Reviewer’s report

Title: Factors associated with hospital length of stay and hospital charges of road traffic-related injuries in Iran

Version: 2 Date: 26 June 2012

Reviewer: Ricardo Pérez-Núñez

Reviewer’s report:

Authors highlight some findings that are actually not statistically significant. In addition, they discuss potential reasons for higher charges for motorcyclists and shorter LOS for car occupants (second paragraph of page 11) when in fact multivariate models do not show any of these differences after adjusting by co-variables.

As solicited by reviewer 1, authors should give a formal definition of RTI in terms of specific ICD-10 codes. From V01-V99 there are traffic and non-traffic subcategories of the external causes. This request was not addressed in their reviewed version.

Authors say that the log transformation of the cost variable did not result in a normal distribution of the dependent variable. However, the linear regression assumption is not under the dependent variable itself but under the distribution of the model residuals. I agree with reviewer 1 in that multiple regression analysis could be a better approach to the billed charges variable.

Instead of using a dummy variable for each category of road user (which would result in a collinearity problem), I recommend the introduction of the variable as categorical, using any category as the reference. For example in the hospital charges final model, the implicit reference category is pedestrians & car occupant. In the LOS final model, the reference category is pedestrians & motorcyclists). From my perspective this approach would not be correct. This comment would also apply for the occupation variable.

Major revisions:

The use of “hospital costs” through the document is misleading. Sometimes is used as synonym of “billed charges”. Billed charges in the context of this particular study refer to what patients/insurance companies are required to pay and not to resources that hospitals are employing to provide medical care to RTI patients. Authors clarify this in the discussion section (page 13) but I think this should be corrected also in the document.

Authors should provide more information on how they handled the “type of road user” and “type of occupation” variables in both of the full models. As it is presented in tables 4 & 5, it is not clear given that if all categories of those
variables are incorporated in the model a collinearity problem would arise (authors say that the “other” categories were not included in the analysis). The problem is that “Other occupations” represent 51.1% of the sample and “other road user” represents 1.6%.

In footnotes of table 2 says that patients with 0 charges are patients that their charges were waived by the hospitals by different reasons. From the response to my comments, I had understood that the analysis was performed in the billed charges (which include costs of all services the patient received in the hospital) not under actual payments. If billed charge is 0 for those who were exempted from their payments, the dependent variable has a great limitation.

Minor essential revisions:
Authors clarified that only those injured that spent at least 24 hours at the hospital were part of the study sample. The first category of LOS that was incorporated in the revised version is then wrong (<=1). The “<” sign should be deleted. This also applies for table 4. In addition, categories of hospital charges are not mutually exclusive and should be corrected in the text (page 6).

In page 10 authors discuss the potential reasons of differences found both in education and in occupation groups. In both cases authors stay that this might be explained by severity of injuries, although final multivariate model was adjusted by severity (so this would not be the case).

Some figures are not rounded correctly when used in the text. For example: 49.6% would be 50% not 49. 77.5% would be 78% not 77. Other figures do not correspond to what is presented in tables (i.e. text says that 48% belong to the “other” occupational group whereas in table 1 it is 51.1%). Text says that motorcyclists and blue collar workers are associated with higher hospital charges. Table 4 seems to say the opposite. Text says that being a farmer and blue-collar worker were associated to longer LOS, whereas table 5 apparently shows opposite results.

In page 10 authors say that insured patients paid less due to the subsidized care for them. Do they mean “insured patients were charged/billed less” If hospitalization charges included both, patients and insurance’s shares, then it would not be correct to say that patients paid less because their bill was lower (authors explain that shares by patients are different depending on the insurance company: 15-25%).

Discretionary Revisions:
If category of “other road user” is not going to be used in the multivariate analysis, then I would recommend eliminating these subjects from the study and focus only on the road users of interest.

Level of interest: An article of importance in its field

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