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Comparison of serum lipid profiles in Diabetes Mellitus patients versus normal population

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Contents

[Abstract 5](#_Toc132324420)

[1.1.Introduction 7](#_Toc132324421)

[**1.2.Objective of the study** 8](#_Toc132324422)

[**1.3.Lecture review** 9](#_Toc132324423)

[**1.4.Symptoms** 11](#_Toc132324424)

[**1.6.Risk factors** 15](#_Toc132324425)

[**1.7.Complications of dyslipidemia** 16](#_Toc132324426)

[**2.1.**Methodology 19](#_Toc132324427)

[2.2.Design of the study: 19](#_Toc132324428)

[2.3• Duration of the study: 19](#_Toc132324429)

[2.4• Sample of the study 19](#_Toc132324430)

[2.4• Method and tool of data collection: 19](#_Toc132324431)

[2.5• Ethical considerations 19](#_Toc132324432)

[2.6• Statistical analysis 19](#_Toc132324433)

[3. Result 21](#_Toc132324434)

[4.Discussion 27](#_Toc132324435)

[5.1Conclusion 29](#_Toc132324436)

[5.2recommendations 29](#_Toc132324437)

# Abstract

This study was designed to compare the levels of serum lipid profile in diabetes mellitus patients verses normal population. Blood samples were collected from60 patients,30 case were healthy and the another 30 participants were suffering from diabetes mellitus type 2. Lipid profile was determined by using laboratory kits. Results revealed that the level of cholesterol was significantly increased in diabetic patients against non-diabetic patients. Also the level of triglyceride (TG) was significantly higher in patients suffering from diabetes in comparison with non-diabetic patients. A significant decrease in the level of high density lipoprotein was recorded in diabetic patients more than non-diabetic patients.Keywords: Diabetes mellitus, serum Lipid profile.

**Chapter one**

# 1.1.Introduction

Lipid abnormalities in patients with diabetes, often termed “diabetic dyslipidemia”, are typically characterized by high total cholesterol (T-Chol), high triglycerides (Tg), low high density lipoprotein cholesterol (HDL-C) and increased levels of small dense LDL particles. Low density lipoprotein cholesterol (LDL-C) levels may be moderately increased or normal.

Lipid abnormalities are common in people with T2DM and prediabetes [1,2] but the pattern of the different lipids may vary between ethnic groups, economic levels, and access to health care [3,4]. A recently published meta-analysis reported that abnormal levels of the above-mentioned lipid parameters reflect, to some extent, the risk of T2DM [5]. Furthermore, studies in people with T2DM have found an increased association between CAD and high Tg and low HDL-C combined, compared to the two lipid parameters assessed separately [6,7].

Some researches shows that there is difference in the serum lipid profile of diabetic patients when we compare it to the normal population. We decided to perform this study in order to compare serum lipid profile of diabetic versus normal population in our area.

# 

# **1.2.Objective of the study**

1-To assess range of Lipid profile in diabetic patients.

2. to assess level of serum lipid profile in non -diabetic participants

3. to compare serum lipid profile of diabetic versus non – diabetic participants.

