Reviewer's report

Title: A case control study of differences in non-work injury and accidents among middle aged men in rural compared to urban British Columbia, Canada

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Reviewer: Roderick McClure

Reviewer's report:

General Comments

As noted by the authors, the rural–urban health differential has been widely described in the literature and is an important subject for further examination. While the study described in this paper goes some way to addressing issues relating to the observed differential as it applies to injury, there are a number of limitations in the paper that restrict the extent to which it makes a contribution to the field. The limitations can be broadly classified as 1) lack of attention to detail in preparation of the manuscript, 2) lack of a single internally coherent argument connecting the study rationale, aims, choice of methods, analysis, interpretation, and 3) a somewhat unconvincing set of conclusions that are able to be drawn from the analysis presented.

Specific comments that explain these overall concerns with the paper are listed below.

Major Compulsory Revisions

Introduction/ Background/Literature Review:

1. This section needs to be re-written

The structure the authors have chosen to use here does not really work. A simple 600-800 word introduction containing the following information would suffice.

The context of the problem being examined
The problem under consideration
What we know about the problem
Any limitations of the existing literature (both in content and methods)
What the authors aim to do to address the specific gaps in knowledge identified above.

If this is done concisely, it should be a clear rationale for what the authors have chosen to do in the study. It should justify the study design, choice of variables analysis; all of which should follow in logical and focused progression. As it is, the reader is left unsure on a number of fronts, in particular a) whether the authors are trying to do a descriptive or an analytic paper. b) why the authors
argue that after controlling for differentials in exposures there is no difference between work injury between rural and urban, but do not adequately try to control for exposures when considering the urban-rural differential in non-work injuries. c) what purpose is served by the migrant analysis.

Aims:

2. The aims section needs to be re-written

The authors say “The purpose of this paper is to present findings from the BC sawmill worker cohort as to whether there are differences in non-health accident and injury outcomes among rural and urban residents in BC, as well as migrants within and across these community types.” This really needs to be tightened. I suggest something more like… “The aim of the study was to quantify the relationship between rural/urban residency and risk of non-work related injury (by external cause category) among BC sawmill workers.”

Methods:

3. The methods appear to be inadequate to properly address the study aim.

This study design seems a somewhat opportunistic analysis of an existing data set. In case control studies the numbers are generally small, but the value of these studies is generally in the complex risk factor information available. This study has small case numbers, but very little compensating exposure data leaving one to question the authors claims for the value of the study methods. I am not convinced that the results of this study are better than could have been achieved from an incidence study using hospital admissions data for numerator information and population census data to create denominators. For example, would it not be a simpler and more accurate way to compare urban/rural hospital rates of hospital misadventure by looking at hospital misadventure data per admitted patient for hospitals in urban and rural regions? The authors could have preempted this criticism with a better justification for the study design.

4. The case identification seems to be flawed.

Line 3 page 11 and line 1 page 12 suggests cases were identified as those admitted with a mental health outcome. Has this entire page been cut and pasted from a similar paper examining mental health rather than injury? This would seem to be a fatal flaw.

Discussion:

5. This section needs to be re-written

The argument on which the paper is based is presented in a brief introduction, and an enumerated list of “postulations”, and a brief literature review. In my comments on the methods above, I have discussed the lack of detailed information about exposure data for the cases and controls, and the fact that this severely limits the interpretations that can be made from the results. Given these
limitations in the introduction, there is limited scope of the conclusions to make substantial contribution to knowledge. This is reflected in the main findings summarised in the discussion at the bottom of page 13, (ie a list of where injuries were observed to be higher lower or the same in rural compared with urban communities) and a somewhat limited discussion of these findings that amounts to some conjectured explanations for these differentials. There is no elucidation of the meaning and significance of the migrant component of the results.

There are two sentences in the introduction that really carries the potential power of the paper, but unfortunately this opportunity suggested by this sentence is not met. In line 8 an 9 page 1 the authors say, “Injuries and accident rates in farming fishing forestry and other resource extractive industries tend to be quite high. However in general once this is controlled for in analyses there is little difference in workplace injury rates for rural compared to urban workers.” The real strength of this study design/paper would have been not to show there is a difference or not in non-work place injury between urban and urban communities, (because that information is easily obtainable from administrative data) but to show what the differences are having controlled for exposures. As it is the authors have trouble making a case for the value of their findings.

Minor Essential Revisions

Title:

6. The title could be re-written

It’s a small point, but the title seems to capture the nuance of the paper’s lack of focus. Case control studies are generally considered to be analytic study designs that identify potentially causal associations between factors of interest and the identified outcome. While the inferences are derived from observed differences, the title “A case control study of differences in non-work injury and accidents in …” seems a little half baked. The critical relationships being examined should preferably be included in a properly formulated study aim that is reflected in the manuscript title.

Abstract:

7. I could not find an abstract for this paper. If one has not been done I suspect this is an oversight as it would serve a very useful function.

Results:

8. Table one could be simplified by listing E code ranges used. Readers could be expected to check the ICD manuals if they want to translate these codes to text strings.

9. line 3: “is systematically worse” not sure what it is that systematically means here. Perhaps if its important it can be spelled out a little.

10. Line 8: “Injuries and accident rates” is somewhat obtuse. Are the authors
meaning Injury rates and accident rates, and if so what do they see as the
difference between the two that requires both words (especially given the
generally acceptance in the injury prevention literature that the term “accidents”
should not be used).

11. Line 18: “non-health accident and injury outcomes”. Is “non-health” a typo? In
the context of this paper what distinction do the authors mean to draw by
referring here not to injuries but to injury outcomes?

Level of interest: An article of limited interest

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

Statistical review: No, the manuscript does not need to be seen by a
statistician.

Declaration of competing interests:

I declare i have no competing interests