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)

Version: 4 Date: 06 Jul 2017

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.

However I respectfully disagree with your statement that statistical significance is the standard method for testing balance of categorical covariates after propensity score matching. The propensity score matching literature and even the literature on randomized trial methodology discourages the use of statistical significance to check balance after propensity score matching or randomization for any kind of variable. Please check out this reference: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3144483/

The reference explains why this practice is discouraged. In it you will also find the formula for calculating the standardized difference for categorical variables. It is obvious from your numbers that the standardized difference would be zero but the manuscript would look much better if you display your results with the correct method. Of course this applies only to the covariates and not the differences in outcome between helmet users and helmet non-users - the latter relies on the odds ratio and its statistical significance.
Answer: We are in agree with your recommendation that although the standardized difference would be zero but the manuscript would look much better if you display your results with the correct method. We had changed that in the Table 1 and Table 2 of revised manuscript. Very thanks for your professional opinion and the provided article.

Another note is that in the conclusion it is better to refer to lower mortality rates etc... rather than reduction in mortality rates ... - reduction implies a change from a baseline level in a longitudinal setting which is not the case here.

Answer: OK, I had substituted the word “reduction” in mortality as “decrease” in mortality to lessen your concern and make this manuscript better. Thank you for your professional comment.

Also it is better to carefully word the last sentence to make it specific to the outcomes measured in the study, as you only looked for evidence of a protective effect against death, head injury etc... but not all sorts of possible injuries, e.g. some minor injuries may not have presented to the healthcare system and therefore not included in the registry.

Answer: Yes, you are right. Therefore, I had revised and highlighted the last sentence in the conclusion to “This study therefore did not identify any protective effect of bicycle helmets for adult bicyclists involved in traffic accidents in Taiwan to keep them away from the risk of different head injuries and mortality”. The conclusion in the Abstract was also revised accordingly.

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.