4. To assess socio-demographics data of participants

# 

# **1.3.Lecture review**

Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction and failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels, that impose a tremendous burden on individual with diabetes and on the health care system [8]. It is classified on the bases of pathogenic process that leads to hyperglycemia. The tow broad categories of (DM) are designated type one (DM) and type two (DM). Other forms of (DM) are also categorized separately from these two types, and examples include gestational diabetes, congenital diabetes due to genetic defects of insulin secretion, cystic fibrosis-related diabetes, steroid diabetes induced by high doses of glucocorticoids, and several forms monogenic diabetes [9].Diabetes mellitus and hypertension are common disease that coexist with each other, and constitute the most common risk factors for coronary heart disease (CHD) [10,11].Hypertension is well known as a common comorbidity in patients with diabetes with its prevalence ranging from 60% to 80% [12].Hypertension in the diabetic individual markedly increases the risk and accelerates the course of cardiac disease; diabetes mellitus has been known to be associated with lipid disorders and cardiovascular complication. Both diabetes mellitus and hypertension alter lipid and lipoprotein metabolism and increase the rick or coronary artery disease. Patients with hypertension have been shown to be resistant to insulin stimulated glucose uptake and to be both hyperinsulinemia and hypertriglyceridemia compared with matched normotensive control group [13,14]. Diabetes mellitus and hypertension are the most common disease and the frequency of both disease increases with increasing age [15,16] Also diabetes mellitus is associated with a considerably increased cardiovascular risk. The presence of hypertension in the diabetic individual markedly increases morbidity and mortality in hypertension abnormalities may be seen in glucose, insulin, and lipoprotein metabolism, these abnormalities have been found to be present in the first degree relatives of hypertensive patients [17,18]. Diabetes mellitus is a disorder resulting from both genetic predisposition and favoring environmental factors and is a characterized by alteration in the metabolism of carbohydrate, fat and protein, which are caused by a relative or absolute deficiency of insulin secretion and different levels of insulin resistance. In the patients with long standing diabetes, late complication develops consisting of alterations and failure of various organs (especially the noninsulin-sensitive ones) including the eyes (retinopathy with vision kidneys (nephropathy leading to renal failure), nerves (peripheral and autonomic neuropathy), heart and blood vessels nrecocious and severe cardiovascular. cerebrovascular and peripheral vascular atherosclerosis). Diabetes mellitus includes etiologically and clinically different diseases that have hyperglycemia in common, representing a syndrome rather than a single disease [19). Diabetes mellitus arises when insufficient insulin produced or when the available insulin does not function correctly. Without insulin the amount of glucose in the blood stream is abnormally high causing unquenchable thirst and frequent urination [13, 14, 20, 21] the body's inability to store or use glucose causes hunger and weight loss. This type of diabetes usually appears in people over the age of 40, and in this type lipid abnormalities and almost the rule, typical finding are elevation of total cholesterol and VLDL cholesterol and a predominance of small dense LDL [21].Insulin resistance is often involved in this process lipid abnormalities in patient with diabetes are likely to play important role in development of thermogenesis.

These lipid disorders include not only quantitative but also qualitative abnormalities of lipoproteins which are potentially atherogenic [20].Type-2 (DM) is associated with cluster of interrelated plasma lipid and lipoprotein (LP)abnormalities that are all recognized as predictors for coronary heart disease, including reduced plasma levels of high density Lipoprotein cholesterol(HDL-C) particles andelevated plasma levels of triglvceride (TG)[22,23].This study was conducted to investigate the estimate lipid profile in hypertensive type 2 diabetic patients.

Lipids, such as cholesterol or triglycerides, are absorbed from the intestines and are carried throughout the body via lipoproteins for energy, steroid production, or bile acid formation. Major contributors to these pathways are cholesterol, low-density lipoprotein cholesterol (LDL-C), triglycerides, and high-density lipoprotein (HDL). An imbalance of any of these factors, either from organic or nonorganic causes, can lead to dyslipidemia.[24]

Dyslipidaemia has recently been recognised as a risk factor for T2DM. A large prospective study among middle-aged adults conducted in the USA has shown the low levels of high-density lipoprotein cholesterol (HDL-C) and elevated triglyceride (TG) levels were significantly related to the development with diabetes.[25]A cohort study drawn from the Korean population found that the elevated concentration of total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C) and TG were independent risk factors for development of new-onset T2DM.[26]Moreover, increasing number of studies recently demonstrated that combined lipid parameters such as non-HDL-C, TG/HDL-C, LDL-C/HDL-C and TC/HDL-C were associated with T2DM[27,28] and have superiority value in predicting the incident of T2DM.[29,30] However, contradictory results about the relationship between dyslipidaemia and diabetes existed in different studies

# 1.4.Symptoms

Unless it is severe, most people with dyslipidemia are unaware that they have it. A doctor will usually diagnose dyslipidemia during a routine blood test or a test for another condition.

Severe or untreated dyslipidemia can lead to other conditions, including coronary artery disease (CAD) and peripheral artery disease (PAD).

Both CAD and PAD can cause serious health complications, including heart attacks and strokes. Common symptoms of these conditions include:

leg pain, especially when walking or standing

chest pain

tightness or pressure in the chest and shortness of breath

pain, tightness, and pressure in the neck, jaw, shoulders, and back

indigestion and heartburn

sleep problems and daytime exhaustion

dizziness

heart palpitations

cold sweats

vomiting and nausea

swelling in the legs, ankles, feet, stomach, and veins of the neck

fainting

These symptoms may get worse with activity or stress and get better when a person rests.

