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Research Article

**A CASE STUDY TO DETERMINE THE LIPID PROFILE IN  
PAKISTANI POPULATION**Qasim Ali, Ch. Noman, Samun Manzoor  
Rural Health Center Roda, Khushab**Article Received:** February 2020    **Accepted:** March 2020    **Published:** April 2020**Abstract:**

**Introduction:** Diabetes mellitus is a metabolic disease caused by the rise in blood sugar level as a result of insulin deficiency or insulin resistance.

**Objectives:** The objective of the study is to examine the lipid profile in type-2 diabetic patients among local population of Pakistan.

**Methodology:** This cross-sectional study was conducted in Rural Health Center Roda, Khushab and the duration of this study was from November 2018 to April 2019. The data was collected from 100 diabetic patients. Patients from both genders, age range from 38 to 68 years was selected for this study. The pre devised proforma recommend subject's demography, and clinical portrait which is done by researcher. By using Randox kit, fasting plasma glucose, serum total cholesterol, high-density lipoproteins cholesterol, low-density lipoproteins cholesterol and triglycerides was measured.

**Results:** The information was collected from 100 patients. The demographic values show that there's a relation between diabetes and hyperlipidemia among the population of Pakistan. The worth of HbA1c is  $5.79 \pm 0.52$  in diabetic patients as compared to normal group. We found direct correlation between harshness of diabetic retinopathy with baseline sugar factor, HbA1c, serum low-density lipoproteins cholesterol, total cholesterol and triglycerides, although age and period of Diabetes mellitus showed slightly direct correlation with harshness of diabetes.

**Conclusion:** In the conclusion of our study, secure direct correlation was form between serum total cholesterol, triglycerides, low-density lipoproteins cholesterol with both baseline sugar factor and HbA1c, at the same time high-density lipoproteins cholesterol showed feeble indirect correlation with both baseline sugar factor and HbA1c.

**KEYWORDS:** Diabetes Mellitus, Insulin Deficiency, Metabolic Disease, Triglycerides, Fasting Plasma Glucose.

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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 associated with Type 1 diabetes mellitus (T1DM) and non-insulin dependent diabetes mellitus as Type 2 diabetes mellitus (T2DM). Diabetes mellitus (DM) is a serious health problem in our country with estimated more than 7 million patients and the toll to rise to 14 million patients by 20 years. Pakistan will be the 8th country to have the highest number of diabetes patients. The morbidity and mortality related to Diabetes mellitus is mainly introduced to its microvascular problems along with retinopathy, nephropathy and neuropathy [2]. Chronic hyperglycemia, boost reactive oxygen group, decline nitric oxides and boost up fatty acids are liable for these chronic vascular problems by shifting the vascular feedback [3]. The major ocular problem of Diabetes mellitus which is also the main cause of irreversible blindness worldwide is diabetic retinopathy (DR) with pervasiveness of diabetic retinopathy in newly recognized type II diabetics up to 54%. For growth and transformation of diabetic retinopathy familiar risk factors consist of type and time, gender, age, body-mass index (BMI), hypertension, nephropathy, smoking, glycemic control, pregnancy and serum lipid levels [4]. Part of serum lipids has been assessed worldwide with variable outcomes in expansion and progression of diabetic retinopathy. Recommended desirable risk components for diabetic retinopathy is: Diabetic dyslipidemia produced by inflated serum total cholesterol (TC), triglycerides (TG), low density lipoproteins cholesterol (LDL-C) and high-density lipoproteins cholesterol (HDL-C) [5]. hyperlipidemia originate endothelial dysfunction due to weak biological availability of nitric oxide and disruption of blood retinal hurdle leading to exhalation of serum lipids and lipoproteins which shows reaction in diabetic retinopathy changes and diabetic macular edema (DME) formation.

Lipid profile analysis studies have been conducted both internationally and nationally to identify the chance of dyslipidemia in T2DM and non-diabetic population [6]. A study conducted on Chinese population showed strong correlation of total cholesterol / high-density lipoproteins cholesterol with T2DM. Lipid analysis study on T2DM patients and hypertensive T2DM patients of Jamaica population showed higher rate of triglycerides / high-density lipoproteins cholesterol and Low-density lipoproteins cholesterol / high-density lipoproteins cholesterol ratios in T2DM and hypertensive T2DM patients compared with non-diabetic, and hypertensive non-diabetic control subjects [7].

