Risk Factors of Mortality among Male Patients with Cardiovascular Disease in Malaysia Using Bayesian Analysis

ABSTRACT

Background: Identifying risk factors associated with mortality is important in providing better prognosis to patients. Consistent with that, Bayesian approach offers a great advantage where it rests on the assumption that all model parameters are random quantities and hence can incorporate prior knowledge. Therefore, we aimed to develop a reliable model to identify risk factors associated with mortality among ST-Elevation Myocardial Infarction (STEMI) male patients using Bayesian approach. Methods: A total of 7180 STEMI male patients from the National Cardiovascular Disease Database-Acute Coronary Syndrome (NCVD-ACS) registry for the years 2006-2013 were enrolled. In the development of univariate and multivariate logistic regression model for the STEMI patients, Bayesian Markov Chain Monte Carlo (MCMC) simulation approach was applied. The performance of the model was assessed through convergence diagnostics, overall model fit, model calibration and discrimination. Results: A set of six risk factors for cardiovascular death among STEMI male patients were identified from the Bayesian multivariate logistic model namely age, diabetes mellitus, family history of CVD, Killip class, chronic lung disease and renal disease respectively. Overall model fit, model calibration and discrimination were considered good for the proposed model. Conclusion: Bayesian risk prediction model for CVD male patients identified six risk factors associated with mortality. Among the highest risks were Killip class (OR=18.0), renal disease (2.46) and age group (OR=2.43) respectively.