Reviewer's report

Title: Antilock Breaking System Effectiveness in Prevention of Road Traffic Crashes in Iran

Version: 2 Date: 1 November 2012

Reviewer: Syed Ghulam Sarwar Shah

Reviewer's report:

Subject: Review of manuscript entitled “Antilock Breaking Braking System Effectiveness in Prevention of Road Traffic Crashes in Iran” submitted to BMC Public Health by Saadat et al.

Reviewer's report:

Manuscript submitted by Saadat et al reports the effectiveness of anti-lock braking system (ABS) in personal cars in Iran, which is an interesting study from the public health perspective in general and the road safety perspective in particular. My specific comments are given below

General comments:

The manuscript has a number of limitations as follows:

1. Poor English, grammar and word selection (e.g. spelling mistakes in the title such as ‘Breaking’, which should be ‘Braking’) and wrong use of terms (e.g. ‘utilize’ should be ‘used’)
2. Inconsistency of reporting aims and objectives of the study
3. Lack of sampling technique used in selecting participants
4. Lack of criteria for choosing cars of only one make (manufacturer)
5. Absence of literature review on the magnitude of road traffic crashes (RTCs) and associated burden (health, social and financial) in Iran
6. Overview of road safety regulations and drivers’ driving and safety training and licensing issues in the country
7. Lack of description of study tools (e.g. survey questionnaire)
8. Lack of the method of data collection (e.g. a self-administered questionnaire, telephone interview or face to face interview etc)
9. Lack of description / presentation of a comprehensive list of studied variables and/or questions asked.
10. Data reporting – lack of complete data reporting in table format on demographics (e.g. gender, age, daily driving time, years since driving, number of intercity trips) and associated variables vis-à-vis study participants, absence of disaggregated data for ABS cars and non-ABS cars with respect total RTCs, injurious RTCs and fatal RTCs, a need for separate reporting for financial losses
for both types of cars, distinction of incidence and incidence rates, separation of ranges from ranges for confidence intervals etc

11. Discussion should focus on Iran with reference to the findings of this study and evidence from other countries

12. Authors should not generalize their findings to other countries in the Middle East.

Major Compulsory Revisions

ABSTRACT:

Study aims should be consistence in the abstract and the introduction. In aims, please clarify whether you are referring the incidences or the incidence rates, which are two different terms.

There is a lot of repetition in the text reporting methods in the abstract. This should be concise without any duplication. For example, ‘Using a historical cohort design, a telephone survey of drivers of personal cars with ABS (n=1232) and cars with other braking systems (n=3123) was used for data collection on RTCs, and associated financial losses and other variables’.

Findings should be reported in the abstract in a logical order such as demographics followed by statistics on RTCs, financial losses and so on.

Conclusion in the abstract should focus only on the area of study i.e. Iran and avoid generalization to other countries in the Middle East.

BACKGROUND:

The background could be improved by describing literature review on the extent of road traffic crashes, and associated impacts in terms of health, psychological and financial losses at the global level, and then at the national level i.e. Iran. This should follow with a report on effective measures that could help in reducing the burden of RTCs. The measures should include the use of anti-lock braking system (ABS) and electronic stability control (ESC) systems etc. in this context, the authors should define/describe the ABS and their effectiveness around the world. This could follows with the description of public policy vis-à-vis mandatory outfitting of cars with ABS in Iran. In this background, the aims and objectives of this study should be reported. The aims/objectives should be consistent throughout the manuscript whether it is the abstract or the main text.

METHODS:

The methods section should clearly report the following:

# The study design,
# participants’ selection including the sampling technique used,
# the criteria and justification for choosing cars of only one make (manufacturer),
# a detailed description of study tools e.g. survey questionnaire, if any,
# Description / presentation of a comprehensive list of studied variables and/or
# Description of questions asked including what questions were common for the
both groups i.e. drivers of cars with ABS and without ABS. In addition, what
questions were unique for the two groups of drivers
# Description of the method of data collection e.g. a self-administered
questionnaire, telephone interview or face-to-face interview etc

More importantly, the authors need to review the distinction between ‘exposed
(cases) and unexposed (control) groups reported in this study. The authors have
stated that the “exposed group” comprised ‘drivers of cars with traditional braking
systems’ and the “unexposed group” comprised ‘drivers of cars with anti-lock
braking system (ABS). However, the aim of the study was to study the
effectiveness of the ABS in prevention of RTCs’. This means that the intervention
was ‘introduction of ABS in car’; therefore, the ‘cases/exposed group’ should be
‘drivers of cars with the ABS’ and the controls/unexposed group’ should comprise
the drivers of cars with non-ABS/traditional braking systems. The authors need to
reconsider this fact and reassess their methodology/analyses/findings.

