# Study of Diabetes Mellitus with Heart Attack

**Abeer Nhad Abess [1], Taha Daham Khalil [2], Rusul Ziad Salman [3], Amna Khudhair Abbas [4]**

**Abstract:** The study conducted on too Iraqi patient with chronic atherosclerosis at age rang (29-70years) in Baquba teaching hospital in (center care unit) during the period from 25 September 2020to may 2021. The patients divided in (55 mans and 45 patients) the total patient divided in tow groups according the treatment (30) of total patient under go to treatment for two to three days after atherosclerosis and 70 patient in same day of diagnosis of atherosclerosis. Blood glucose value increase and we can use this as biomarkers with Atherosclerosis.

## Introduction

Diabetes is an increasing public health problem, and when uncontrolled, it has serious consequences for individuals' health and well-being [1]. Diabetes is well known to be a key risk factor for cardiovascular disease (CVD) and premature death [1-6]. Furthermore, suboptimal blood glucose levels are associated with increased risk of coronary heart disease and strokes [2]. It is not clear, however, whether glucose levels may predict CVD risk among individuals without known diabetes and, furthermore, whether casual blood glucose levels may predict CVD in the same way as fasting glucose levels. Such knowledge is of relevance for general practitioners since the majority of individuals at risk of diabetes and CVD are treated in the primary care service. From an individual's perspective, better glycemic control may prevent, or at least delay, CVD complications, which will have a great impact on the individual's health and well-being.

In the UK, more than one-third of the adult population have pre-diabetes, which puts people at high risk of developing diabetes and CVD [7]. Pre-diabetes may be defined as increased blood glucose levels that are not yet high enough to be diagnosed as diabetes [8]. The metabolic process that leads to elevated blood glucose in individuals at risk of developing diabetes typically starts years before the diagnosis, [9] and several trials have demonstrated that early identification and intervention in relation to high-risk individuals can prevent or delay the development of diabetes and its complications [10-12]. Finally, when assessing hyperglycemia and CVD risk among men and women without diabetes, studies often require participants to be fasting for blood sampling purposes. In some settings, however, it is unrealistic to require all participants to be fasting, for instance, in community-based studies. Moreover, people are seldom fasting when they visit their general practitioner with various health problems or for routine annual consultations for adults. It is therefore important to investigate whether casual blood glucose level (ie, no instructions to participants as regards fasting) is associated with future CVD risk.

To our knowledge, studies examining the association between casual blood glucose and future risk of CVD in both women and men, especially in older adults, are missing. In Norway, health data from several regional community-based health surveys of more than 170 000 individuals are combined in the Cohort of Norway (CONOR) database [13]. In the current study, CONOR was linked to the Cardiovascular Disease in Norway Project (CVDNOR), which includes information on all hospital stays with a cardiovascular or diabetes-related diagnosis from 1994 to 2009. Using these data, we aimed to assess the association between casual blood glucose level and subsequent CVD and

mortality among community-dwelling adults without a known diagnosis of diabetes. We also aimed to outline the impact of age and sex on this association.

## Experimental part

Type 2 diabetes is usually diagnosed using the glycated hemoglobin (A1C) test. This blood test indicates your average blood sugar level for the past two to three months. Results are interpreted as follows:

✓ Below 5.7% is normal.

✓ 5.7% to 6.4% is diagnosed as pre diabetes.

✓ 6.5% or higher on two separate tests indicates diabetes.

If the A1C test isn't available, or if you have certain conditions that interfere with an A1C test, your health care provider may use the following tests to diagnose diabetes:

**Random blood sugar test.** Blood sugar values are expressed in milligrams of sugar per deciliter (mg/dL) or millimoles of sugar per liter (mmol/L) of blood. Regardless of when you last ate, a level of 200 mg/dL (11.1 mmol/L) or higher suggests diabetes, especially if you also have symptoms of diabetes, such as frequent urination and extreme thirst.

**Fasting blood sugar test.** A blood sample is taken after you haven't eaten overnight. Results are interpreted as follows:

➢ Less than 100 mg/dL (5.6 mmol/L) is considered healthy.

➢ 100 to 125 mg/dL (5.6 to 6.9 mmol/L) is diagnosed as prediabetes.

➢ 126 mg/dL (7 mmol/L) or higher on two separate tests is diagnosed as diabetes.

**Oral glucose tolerance test.** This test is less commonly used than the others, except during pregnancy. You'll need to not eat for a certain amount of time and then drink a sugary liquid at your health care provider's office. Blood sugar levels then are tested periodically for two hours. Results are interpreted as follows:

✓ Less than 140 mg/dL (7.8 mmol/L) after two hours is considered healthy.

✓ 140 to 199 mg/dL (7.8 mmol/L and 11.0 mmol/L) is diagnosed as prediabetes.

✓ 200 mg/dL (11.1 mmol/L) or higher after two hours suggests diabetes.

**Screening.** The American Diabetes Association recommends routine screening with diagnostic tests for type 2 diabetes in all adults age 35 or older and in the following groups:

➢ People younger than 35 who are overweight or obese and have one or more risk factors associated with diabetes.

➢ Women who have had gestational diabetes.

➢ People who have been diagnosed with prediabetes.

➢ Children who are overweight or obese and who have a family history of type 2 diabetes or other risk factors.

