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Research Article

**ASSESSMENT OF LIPID PROFILE IN TPE-2 DIABETIC  
PATIENTS AMONG LOCAL POPULATION OF PAKISTAN**Dr Sidra Mustafa<sup>1</sup>, Dr Sana Arooj<sup>2</sup>, Dr Hafiz Abdul Basir<sup>3</sup><sup>1</sup>Latin American School of Medicine<sup>2</sup>PIMS, Islamabad<sup>3</sup>Bahawal Victoria Hospital, Bahawalpur

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**Abstract:**

**Introduction:** Diabetes mellitus is a metabolic disease characterized by the increase in blood glucose level as a result of insulin deficiency or insulin resistance. **Aims and Objectives:** The main objective of the study is to analyze the lipid profile in tpe-2 diabetic patients among local population of Pakistan. **Methodology of the study:** This cross sectional study was conducted in Latin American School of Medicine during November 2018 to April 2019. The data was collected from 100 diabetic patients who was suffering from diabetes from last one year. Patients from both genders, age range 35 to 65 was selected for this study. The pre devised proforma was completed by single researcher endorsing subject's demography, and clinical profile. Fasting plasma glucose, serum TC, HDL-C, LDL-C and TG was measured by using Randox kit. **Results:** The data was collected from 100 patients. The demographic values shows that there is a significant relation between diabetes and hyperlipidemia in a local population of Pakistan. The value of HbA1C is  $5.77 \pm 0.50$  in diabetic patients as compared to normal group. We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of diabetes. **Conclusion:** In our study, strong positive correlation was found between serum TC, TG, LDL-C with both BSF and HbA1c, while HDL-C showed weak negative correlation with both BSF and HbA1c.

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**INTRODUCTION:**

Diabetes mellitus is a metabolic disease characterized by the increase in blood glucose level as a result of insulin deficiency or insulin resistance. Insulin-dependent diabetes mellitus is referred as Type 1 diabetes mellitus (T1DM) and non-insulin-dependent diabetes mellitus as Type 2 diabetes mellitus (T2DM). Diabetes mellitus (DM) has been emerging as a major healthcare problem in Pakistan with 7.0 million people suffering from it and the number of diabetic patients is estimated to rise to a staggering figure of 14.4 million by the year 2040 making Pakistan the 8<sup>th</sup> highest country in the world in terms of burden of diabetic patients [1]. The morbidity and mortality related to DM is mainly attributed to its microvascular complications including retinopathy, nephropathy and neuropathy [2]. Chronic hyperglycaemia, increased reactive oxygen species, decreased nitric oxides and increased fatty acids are responsible for these chronic vascular complications by altering the vascular response [3]. The major ocular complication of DM is diabetic retinopathy (DR) which is the leading cause of irreversible blindness worldwide with prevalence of DR in newly diagnosed type II diabetics up to 40%. Known risk factors for development and progression of DR include type and duration, age, gender, body-mass index (BMI), glycaemic control, hypertension, nephropathy, smoking, pregnancy and serum lipid levels [4].

Role of serum lipids in development and progression of DR has been evaluated worldwide with variable results. Diabetic dyslipidaemia characterized by elevated serum total cholesterol (TC), triglycerides (TG), low density lipoproteins cholesterol (LDL-C) and high density lipoproteins cholesterol (HDL-C) has been proposed as possible risk factors for DR [5]. Hyperlipidaemia causes endothelial dysfunction due to reduced bioavailability of nitric oxide and breakdown of blood retinal barrier leading to exudation of serum lipids and lipoproteins which results in DR changes and diabetic macular edema (DME) formation.

Lipid profile analysis studies have been conducted both internationally and nationally to identify the

risk of dyslipidemia in T2DM and non-diabetic population [6]. A study conducted in Chinese population showed strong correlation of TC/HDL-C with T2DM. Lipid analysis study on T2DM patients and hypertensive T2DM patients of Jamaica population showed higher rate of TG/HDL and LDL/HDL ratios in T2DM and hypertensive T2DM patients compared with non-diabetic, and hypertensive non-diabetic control subjects [7].

