An Assessment of Serum Cholesterol level and BMI in Women: Study in Several Private Chambers in Mymensingh

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Abstract

The increased risk of cardiovascular disease associated with higher serum cholesterol levels in middle-aged persons has been established, but there have been few studies conducted regarding the issues in Mymensingh. For evaluation of serum cholesterol and BMI in women of Mymensingh, across-sectional studywas conducted in several private chambers in the districts of Mymensingh, Bangladesh during the period from January 2017 to December 2017. A total of 48 Female patients participated in the study. In the study, participants were aged between 18 to 29 years of age. The study suggested that the serum cholesterol was below 4.99 were 15(31.25%), 5.00 to 6.49 were 13(26.08%) and above 6.50 were 20 (41.67%), the Mean ± SD was 4.45 (0.76). The health status according to BMI showed that 12.50% (n=6) of the participants were underweight <18.49, majority 50.00% (n=24) of the population were from normal weight range (18.5-24.9), 16.67% (n=8) of the participants were overweight and 20.83 %(n=10) of the participants were obese >30. The Mean ± SD was 18.93± (3.68). Measurement of BMI and Serum Cholesterol levels can help doctors to treat patients properly for reducing the burden of death in our country.

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Key words: Physiology, Body Mass Index (BMI), Serum Cholesterol, Weight.

Introduction

Body Mass Index (BMI) acts as a concerning link between the current and upcoming health of a person. BMI is usually measured as a fine indicator for measuring the health status of an individual, but there might be some biochemical parameters that may be harmfully connected with BMI. For example, there might be some straight or unintended relation between glucose, cholesterol, and blood pressure with BMI. This study reproduces a clue that BMI might be directly related to random blood sugar and cholesterol. But due to the effect of age, sex, and health status this correlation was reduced.[1] BMI can be used as the standard method for the measurement of an individual's body fat.[2]

Usually varied parameters area unit want to estimate whether or not an individual is healthy or not. Since the blood could be a circulatory connective tissue, therefore it is used as an honest marker of assorted health connected problems. Blood is employed in several clinical trials e.g. aldohexose estimation, Creatinine test, Cholesterol estimation, etc. The serum that is a gift in the blood is plasma that doesn't contain clotting protein. Proteins can be a gift in blood area unit albumen and antibody. Cholesterol could be a waxy, fat-like substance that is found in all the body cells. Most sources of cholesterol are unit liver and food sources. It's synthesized within the liver within the body and is circulated through the blood. It is generally found in food like meat, poultry, and dairy farm things. It's carried within

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the sort of lipoproteins through the blood. There are a lot of different kinds of compound proteins like high-density lipoprotein (HDL), rarity compound protein (LDL), Intermediate density lipoproteins (IDL), and extremely low-density lipoproteins (VLDL). HDL cholesterol is additionally called smart cholesterol as it helps us to keep building cholesterol in the blood vessel. It prevents the adipose tissue (blockage in arteries) formation within the body. Low-density lipoprotein cholesterol is identified as unhealthy cholesterol. It's concerned with the interference of veins and is the main cause of vessel diseases. The additional amount of LDL cholesterol and there will be more chances of danger to health. The major factors that are answerable for affecting the sterol levels are unit diet, weight, physical activity, smoking, age, gender, case history, etc. Sex variations contribute to an association of BMI with total sterol and LDL cholesterol that ends up at a lower risk of developing chronic heart diseases in ladies than that of men.[3] Excessive body weight is a major health problem in industrialized and developed countries where it could be considered epidemic[4,5,6] and a key determinant of health-care costs.[7]

Overweight and obesity have been related to increased morbidity and mortality rates due to diabetes mellitus, several forms of cancer, digestive diseases, and CHD.[8,9,10] However, waist circumference is one of the main issues which is used aimed at differentiating between healthy individuals from overweight and obese individuals other than BMI.[11] The process which is used for the assessment of adiposity is the waist dimension which is related to the visceral fat mass. It is also considered to be a better marker for abdominal obesity. According to WHO, the usual waist circumference for men is less than 40 inches and for Women is 35 inches. A strong optimistic association was observed between waist circumference and body fat. It could act better for the estimation of central obesity as well as for the identification of overweight and obese individuals.[12] In this study, the age group of 18-30 had examined the serum cholesterol level and compared the statistical relationships of BMI, body weight, and serum cholesterol level in healthy individuals.