## The results

The results of the statistical analysis showed a significant increase in the sugar level in the patients (143.26 ± 6.97) compared to the control (143.26 ± 6.97) group. Sugar results was agree with Anastasia Poznyak .et ,al (2020),[14] were observed Both types of diabetes mellitus have been shown to be independent risk factors for accelerated atherosclerosis development. It is now clear that the pathogenesis of diabetes mellitus and atherosclerosis are closely linked, but the mechanisms and molecular interactions of this linkage are still under discussion and as the figure (1) and table (1).

**Table (1) serum blood glucose, in study groups (patients compared with controls)**

| Parameters | Group | Mean ± Std. | P-value |
|---|---|---|---|
| sugar | Control | 100.17 ± 1.36 | 0.001 |
| | Patients | 143.26 ± 6.97 | |
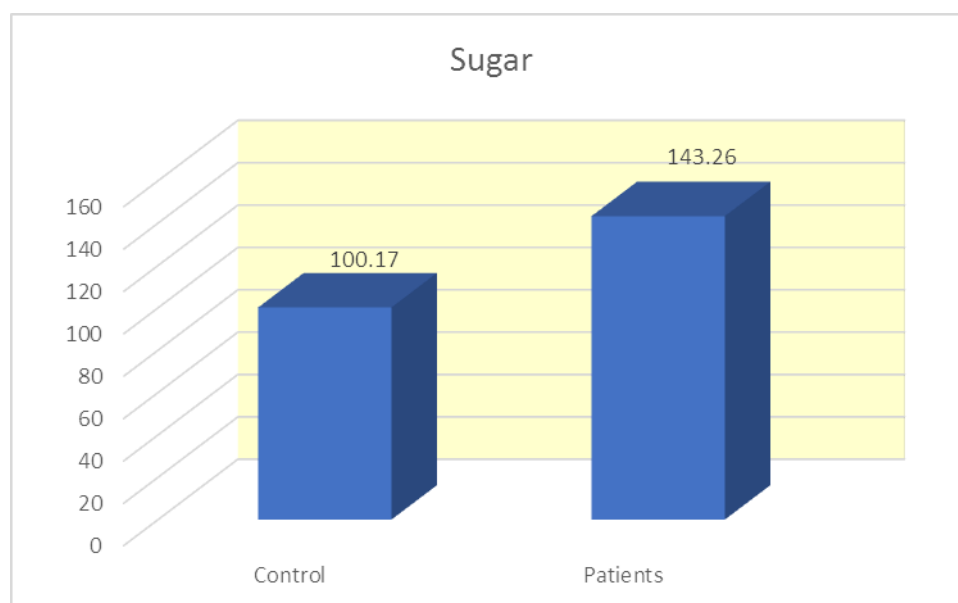


**Figure (1) blood glucose level in study groups**

### References

1. World Health OrganizationRoglic G. Global report on diabetes. Geneva, Switzerland: World Health Organization, 2016: 86.

2. Emerging Risk Factors Collaboration, Sarwar N, Gao P, et al. Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: a collaborative meta-analysis of 102 prospective studies. Lancet 2010;375:2215–22.

3. Tancredi M, Rosengren A, Svensson A-M, et al. Excess mortality among persons with type 2 diabetes. N Engl J Med 2015;373:1720–32.

4. Rao Kondapally Seshasai S, Kaptoge S, Thompson A, et al. Diabetes mellitus, fasting glucose, and risk of cause-specific death. N Engl J Med 2011;364:829–41.

5. Stamler J, Vaccaro O, Neaton JD, et al. Diabetes, other risk factors, and 12-yr cardiovascular mortality for men screened in the multiple risk factor intervention trial. Diabetes Care 1993;16:434–44.

6. Wei M, Gaskill SP, Haffner SM, et al. Effects of diabetes and level of glycemia on all-cause and cardiovascular mortality. The San Antonio heart study. Diabetes Care 1998;21:1167–72.

7. Mainous AG, Tanner RJ, Baker R, et al. Prevalence of prediabetes in England from 2003 to 2011: population-based, cross-sectional study. BMJ Open 2014;4:e005002.

8. American Diabetes Association. Diagnosis and classification of diabetes mellitus. Diabetes Care 2010;33 Suppl 1:S62–9.

9. American Diabetes Association. 1. Improving Care and Promoting Health in Populations: Standards of Medical Care in Diabetes-2020. Diabetes Care 2020;43:S7–13.

10. Laiteerapong N, Ham SA, Gao Y, et al. The Legacy Effect in Type 2 Diabetes: Impact of Early Glycemic Control on Future Complications (The Diabetes & Aging Study). Diabetes Care 2019;42:416–26.

11. Lindström J, Peltonen M, Eriksson JG, et al. Improved lifestyle and decreased diabetes risk over 13 years: long-term follow-up of the randomised Finnish Diabetes Prevention Study (DPS). Diabetologia 2013;56:284–93.

12. Dunbar J, Hernan A, Janus E, et al. Implementation salvage experiences from the Melbourne diabetes prevention study. BMC Public Health 2012;12:806.

13. Naess O, Søgaard AJ, Arnesen E, et al. Cohort profile: cohort of Norway (CONOR). Int J Epidemiol 2008;37:481–5

14. Anastasia Poznyak, Andrey V. Grechko, Paolo Poggio, Veronika A. Myasoedova, Valentina Alfieri, and Alexander N. Orekhov "The Diabetes Mellitus–Atherosclerosis Connection: The Role of Lipid and Glucose Metabolism and Chronic Inflammation "Introduction Journal of molecular sciences,v.21(5)2020.