a duration of six months on young male medical students who are studying in Index Medical College.

Study Design: Cross-sectional and observational study.

Study Population: Male medical students of our institution.

Study Place: Department of Physiology, Index Medical College, Hospital & Research Centre, Indore.

Size of the study population: Approx. 228 male medical students will be included after obtaining their written consent.

Inclusion Criteria

1. All male medical students of age group 18 and above.
2. Who willingly provide their voluntary written consent for participation in the study.

Exclusion Criteria

1.All female medical students. Students with known history of any cardiovascular condition. Students not willing to provide their voluntary written consent.

Methodology

Male medical student filled up a questionnaire recording his age, diet and family history of hypertension. Body weight (to the nearest 0.5 kg) standing motionless, feet 15 cm apart with minimum outwear (as culturally appropriate)and no footwear. Height (to the nearest 0.5 cm)with subject standing erect against a vertical surface with head in Frankfurt Plane. calculate by using the BMI 18.5), Weight and height was measured to calculate Body Mass Index (BMI) by Formula-Weight in KG/(Height in Meter) - using the BMI criteria of WHO2749, the body types were categorized as underweight (BMI <18.5), normal (18.5-24.9), overweight (25.0-29.9) and obese (>30).Blood pressure was measured by Standard mercury Sphygmomanometer and classified as per the Seventh Report of the Joint National Committee where Pre-hypertension is systolic BP (SBP) of 120-139 mmHg or diastolic BP (DBP) of 80-89 mmHg and Hypertension stage 1 is SBP of 140-159 or DBP of 90-99 mmHg. Subjects were informed about the study and their voluntary written consent was taken. Mean BP were computed for weight, height, BMI and blood pressure, data was analysed using chi-square test to find association between hypertension and variables (BMI of <25 & BMI >25, diet – vegetarian and non-vegetarian and presence or absence of family history of hypertension). Those found to be significantly associated with hypertension (P<0.05) were then entered in Multiple logistic regression.

For serum lipid profile, Fasting venous samples were drawn from the antecubital space of the forearm between 9 am to 10 am with subjects being refrained from any consumption of food, alcohol or Caffeine containing beverages for >=12 hrs. Blood was collected in Patho. Laboratory of Index Hospital and Automated analysis was done for Triglyceride (TG),Cholesterol (C),Serum High Density Lipoprotein (S.HDL),Serum Low Density Lipoprotein(S.LDL), Serum Very Low Density Lipoprotein(S.VLDL. Normal values taken as follows TG- <150mg/dl; C- 150-250 mg/dl ;

S.HDL-35-55mg/dl; S.LDL- upto 120 mg/dl;
S.VLDL- more than 40

Statistical Analysis

For the present study, for comparing two variables, students 't' test - unpaired and paired will be used and for finding the association between the variables and hypertension, Pearson's chi-square test²¹ and Multiple Logistic regression will be used. Any additional test as prescribed by the Statistician can be used on requirement or a test may also be changed as per the judgement of the statistician.

Table 01: The Relationship between Obesity with Serum Lipid Level and Blood Pressure

IV	D V	95% CI	P Value
Obesity	Cholesterol	(0.45-0.57)	0.001
	Triglyceride	(0.33-0.54)	0.001
	HDL Cholesterol	(0.38-0.18)	0.001
	SBP	(0.33-0.45)	0.001
	DBP	(0.18-0.36)	0.001

IV= Independent Variable, DV= Dependent Variable, 95% CI=95% Confidence Interval., HDL-Cholesterol= High Density Lipoprotein Cholesterol.

Table shows positive and Significant (p=0.001) relationship of Obesity with Cholesterol, Triglyceride, SBP and DBP but Negative and significant relationship with HDL-cholesterol.

Table-02: The Relationship between Serum Lipid Level and Blood Pressure

IV	D V	95% CI	P Value
Hypertension	Cholesterol	(0.28-0.44)	0
	Triglyceride	(0.40-0.65)	0.001
	HDL Cholesterol	(0.66- 0.29)	0.001

IV- Independent Variable, DV= Dependent Variable, 95% CI=95% Confidence Interval., HDL-Cholesterol= High Density Lipoprotein Cholesterol.