Objectives

To evaluate the serum cholesterol level and BMI in women in Mymensingh.

Methods

This was a cross-sectional study on an assessment of serum cholesterol level and BMI in women conducted in several private chambers in the districts of Mymensingh during the period of January 2017 to December 2017. A total of 48 female patients participated in the study. In the study, the participants were aged between 18 years to 29 years of age. On enrollment, participants were screened for a high risk of cardiovascular disease using quantities such as weight, height, and systolic blood pressure, diastolic blood pressure, Pulse, BMI, and socio-demographic information. The participant's weight and height without shoes and wearing light clothing were then measured by trained technicians. Body mass index was then calculated as weight and divided by height in meters squared. In addition to physical measurements, socio-demographic data and data on basic medical history were collected from standardized in-person interviews by trained medical staff.

Inclusion Criteria

- Only the female population
- Patients who had given consent to participate in the study.
- Patients aged between 18-29

Exclusion Criteria

- Mentally ill.
- Unable to answer the criteria question.
- Exclude those affected with other chronic diseases etc.
- Those less than 18 years old or more than 29 years old

Results

The study included 48 participants where all participants were female. The participant's maximum & minimum ages were 29 years and 18 years. Age distribution of the study participant's showed majority (35%) were aged between 27-29 years and the mean age Mean ± SD in the study participants was 18.38 (2.22), the Mean ± SD systolic BP was 101.2 (11.84) mmHg, and the Mean ± SD diastolic BP was 64.49 (7.59) mmHg. The study suggested that the serum cholesterol was below 4.99 were 15(31.25%), 5.00 to 6.49 were 13(26.08%) and above 6.50 were 20(41.67%), the Mean ± SD was 4.45 (0.76).The health status according to BMI showed 12.50% (n=6) of the participants were underweight <18.49, half (n=24) of the population had a normal weight range (18.5-24.9), 16.67% (n=8) of the participants were overweight and 20.83 %(n=10) of the participants were obese >30. The Mean ± SD was 18.93±3.68.

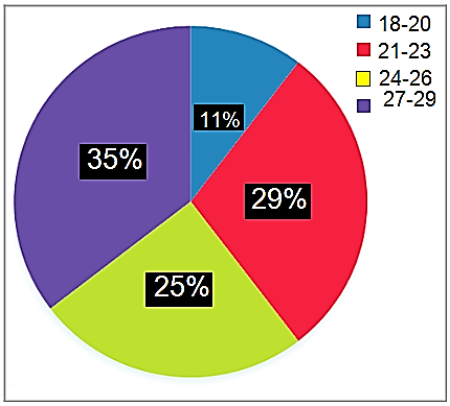

Figure 1: Age distribution of the study participants.

Table I: Age Distribution of the study participants. (n=48)

Age	n	%
18-20	5	10.42
21-23	14	29.17
24-26	12	25.00
27-29	17	35.42
Total	48	100
Variable	**Mean±SD**	
Age	18.38±2.22	

Table II: Systolic BP level of the study participants. (n=48)

Variable	n	%	Mean± SD
100-114.9	11	22.92	101.2±11.84
115-129.9	17	35.42	
130-144.9	20	41.67	
Total	48	100	

Table III: Diastolic BP level of the study participants. (n=48)

Variable	n	%	Mean± SD
70-79.9	11	22.92	64.49±7.59
80-89.9	20	41.67	
90-99.9	17	35.42	
Total	48	100	

Table IV: Serum Cholesterol level of the study participants. (n=48)

