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A comparison of three models in multivariate binary longitudinal analysis

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Multivariate longitudinal data analysis plays an important role in many biomedical and social problems. In this article, we present three methods for analyzing multiple and correlated binary outcomes; each one can be benefecial for determined aims. We review method one and method two and we proposed method three. The three methods estimate the marginal means using the GEE approach for multivariate binary longitudinal data. The first method addresses the question of estimating one group of covariate parameters for many binary outcomes while accounting for their multivariate structure. The second method addresses the question of estimating the covariate parameters for each binary outcome separately. The third method is an estimation of the covariate parameters for each combination of outcomes. Our goal is to investigate the difference among the parameter estimations of the three methods. In the simulation element, we present many scenarios related to diffeerent correlation structures. In the application element, we present a follow up study (Florida Dental Care Study) that measured three binary outcomes and five covariates in four intervals. That particular study is a useful explanation of the variation between outcomes since the outcomes were highly correlated.

Biography

Hissah alzahrani has studied in computer science and statistics departments. She completed her masters degree in 2009 from statistics department at King Abdul-Aziz University and started the joint program of master and PhD in biostatistics at Florida state university in 2012. Her research interests include multivariate longitudinal data analyses and survival analysis that applies in biomedical applications and clinical trials. She is working on improvement of her skills in skills in SAS and R software to accommodate the advanced statistical analysis in different biostatistics fields.

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