Talk with a doctor about chest pain, especially any of the above symptoms accompany it.

Anyone who experiences severe chest pain, dizziness, and fainting, or problems breathing should seek emergency care.

**1.5. Types and causes**

Dyslipidemia can be categorized into two types, based on the cause:

**Primary dyslipidemia**

Dyslipidemia can be diagnosed with a blood test.

Genetic factors cause primary dyslipidemia, and it is inherited. Common causes of primary dyslipidemia include:

Familial combined hyperlipidemia, which develops in teenagers and young adults and can lead to high cholesterol.

Familial hyperapobetalipoproteinemia, a mutation in a group of LDL lipoproteins called apolipoproteins.

Familial hypertriglyceridemia, which leads to high triglyceride levels.

Homozygous familial or polygenic hypercholesterolemia, a mutation in LDL receptors.

Secondary dyslipidemia

Secondary dyslipidemia is caused by lifestyle factors or medical conditions that interfere with blood lipid levels over time.

Common causes of secondary dyslipidemia include:

obesity, especially excess weight around the waist

diabetes

hypothyroidism

alcohol use disorder, also known as alcoholism

polycystic ovary syndrome

metabolic syndrome

excessive consumption of fats, especially saturated and trans fats

Cushing’s syndrome

inflammatory bowel disease, commonly known as IBS

severe infections, such as HIV

an abdominal aortic aneurysm

# 1.6.Risk factors

Several factors are known to increase the chances of developing dyslipidemia and related conditions. These risk factors include:

obesity

a sedentary lifestyle

a lack of regular physical exercise

alcohol use

tobacco use

use of illegal or illicit drugs

sexually transmitted infections

type 2 diabetes

hypothyroidism

chronic kidney or liver conditions

digestive conditions

older age

a diet rich in saturated and trans fats

a parent or grandparent with dyslipidemia

female sex, as women tend to experience higher LDL levels after menopause[31]

# 1.7.Complications of dyslipidemia

Cholesterol is not bad, because the body still needs cholesterol to synthesize hormones, vitamin D and digestive fluids. Cholesterol also creates a metabolic environment for the organs to function smoothly. However, high cholesterol levels cause many dangerous diseases. Therefore, understanding about dyslipidemia and its complications helps us to take early measures to regulate blood fat levels, prevent diseases, ensure quality of life and prolong life in the future.

1. Cardiovascular system

When blood cholesterol levels are too high, they form plaques, which build up on the artery walls. The consequence is on the one hand to block the blood circulation in the vessel lumen, on the one hand to make the vessel wall become stiffer. This condition is commonly known as atherosclerosis. This is the most common and also the most worrisome manifestation of hyperlipoproteinemia.

1. Endocrine system

Some endocrine glands produce hormones that tell the body to use cholesterol such as estrogen, testosterone and cortisol. So hormone levels in the blood also interact with cholesterol levels.

Indeed, many studies have shown that as estrogen levels increase during a woman's menstrual cycle, HDL cholesterol levels also increase and LDL cholesterol levels decrease. In contrast, as menopause approaches, estrogen levels drop and the amount of unused blood lipids increases. This is why middle-aged women have a similar increased risk of cardiovascular disease as men.

1. Nervous system

Cholesterol is an essential component of the human brain. In fact, the brain contains about 25% of the total body's supply of cholesterol. This fat is essential for the development and protection of nerve cells, allowing the brain to work and control life activities.

