Author’s response to reviews

Title: Insomnia as a covariate of community integration in persons with delayed recovery from mild traumatic brain injury

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Version: 5 Date: 8 August 2015

Author’s response to reviews: see over
August 7, 2015

Dear Professor Liming Li and the editorial team,

My co-authors and I appreciate the feedback and extend our gratitude to the reviewers for their comments. We have addressed the concerns and suggestions raised to the best of our abilities.

We look forward to hearing from you.

Sincerely,

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Reviewer 1.

The manuscript is very interesting for the mTBI researchers since there are few reports related to the prognosis of the mTBI. This manuscript describes several outcome associated factors like insomnia, English level, Axis IV-TR malingering, time since injury and/or neck pain and marital status. Though the manuscript is titled by "Insomnia as a covariate of community integration in persons with delayed recovery from mild traumatic brain injury" and the role of insomnia is emphasized. However, I did not read any analysis why insomnia is the most important factors impacting the outcome of mTBI. One of the 4 hypotheses is "(3) insomnia would explain several post-concussive symptoms", however, I did not read the explanation. Thus, the manuscript should be rewritten. The insomnia should be fully explained and described if the author persists to use this title.

Response: We thank the reviewer for the feedback. Below, we provide more information to explain why insomnia, a factor which has never been investigated before in relation to outcomes post TBI in general and CI in particular, was highlighted in our study.

Our analysis revealed insomnia, head or neck pain, being married or in a relationship, TSI, and a diagnosis of possible/probable malingering were independently associated with limited CI. The R2 value of 0.366 for our final fully adjusted regression analysis indicates the 36.6% of the variance in the mean CI can be explained by the above-named variables, of which insomnia explains the most of the variance (i.e., 15.9%). We refer the reader to Table 2 for specifics. Given that our results support the notion of CI as a time-dependent construct, and our data consisted of various time series, the R2 value explained by insomnia provide solid information of it as a covariate of CI, bearing in mind the fact that we are looking for a meaningful associations in a context of delayed recovery from mTBI in the presence of many a priori defined relationships and a relatively small sample size.

Furthermore, this study also highlights the associations between insomnia, pain, and depression, as reported in previous studies. However, while we found that depression was moderately related to CI in the bivariate statistical analysis, this relationship was not confirmed in the multiple linear regression model. Our findings suggest that depression in our sample can be partially explained by insomnia, supporting our hypothesis and highlighting the need for attention to insomnia in relation to the CI outcome.

We agree with the reviewer that the title of the manuscript is not inclusive of other variables that were investigated, and therefore changes have been made. The title now reads:
Modeling community integration in workers with delayed recovery from mild traumatic brain injury

The following paragraph has been added to the manuscript:

The R2 value of 0.366 for our final regression analysis indicates that 36.6% of the variance in the mean CI can be explained by the above named variables; insomnia explains most of the variance (i.e., 15.9%). Given that our results support the notion of CI as a time-dependent construct, and our data consisted of various time series, the R2 value for insomnia provides solid support of it as a covariate of CI, bearing in mind the fact that we are looking for meaningful associations in the context of delayed recovery from mTBI in the presence of many a priori defined relationships and a relatively small sample size.

Reviewer 2.
Because of lacking specific symptoms, mild TBI is often overlooked by doctors in clinics. Community integration (CI) disorder is often a common outcome of mTBI. This paper made a cross-sectional study of local mTBI patients in CI and associated factors and identified insomnia as one covariant for CI. This data could provide some guiding information for the assessment and treatment of mTBI patients. For example, for these patients, insomnia may be a common disorder and should be carefully dealt with. The ten items provided by editorial office for reviewed have been checked. This manuscript conformed to most of them excluding the following one question. 1. How did the authors use one-way analysis of variance to examine the associations between the CIQ total score and the categorical variables in the part of statistical analysis. Is this method used incorrectly?"

Response: We thank the reviewer for the positive feedback. We understand that the English term “analysis of variance” is a bit of a misnomer. In fact, by applying one-way anova one uses variance-like quantities to study the equality or non-equality of means, therefore analyzing means, not variances. In our case, we applied one-way anova for a bivariate analysis to assess the associations between the CIQ total score and categorical explanatory variables that had two or more levels, producing an F distribution. While typically one-way anova is used to test for differences among at least three levels of explanatory variables, and the two-level cases can be covered by a t-test, when there are two means to compare, the t-test and the F-test results are equivalent and one way anova statistical analyses are appropriate.

The following sentence has been added to the methodology section:

A one-way analysis of variance was used to assess the associations between the CIQ total score and the categorical explanatory variables with two or more levels.