**MATERIAL AND METHODS:**

This cross-sectional study was conducted in Rural Health Center Roda, Khushab and the duration of this study was from November 2018 to April 2019. The data was collected from 100 diabetic patients who were suffering from diabetes from last one year. Patients from both genders, age range from 38 to 68 years was selected for this study. The pre-discovered proforma was achieved by particular analyst approved subject's demography, and clinical portrait. Fasting plasma glucose, serum total cholesterol, high-density lipoproteins cholesterol, Low-density lipoproteins cholesterol and triglycerides was consistent by using Randox kit. SPSS 17.0 was used for statistical analysis.

**RESULTS:**

The data was collected from 100 diabetic patients. The demographic values show that there's a big relation between diabetes and hyperlipidemia among the population of Pakistan. The worth of HbA1C is  $5.79 \pm 0.52$  in diabetic patients as compared to normal age group (Table 01). We found secure direct correlation between harshness of diabetic retinopathy with baseline sugar factor, HbA1c, serum low-density lipoproteins cholesterol, total cholesterol and triglycerides, although, age and time of diabetes mellitus showed slightly direct correlation with harshness of diabetes (Table 2).

**Table 1: Clinical and Biochemical Portrait of Study Population**

Variable	Diseased group	P value
Age (years)	$58.05 \pm 4.84$	1.019
Male, n (%)	82 (50.72%)	1.286
Smoker, n (%)	63 (22.86%)	< 0.08
Duration (years)	$7.61 \pm 3.04$	0.168
BMI ( $\text{kg}/\text{m}^2$ )	$16.32 \pm 2.72$	0.319
Plasma Glucose (F) mg/dl	$127.35 \pm 7.94$	< 1.02
HbA1C (%)	$5.79 \pm 0.52$	< 1.02

**Table 2: Lipid Sub Fraction Values Among Subgroups**

Lipid Profile	Diseased group	P value
Serum Cholesterol (mg/dl)	87.27 ± 17.47	< 3.01
Serum LDL-C (mg/dl)	62.58 ± 11.52	< 4.01
Serum HDL-C (mg/dl)	65.62± 4.45	< 2.01
Serum triglycerides (mg/dl)	269.29± 9.84	< 3.01

**DISCUSSION:**

Diabetes is a major reason for mortality around the world, and it's been determining that 450 million people worldwide will suffer from this disease by 2030. Despite the very fact that hereditary qualities appear to think an important part within the growth of diabetes, examine recommends that dietary decisions driven by natural and financial components are of critical significance. Amazing eating regimens concluded as an important part in diabetes avoidance [7, 8]. Suitable dietary adherence can increase insulin affectability and glycemic control, and consequently increase way of life change and general personal satisfaction [9]. Nonetheless, past research recommends that dietary attachment is apparent among the foremost troublesome foundations of diabetes administration. Higher HEI scores determine nearer attachment to current dietary rules for singular food and supplement gatherings [10]. For the sufficiency segments, for instance, vegetables and natural product, a better score determine higher utilization [11]. Dietary proposals depend upon the useful effects of devouring products of the soil and expressly stress their constructive outcomes of decreasing corpulence and certain kinds 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 better score demonstrates bring down utilization [12,13]. In between harshness of diabetic retinopathy with baseline sugar factor, HbA1c, serum low-density lipoproteins cholesterol, total cholesterol and triglycerides we found secure direct correlation, although, slightly direct correlation with harshness of diabetic retinopathy is shown by the age and time of diabetes mellitus and slightly opposite correlation with severity of diabetic retinopathy is shown by smoking and serum high-density lipoproteins cholesterol levels [14,15]. Correlation was not statistically significant between diabetic retinopathy with gender or body mass index [16]. Important element for establishing retinopathy is male gender (3.5 times), boost duration of diabetes ( $\geq 10$  years, 5.46 times) and poor glycemic control (HbA1c  $\geq 7\%$ , 1.39 times), reported in our study.