Although the body always needs some cholesterol for the brain to function optimally, too much cholesterol can be harmful. Excess cholesterol creates plaque in the artery walls that can lead to stroke, ischemic stroke, leading to memory loss, reduced mobility, difficulty swallowing, difficulty speaking and affecting other function

1. Digestive system

In the digestive system, cholesterol is the main raw material for the liver to produce bile - a digestive fluid that helps the body break down food and absorb nutrients through the intestinal wall into the bloodstream. However, when there is too much cholesterol in the bile, the excess will promote the formation of crystals, which in the long run will form hard stones in the gallbladder, bile ducts in the liver. As a result, it will cause obstruction, causing the patient to have intermittent cramps or high fever due to infection - poisoning from the biliary tract. Because of the dangerous dyslipidemia complications mentioned above, the treatment of lipid reduction is extremely necessary. A healthy diet and active exercise habits will help people avoid cardiovascular diseases as well as the bad consequences caused by hyperlipidemia.[32]

Chapter two

# 2.1.Methodology

# 2.2.Design of the study:

An interventional study was conducted in order to compare serum lipid level of both case and control groups.

# 2.3• Duration of the study:

This study performed from (October /2022 ) to ( April /2023 )

2.4• Sample of the study**:**

A purposive sample of total 60 participants which was include (30) patients in diabetic center were chose to participate in the study by reviewing the patients record in the diabetes center And also 30 normal people was selected to participate in this study . we took the data from them by referring to the labs and observing the tests of those normal people who refer to shaqlawa laboratory’s to check their lipid profiles.

# 2.4• Method and tool of data collection:

A self designed questionnaire was prepared to assess some demographic data about participants and also collecting data regarding serum lipid profile.

2.5• Ethical considerations:

The agreement of participants was taken verbally to participate in the study.

2.6• Statistical analysis:

collected data was analyzed by Excel program.

**Chapter three**

# 3.Result

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 1: Age of participants** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 20<=30 | 7 | 11.7 | 11.7 | 11.7 |
| 31<=50 | 24 | 40.0 | 40.0 | 51.7 |
| 51<=75 | 29 | 48.3 | 48.3 | 100.0 |
| Total | 60 | 100.0 | 100.0 |  |

This table shows that the majority of the participants aged were between (51-75 ) years(% 48.3).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 2: Gender of participants** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Female | 33 | 55.0 | 55.0 | 55.0 |
| Male | 27 | 45.0 | 45.0 | 100.0 |
| Total | 60 | 100.0 | 100.0 |  |

This table shows the distribution of participant gender. According to the result female had slightly higher percentage (%55) than males in this study.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 3: Education of participants** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | hightSchool | 3 | 5.0 | 5.0 | 5.0 |
| illiterate | 33 | 55.0 | 55.0 | 60.0 |
| Institute | 5 | 8.3 | 8.3 | 68.3 |
| MiddleSchool | 8 | 13.3 | 13.3 | 81.7 |
| university | 11 | 18.3 | 18.3 | 100.0 |
| Total | 60 | 100.0 | 100.0 |  |

This table shows the education level of participant. The majority of participants was illiterate

(%55)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table4: Occupation of participants** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | employed | 9 | 15.0 | 15.0 | 15.0 |
| techer | 8 | 13.3 | 13.3 | 28.3 |
| unemployed | 35 | 58.3 | 58.3 | 86.7 |
| worker | 8 | 13.3 | 13.3 | 100.0 |
| Total | 60 | 100.0 | 100.0 |  |

This table shows the **Occupation** level of participant. The majority of participants was unemployed

(%58.3)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table5:existence of DM type 2 in the participants** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | no | 30 | 50.0 | 50.0 | 50.0 |
| yes | 30 | 50.0 | 50.0 | 100.0 |
| Total | 60 | 100.0 | 100.0 |  |

This table shows that the numbers of participants with diabetes mellitus and non-diabetes mellitus were equal (%50-50)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 6: BMIof participants** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 15<25 | 14 | 23.3 | 23.3 | 23.3 |
| 25<35 | 43 | 71.7 | 71.7 | 95.0 |
| 35<45 | 3 | 5.0 | 5.0 | 100.0 |
| Total | 60 | 100.0 | 100.0 |  |

this table we show that the higher proportion of participants had a BMI between 25-35, which is 71.7% of the participants

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 7: Cholesterol Range in patients with diabetes mellitus** | | | | | |
|  | | | | | |
|  | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 130<=200 | 17 | 56.7 | 56.7 | 56.7 |
| 201<=300 | 11 | 36.7 | 36.7 | 93.3 |
| 301<=420 | 2 | 6.7 | 6.7 | 100.0 |
| Total | 30 | 100.0 | 100.0 |  |

