Reviewer's report

Title: Is the Scottish population living dangerously? Prevalence of multiple risk factors: the Scottish Health Survey 2003

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Reviewer: Wouter Poortinga

Reviewer's report:

The manuscript "Is the Scottish population living dangerously?" by Lawder et al is an interesting research report on the prevalence of multiple risk factors in the Scottish population, using the 2003 Scottish Health Survey. It is well written and easy to read. However, I do not think that the paper is complete at the moment. Most importantly, I miss a thorough literature review on the topic. It would be useful to include a more elaborate review to see what the current paper contributes to the already substantial body of evidence. I also miss an explicit statement of the aims of the study, making it difficult to evaluate the manuscript. What does the study aim to achieve? And what does it add to the already existing literature? At the moment the manuscript is purely descriptive. The authors describe the combination of multiple risk factors on page 6 in a non-systematic way. It is not clear why the authors describe certain combinations of risk factors (e.g. "of those who drank to excess but did not smoke 70% were overweight") but not other combinations. Similarly, Table 2 is very difficult to read. The combinations of risk factors are ordered according to their prevalence, but in my view that makes the table messy. It is better to order the table according to the number of risk factors (see e.g. Schuit et al 2002). The results section could be structured in a similar way. It also needs to be considered that, because certain risk factors are more common (i.e. a poor diet), the combinations with these risk factors are more prevalent. That is the reason why none the least prevalent combinations include a poor diet, as that risk factor is the most common among the Scottish population. It would therefore be interesting not just to report on the prevalence (i.e. the observed frequency) but also to study the clustering of combinations (i.e. compare the observed and expected frequencies of risk factor combinations.

The authors conduct a multinomial logistic regression analysis, comparing "0 or 1", "2 or 3", and "4 or 5". What is the justification for combining them? Why didn't the authors conduct an unordered multinomial regression analysis for all number of risk factors (i.e. 0, 1, 2, 3, 4, 5). An ordered multinomial analysis could also be appropriate. A lot of information may be lost by combining the number of risk factors, as currently done by the authors.

The authors compare their results with similar analyses across the world. This is very commendable. However, did the other studies measure and define the risk factors in the same way? And were the same cut-off points used? It is interesting to see that a study on lifestyle risk factors in England (Poortinga 2007) found
similar prevalence of smoking, excessive alcohol consumption, fruit/vegetable consumption, and physical inactivity.

The authors report that there is a higher prevalence of ‘multiple risk factors’ in Scotland, as compared to USA, New Zealand, the Netherlands, Switzerland, and Finland. However, the other studies used different combinations of lifestyle risk factors (see Table 4); and therefore it is not possible to make such comparisons.

Other studies also have studied socio-economic variation in the prevalence and clustering of multiple risk factors. How do the results of the current paper compare to these previous findings?

Overall, this is not a bad paper. However, it is difficult to assess what the paper contributes to the literature, as it does not seem to have a clear aim. The paper would benefit from a more thorough review of the literature, which could also be used to direct more detailed statistical analyses to study the clustering of multiple risk factors.

Some minor comments:

page 4: "our analysis considered five lifestyle risk factors and obesity" should be "four lifestyle risk factors and obesity"

page 5, last sentence: physical INactivity was less common among men

Figure 1 is superfluous. The percentages are already reported in the text.

Table 1: It is not clear why the authors report the 95%CI. It also makes the table difficult to read.

Table 1: The authors use very broad age categories. Smaller age brackets would be better.

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

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests