Reviewer's report

Title: Independent comorbidity of injury patients in the first year following injury: comparison of three comorbidity adjustment approaches

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Reviewer: Saeid Shahraz

Reviewer's report:

The authors of the current study have touched a very important issue. The trivial change in the estimated disability weight (dw) associated with any single or comorbid condition has a considerable effect on the final calculation of the Years of Life Lost. The aim of this study is to see if the suggested methods to correct for dw of the comorbid conditions are valid. This has been evaluated through looking at the correlation between the calculated (which might be a better word than ‘predicted’ used by the authors) value of the dw and observed value. I summarized my comments and sorted them out in order of their significance as follows:

Major essential revisions:

1. The method of assigning a dw by using the EQ-50 instrument has limitations and is to be validated by improved methods being used in the current GBD study. The inherent problems to the methodology of dw assignment used in this paper may have significant effects on the results and conclusions of the current work. For instance ‘facial fracture, eye injury’ in Table 1 received a dw of 0.5 whereas a dw of 0.9 has been calculated for the ‘superficial injury, open wound’. The validity of such a differential is under question unless other competing methods yield to similar results.

2. High correlation between two parameters that measure the same construct may be expected in particular when the two parameters change in overlapping range of values. It would be better that authors could interpret the results of the correlations.

3. The response rate of the study is very low and it is crucial to present the results of missing data analysis (differential characteristics between responders and non-responders).

Minor essential revisions:

4. The authors have honestly mentioned a good number of limitations of the study such that one can conclude that the results of the study have been severely affected by these limitations and are not hard to interpret.

5. Under the subheading of ‘Observed disability weight in comorbid cases’ the authors have used the term ‘disease’ to refer to six conditions. Among these conditions backache is not a disease and is a symptom. Also, arthrosis is an obsolete terminology and should be replaced by osteoarthritis. Hence, the correct
use of terminology is recommended.

6. The authors have not explained why they have picked these 6 conditions. Why for example ‘chronic non-specific lung disease’ has been chosen and ‘chronic obstructive lung disease’ has been opted out. Also, what is the rationale of having ‘heart disease’ but not ‘ischemic heart disease’.

7. The assumption that injuries, for example, have no effect on the reported severity of functional loss (in different domains) of ‘arthrosis’ after 9 months can be easily violated. This problem can be universal across other conditions as well.

8. Not adjusting for sex and age is a major drawback of the current study (which has been mentioned by the authors) and might result in biased results.

9. The authors can remove the introductory explanations in the ‘conclusion’ section.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

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 interest.