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Assessment of the relationship between high-density lipoprotein and Body Mass Index

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ABSTRACT

Increased BMI is one of the main factors for cardiovascular disease stroke and diabetes mellitus development. The leading causes of this kind of morbidities are alternatives to plasma lipid and lipoprotein levels. Dyslipidemia of obesity or high BMI is usually expressed as a high triglyceride level and low HDL cholesterol. The HD study is the lowest BMI individuals with the lowest target of current study. 30 individuals with high BMI and 30 healthy individuals with normal BMI levels from the outpatient department of Saveetha Dental College. Serum samples were analyzed for the hormonal status by using the kit method in autoanalyzer. There is a significant decrease in HDL ($p < 0.005$) in the people with high BMI levels when compared to the normal BMI healthy controls. The study states that high levels of BMI indicate the lower levels of good cholesterol HDL which in terms leads to increase in bad cholesterol LDL can cause different health problems like CVD, DM and renal damage etc.



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INTRODUCTION

Increasing body mass index (BMI) is associated with progressively lower serum HDL-cholesterol concentrations, although the underlying body-composition compartment accounting for this unfavorable lipid change remains uncertain (Bots ML *et al.*, 1997) Lean tissues and body cell mass appear to account in part for the long-observed inverse association of HDL cholesterol and BMI (Li Z *et al.*, 1996) These observations suggest a link between nonadipose tissue compartments and the greater cardiovascular risk associated with high BMI (Sherwin BB *et al.*, 1989) Increased BMI is one

of the major factors for cardiovascular disease stroke and development of diabetes mellitus (Miller VT *et al.*, 1991) . A principal contributor to this sorus morbidities is the alteration in plasma lipid and lipoprotein level. The dyslipidemia of obesity or high BMI is commonly manifested as high triglyceride level and low HDL cholesterol. (Brischetto CS *et al.*, 1983)

Patients were selected from those attending the outpatient department of Saveetha Dental College, and hospitals and divided into two groups as follows

Group I – Normal healthy individuals with normal BMI (19-24.9) – 30 individuals

Group II – High Individuals with BMI- (30-40) – 30 individuals

Inclusion Criteria

Individuals with the age group of twenty to thirty years

High BMI Individuals

Exclusion Criteria

Individuals with other systemic illness like diabetes mellitus, cardiovascular disease, Renal failure, Stroke, endocrine illness.

Individuals with an acute illness like a fever.

Immunocompromised individuals.

Sample collection and Procedure

Informed consent was obtained from the patient before sample collection. 5ml of venous blood was collected and distributed in plain collection tubes and centrifuged in 3000rpm for 10mins. Then serum was separated and used to estimate the HDL-c by modified Polyvinyl sulfonic acid (PVC) and polyethylene glycol methyl ether (PEGME) coupled classic precipitation method, using ERBA CHEM 5 plus analyzer.

RESULTS AND DISCUSSION

Table 1: Mean, SD and p-value of Control and Study groups

PARAMETERS	Normal BMI		Increased BMI		p-value
	Mean	SD	Mean	SD	
BMI	21.63	2.09	35.63	4.54	<0.005
HDL (mg/dl)	37.4	8.51	24.14	6.45	<0.005

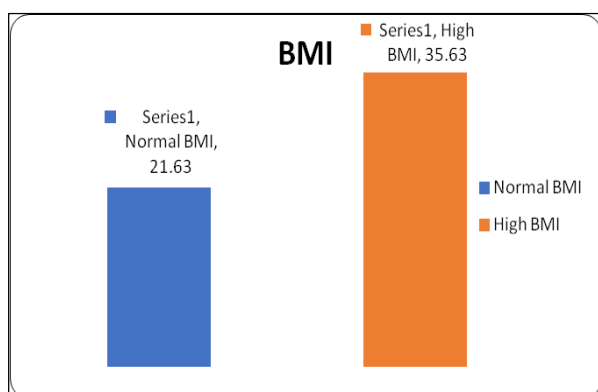


Figure 1: Mean BMI level in both groups

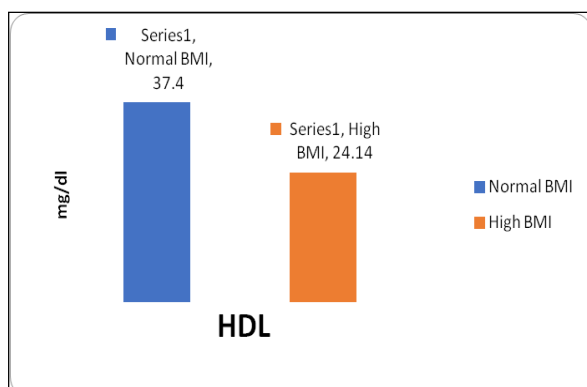


Figure 2: Mean HDL level in both groups

There is a significant decrease in HDL in a relationship with high BMI. The results of the

current study, an acoustic carrier that reflects the low GSM value, (Carmena R *et al.*, 1984) is associated with inter-mediocre, ageing, high BMI and low-level serum HDL-C, which is carotid interior-media. (Schmidt C *et al.*, 2003) Age, BMI and serum HDL-C indicate important decisions in the case of the vascular wall. (Heinecke J *et al.*, 2011).

Furthermore, these results support the use of B-mode ultrasound for identification of simultaneous carotid inter-media simultaneously as a cardiac risk marker. (Chen Y *et al.*, 1995) Lipid pools, thrombosis and invert haemorrhage can mount on all B-mode ultrasound images (Daniels SR *et al.*, 1988) Early studies of the risk factors of the backbone are mainly focused on atherosclerotic plaques, These studies consist of a large thin peach cape, a large macrophage density and a large lipid-rich core with intraplaque hemorrhage, (Després JP *et al.*, 1985) but fibrous tissue and calcification are mainly observed in echogenic panels. The echolucent plaques appear to be very dangerous and weak plaques (Heitmann BL *et al.*, 1992) which are precipitated, leading to leading to cardiovascular events.

In addition, the higher levels of triglycerides and the reduced levels of HDL-C have previously been consensual plaques (Matsumura K *et al.*, 2001) Studies of the correlation between cardiovascular risk factors and coronary all-media cohorts showed a positive relationship between acryan carotid internal-media and oxidative stress, swelling, (Mancia G *et al.*, 1995) HDL-C, BMI and low cutting stress. The risk factor for sensitive carotid inter-media emerged in the current study is similar to the PIVUS study and the lowest levels of HDL-C, ageing and high BMI (Daniel Silas Samuel *et al.*, 2015) are major independent decisions in the morphology of the artery.

The effect of risk factor change on carotid intermedia's necrosis has not been studied in the past. However, people with a high degree of BMI and HDL-C levels have a beneficial effect on the simultaneous use of the charcoal wall (Harini.N *et al.*, 2014) correlated relationship between the HDL-C levels found in the current study and the simultaneous interaction of the carotid interior-media. The high level of HDL-C is associated with reduced carotid plaque growth, which stabilizes HDL-C plaques and reducing their lipid content and reducing their growth by decreasing swelling.

CONCLUSION

Our study states that high levels of BMI indicate the lower levels of good cholesterol HDL which in terms leads to increase in bad cholesterol LDL can

cause different health problems like CVD, DM and renal damage etc.,

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