This table shows the cholesterol level of people with diabetes. 17 participants had a level between 130-200, 11 of them had a level of 201-300, and 2 of them had a level of between 301-420, ie 56.7% Between 130-200. 36.7% between201-300 6.7% between 301-420

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 8:TG in patients with diabetes mellitus** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 100<=250 | 20 | 66.7 | 66.7 | 66.7 |
| 251<=400 | 7 | 23.3 | 23.3 | 90.0 |
| 401<=550 | 1 | 3.3 | 3.3 | 93.3 |
| 551<=700 | 2 | 6.7 | 6.7 | 100.0 |
| Total | 30 | 100.0 | 100.0 |  |

This tablethe TG level of people with diabetes.20 participants had a level between 100-250, 7 of them had a level of 251-400, and 1 of them had a level of between 401-550, and 2of them had a level between501-700.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table9:Cholesterol Rate in patients without diabetes mellitus** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 100<=150 | 21 | 70.0 | 70.0 | 70.0 |
| 151<=190 | 9 | 30.0 | 30.0 | 100.0 |
| Total | 30 | 100.0 | 100.0 |  |

This table shows the Cholesterol level of people without diabetes. 21 participants had a level between 100-150, 9 of them had a level of 151-190 .

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 10:TG Rate in patients without diabetes mellitus** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 70<=130 | 24 | 80.0 | 80.0 | 80.0 |
| 131<=190 | 6 | 20.0 | 20.0 | 100.0 |
| Total | 30 | 100.0 | 100.0 |  |

This table shows the TG level of participantswithout diabetes, 24 of them had a level between 70-130, 6of them had a level of 132-190 .

**Chapter four**

# 4.Discussion

According to the results, it reveals that:

In this study, the proportion of females was 55% higher than that of males.This is a coincidence that the number of women is higher, especially since we have not gone to recruit more women.

Most of the participants were unemployed.Therefore, they were unemployed because we recruited people from the community, not specifically a group of people who have the same job.

The average age of the participants was 52 years, indicating that most of the participants were elderly.That’s why the average age is 52 because mostly the elders mostly considered about their health and checking them as often as they can.

The highest BMI score was41,The highest BMI was 41 in patients with diabetes mellitus and 33 in healthy subjects

The highest cholesterol level in people with diabetes was between 300-420, which was higher than in normal people. The highest level of cholesterol in people without diabetes was between 150-190

The highest TG level in a person with diabetes was between 551-700, which is higher than in a normal person. The highest TG level in a person without diabetes was between 130-190

**Chapter five**

# 5.1Conclusion

The average age is (52)

Most of the participants was female(%55)

The highest cholesterol level among participants with DM was 301-420.

The highest TG level among participants with DM was 551-700.

The highest cholesterol levels in the normal population ranged from 151-190 The highest

TG level in the normal population was 131-190.

According to this result, we conclude that cholesterol and TG levels are much higher in people with diabetes than in people without diabetes

# 5.2recommendations

1. The same study should be conducted but more people should be recruited

2. People with diabetes have high TG and cholesterol, so we recommend that they take lab tests as often as possible

3. We recommend that students be informed that people with diabetes have higher cholesterol and TG

4-We recommend that people with diabetes avoid fatty foods

**References**

[1] Mooradian A.D. Dyslipidemia in type 2 diabetes mellitus. Nat. Clin. Pract. Endocrinol. Metab. 2009;5:150–159. doi: 10.1038/ncpendmet1066. [PubMed] [CrossRef] [Google Scholar]

[2]. Santos-Gallego C.G., Rosenson R.S. Role of HDL in those with diabetes. Curr. Cardiol. Rep. 2014;16:512. doi: 10.1007/s11886-014-0512-5. [PubMed] [CrossRef] [Google Scholar]

[3] Gerber P.A., Spirk D., Brandle M., Thoenes M., Lehmann R., Keller U. Regional differences of glycaemic control in patients with type 2 diabetes mellitus in Switzerland: A national cross-sectional survey. Swiss Med. Wkly. 2011;141:w13218. doi: 10.4414/smw.2011.13218. [PubMed] [CrossRef] [Google Scholar]

