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A new model for multivariate current status data

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Individual heterogeneity in the acquisition of infectious diseases is recognized as a key concept, which allows improved estimation of important epidemiological parameters. Frailty models allow to represent such heterogeneity. Coull (2006), introduced a computational tractable multivariate random effects model for clustered binary data. The objective of this report was to apply and modify the proposed model, and compare to the shared and correlated gamma frailty models in the context of the analysis of multivariate current status data. The models were applied to the bivariate current status data on Varicella-Zoster Virus and Parvovirus B19 using different baseline hazard functions for the force of infection. The findings revealed that the proposed model which is called in this report as new correlated gamma frailty model is closely related to existing frailty models. The main difference is the way the multivariate gamma is introduced in the model, and the indirect way to specify the baseline hazard function. In terms of construction, a frailty model is typically formulated based on the specification of the proportional hazard function, whereas the new correlated gamma frailty model is built using a classical generalized linear mixed model for clustered binary data. Furthermore, in the new model the variances of the frailties are assumed to be identical, whereas in case of the frailty model, the variances can be different or identical and the correlation is constrained by the ratio of the variances.

Biography

Adelino Martins has completed his Master's degree from Hasselt University and currently pursuing his PhD at Hasselt University. He served as a Lecturer at Eduardo Mondlane University in Maputo, Mozambique.

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