



**Comparative Study between Diabetic  
and non- Diabetic Patients Regarding  
Prevalence of Coronary Artery Disease  
and Plaque Composition by Multi-  
detector CT Coronary Angiography**

*Thesis*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# قالوا

لسببائك لا علم لنا  
إلا ما علمتنا إنك أنت  
العليم العظيم

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## *List of Abbreviations*

<b>Abb.</b>	<b>Full term</b>
<b>2D</b> .....	Two dimensions
<b>3D</b> .....	Three dimensions
<b>ACCF</b> .....	American college of cardiology foundation
<b>AHA</b> .....	American heart association
<b>AOR</b> .....	An Odds Ratio
<b>CABG</b> .....	Coronary artery bypass and grafting
<b>CAD</b> .....	Coronary artery disease
<b>CAP</b> .....	Coronary artery plaque
<b>CCT</b> .....	Coronary Computed tomography
<b>CCTA</b> .....	Coronary computed tomography angiography
<b>CHD</b> .....	Coronary heart disease
<b>CI</b> .....	Confidence interval
<b>CKs</b> .....	Cytokines
<b>CT</b> .....	Computed tomography
<b>HR</b> .....	Heart rate
<b>HS</b> .....	Highly significant
<b>HTN</b> .....	Hypertension
<b>HU</b> .....	Hounsfield units
<b>IL</b> .....	Interleukin
<b>LA</b> .....	Left atrium
<b>LAA</b> .....	Left atrial appendages
<b>LAD</b> .....	Left anterior descending
<b>LCx</b> .....	Left circumflex
<b>LDL</b> .....	Low density lipid
<b>LM</b> .....	Left main
<b>LSPV</b> .....	Left superior pulmonary vein
<b>MDCT</b> .....	Multidetector computed tomography

## *List of Abbreviations Cont...*

<b>Abb.</b>	<b>Full term</b>
<b>MI</b> .....	Myocardial infarction
<b>MIP</b> .....	Maximum projection intensity
<b>MPR</b> .....	Multiplanar reconstruction
<b>NAD</b> .....	Nicotinamide adenosine dinucleotide
<b>NC</b> .....	Necrotic core
<b>NS</b> .....	Non significant
<b>OM</b> .....	Obtuse marginal
<b>P</b> .....	Prevalence
<b>PDA</b> .....	Posterior descending artery
<b>RCA</b> .....	Right coronary artery
<b>ROI</b> .....	Area of interest
<b>RR</b> .....	Inter beat interval
<b>RSPV</b> .....	Right superior pulmonary vein
<b>S</b> .....	Significant
<b>SA</b> .....	Superior atrial
<b>SD</b> .....	Standard deviation
<b>Sig</b> .....	Significance
<b>TNF</b> .....	Tumor necrosis factor
<b>VA</b> .....	Ventriculo-atrial

## INTRODUCTION

Coronary artery disease (CAD) is the leading cause of morbidity and mortality worldwide. The treatment of CAD has changed significantly in the last two decades (*Rochette et al., 2013*).

Diabetes is known to be a major cardiovascular risk factor associated with significantly increased morbidity and mortality and particularly increased risk of major cardiac events especially myocardial infarction as a manifestation of highly incident coronary artery disease. This can lead to decreased life expectation and life quality. Major cause for myocardial infarction is plaque rupture. Prevalence of obstructive and non-obstructive plaques is increased in diabetic patients (*Nadjiri et al., 2016*).

Recent trials have demonstrated that both anatomical and functional significance are crucial to clinical outcomes for symptomatic CAD patients considered for revascularization (*Rochette et al., 2013*).

The primary advantage of MDCT is the ability to obtain thin cross-sectional axial images, with improved spatial resolution over ultrasound, nuclear medicine and magnetic resonance imaging. CT images, which are inherently digital and thus quite robust, are amenable to 3-D computer reconstruction, allowing for nearly an infinite number of projections (*Budoff, 2016*).

Coronary CT Angiography not only substitutes invasive coronary angiography under certain conditions but it furthermore emerges as a useful prognostic tool for prediction of subsequent cardiac events (*Nadjiri et al., 2016*).

The exceptional contrast resolution of CT (ability to differentiate fat, air, tissue and water), allows visualization of more than the lumen or stent but rather the plaque, artery wall and other cardiac and non-cardiac structures simultaneously (*Budoff, 2016*).

## **AIM OF THE WORK**

**T**he aim of this study is to assess the prevalence of coronary heart disease in diabetic patients in comparison to non-diabetics and evaluating the composition of the plaque in diseased individuals.