[4] Joshi S.R., Anjana R.M., Deepa M., Pradeepa R., Bhansali A., Dhandania V.K. Prevalence of dyslipidemia in urban and rural India: The ICMR-INDIAB study. PLoS ONE. 2014;9:e96808. doi: 10.1371/journal.pone.0096808. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[5] Zhu Z.W., Denga F.Y., Lei S.F. Meta-analysis of Atherogenic Index of Plasma and other lipid parameters in relation to risk of type 2 diabetes mellitus. Prim. Care Diabetes. 2015;9:60–67. doi: 10.1016/j.pcd.2014.03.007. [PubMed] [CrossRef] [Google Scholar]

[6] Lee J.S., Chang P.Y., Zhang Y., Kizer J.R., Best L.G., Howard B.V. Triglyceride and HDL-C Dyslipidemia and Risks of Coronary Heart Disease and Ischemic Stroke by Glycemic Dysregulation Status: The Strong Heart Study. Diabetes Care. 2017;40:529–537. doi: 10.2337/dc16-1958. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

[7] Rana J.S., Liu J.Y., Moffet H.H., Solomon M.D., Go A.S., Jaffe M.G., Karter A.J. Metabolic dyslipidemia and risk of coronary heart disease in 28,318 adults with diabetes mellitus and low-density lipoprotein cholesterol, 100 mg/dL. Am. J. Cardiol. 2015;116:1700–1704. doi: 10.1016/j.amjcard.2015.08.039. [PubMed] [CrossRef] [Google Scholar]

[8] American Diabetes Association Diagnosis and Classification of Diabetes mellitus. Diabetes Care; 36:(supp1.1):S67-74, 2013.

[9] Craig, M.E.; Hattersley, A.; and Donaghue, K.C. “Definition epidemiology and classification of diabetes in children

and adolescents”; J. Pediatr Diabetes, 12:3-

12, 2009.

[10] Gregory, L.; Bryan, K.; Derida chen, Y.;

David, R.; Bruce, Jr.; M.; Psaty, J.; Rotter, D.; Siscovick, S.; and Ian H.B.“Glucose insulin and incident hyprtension in the multi –ethnic study of atherosclerosis”; American journal of pidmiology, 172(10)1144-1154, 2010.

[11] Tchaicaya, A.; Braun, M.; Lorenz, N.; Delagardelle, C.; and Beissd, J. “Social inequality in awareness of cardiovascular risk factors in patients undergoing coronary angiography”;. Eur J prev cardiol, Vol(20), 5:872-879, 2013.

[12] Basevi, V.; DiMario, S.; Morciano, C.; Nonino, F.; and Magrini, N.”American diabete Association standard of medical care in diabetes”; 34 (suppl. 1): S 11- S 61. 34 (5):e 53 – e 53, 2011.

[13] World health organization. Expert committee on prevention and treatment of diabetes mellitus. WHO technical series No.844 Geneva. World Health organization, 1994.

[14] Godkar, D.; “Text book of medical laboratory technology”; ed.2 Bahlani Publishing house, S: 176-233, 2003.

[15] Harris, M.; Hadden, W.; and Knowlerwc, B. “Prevalence of Diabetic and impairedglucose tolerance and plasma glucose level in the US population aged 20- 74 Years”; 36:523-534, 1987.

[16] Bild, D.; and Teutsch, S. M. “The control of hypertension in person with diabetes”; 102:522-529, 1987.

[17] Facchini, C.; YLD, C.; Jeppesen, J.; and Revan, G. “Insulin resistance hyperinsulinemia and dislipidemia in non obese individuals with a family history of hypertension”; Am j hypertension, 5:694- 699, 1992.

[18] Reaven, G.; Lithell, H.; and Landsberg, L. “Hypertension and associated metabolic abnormalities the role of insulin resistance and sympathoadrenal”; J Mesystem. N Engl J Med, 334:374-381, 1996.

[19] Belfiore, F.; and Mogensen, E. “New concepts in Diabetes and it’s treatment”; Karger medical and scientific publisher pp(1-2), 2000.

[20] Chatrjee, C. “Role of endocrine in lipid metabolisim”; Editor, Medical allied agency, S:546-550, 1992.