Table shows that Hypertension is Positively and Significantly (p=0.0001 related to Triglyceride Weakly, Significant (p=0) relation with Cholesterol and Negatively and Significantly (p=0.0001 related to HDL-Cholesterol

Discussion

In our study 18.42% students were obese while 69.73% were Non-obese

Quazi Rais Ahmed et al³ in their study found out that 15% of male Medical students were obese Yasin I Tayem⁵ et al² in their study found out that 18.2% students were obese. These results are similar to our study RenuLohitashwa⁴ et al²⁸ in their study found out that 24.4% students were obese These results are higher than our study. **LIFESTYLE** In our study 58.77% students lead a Sedentary life while only 41.22% were Exercising regularly Yasin I Tayem⁵ et al¹²⁷ in their study found out that 56.5% students were leading Sedentary life Quazi Rais³ Ahmed et al¹²⁹ in their study found out that 52.3% lead Sedentary life These results are similar to our study RenuLohitashwa⁴ et al¹²⁸ in their study at Belgam found out that 70.03% students were leading sedentary life. These results are higher than our study. High prevalence of Hypertension and obesity in Belgaum study can be the fact that a much higher percentage(70.03%) of their e leading a sedentary life as compared to our study group explained by the fact the students were leading a **PERSONAL HABITS** In our study 22.8% students were smokers, Quazi Rais Ahmed³ et al in their study found out that 31.3% students were smokers Singh SK⁶ et al in their study "Smoking habits of the medical students found out that 30.7% were smokers. These results are similar to our study "Cardiovascular risk behaviour among students of a Medical College in Delhi found out that prevalence of smoking was 7% These results are less than our study Renu Lohitashwa⁴ et al¹²⁸ in their study at Belgaum found out that 42% were smoking, Yasin T Tayem⁵ et al¹² in their study found out that 42.2% were smokers Results are higher than our study and as smoking leads to deranged Profile, this can explain the high prevalence of hypertension in these Studies as compared to our study. In our study habit of Alcohol consumption was present in 14.03% Quazi Rais Ahmed³ et al. in their study found out that 16.33% consumed.

These results are trends and acceptability Tayem et al in their study found out that 7.38% were consuming Alcohol This result is much result is much less than our study, which can be due to cultural prohibition to Alcohol consumption AMILY HISTORY (of Cardiovascular risk factors) In our study family history of Cardiovascular risk factors was present in 34.64% of students Which is much less than West Bank study of Yasin I Tayem⁵ et al (68.33%) and Belgaum study of Renu Lohitashwa⁴ et al (72.03%) while similar to Bareilly study of Quazi Rais Ahmed³ et al (28%), which can be due to regional eating habits, lifestyle and genetic factors.

Diet

In our study 14.49% vegetarian students were hypertensive while 14.5% Non-vegetarian were hypertensive In Delhi study by 120 15.2% vegetarian and 33.5% Non vegetarian were hypertensive Christopher L Melby⁷ et al in their study "Blood pressure and blood lipids long vegetarian, semi vegetarian and non vegetarian African Americans" und out that 16% vegetarian and 31.1% Non-vegetarian were hypertensive Appleby PN⁸ et al in their study "Hypertension and blood pressure among meat eaters, vegetarian eaters, vegetarians and vegans in EPIC-Oxford" found out that 41.3% Non-vegetarian were hyperter Christopher L⁷ Me population and 31.1% Christopher L Melby⁷ et al in their study found out that 16% vegetarian ton and 31.1% Non-vegetarian population were Hypertensive. These results are study for non-vegetarian and frequency of Its are similar to our study for vegetarians but much more than our on-vegetarians which can be due to Type of meat, portion of meat frequency of having Non-veg diet in Western population

Socioeconomical Status (Ses)

In our study 61.4% students belongs to High SES while 18.4% belonged to Middle SES; these findings are similar to study by Renu Lohitashwa⁴ et al 28 (70.2%) and Tenzing Kyizom 123

(59.8%) These findings associate the eating habits and sedentary lifestyle of affluent class with increasing prevalence of cardiovascular risk factors.

The respective P-values and Odds Ratio for BMI, diet and family history. All three variables were found to be significant after the application of Chi-square test. After applying multiple logistic regression, only BMI & diet was found to be significantly associated with hypertension.

Conclusion

Obesity is a major heal major health hazard all over the world and becoming a major Health threat among both the sexes and all age groups. Substantial proportions of young of adult medical students medical students are pre hypertensive and obese. Our results highlight the necessity to institute effective prevention and the promotion programs targeting younger age groups. In view of the fact at medical students are not representative of the general population, studies should be extended to the young adult population and investigate the presence of obesity and major CVD risk factors and their trends over time. Unhealthy behavioural practices are present and may progress as student advance through medical college. Developing strategies targeting at these risk behaviours and determining factors is necessary to promote healthy life style among medical students. Modifiable cardiovascular risk behaviours are widely prevalent among medical students and increase with years spent in the medical college. Promotion of supportive environment for strengthening student-based approaches and strategic delivery of health education is essential to target these risk behaviours among our future doctors.

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