Original Research Article

An Institutional Based Prospective Study to Evaluate the Correlation of Serum Lipid Profile and BMI in Young First Year MBBS Students

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Abstract

Background: In India, obesity is emerging as an important health problem particularly in urban areas. If the medical students are sensitized early in their courses, it will help them to make healthy choices for themselves, which will also empower them to act as facilitators in influencing community to adopt healthy lifestyles. Hence; the present study was conducted with the aim of evaluating the Correlation of Serum Lipid Profile and BMI in Young First Year MBBS Students.**Materials & Methods:** A total of 100 first year MBBS students were enrolled. Complete demographic details of all the subjects were obtained. All the students were recalled in the morning. Weight and height of all the subjects was assessed and BMI was calculated. Blood samples were collected from the antecubital vein, in the early morning, after a minimum of 12 hours of fasting period, in a supine position. Biochemical analysis Serum cholesterol, (TC) triglycerides (TG), Serum high density lipoprotein (HDL) was measured by Autoanalyzer. All the results were recorded and analyzed by SPSS software. Student t test was used for evaluation of level of significance.**Results:** Mean cholesterol among underweight, normal weight and overweight subjects was 141.5 mg/dL, 151.8 mg/dL and 162.8 mg/dL respectively. Mean LDL among underweight, normal weight and overweight subjects was 83.1 mg/dL, 89.8 mg/dL and 95.4 mg/dL respectively. Mean VLDL among underweight, normal weight and overweight subjects was 14.6 mg/dL, 17.5 mg/dL and 19.2 mg/dL respectively. Mean triglycerides among underweight, normal weight and overweight subjects was 76.5 mg/dL, 83.6 mg/dL and 94.8 mg/dL respectively. Mean HDL among underweight, normal weight and overweight subjects was 49.2 mg/dL, 50.7 mg/dL and 51.2 mg/dL respectively. Lipid profile was significantly raised among overweight subjects. **Conclusion:** Overweight first year MBBS students were associated with deranged lipid profile.

Keywords: Lipid, Overweight, Medical.

Introduction

In India, obesity is emerging as an important health problem particularly in urban areas. The prevalence of obesity is rising to epidemic proportions at an alarming rate in both developed and less developed countries around the world. Almost 30-65% of adult urban Indians are either overweight or obese or have abdominal obesity. The rising prevalence of obesity in India has a direct correlation with the increasing prevalence of obesity-related co-morbidities; hypertension, the metabolic syndrome, dyslipidemia, type 2 diabetes mellitus (T2DM), and cardiovascular disease (CVD). Obesity is defined as an excess accumulation of fat in the body resulting in adverse effects on health of the individual[1-3].Good health is important for all and especially to medical students and healthcare personnel who should be role models in terms of health consciousness and sound life style practices. If the medical students are sensitized early in their courses, it will help them to make healthy choices for themselves, which will also empower them to act as facilitators in influencing community to adopt healthy lifestyles. While medical school lays a firm foundation for the essential knowledge, physicians must possess, it should also inculcate and promote the ideal characteristics of compassion, integrity, empathy, professionalism, and commitment to service and lifelong learning. These qualities will flourish when they receive nourishment from solid mental health[4-6]. Hence; the present study was conducted with the aim of evaluating the Correlation of Serum Lipid Profile and BMI in Young First Year MBBS Students

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Materials & Methods

The present study was conducted in the department of Department of Anatomy and physiology of S. K. Government Medical College, Sikar, Rajasthan, India, with the aim of evaluating the Correlation of Serum Lipid Profile and BMI in Young First Year MBBS Students. A total of 100 first year MBBS students were enrolled. Complete demographic details of all the subjects were obtained. All the students were recalled in the morning. Weight and height of all the subjects was assessed and BMI was calculated. According to BMI, following categories were made: BMI less than 18.5 Kg/m^2- Underweight, BMI 18.5 to 24.9 Kg/m^2- Normal weight, BMI 25 to 29.9 Kg/m^2- Over weight and BMI of more than 30 Kg/m^2- Obese. Blood samples were collected from the antecubital vein, in the early morning, after a minimum of 12 hours of fasting period, in a supine position. Biochemical analysis Serum cholesterol, (TC) triglycerides (TG), Serum high density lipoprotein (HDL) was measured by Autoanalyzer. All the results were recorded and analyzed by SPSS software. Student t test was used for evaluation of level of significance.

Results

Out of 100 subjects, 13 subjects, 58 subjects and 29 subjects were underweight, of normal weight and overweight respectively.

