Author’s response to reviews

Title: Buckling up in Singapore: Residency and other risk factors for seatbelt non-compliance - a cross-sectional study based on trauma registry data

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Buckling up in Singapore: Residency and other risk factors for seatbelt non-compliance - a retrospective cohort study based on trauma registry data

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BMC Public Health

Dear Ms Christie,
Thank you for accepting our manuscript "Buckling up in Singapore: Residency and other risk factors for seatbelt non-compliance - a cross-sectional study based on trauma registry data" (PUBH-D-16-00235).

We are pleased to attach our revised manuscript, as well as a point-for-point response to the reviewers. This includes minor amendments to some of the authors’ contact details.

Best wishes,

Ting Hway Wong

On behalf of all authors

Response to Reviewers

Reviewer #1:

1. The proportions given in the first paragraph results of the abstract did not give clear cue whether those were overall frequency or proportion of compliant or non-compliant.

Quantified results should also be mentioned in the abstract of the manuscript.

Use multivariable model instead of the term multivariate model.

Results should not be repeated in conclusion.

Response:

The abstract has been revised to address these points (clarified overall frequency, inserted quantified results, removed the repetition, and changed to multivariable model), within the abstract word limit. We have removed the repetition of the results in the conclusion.

2. "Studies from the region have been observational" illustrated that differential of residents from non-residents cannot be done. If author was trying to authenticate retrospective study more from this linkage then this point is not strong enough.

Response:

Certainly, each method has its strengths. However, we believe that the method in this paper is the most pragmatic one for Singapore due to the high proportion of non-residents and transient workers. For example, many non-residents might not be willing to be interviewed, or the multiple language barriers might pose difficulties for the interviewers. If it were a roadside observational study, the heavy urban traffic would mean difficulty in stopping the vehicles to interview the occupants.
Now that we know from this study that certain groups are at-risk, we plan to, once our data is published, take the next steps to target high-risk groups regardless of language barriers.

We hope that our text in the paragraph below clarifies the strengths of this particular method in a high non-resident and multi-lingual society like Singapore:

“Pure observational studies without direct interview with the occupants cannot differentiate non-residents from residents, while self-report questionnaires may be difficult to administer to certain social and linguistic groups, including the transient migrant worker and non-resident population.”

3. It is not clear how motorcyclist could be compared with the other vehicle personages? Why was it given in the end of Background/Introduction?

Response:

Motorcyclists were mentioned to put in perspective the injury burden from vehicle passengers, as compared to the wider context of road injuries in general.

While we understand that injury epidemiologists and injury prevention experts would already be aware of this, we would like to leave this phrase unchanged, so that readers less familiar with road injury epidemiology will understand why we undertook this study.

4. Rationale of the study is not clearly defined. Prevalence is not analyzed; Prevalence is determined. Correct the term in last paragraph of introduction.

Response:

This has been amended.

5. How was it a cohort study? What was/were the exposure(s)? What and how long the outcome was identified?

Response:

Thank you for pointing this out. We have corrected this. It should be described as a cross-sectional study.

6. The assumptions of normality and homogeneity of variance are required prior to the application of two independent samples t-test. Please, check the same and if assumptions will be failed then apply non-parametric test instead.
Response:

We have checked and amended our methods section accordingly to reflect this.

7. How was the sensitivity analysis of the models was performed? Explanation is required in statistical analysis description.

Response:

We have amended the paragraph on sensitivity analysis. Sensitivity analyses included: exclusion of all factors that were not significant on univariate analysis, re-categorisation of non-citizen permanent residents as non-residents, and inclusion of patients with missing vehicle type and seat position information in the multivariable models. These models yielded similar results.

8. With frequencies only likelihood of compliance is not inferred. Correct the interpretation of results pertaining to table 2.

Provide the odds ratio at univariable stage.

Response:

Table 2 and the interpretation paragraph have been amended, including the odds ratio at univariable stage.

9. What was the reference category for the variable "Others associated factors" in multivariable analysis?

Present the results in tabular form for multivariable analysis on car drivers exclusively.

Response:

Table 5 for the multivariable analysis on drivers exclusively has been added (rounding errors in the text amended). The reference categories in all the tables have been clarified.

10. Output in table 3 implied that to be compliant of seatbelt use, one should drink alcohol? What would you suggest on the protective effect of alcohol as depicted in table 3?

Response:
Although the odds ratio of alcohol use was estimated to be less than one, it was not statistically significant and therefore, does not mean that alcohol has a protective effect. One explanation for our finding is that our registry does not distinguish between patients with mild alcohol levels below the legal limit, and patients with blood alcohol levels above the legal limit. It is not standard practice in Singapore to screen for blood toxicology in our hospitals unless requested by the police. Consequently, patients with a positive alcohol status include those documented clinically to have consumed alcohol (in the history or the physical examination), as well as those with blood alcohol levels requested by the police, and found to be above the legal limit.

We have expanded our explanation for this in our discussion:

It is not standard practice in Singapore to screen for blood toxicology in our hospitals unless requested by the police. Consequently, patients with a positive alcohol status in our registry include those documented clinically to have consumed alcohol (in the history or the physical examination), as well as those with blood alcohol levels requested by the police. Hence, alcohol status includes patients with mild alcohol levels below the legal limit, who might still be compliant with seatbelts.

Reviewer #2:
This is a very well written paper describing levels of seat belt compliance in Singapore and predictors of non-compliance using a retrospective design from trauma registry data. I think the paper would be greatly enhanced by describing the level of injuries of those who were not compliant compared to those who were by the key risk factors and include a table on this.
Response: We added a table (table 6) and a paragraph on this in the results and discussion sections.