[21] Chatterjee, M.; and Shind, R. “Text book of medical laboratory technology metabolsim of carbohydrates”; Jaypee Brothers medical publisher, sixth edition, S: 266-330, 2005.

[22] Otamere, H.O; Alomamka, C.P.; Okokhere, P.O.; and Adisa, W.A. “Lipid profil in diabetes mellitus what impact has age duration”; British Journal of Pharmacology and Toxicology, 2(3):135- 137, 2011.

[23] Craig, W.; Neveux, G.; Palomaki, M.; Cleveland, M.;and Hadow, J. “Lipoprotien (a) as a risk factor for ischemic heart diseas”;. Clin cheme, 44(11):2301-2306, 1998.

[24] Rader DJ, Hoeg JM, Brewer HB. Quantitation of plasma apolipoproteins in the primary and secondary prevention of coronary artery disease. Ann Intern Med. 1994 Jun 15;120(12):1012-25. [PubMed]

[25] Wilson PWF, Meigs JB, Sullivan L, et al. Prediction of incident diabetes mellitus in middle-aged adults: the Framingham offspring study. Arch Intern Med 2007;167:1068–74.doi:10.1001/archinte.167.10.1068pmid:http://www.ncbi.nlm.nih.gov/pubmed/17533210CrossRefPubMedWeb of ScienceGoogle Scholar

[26] Seo MH, Bae JC, Park SE, et al. Association of lipid and lipoprotein profiles with future development of type 2 diabetes in nondiabetic Korean subjects: a 4-year retrospective, longitudinal study. J Clin Endocrinol Metab 2011;96:E2050–4.doi:10.1210/jc.2011-1857CrossRefPubMedGoogle Scholar

[27] Wang Y-L, Koh W-P, Talaei M, et al. Association between the ratio of triglyceride to high-density lipoprotein cholesterol and incident type 2 diabetes in Singapore Chinese men and women. J Diabetes 2017;9:689–98.doi:10.1111/1753-0407.12477pmid:http://www.ncbi.nlm.nih.gov/pubmed/27573855PubMedGoogle

Scholar

[28] Wang B, Zhang M, Liu Y, et al. Utility of three novel insulin resistance-related lipid indices for predicting type 2 diabetes mellitus among people with normal fasting glucose in rural China. J Diabetes 2018;10:641–52.doi:10.1111/1753-0407.12642pmid:http://www.ncbi.nlm.nih.gov/pubmed/29322661PubMedGoogle Scholar

[29] Chen Z, Hu H, Chen M, et al. Association of triglyceride to high-density lipoprotein cholesterol ratio and incident of diabetes mellitus: a secondary retrospective analysis based on a Chinese cohort study. Lipids Health Dis 2020;19:33. doi:10.1186/s12944-020-01213-

xpmid:http://www.ncbi.nlm.nih.gov/pubmed/32131838PubMedGoogle Scholar

[30] Cheng C, Liu Y, Sun X, et al. Dose-response association between the triglycerides: high-density lipoprotein cholesterol ratio and type 2 diabetes mellitus risk: the rural Chinese cohort study and meta-analysis. J Diabetes 2019;11:183–92.doi:10.1111/1753-0407.12836pmid:http://www.ncbi.nlm.nih.gov/pubmed/30091266PubMedGoogle Scholar

[31]<https://www.medicalnewstoday.com>

[32]<https://www.vinmec.com/en/cardiology/health-news/complications-of-dyslipidemia/>

Dear participant

Thank you for participating in this research.

Please answer these questions in honestly.

**Part one: Data Collection Form**

• Gender male( ) female( )

• Age ( ) years

• Educationilliterate( ) high school( ) institute( ) middle school( )

University ( )

• Occupation employed( ) teacher( ) unemployed( ) worker( )

• do the participants have diabetes yes( ) no( )

• BMI ( )

• Cholesterol rate ( )

• TG rate ( )