Please be clear whether you are reporting the ‘incidences’ or ‘incidence rates’.

Furthermore, I assume that the data would deviate from the normal distribution,
which would require use of non-parametric analytical techniques. Therefore, the
authors need to provide justification for using the T-test and Poisson regression,
with especial attention should be paid as to how authors dealt with the
assumptions necessary for the above analytical techniques.

Regarding the Poisson regression analysis, the authors need to report what was
the outcome variable and what were the predictors / explanatory variables.

In addition, In the case of data deviation from normal distribution, reporting of the
mean statistics become less important; therefore, median values should be
reported.

The power of study should be reported in the methods section.

The response rate is missing and it should be reported in this section.

RESULTS:

In the current format, results are not logically reported. The presentation of the
results could be improved in the following order.

Table 1 should report data on demographics e.g. gender, age, daily driving time,
number of years since driving, and number of intercity trips

Table 2 should report disaggregated data on total RTCs, injurious RTCs and fatal
RTCs, locality of RTCs (urban vs. rural, major highways vs. country roads), RTCs
due to the brake failure and financial losses due to RTCS should be reported
separately for ABS cars and non-ABS cars
The current table 1 and table 2 could be renumbered.

In addition, the data reported in parenthesis should clearly state it is the ranges or confidence intervals and so on.

Moreover, the authors should state whether they are reporting the incidences or the incidence rates.

Poisson regression results: authors need to report statistics showing model fit with the given data. Additional comments on the Poisson regression analysis are given below with reference to Table 2.

DISCUSSION:

The opening paragraph mentions other Middle Eastern countries, which should be avoided and the focus of the discussion should be on the findings in the context of Iran. The discussion should provide critique of the study in relation to the evidence from other countries and finally some policy suggestions for the road safety in Iran should be proposed.

Could you please discuss the effect of individual variables presented in the Poisson regression analysis given in Table 2

CONCLUSION:

As stated earlier, the conclusion in the abstract should focus only on Iran and present a bottom line of the study findings.

Table 2 Poisson regression analysis:

Table 2, Colum 3 ‘SD’. Is this the ‘standard deviation’ or the ‘standard error (SE)’? I believe it is the SE.

Could you please provide 95% confidence intervals for the Poisson regression coefficients for each of the variables included in the Poisson regression model?

In the results section, the authors have stated that they included six variables i.e. cars with ABS, age of drivers, age of vehicles, number of drivers, daily driving time (DDT), and frequency of inter-city trips I the Poisson regression model. However, Table 2 provides statistics for only 4 variables i.e. cars with ABS, age of drivers, daily driving time (DDT), and age of cars. Authors therefore need to provide statistics for all variables included in the model.

Minor Essential Revisions

TITLE:

Spelling mistake: change ‘Breaking’ to ‘Braking’

AUTHOR INSTITUTION:

Authors have written ‘Sina Trauma Research Centre’ and ‘Sina Trauma and
Surgery Research Centre'. This should be consistent
Authors reported ‘Social Determinant of Health’. In my opinion, the term ‘Determinant’ should be ‘Determinants’
Authors reported ‘Student Scientific Research Centre’. In my opinion, the term ‘Student’ should be ‘Students’

ABSTRACT:
Background is generally written in the present tense; hence, the use of ‘was’ should be avoided.
Background: change ‘was’ to ‘is’ in line 2 and 3.
Aim: Change ‘loss’ to ‘losses’
Methods: ‘similar models’ in what sense?
Results: see suggested major revisions
Conclusion: delete ‘similar Middle Eastern Countries’. What do you mean by ‘preparation of a list of priorities’?

