Reviewer's report

Title: Migraine day frequency in migraine prevention: longitudinal modelling approaches

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Reviewer: Paolo Eusebi

Reviewer's report:

The authors proposed approaches for estimating the frequency of migraine days. This outcome was modeled from the double-blind phases of two studies of erenumab. Two longitudinal regression models were fitted: negative binominal and beta binominal. The distribution of individual patients around estimated means was then calculated. Using the erenumab study data, both the negative binominal and beta-binominal models provided well-fitting estimates relative to observed trial data.

The authors conclude that the proposed methodology, which has not been previously tested in migraine, has shown that these models may be suitable for estimating frequency of migraine days.

The manuscript is well written and with a clear aim.

I found that some issues need to be addressed before acceptance for publication.

Among fitted models I would suggest the inclusion of Poisson regressions, at least as a reference model.

Furthermore I think that the paper would benefit from a simulation study that could show the costs and benefits of each procedure under a range of scenarios.

Models equations should be numbered and written with greater attention to details. For instance, are t and k different quantities? Why k, but not t, has a notation for their possible values?

The paper would benefit from the inclusion of STATA code in the appendix.
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

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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