**Aims and Objectives**

The main objective of the study is to analyze the lipid profile in tpe-2 diabetic patients among local population of Pakistan.

**METHODOLOGY OF THE STUDY:**

This cross sectional study was conducted in Latin American School of Medicine during November 2018 to April 2019. The data was collected from 100 diabetic patients who was suffering from diabetes from last one year. Patients from both genders, age range 35 to 65 was selected for this study. The pre devised proforma was completed by single researcher endorsing subject's demography, and clinical profile. Fasting plasma glucose, serum TC, HDL-C, LDL-C and TG was measured by using Randox kit.

**Statistical analysis**

SPSS 17.0 for windows was used for statistical analysis. Descriptive statistics i.e. mean  $\pm$  standard deviation for quantitative values and frequencies along with percentages for qualitative variables were used to describe the data. Independent sample 't' test.

**RESULTS:**

The data was collected from 100 patients. The demographic values shows that there is a significant relation between diabetes and hyperlipidemia in a local population of Pakistan. The value of HbA1C is  $5.77 \pm 0.50$  in diabetic patients as compared to normal group (Table 01). We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of diabetes (Table 2).

**Table 01: Clinical and biochemical profile of study population.**

Variable	Diseased group	P value
Age (years)	48.04 $\pm$ 4.83	0.018
Male, n (%)	71 (50.71%)	0.285
Smoker, n (%)	32 (22.85%)	< 0.01
Duration (years)	4.60 $\pm$ 3.03	0.067
BMI (kg/m <sup>2</sup> )	26.31 $\pm$ 2.71	0.418
Plasma Glucose (F) mg/dl	117.34 $\pm$ 7.93	< 0.01
HbA1C (%)	5.77 $\pm$ 0.50	< 0.01

**Table 02:** Lipid sub fraction values among subgroups.

Lipid Profile	Diseased group	P value
Serum Cholesterol (mg/dl)	187.26 ± 17.46	< 0.01
Serum LDL-C (mg/dl)	92.59 ± 11.53	< 0.01
Serum HDL-C (mg/dl)	45.63 ± 4.44	< 0.01
Serum TG (mg/dl)	169.28 ± 9.83	< 0.01

**DISCUSSION:**

Diabetes is a major cause of mortality globally, and it has been estimated that 400 million people worldwide will suffer from it by 2030. Despite the fact that hereditary qualities seems to assume an essential part in the advancement of diabetes, examine recommends that dietary decisions driven by natural and financial components are of critical significance. Amazing eating regimens assume an essential part in diabetes avoidance [7]. Suitable dietary adherence can enhance insulin affectability and glycemic control, and consequently add to way of life change and general personal satisfaction. Nonetheless, past research recommends that dietary adherence is seemingly among the most troublesome foundations of diabetes administration. Higher HEI scores demonstrate nearer adherence to current dietary rules for singular food and supplement gatherings [8]. For the sufficiency segments, for example, vegetables and natural product, a higher score demonstrates higher utilization. Dietary proposals depend on the useful effects of devouring products of the soil and expressly stress their constructive outcomes of decreasing corpulence and certain sorts of growths. The last three segments of the HEI incorporate refined grains, sodium, and discharge (calories from strong fats, liquor, and included sugars) and a higher score demonstrates bring down utilization [9].

We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of DR. Smoking and serum HDL-C levels showed moderate inverse correlation with severity of DR. Correlation between DR with gender or BMI was not statistically significant [10]. Ahsan et al in their study reported male gender (3.5 times), increased duration of diabetes ( $\geq 10$  years, 5.46 times) and poor glycemic control ( $HbA1c \geq 7\%$ , 1.39 times) as significant factors for developing retinopathy [11].

**Conclusion**

In our study, strong positive correlation was found between serum TC, TG, LDL-C with both BSF and HbA1c, while HDL-C showed weak negative correlation with both BSF and HbA1c. Serum cholesterol, LDL-C and TG levels were significantly

elevated and serum HDL-C level was decreased in patients with diabetes.

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