Validation of the framingham general cardiovascular risk score in a multi-ethnic Asian population a retrospective cohort study

ABSTRACT

Objective: This study aims to examine the validity of the Framingham general cardiovascular disease (CVD) risk chart in a primary care setting. Design: This is a 10-year retrospective cohort study. Setting: A primary care clinic in a teaching hospital in Malaysia. Participants 967 patients' records were randomly selected from patients who were attending follow-up in the clinic. Main outcome measures Baseline demographic data, history of diabetes and smoking, blood pressure (BP), and serum lipids were captured from patient records in 1998. Each patient's Framingham CVD score was computed from these parameters. All atherosclerotic CVD events occurring between 1998 and 2007 were counted. Results In 1998, mean age was 57 years with 33.8% men, 6.1% smokers, 43.3% diabetics and 59.7% hypertensive. Median BP was 140/80 mm Hg and total cholesterol 6.0 mmol/L (1.3). The predicted median Framingham general CVD risk score for the study population was 21.5% (IQR 1.2–30.0) while the actual CVD events that occurred in the 10 years was 13.1% (127/967). The median CVD points for men was 30.0, giving them a CVD risk of more than 30%; for women it is 18.5, a CVD risk of 21.5%. Our study found that the Framingham general CVD risk score to have moderate discrimination with an area under the receiver operating characteristic curve (AUC) of 0.63. It also discriminates well for Malay (AUC 0.65, p=0.01), Chinese (AUC 0.60, p=0.03), and Indians (AUC 0.65, p=0.001). There was good calibration with Hosmer-Lemeshow test $\chi 2$=3.25, p=0.78. Conclusions Taking into account that this cohort of patients were already on treatment, the Framingham General CVD Risk Prediction Score predicts fairly accurately for men and overestimates somewhat for women. In the absence of local risk prediction charts, the Framingham general CVD risk prediction chart is a reasonable alternative for use in a multiethnic group in a primary care setting.