

Title: Cardiovascular Risk Assessment Using Astronaut Cardiovascular Health and Risk Modification and Pooled Cohort Equation in Non-Cardiac Pakistani Population

Category: Prevention

Abstract

Background: South Asians have relatively high risk of cardiovascular diseases (CVD) compare to other regions. A newly established CVD risk estimator, Astronaut Cardiovascular Health and Risk Modification (Astro-CHARM) effectiveness in South Asian population is yet to be explored. This study was planned to evaluate the 10-years CVD risk in non-cardiac Pakistan population using Astro-CHARM and Pooled Cohort Equation (PCE).

Methods: We recruited n=335 non-cardiac patients of either gender between 40 to 65 years of age through screening camps organized in tertiary care hospitals across Karachi, a metropolitan city of Pakistan. Demographics, history, physical examination, Lipid Profile, C-reactive protein (CRP), ECG and Coronary Artery Calcium (CAC) score were obtained. CVD 10-years risk was estimated through Astro-CHARM and PCE. IBM SPSS version-22 was used for analysis. Numerical data presented in mean \pm standard deviation whereas categorical in frequencies and percentages.

Results: Out of 335 individuals, 179 (53.4%) were males. The mean age was 48.9 ± 7.1 years and BMI was 28.1 ± 5.4 . There were 149 (44.5%) hypertensive, 52 (15.5%) diabetic, 43 (12.8%) current smokers and 100 (29.9%) had family history of heart attack. The CRP was 5.9 ± 5.7 mg/L and 247 (73.7%) had zero CAC score. Mean total cholesterol was 179.8 ± 39.8 mg/dL, HDL was 52.1 ± 34.2 mg/dL, and SBP was 138.9 ± 20.6 mmHg. It was observed that Astro-CHARM classified 34 (10.1%) non-cardiac patients in high risk ($\geq 7.5\%$) whereas PCE categorized 64 (19.1%) individuals in the same group. The correlation between Astro-CHARM and PCE was statistically significant and high positive ($r=0.742$; $p<0.001$).

Conclusion: Although Pooled Cohort Equation has predicted significantly higher risk as compared to the Astro-CHARM but a longer follow-up will ensure the effectiveness of Astro-CHARM in our local population. Moreover PCE cannot be neglected in situations where CAC and CRP investigations are not available.

Clinical Implications: Risk assessment is a vital step in implementing and developing preventive strategies for CVD. This baseline data shall support the clinicians to implement risk assessment for decision-making in primary prevention.