Reviewer’s report

Title: Effect of Sex and Age on Traumatic Brain Injury: A Geographical Comparative study

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Reviewer: A Ruet

Reviewer’s report:

This paper assesses the pronostic value of independent and interaction effects of age and sexe on TBI outcome in two data samples, one from the CRASH trial and the second from patients of a bangladesh hospital. Different statistical methods were applied for this assessment. Authors found an interaction effect of age and sex and concluded that old women endured the worst outcomes of TBI in the CRASH sample only. That is an interesting result.

Comment 1

Method:

Data Description

The data is comprised of patients treated in the hospital from May to September in 2015 with a total sample size 151.

Could you please discribe more precisely how this sample have been constituted?

Comment 2

Method:

Binary outcome analysis:

"The linear logistic model is defined by Equation 1, logit\(\pi_i\) = log(\(\pi_i/1 - \pi_i\))= XT\(\beta\) (1) where xi is a vector measurement corresponding to covariates and dummy variables corresponding to factor levels and \(\beta\) is the parameter vector."

There is no "xi" in the given equation. Is it a mistake?

Comment 3

Results and discussion
Sex

"The odds of unfavorable outcomes for women were 0.74, 0.91 and 0.97 in the logistic regression, the proportional odds model and the sliding dichotomy model respectively"

Could you please give us the confidence interval of the Odds?

Comment 4

Table 3

Tests results on "Bangladeshi Data" and on "Bootstrap of Bangladeshi Data" are the same. I wonder if it's a mistake. If it's not and as the results are the same, is the bootstrap method interesting in this case?

Comment 5

Figure 1

Could you please give the legend of the figure (data set? Meaning of "treatment A", "treatment B")?

Comment 6

Results and discussion

Age

"However, no significance was found in the sliding dichotomy model for the age groups in either data sets."

Could you please discuss this result that contrasts with results of binary regression and proportional odds model? You highlighted in the "method" part that "The sliding dichotomy model is a comparatively newer approach developed for clinical trials, particularly for TBI research [46]. This method is an improved version of the conventional logistic regression model." In which results should we trust?

Comment 7

Table 9
I think there is an error in the table, "Bangladeshi Data" on the top of the table whereas the table shows CRASH data.

Comment 8

Tables 3, 5, 7, 8 and 9

Could you please give all the test results of your proportional odds models in the tables with the p-value?

Comment 9

Results and discussion

"This suggests that the effect of gender and age could be stronger in some countries than others, which is driving the significance in CRASH that was not found in Bangladesh."

Could you please discuss the effect of population size on your results, especially regarding differences in outcome between CRASH and Bangladesh data?

Comment 10

Method

Statistical methods

In your multivariate analysis, you didn't consider initial severity (initial Glasgow Coma Scale Score for example) that is an important predictor of functional outcome. One could think that older women could have suffered more severe Traumatic Brain Injury. Do you think this could lead to inappropriate conclusion?

Comment 11

References

Some references are incomplete with "???" in the manuscript.

Level of interest

Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests
Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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