Reviewer’s report

Title: Predicting the multi-domain progression of Parkinson's disease: A Bayesian multivariate generalized linear mixed-effect model

Version: 0 Date: 18 Mar 2017

Reviewer: Jingyang Zhang

Reviewer's report:

The authors applied the multivariate generalized linear mixed-effect model to a PD longitudinal data set to predict the progression from multiple aspects. The statistical model was well described and the results were well explained. Here are some comments:

1. In the marginal model for $Y_{i3j}$ (page 10, line 20), is the random error $\epsilon_{i3j}$ necessary if assuming a Bernoulli distribution for $Y_{i3j}$ and a logit link function?

2. In line 6 of page 11, there should be no comma between "18-month" and "visit".

3. In Section 3.4, what predictors in the univariate models are significant? Are they similar to the multivariate model?

4. In Section 3.5, since only 6 participants in the testing data and only 2 follow-up time points, maybe the authors could list the predictions for all the 6 participants as in Table 3, or a spaghetti plot for each subject with the 95% credible interval?

5. For the internal predictions, the authors calculated the RMSE and AB to assess the prediction accuracy. How about the prediction accuracy of the external predictions?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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