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# LIPID PROFILE IN DIABETIC AND NON-DIABETIC POPULATION (A COMPARATIVE STUDY)

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**Abstract:**
***OBJECTIVE:*** *To compare the lipid profile in diabetic (type 2) with non-diabetic's population.*
***PATIENTS AND METHODS:*** *This comparative study of six months (from January 2011 to June 2011) was conducted in tertiary care hospital at Hyderabad on patients admitted through outdoor or emergency department or seen in OPD, fulfilled the inclusion criteria in which the patterns of lipid profile in type-2 diabetics is compared with non-diabetics. Two hundred patients were included in this study, one hundred patients with type-2 diabetes and hundred non-diabetic patients.*
***RESULTS:*** *It was found that the commonest dyslipidaemia among type-2 diabetics was raised serum triglyceride level, but raised LDL-C and serum cholesterol and low HDL-C were also found.*
***CONCLUSION****: Diabetic dyslipidaemia is the commonest sequelae of type-2 diabetes and predisposes a patient to premature atherosclerrosis and risk of CHD.*
***KEYWORD:*** *Diabetes mellitus, lipid, dyslipidemia and lipoproteins.*

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## INTRODUCTION:

Patients with type-2 diabetes have increased risk of cardiovascular disease associated with atherogenic dyslipidaemia [1]. Coronary artery disease especially myocardial infarction is the leading cause of morbidity and mortality worldwide [2]. The incidence of CHD in the region of South Asia is as high as in European population. Circulating lipoprotein levels are dependent on insulin, as is plasma glucose. Once hyperglycaemia is corrected, lipoprotein levels generally become normal [3, 4].

Hyperglycaemia and atherosclerosis are related in type-2 diabetes. Persistent hyperglycaemia causes glycosylation of all proteins especially collagen cross linking and matrix proteins of arterial wall [5, 6]. This eventually causes endothelial cell dysfunction, contributing further to atherosclerosis [7]. Combination of raised triglycerides and low HDL-C constitutes the commonest pattern of dyslipidaemia in type-2 diabetics [8]. Its features are high triglycerides, low HDL-C and qualitative change in LDL patients producing smaller but dense LDL-C particles, whose membranes carry supranormal amount of free cholesterol [9]. A low HDL-C is a major risk factor predisposing to macrovascular disease. Thus this study was conduct to compare the pattern of lipid profile in type-2 diabetics with non-diabetics population present at tertiary care hospital.

## PATIENTS AND METHODS:

This comparative study of six months (from January 2011 to 30 June 2011) was conducted in tertiary care hospital at Hyderabad on patients admitted through outdoor or emergency department or seen in OPD, fulfilled the inclusion criteria in which the patterns of lipid profile in type-2 diabetics is compared with non-diabetics. Two hundred patients were included in this study, one hundred patients with type-2 diabetes and hundred non-diabetic patients. Brief history was taken and detailed physical examination was done. Blood sample for fasting and random blood sugar, fasting lipid profile and all relevant investigations were taken while the exclusion criteria were type-I Diabetes mellitus, acute myocardial infarction (up to 6 weeks) and patients with nephrotic syndrome. The Data was analyzed by SPSS System and results were expressed in percentages and proportions. It was a comparative study in which lipid profile of type-2 diabetics and non-diabetics was compared.

## RESULTS:

The mean age of type-2 diabetics was 51 years, and the mean age of non-diabetics was 50 years. It was found that the commonest dyslipidaemia among type-2 diabetics was raised serum triglyceride level, but raised LDL-C and serum cholesterol and low HDL-C were also found. Out of 100 patients with type-2, diabetes 40% had serum triglyceride above 200mg/dl and 18% had TG less than 100mg/dl, only 10% diabetics were found to have serum TG more than 400mg/dl whereas among 100 non-diabetics, 95% had TG <200mg/dl. Serum cholesterol level <200mg/dl was found in 50% type-2 diabetics and 80% non diabetics. Serum LDL-C <130mg/dl was found in 35% type-2 diabetics and 52% non-diabetics. HDL-C which is also known as good cholesterol, as it is not atherogenic and confers protection against the risk of CHD. HDL-C >35mg/dl in 37% patients with type-2 diabetes and 60% non-diabetics.

## DISCUSSION:

In this study, fasting lipid profile of 200 patients was checked. Among 100 patients with type-2 diabetes, the commonest abnormality of lipoproteins was raised VLDL, as reflected by raised serum TG level. The reason for difference in serum cholesterol values may be due to difference in the dietary habits of the people from different cities. Former study shown that serum triglyceride was raised in majority of patients with controlled diabetes mellitus [10]. Our results are partly consistent with a study by Walder CE et al, who reported that adverse effects of diabetes mellitus on dyslipidaemias are more marked in women than men [11]. Increasing use of cooking oils in place of vanaspati ghee has also contributed to the change in lipid profile. Another reason is increasing literacy rate and life style modification by most of the people. In our study, serum TG levels were found to be much raised among diabetic females as compared to males, whereas serum cholesterol and LDL-C levels were higher among male diabetics. Although similar sex difference has been found in many studies, but this is not a universal finding. A study conducted on diabetic showed that serum cholesterol and LDL-C were raised in 22% patients [12]. Hypertriglyceridaemia is the commonest lipid abnormality in type-2 diabetics, particularly those with poor glycaemic control. It is a potent risk factor for macrovascular disease due to reduced synthesis of insulin dependent lipoprotein lipase in the liver, resulting in impaired clearance of IDL, Chylomicrons and VLDL remnants. High TG levels are associated with hypercoagulability and decreased fibrinolysis, both contributing to CHD. Diabetic dyslipidaemia is the common longterm complication of diabetes mellitus and predisposes an individual to atherosclerotic complications occuring in the form of microangiopathy or macroangiopathy. Early detection and treatment can reduce long term morbidity and mortality.

## CONCLUSION:

Diabetic dyslipidaemia is the commonest sequelae of type-2 diabetes and predisposes a patient to premature atherosclerrosis and risk of CHD. However, good glycaemic control can help preventing development of diabetic dyslipidaemia.

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