Reviewer's report

Title: Incidence of Brain Injury and the Relationship with Substance use: Findings from a Longitudinal Community Survey

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Reviewer: David P. P Graham

Reviewer's report:

This manuscript reports the results of a prospective community study evaluating a) the incidence of first-time brain injuries over a four year period for three age cohorts along with associated changes in physical health scores, b) the relationship between alcohol or marijuana problems at baseline assessment to subsequent brain injuries, and c) the development of substance use problems at follow-up assessment for those participants who incurred a first-time brain injury during the study period. The study involved 7485 participants at the baseline evaluations, with 89.7% completing the four-year follow-up evaluation.

This paper was generally clearly written, and there are many strengths in the study design. Further, the topic and results are meaningful to the field of brain injury research. However, there are several methodological issues that must be addressed. Specific concerns follow.

- Major Compulsory Revisions

1. Are the methods well described?

While the study population and data collection procedures are well described, there are several aspects to the methods that require clarification.

A) the measures (AUDIT and SF-12) are not described well, and neither is given a single citation nor is their validity/reliability described. This is a major, but correctable, oversight and flaw.

B) No mention in methods was made as to the medications monitored that are referred to throughout the manuscript. How were the medications inquired about? What medications were inquired about? How were the groupings decided? For example, for antidepressants, was only fluoxetine asked about or were all SSRI’s, what about SNRI’s, TCA’s, MAOI’s, etc. As a reviewer I had no way to place the medication comments in a larger context as the information is just missing. This is another major but correctable flaw.

An example in the text of this vagueness is second paragraph page 12 which refers to “other medicines such as sleeping pills, anti-depressants and anxiolytics”. This is a vast statement. Which sleeping pills, which antidepressants, which anxiolytics? Nowhere in the manuscript is any information described about this.
C) Regarding the analysis section: Many tests were run on the data. There is no mention to any Bonferroni adjustments being utilized, or if the author’s decided not to any explanation as to why not. If even only 4 tests were run, the p-value would drop from 0.05 to 0.0125, which would have minimal impact on the results. If, as it appears to read, that possibly >14 tests were run, and the resulting p-value would drop from 0.05 to <0.003 would cause 4 priorly significant results to be non-significant, including the association of pain medications at time one with brain injuries at time 2. This seems an important consideration to defend either the decision to use or not use correction for multiple tests for statistical integrity.

2. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

The authors provide an adequate review in their background and discussion. However, as remarked above in item #1A above, the authors MUST reference their measures along with some substantiation of their validity and reliability. Without these citations the people whose work was solely developing these measures and validating them is ignored, failing to give credit as is necessary, particularly when this manuscript so heavily depends upon these measures for the data.

As stated before, this should be an easy but absolutely mandatory fix.

- Minor Essential Revisions

1) A References appear to have been left off in 1 location.

- last paragraph page 10, end of second sentence (In contrast, …). When remarked that the proportion is greater than expected in the general population, what is the reference referring to the general population comparison?

- (I am not repeating need for references for measures here, that is considered a correctable but major flaw noted above).

- Discretionary Revisions

1) The SF-36 has published MCID (minimal clinically important differences) values. As the SF-12 uses parts of the SF-36, some of these MCID values would apply. This would allow the authors to move from discussing just significant differences to focusing on those that are both statistically different AND clinically meaningful. This could simplify the results and make them more clinically meaningful.

Start by looking at the following if you are interested in this option:


2) last paragraph page 10, end of second sentence (In contrast, …) read a bit confusing, the ending “than expected in the general population” does not flow well. If possible, try to rephrase for more clarity in the flow of the thought.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.