

Assessing the severity of cardiovascular disease in people with coronary heart disease (CHD) in UK primary care: a retrospective cohort study

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Abstract

Introduction

CHD is the most common cardiovascular (CV) disease and caused ~9.5m deaths worldwide in 2016. Nearly 2.3m people have CHD in the UK. We aimed to: i) develop/validate CV severity scores in people with CHD using routinely-collected EHRs; ii) evaluate its association with risks of all-cause and cause-specific hospitalisation and mortality.

Methods

Using Clinical Practice Research Datalink (CPRD), we extracted data for people with CHD, and modelled baseline and longitudinal scores across 20 severity domains. We used Cox regression models and competing risk regressions to evaluate the association between severity and 1-year all-cause mortality and 1-year hospitalisations after controlling for age, gender, ethnicity, and deprivation.

Results

We identified 213,088 patients with CHD from 398 English practices. Baseline severity scores ranged between 0-10, mean(\pm SD) 1.5 \pm 1.2. Overall, 49,918 (23%) patients died, and 173,204 (81%) patients had \geq 1 hospitalisation during 9.4years of follow-up. A 1-unit increase in baseline severity score was associated with significantly 41% increased risk for all-cause mortality (95%CI: 37%-45%, AUROC=0.83). In competing risk regressions, a 1-unit increase in score was associated with 28% any-cause hospitalisation (27%-29%, AIC=992,096), and 39% CV/diabetes hospitalisation (37%-40%, AIC=699,635). The new score improved the models' predictive value for all outcomes when added to socio-demographic variables.

Discussion

A higher CHD severity score is associated with increased risks of hospital admissions and mortality. This reproducible scoring tool based on routinely-collected data could support practitioners to provide better clinical management of CHD in primary care with wider implications on individual patient and population healthcare.

Patient and Public Involvement (PPI)

Patients with CHD were invited to a PPI meeting to seek their views on included severity domains and the readability of a lay summary. Participants agreed on the importance and the relevance of the study and suggested the need to raise the awareness about disease severity and how it involves several conditions. Their perceptions varied about severity domains where some participants said they did not know previously that some other conditions, such as renal disease, were related to their CHD and its progression.