**CONCLUSION:**

In the conclusion of our study, we found a relation between serum total cholesterol, triglycerides, low-density lipoproteins cholesterol with both baseline sugar factor and HbA1c have secure direct correlation, while fragile indirect correlation with

both baseline sugar factor and HbA1c is shown in high-density lipoproteins cholesterol. Automatically inflated were serum cholesterol, low-density lipoproteins cholesterol and triglycerides levels and in patients with diabetes serum high-density lipoproteins cholesterol level was decreased.

**REFERENCES:**

1. Meikle, P. J., & Summers, S. A. (2017). Sphingolipids and phospholipids in insulin resistance and related metabolic disorders. *Nature Reviews Endocrinology*, 13(2), 79.
2. Schiffer, L., Kempegowda, P., Arlt, W., & O'Reilly, M. W. (2017). Mechanisms in endocrinology: the sexually dimorphic role of androgens in human metabolic disease. *European journal of endocrinology*, 177(3), R125-R143.
3. Czech, M. P. (2017). Insulin action and resistance in obesity and type 2 diabetes. *Nature medicine*, 23(7), 804-814.
4. Suzanne, M. (2017). Insulin resistance and neurodegeneration: progress towards the development of new therapeutics for Alzheimer's disease. *Drugs*, 77(1), 47-65.
5. Winer, D. A., Luck, H., Tsai, S., & Winer, S. (2016). The intestinal immune system in obesity and insulin resistance. *Cell metabolism*, 23(3), 413-426.
6. Karalliedde, J., & Gnudi, L. (2016). Diabetes mellitus, a complex and heterogeneous disease, and the role of insulin resistance as a determinant of diabetic kidney disease. *Nephrology Dialysis Transplantation*, 31(2), 206-213.
7. Riddey, D. M., Delerive, P., Summers, R. J., Sexton, P. M., & Langmead, C. J. (2018). G protein-coupled receptors targeting insulin resistance, obesity, and type 2 diabetes mellitus. *Pharmacological reviews*, 70(1), 39-67.
8. Newby PK, Tucker KL. Empirically derived eating patterns using factor or cluster analysis: a review. *Nutr Rev*. 2004;62(5):177-203.
9. Ocké MC. Evaluation of methodologies for assessing the overall diet: dietary quality scores and dietary pattern analysis. *Proc Nutr Soc*. 2013;72(2):191-199.
10. Viana LV, Gross JL, Camargo JL, Zelmanovitz T, da Costa Rocha EP, Azevedo MJ. Prediction of cardiovascular events, diabetic nephropathy,

- and mortality by albumin concentration in a spot urine sample in patients with type 2 diabetes. *J Diabetes Complications*. 2012;26(5):407–412.
11. Kiran PU, Srinivas B. Study of glycated haemoglobin, lipid profile and uric acid levels in diabetic retinopathy. *Sch J App Med Sci*. 2015;3(7A):2480–2484.
  12. Kanski JJ, Bowling B. Retinal Vascular Disease. In: Kanski JJ, editor. *Clinical Ophthalmology – A Systematic Approach*. 7th Ed. London: Elsevier, Saunders; 2011. pp. 533–591.
  13. Rahman MR, Arslan MI, Hoque MM, Mollah FH, Shermin S. Serum lipids and diabetic retinopathy in newly diagnosed type 2 diabetic subjects. *J Enam Med Coll*. 2011;1(2):63–66.
  14. Rumaolat, W., Dusra, E., Tunny, I. S., Malisngorar, M. S., Cahyawati, S., & Umanailo, M. C. B. (2019). Relationship Diet and Regulate Blood Sugar in the Elderly with DM Type II in Waimital Village, Kairatu District, West Seram Regency. *Int. J. Sci. Technol. Res*, 8(10).
  15. Meex, R. C., & Watt, M. J. (2017). Hepatokines: linking nonalcoholic fatty liver disease and insulin resistance. *Nature Reviews Endocrinology*, 13(9), 509.
  16. Hurrell, S., & Hsu, W. H. (2017). The etiology of oxidative stress in insulin resistance. *biomedical journal*, 40(5), 257-262.