Reviewer's report

Title: A Simulation Study of Sample Size for Multilevel Logistic Regression Models

Version: 2  Date: 11 April 2007

Reviewer: wan tang

Reviewer's report:

General Comments

In my initial review of the paper, my major concern was that the paper was not built upon any theoretical basis and all the results and recommendations were based on simulations. In the absence of any theoretical justification, a large amount of simulations under different modeling scenarios is warranted for the publication of the paper. Given the limited simulations and the severe limitations of the models used in the simulations, I recommended that more simulations under different statistical models be performed to improve the robustness of the results and findings. However, this major concern and the corresponding recommendation were not sufficiently addressed in the revision, along with some other concerns raised in my previous review.

Specific Comments

1. Since the theoretical justification issue raised was difficult to address, I am ok that the authors did not sufficiently address it.

2. I was concerned about the normal distribution assumption used in the simulation work. Since this distribution assumption is frequently violated in many real study applications, power analysis and sample size calculations based on this model may provide misleading information and misleading study planning and execution. For this reason, it is extremely important to relax such an assumption in the simulation to study the sensitivity of power and sample size estimates to departures from the normal assumption. For a paper purely on simulation and wants to provide practical guidelines, this becomes extremely important and thus more thorough simulations should be carried out to investigate this issue. The authors argued by citing a big number of simulations to show that such a scale of simulation is unfeasible. However, this reviewer feels that the authors can still increase the amount of simulation work to investigate the robustness issue discussed earlier. Indeed, between what has been done and the number the authors suggested, there are still a lot of feasible options that the authors should consider.

3. This issue has been addressed.

4. In the places mentioned by the authors, there was a discussion about the change of the convergence rates with the sample size, etc. In addition, they claimed that samples that did converge and that did not converge are not significantly different in various aspects. However, the reviewer cannot find any description about their differences in the paper. It is important to elaborate on these differences.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests