Reviewer's report

Title: The Regional Differences in Prevalence, Medical Expenditures and Risk Factors for Injury in Taiwanese Teenagers

Version: 2 Date: 21 December 2005

Reviewer: Paul Hewson

Reviewer's report:

General

This study is based on a thoroughly designed health survey, with response rates in excess of 90%. Little comment is made on the bias that may be included when surveying by household or by individual. I think this is a valuable dataset and hope that I will see a number of publications emerge from its careful analysis.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

I feel that the first set of results (reported in Table 1) should be examined by means of a log-linear model. There is considerable scope for Yule's / Simpson's paradox within these data; for example whilst it might be unlikely, if the gender mix differs by age group the effect of age may be different to that suggested by table 1. I also think the table ought to be set out slightly differently to distinguish "response" and "stimulus" variables. As a byproduct of this work, the injury prevalence can be reported with a confidence interval.

I am always a little nervous about uncritical use of stepwise selection methods (see for example Frank Harrel, Regression Modelling Strategies, Springer for a good discussion). As a result, I wonder what to make of smoking not selected and drinking being selected. In many countries these two behaviours tend be very closely associated, and I have a small worry that stepwise selection has rejected one of two essentially collinear variables. Whilst we have a well fitting model, we may be losing an important piece of information regarding lifestyle and injury risk. I would be a lot more comfortable either if the results of the stepwise selection were triangulated against other findings in the literature OR if more judicious information was presented on variable selection.

Finally, I feel that the modelling work on costs needs reworking. I think it is reasonably obvious that there will be different costs associated with different injury types (open wounds, bone fractures). The two aims of an analysis are to see whether males / females or young / medium / old differ in their risk of receiving different types of injury (which can be examined by a log-linear model, as well as emerging as a byproduct of this analysis). The second aim would be to see whether males / females young / medium / old with the same injury have different costs associated - and I suppose by implication more or less severe injuries for the same cause. There is some serious confounding in this analysis which needs attending to. When you state that "females in remote areas spent less money" is this because they are less seriously injured, more likely to have those injuries that are dealt with cheaply or because they have less money spent on them?

On page 7, you state "Because of few hospitalisations, we did not include those in the study"; this sounds like a potential study bias. At the very least I would like some information presented to reassure me that it is a small bias (how many hospitalisations (male / female, offshore / mountainous)
and how much cost did these accrue.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

The statement "education levels were removed because of close correlation to age" needs expanding. What do you mean by "education levels" in this context. There might be a close correlation to age, but if those relatively less well educated at the same age had an increased injury risk we would want to know.

The use of English needs some attention, for example "The logarithm of cost was used in mixed model to make the expenditure distribute normally" needs to be reworded; there are many more examples.

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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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: No

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