بەژداربووی بەرێز

سووپاس بۆ بەژداری کردنتان لەم توێژینەوەیەدا

تکایە وەڵامی ئەم پرسیارانە بدەنەوە

**بەشییەکەم : فۆرمی پرکردنەوەی زانیاری**

ڕەگەز نێر مێ

تەمەن ساڵ

ڕێژەی خوێندەواری نەخوێندەوار قۆناغی ئامادەی پەیمانگا دواناوەندی کۆلێژ

پیشەی مۆزەف مامۆستا بێکار کاسب

ئایە نەخۆشی شەکرەت هەیە ؟

رێژەی کۆلیسترۆل

رێژەی چەوری سیانی

**پوختە**

ئەم توێژینەوەیە بۆ بەراوردکردنی ئاستی پرۆفایلی چەوری سیرۆم لە نەخۆشانی شەکرە لەگەڵ دانیشتوانی ئاسایی داڕێژرابوو. نمونەی خوێن لە ٦٠ نەخۆش وەرگیرا، ٣٠ حاڵەت تەندروست بوون و ٣٠ بەشداربووەکەی تر تووشی نەخۆشی شەکرەی جۆری دووەم بوون. پرۆفایلی چەوری بە بەکارهێنانی کیتی تاقیگەیی دیاریکرا. ئەنجامەکان دەریانخست کە ئاستی کۆلیسترۆڵ لە نەخۆشانی شەکرەدا بە شێوەیەکی بەرچاو بەرزبووەتەوە لە بەرامبەر نەخۆشانی غەیرە شەکرە. هەروەها ئاستی ترایگلیسیرید (TG) بە شێوەیەکی بەرچاو بەرزتر بووە لە نەخۆشانی تووشبوو بە نەخۆشی شەکرە بە بەراورد لەگەڵ نەخۆشانی غەیرە شەکرە. کەمبوونەوەی بەرچاو لە ئاستی چەوری پڕۆتینی چڕی بەرز لە نەخۆشانی شەکرەدا تۆمارکرا زیاتر لە نەخۆشانی غەیرە شەکرە.

وشەی سەرەکی: نەخۆشی شەکرە، پرۆفایلی چەوری سیرۆم.

**تجريدي**

تم تصميم هذه الدراسة لمقارنة مستويات الدهون في الدم في مرضى السكري مقابل السكان العاديين. تم جمع عينات الدم من 60 مريضا ، وكانت 30 حالة صحية و 30 مشاركا آخرين يعانون من داء السكري من النوع 2. تم تحديد ملف الدهون باستخدام مجموعات المختبر. كشفت النتائج أن مستوى الكوليسترول قد زاد بشكل ملحوظ في مرضى السكري ضد المرضى غير المصابين بالسكري. كما كان مستوى الدهون الثلاثية (TG) أعلى بكثير في المرضى الذين يعانون من مرض السكري مقارنة بالمرضى غير المصابين بالسكري. تم تسجيل انخفاض كبير في مستوى البروتين الدهني عالي الكثافة لدى مرضى السكري أكثر من المرضى غير المصابين بالسكري.

الكلمات المفتاحية: داء السكري ، ملف الدهون في الدم

حکومەتی هەرێمی کوردستان – عێراق

وەزارەتی خوێندنی باڵا و توێژینەوەی زانستی

زانکۆی پۆلیتەکنیکی هەولێر

کۆلێژی تەکنیکی شەقڵاوە

بەشی پەرستاری

**پڕۆژەی دەرچوون (توێژینەوە)**

**ئاساییبەراوردکردنی پرۆفایلی چەوری سیرۆم لە نەخۆشانی شەکرە لە بەرامبەر دانیشتوانی ئاساییپڕۆژەی دەرچوون (توێژینەوە)**

**بەراوردکردنی پرۆفایلی چەوری سیرۆم لە نەخۆشانی شەکرە لە بەرامبەر دانیشتوانی ئاسایی**

توێژینەوەیەک پێشکەش بە ئەنجومەنی بەشی پەرستاری لە کۆلێژی تەکنیکی شەقڵاوە دەکرێت لە جێبەجێکردنی بەشەکی پێویستیەکان بۆ پلەی بڕوانامەی تەکنیکی لە پەرستاری بۆ ساڵی خوێندن٢٠٢٢ -٢٠٢٣

ئامادەکراوە لە لایەن :

زەکەریا ادریس فائقزریان فەلاح علی

ژیان سەدام نوریرەیان احمد

سەرپەرشتیکراوە لە لایە :

بەڕێز . دلێر محمد سەید

٢٠٢٢-٢٠٢٣

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