

## Introduction

Diabetes mellitus, particularly type 2 diabetes mellitus (T2DM), is a chronic condition that affects multiple organ systems and is associated with numerous long-term complications. Among the most serious of these are cardiovascular diseases (CVD), which represent the leading cause of morbidity and mortality in individuals with diabetes. The interplay between poor metabolic control characterized by sustained hyperglycemia, insulin resistance, and dyslipidemia and increased cardiovascular risk forms a critical focus in diabetes management. Effective control of blood glucose and other metabolic parameters is essential to mitigating cardiovascular complications and improving overall health outcomes for people living with diabetes [1].

### Diabetes and cardiovascular risk

Cardiovascular diseases, including coronary artery disease, stroke, and peripheral artery disease, are significantly more common in people with diabetes than in the general population. Diabetic patients are two to four times more likely to develop cardiovascular events, largely due to the chronic metabolic imbalances that characterize the disease [2]. Several factors contribute to the increased cardiovascular risk in diabetes, including:

**Atherosclerosis:** Hyperglycemia accelerates the development of atherosclerosis, the buildup of plaques in the arteries. This condition narrows and hardens the arteries, reducing blood flow and leading to ischemic events such as heart attacks and strokes.

**Hypertension:** High blood pressure is common in diabetic individuals and acts synergistically with other risk factors to increase cardiovascular strain. Insulin resistance and hyperglycemia contribute to vascular endothelial dysfunction, which exacerbates hypertension [3].

**Dyslipidemia:** Diabetes is often accompanied by abnormal lipid profiles, including elevated triglycerides, low high-density lipoprotein (HDL) cholesterol, and an abundance of small, dense low-density lipoprotein (LDL) particles. This lipid imbalance contributes to the formation of atherosclerotic plaques and vascular inflammation.

**Inflammation and oxidative stress:** Chronic inflammation and increased oxidative stress in diabetes further damage blood vessels, promoting endothelial dysfunction and plaque formation, both of which increase the risk of CVD [4].

## Description

### Metabolic control and its impact on cardiovascular risk

Metabolic control managing blood glucose, lipids, and blood pressure plays a crucial role in reducing cardiovascular risk in people with diabetes. Poor metabolic control not only exacerbates the risk of cardiovascular complications but also worsens other diabetes-related conditions such as nephropathy and neuropathy, which further increase the burden on the cardiovascular system.

#### Glycemic control

## Conclusion

Diabetes, particularly T2DM, significantly increases the risk of cardiovascular complications due to its impact on multiple metabolic pathways, including glucose, lipid, and blood pressure regulation. Poor metabolic control not only accelerates the development of cardiovascular diseases but also exacerbates other diabetes-related complications. Effective management of cardiovascular risk in diabetes requires a multifaceted approach that includes tight glycemic control, blood pressure regulation, lipid management, and lifestyle interventions.

Thorough comprehensive metabolic control, individuals with diabetes can greatly reduce their risk of cardiovascular events and improve their long-term health outcomes. The focus on preventing cardiovascular complications, combined with advances in pharmacological therapies and lifestyle interventions, is essential in addressing the growing burden of diabetes-related cardiovascular diseases worldwide.

## Acknowledgement

None

## Conflict of Interest

None

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