A Comparison Between Bayesian and Frequentist Approach in the Analysis of Risk Factors for Female Cardiovascular Disease Patients in Malaysia

ABSTRACT

Cardiovascular disease (CVD) is the number one killer among women in Malaysia and globally, with over two million deaths each year. In this study, two modelling approaches namely Bayesian approach and frequentist approach were considered to identify associated risk factors in CVD among female patients presenting with ST Elevation Myocardial Infarction (STEMI) and to obtain feasible model to fit the data. Comparisons were made to find the best model. A total of 874 STEMI female patients from 18 participating hospitals across Malaysia in the National Cardiovascular Disease Database-Acute Coronary Syndrome (NCVD-ACS) registry year 2006-2013 were analysed. Univariate and multivariate analysis were performed for both Bayesian and frequentist approaches. Six variables namely smoking, dyslipidaemia, myocardial infarction (MI), renal disease, Killip class and age group were found to be significant at the multivariate analysis. The standard errors obtained from the Bayesian approach were much smaller than the frequentist approach. Also, the model fit using Bayesian approach was much better than the frequentist as the deviance value produced by the Bayesian approach was smaller. The Bayesian analysis provides a better alternative to the frequentist approach in the analysis of the risk factors associated with mortality among female CVD patients.