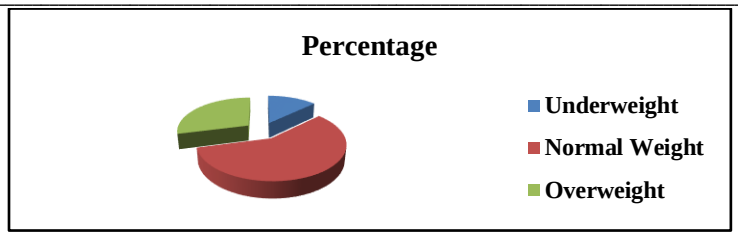

Fig 1: Distribution of subjects according to BMI

Table 1: Correlation of serum lipid profile and BMI

Variable	Underweight	Normal weight	Overweight	p- value
Cholesterol (mg/dL)	141.5	151.8	162.8	0.00*
LDL (mg/dL)	83.1	89.8	95.4	0.58
VLDL (mg/dL)	14.6	17.5	19.2	0.00*
Triglycerides (mg/dL)	76.5	83.6	94.8	0.03*
HDL (mg/dL)	49.2	50.7	51.2	0.69

*: Significant

Mean cholesterol among underweight, normal weight and overweight subjects was 141.5 mg/dL, 151.8 mg/dL and 162.8 mg/dL respectively. Mean LDL among underweight, normal weight and overweight subjects was 83.1 mg/dL, 89.8 mg/dL and 95.4 mg/dL respectively. Mean VLDL among underweight, normal weight and overweight subjects was 14.6 mg/dL, 17.5 mg/dL and 19.2 mg/dL respectively. Mean triglycerides among underweight, normal weight and overweight subjects was 76.5 mg/dL, 83.6 mg/dL and 94.8 mg/dL respectively. Mean HDL among underweight, normal weight and overweight subjects was 49.2 mg/dL, 50.7 mg/dL and 51.2 mg/dL respectively. Lipid profile was significantly raised among overweight subjects.

Discussion

Obesity is now estimated to be the second leading cause of mortality and morbidity, causing an estimated 2.6 million deaths worldwide and 2.3% of the global burden of disease. There is an overall consensus that obesity poses a significant risk for the development of cardiovascular disease, alterations in glucose metabolism and reduces life expectancy. Lipids and lipoproteins are well known risk factors for ischemic heart disease. Elevated levels of triglyceride, cholesterol and LDL-C are documented as risk factors for atherogenesis. LDL-C in its oxidized or acetylated form has been identified as a major atherogenic particle, as it not only load macrophages with cholesterol for the formation of foam cells but also because it is chemotactic for circulating monocytes, is cytotoxic and can adversely alter coagulation pathways. The blood level of HDL-C in contrast bears an inverse relationship of the risk of atherosclerosis and coronary heart disease that is higher the level, smaller the risk[6-10] Hence; the present study was conducted with the aim of evaluating the Correlation of Serum Lipid Profile and BMI in Young First Year MBBS Students.In the present study, out of 100 subjects, 13 subjects, 58 subjects and 29 subjects were underweight, of normal weight and overweight respectively. Mean cholesterol among underweight, normal weight and overweight subjects was 141.5 mg/dL, 151.8 mg/dL and 162.8 mg/dL respectively. Mean LDL among underweight, normal weight and overweight subjects was 83.1 mg /dL, 89.8 mg/dL and 95.4 mg/dL respectively. Mean VLDL among underweight, normal weight and overweight subjects was 14.6 mg/dL, 17.5 mg/dL and 19.2 mg/dL respectively. Tejashwini VB et al correlated the relationship between BMI and lipid profile among young healthy medical students. This study comprises 45 males and 55 females (100 in total) young adults aged between 18 to 25 years. A total of 100 participants were tested. Among them 45 males were males and 55 were females. The mean age of the subjects was 22 years. Among them, 30 were overweight and 17 were obese while, 4 were underweight. The mean BMI was 26.72±3.45 Kg/m^2. Mean serum cholesterol in 100 students was 147.63 ± 15 mg/dl, mean LDL-C was 85.23±14.8 mg/dl, mean HDL-C was 23.22±5.56 mg/dl and mean triglycerides were 76.6 ±18.5 mg/dl. The mean BMI of students was 22.5 kg/m^2 ±5.5. It was found in their study that prevalence of overweight is the major driving forces in the development of diabetes mellitus, hypertension, metabolic syndrome[10].In the present study, mean triglycerides among underweight, normal weight and overweight subjects was 76.5 mg/dL, 83.6 mg/dL and 94.8 mg/dL respectively. Mean HDL among underweight, normal weight and overweight subjects was 49.2 mg/dL, 50.7 mg/dL and 51.2 mg/dL respectively. Lipid profile was significantly raised among overweight subjects. Dholakia J et al studied correlation of anthropometric and biochemical parameters in first year medical students. Total 150 students of first year MBBS were enrolled in the study. Anthropometric measurements were carried out to measure body weight (BW), body height (BH), Waist circumference (WC) and hip circumference (HC), while Body mass index (BMI) was calculated. Blood samples were collected for estimation of fasting blood glucose (FBS), Lipid profile, Results concluded that 1) Overweight and obesity among the students were 17.3% and 4% respectively; 2) When the abnormal serum cholesterol (≥200 mg%)was compared between male and female students it was statistically significant with p 0.003; 3) In the present study 03 (2.0%) students had FBS >126 mg/dl, high risk of developing Type 2 diabetes mellitus. 4) WC showed positive correlation with blood pressure, r: -0.28 and p: 0.0005 and negative correlation with HDL-Cholesterol, r: -0.21 and p: 0.008. Whereas, BMI showed positive correlation with triglyceride with r: -0.27and p: 0.0008 and negative correlation with HDL Cholesterol with r: -0.34 and p< 0.0008 considered highly significant. High prevalence of cardiovascular risk factors like overweight, high blood pressure and high triglyceride were common among the medical students[11].

Conclusion

From the above results, the authors concluded that overweight first year MBBS students were associated with deranged lipid profile.

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