

**Title:** Coronary Artery Calcifications in Middle Eastern Populations: Prevalence and Comparison with Populations in Europe and the USA

**Category:** Prevention

### **Abstract**

**Background:** Coronary artery calcifications (CAC) are markers of atherosclerosis and correlate with the extent and severity of coronary artery disease (CAD). The distribution of CAC scores has only been reported in selected cohorts: mostly in USA, Europe and South America. The objective of this study is to report age- and gender-stratified CAC distributions in a Middle Eastern cohort referred for coronary computed tomographic angiography (CCTA) and CAC scoring to serve as guidelines for the clinical interpretation of CAC scans.

**Methods:** Consecutive patients referred for coronary CTA to rule out CAD were included. Patients with previous percutaneous coronary intervention (PCI), Coronary artery bypass grafting (CABG) or myocardial infarction (MI) were excluded. Agatston CAC scoring was performed in all patients prior to contrast injection. Patients were divided by gender and then into 8 exclusive age groups.

**Results:** A total of 2361 Middle Eastern patients (37.6% women, 69.6% Jordanians) aged 19-93 were included. Men had higher mean calcium scores than women (220.1 vs. 160.2,  $p=0.0052$ ), and the amount and prevalence of calcium increased progressively with age in both genders. CAC burden significantly increased with every additional risk factor added. Subjects with no risk factors had a mean CACS of 88 compared to 369 in subjects with all 4 risk factors (hypertension, diabetes, dyslipidemia and cigarette smoking), ( $p<0.0001$ ). Compared with results from 6 population-based studies in Europe, USA and Brazil, our population had a higher prevalence of DM, smoking and obesity. We compared median CAC scores between MESA's white population of both genders and our cohort. In both genders, the mean CAC scores were higher in our cohort. In men the difference appeared at the 55-64 years age group, and in women at 65-74 years age group. We also compared our mean scores with those in the Heinz Nixdorf Recall study (HNR); CAC scores were consistently higher in our population for both genders

**Conclusions:** Middle Eastern populations have higher calcium scores at all age groups and in both genders as compared with similar populations in the USA and Europe. This can be partly explained by the higher prevalence of cardiovascular risk factors. Such differences must be taken into consideration when assessing cardiovascular risk profiles

**Implications:** The consistently higher CACS partly explains the earlier onset of CV events in Middle Eastern populations compared with the West. Addressing CV risk factors is key to CAD prevention