THE USE OF MULTIPLE IMPUTATION TO PREDICT MORTALITY BY ACUTE MYOCARDIAL INFARCTION

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Hospital discharge summary databases are often used to identify cases of acute myocardial infarction (AMI). However, among those who experience AMI, about 50% die before being admitted to the hospital. The missing data can lead to inefficient and biased inferences. A common approach for addressing missing data is the use of multiple imputation techniques. We investigated whether these techniques would correctly predict mortality by AMI. Using the Quebec medical administrative databases, we identified a sample of individuals who had hospital admission for AMI (fatal or nonfatal), died, or did not experience any of the aforementioned events between 1998 and 2002. Demographic and clinical characteristics of the sample population were assessed. Using multiple imputation techniques, we developed a model to predict the mortality from AMI. The accuracy of the imputed data was assessed against mortality data obtained from the Institut Statistique du Québec (ISQ) using the concepts of diagnostic test evaluation. Sensitivity, specificity, and positive and negative predictive values of the imputed data were estimated. Preliminary results have shown low sensitivity (20%) and relatively high specificity (>90%). Additional analyses are being conducted to improve the prediction of the model and to explore other statistical approaches for addressing missing data. The use of multiple imputation techniques for outcome variables is attractive; however, they should be applied with caution.