Comparison of Marginal and Cluster-Specific Models in Analysis of Cluster Randomized Trials with Missing Binary Outcomes

Marginal and cluster-specific models are commonly used to analyze binary outcomes in cluster randomized trials to estimate the population-averaged and the cluster-specific treatment effect, respectively. However, limited attention has been paid to their performance when there are missing outcomes and some multiple imputation strategies are used to handle the missing data. Under the assumption that the probability of having missing outcomes is covariate dependent, we compare the performance of the generalized estimating equations and random-effects logistic models using a simulation study. The methods are compared in terms of standardized bias, coverage, root mean squared error and average standard error.