Variable	n	%	Mean± SD
<4.99	15	31.25	4.45±0.76
5.00-6.49	13	27.08	
>6.50	20	41.67	
Total	48	100	

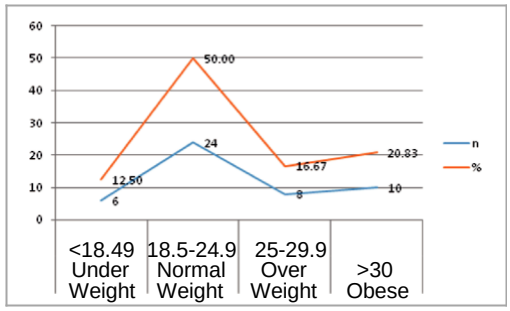

Figure 2: Health status according to BMI in the study participants. (n=48)

Discussion

Extreme bodyweight is recognized to be associated with dyslipidemias, cardio-vascular disease, and mortality.[6,10,13]
In the ERICA study, BMI was a predictor of CHD mortality only in southern Europe later adjusting for total cholesterol.[14] The prevalence of overweight and obesity in the

present cross-sectional population-based study was comparable with that observed in a recently published meta-analysis.[15] The present analysis has also revealed a strong positive association between cholesterol level in Bangladesh institute of child health (WOMEN) young adult students and BMI. However, several studies have failed to detect the relation between BMI and cholesterol.[16-19] During the study period, majority of the patients belonged to the age group of 27 to 29, as more than 1/3rd of the study population belonged solely to this age group. But only 5 patients were from the aged under 20 years. The mean age of the study group was 18.38±2.22. Dividing the systolic BP of the sample size into 3 groups, majority (n=20) belonged to the group with a high systolic BP of 130-144.9. 17 patients had a systolic BP of 115-129.9 and the remaining 11 had a systolic BP of 100-114.9. Similarly, dividing the patients into three groups based on their diastolic BP, majority had a diastolic BP between 80-89.9. 17 had diastolic BP higher than 90 and lower than 100. The remaining 11 had a diastolic BP of less than 80. Serum cholesterol level was higher than 6.50 among 20 patients. And cholesterol lower than 4.99 was found in 15 patients. The remaining 13 study subjects had a serum cholesterol level between 5.00 to 6.49. When looking at the BMI measurements of the participants, hald the study sample had normal weight. 8 were overweight and 10 were obese. Only 6 patients, 1/8th of the complete study population were underweight. Obesity is a chronic condition that results from an interaction between genetic and environmental factors.[20] Various lipid abnormalities have been observed in obese subjects, including elevated total cholesterol, triglycerides, and lower high-density lipoprotein cholesterol levels.[21] Dyslipidemia among the obese subjects might be due to an increased intake of food rich in saturated fatty acids and cholesterol.[22] It was found only in obese subjects with hypercholesterolemia. In individuals with simple obesity or hyper-cholesterolemia, without obesity, alteration of cholesterol synthesis through this pathway was not observed. Moreover, subjects with established obesity have an increased lipogenesis in hepatocytes (not in adipocytes) that might contribute to develop and/or maintain the excessive fat mass[23] and together with hyperinsulinemia, might additionally alter lipid homeostasis by promoting cholesterol synthesis.[24] However, the prevalence of high blood cholesterol and mean levels of cholesterol do not increase consistently with increasing BMI above 25kg/ m^2.

Limitations of the study

The study has a limited sample size and preferable it considers only the same group of people who particularly studies in Mymensingh.

Conclusion

A high prevalence of cholesterol levels was ascertained among young adult women. It considers that overweight and obesity were considerably related to prehypertension and high blood pressure among young women. These findings would be helpful within the development of public health programs for reducing risk factors of vessel diseases, and would even be necessary for the hindrance, management, and treatment of high BP among adolescents.

Recommendations

Study suggest more multi-centre study with large sample size to draw pure findings regarding the issue.

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