Author's response to reviews

Title: The protective effect of helmet use in motorcycle and bicycle accidents: a propensity score-matched study based on a trauma registry system

Authors:

Spencer C.H. Kuo (spenc19900603@gmail.com)
Pao-Jen Kuo (bow110470@gmail.com)
Cheng-Shyuan Rau (ersh2127@cloud.cgmh.org.tw)
Yi-Chun Chen (libe320@yahoo.com.tw)
Hsiao-Yun Hsieh (sylvia19870714@hotmail.com)
Ching-hua Hsieh (m93chinghua@gmail.com)

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Author’s response to reviews:

Dear Safa Abdalla

Thank you for your time, effort and professional comments in regard to our manuscript entitled “The protective effect of helmet use in motorcycle and bicycle accidents: a propensity score-matched study based on a trauma registry system” to BMC Public Health. This article has been further revised according to your kind suggestions. The revised areas are highlighted in yellow color.

1. In tables 2 and 3, you should not use statistical significance tests and p-values to compare the covariates between the two groups before and after matching. The purpose of the comparison is to measure how big the difference is in the means/proportions between the helmet and non-helmet groups. Statistical significance tests test the probability of any difference (big or small) arising from chance in order to infer from a sample to a population. Therefore statistical significance testing makes no sense in this case of checking whether the matching has achieved its purpose within this particular sample, in addition to the fact that it is influenced by sample size. Therefore, as you did with the mean age, you should use the standardized difference for the gender and comorbidity variables too and remove any reference to odds ratios and p-values in those tables.

Answer:

We have to state that we used the standardized difference for the mean age is because the age is a continuous variable. However, for other categorical variables, standardized difference could not
be calculated according by, and odds ratios and p-values are the standard methods to compare their differences.

2. Table 1 needs to be reserved to background characteristics only, namely demographics, obesity and comorbidity. Injury characteristics are outcome variables and need to be reported in a separate table with mortality for the analysis after matching. So far, results are repeated across tables, e.g. age, gender, comorbidity and mortality before matching show in table 1, 2 and 3. All other outcomes such as GCS, ISS, LOS and others only have the results reported in table 1 in the data before matching with no tabulated results for those outcomes after matching. Since your propensity score is now correctly based on the comparison groups and not on the mortality outcome, all outcomes can now be investigated in the matched data.

Answer:

As noted, we’ve noticed that our results are repeated partly across tables 1, 2, and 3. Therefore, we have deleted the original Table 1 and indicated the background characteristics into the results of the manuscript. Under your kind suggestion, we had revised the Tables (Now the Tables 1-2 of the revised manuscript) accordingly with all outcomes including GCS, AIS > 3, ISS, hospital and ICU LOS, and mortality have been presented according to the data after propensity score-matching. Actually, we found the results are still similar. The related results and description in the article has also been revised accordingly (Page 8-12/Results and Page 15).

3. Tables 4 and 5 do not report the results after matching. The authors need to rerun the analysis for those outcomes using the matched data and report those results instead.

Answer:

Yes, under your kind suggestion, we re-calculated the results in tables 4 and 5 using the data after matching (Now the Tables 3-6 of the revised manuscript). The related description in the article has also been revised accordingly.

4. Acknowledge in your limitations that the results after matching depend on the specification of the logistic regression model and the potential confounders measured in this study. Therefore balance between the comparison groups regarding unmeasured confounders still cannot be guaranteed.

Answer:

Indeed, the influence and balance between the comparison groups in terms of the unmeasured confounders cannot be guaranteed. This description has been put into the limitation (Page 16/2nd paragraph/lines 2-5). Thanks for the critical point of view towards the possible cons in terms of the propensity score-matched setting.

This article had revised under your kind suggestion and we hope that will satisfy your standard. If required, we are very delighted to make further change or revision.
Ching-Hua Hsieh, M.D. Ph.D, FACS

Department of Plastic and Reconstructive Surgery, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Taiwan.