BACKGROUND:
Delete ‘and development’
Change ‘are increasing’ to ‘are projected to increase’
Delete ‘a’ before psychological
Change ‘jurisdictions’ to ‘authorities’ or ‘road traffic safety regulatory authorities’
Change ‘exceed’ to ‘exceeds’
Change ‘story’ to ‘evidence’
What do you mean by ‘a small fraction’? Could report some figures instead?
Delete ‘in the world’
Could you please report ‘where’ is the debate taking place vis-à-vis mandatory ABS. Perhaps you are talking about Iran!
Report aims in a new paragraph.
In aims, delete ‘to provide a preliminary evidence for this debate’.

METHODS
Delete ‘with a land mass……45 inhabitants/km2. This information does not fit here but could be moved to the introduction/background section.
Again, what do you mean by ‘similar vehicles’. It would be useful if you could report as ‘two different models of cars i.e. one with ABS and second with traditional brake system, produced by the same manufacture’.
Change ‘called’ to ‘contacted’
Change ‘traffic collisions’ to ‘RTCs’
Change ‘was sought’ to ‘were sought’
Delete ‘accordingly’

Case selection:
change ‘drivers that were’ to ‘drivers who were’
change ‘according; to ‘through’

Data treatment:
Change ‘was’ to ‘were’ ( …were calculated)
If data was not normally distributed then it is better to report ‘median values’
What variables were categorical? such as…..
change ‘utilized’ to ‘used’

RESULTS:
it would be better if you could provide sun-headings for reporting data. Such as:
Demographic characteristics, RTCs, RTIs, Financial losses, and Drivers
perceptions about ABS.

Please revise an incomplete sentence i.e. ‘To non-ABS vehicles was 0.20, 0.65, and 0.96 respectively’ given at the bottom of the results section.

Please refer Table 2 when you describe the Poisson regression analysis in the results section.

DISCUSSION:
Change ‘and in the Middle Eastern Climate’ to ‘in Iran’.
Is it ‘annual incidence’ or ‘annual incidence rate’?
Please delete an extra comma in paragraph 3 i.e. … and RTIs, , as’ (this should be …RTIs, as was observed..)
Change ‘the story has been controversial in the real world’ to ‘the findings have been inconsistent in the real field’.
You might need to add the country (i.e. USA) where the ‘Highway Loss Data Institute’ is located.
Change ‘adding this technology’ to ‘adding the ABS technology’
Please use abbreviation of RTCs and RTIs throughout the text after their initial full spelling.
Change ‘by ABS installation’ to ‘involving vehicles with ABS’.
Change ‘attributed to ABS installation’ to ‘attributed to the ABS’
Change ‘failure of this technique’ to ‘failure of the ABS’
Change ‘all forms of RTC’ to ‘all forms of RTCs’
Change ‘got its support by’ to ‘was supported by’
How much is a ‘noticeable fraction’? Please be precise!
Could you please rephrase this sentence i.e. ‘This is more attentive……………. 
verbal knowledge [3]’
Change ‘information about’ to ‘information and training about’
Change ‘ought’ to ‘sought’
Change ‘their products’ to ‘their cars (vehicles)’
You might need to delete the following text i.e. ‘This ratio has been reported………….for safety seat belts of drivers’.
Delete ‘and similar Middle Eastern countries’
Please describe what do you mean by a ‘list of priorities’.
Change ‘any specific policy in this regard’ to ‘any specific policy regarding mandatory fitting of ABS in vehicles’
Change ‘Limitation and strength’ to ‘Limitations and strengths’
Change ‘might believe’ to ‘might have believed’
Change ‘overestimate’ to ‘probably overestimated’
Change ‘may expect’ to ‘might have expected’

**CONCLUSION:**
Change ‘While ABS have believed to have prevent RTCs that were due to brake failure up to 40 %’ to ‘While ABS is believed to prevent RTCs due to brake failure (up to 40 %)’
Change ‘safety authorities’ to ‘Road safety authorities’
Delete ‘and similar Middle Eastern Countries’
Change ‘should first invest to prepare a list of priorities, considering’ to ‘should first consider’
Change ‘specific policy in this regard’ to ‘specific policy vis-à-vis mandatory ABS in vehicles’
Add ‘In addition,’ before the drivers need ………..effectiveness.
Authors might consider adding the following as the last sentence in the conclusion. ‘This could be facilitated by the organizations responsible for the road traffic safety in the country.’

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

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

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**
I declare that I have no competing interests.