Author's response to reviews

Title: Relation between body mass index and depression: A structural equation modeling approach

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Version: 4 Date: 5 April 2007

Author's response to reviews: see over
Dear Editor,

“Relation between body mass index and depression: A structural equation modeling approach”

On behalf of my co-author and myself, I would like to thank you once again for processing the above manuscript for publication in the *BMC Medical Research Methodology*. I also would like to thank the reviewers for their constructive comments.

We revised this last version of the manuscript based on the further comments from Reviewer #1 as it has already been approved by Reviewer #2.

I would like to emphasize once again that our main objective was to demonstrate the use of SEM in modeling the relation between obesity and depression and the sample size used in this analysis is large enough for such analysis. Also, because about 40% of Canadian population live in Ontario, we believe that this results could be good estimates for the Canadian population as well.

A point-by-point response is prepared for your consideration.

Sincerely,

Noori Akhtar-Danesh
Reviewer No. 1 (Fiona Shrive)

Compulsory revisions:
1. I would still like the dataset justified. The work uses the Ontario respondents of a national survey without any justification for the limitation to only Ontario residents. The authors must explain why they limit to only Ontario residents. The authors have explained their rationale in the reviewer responses but have not clarified this decision in the manuscript. In addition, the reasons provided - This was acceptable for the MSc thesis committee - is not a scientifically sound justification for excluding observations.

The following change has been made to incorporate this comment (see the first paragraph on Page 4):

“In this article we used the structural equation modeling (SEM) technique to assess the relation between BMI (as a proxy for obesity) and depression in a sample of 12,376 individuals from the province of Ontario as a subset of the 2002 Canadian Community Health Survey, Cycle 1.2 (CCHS-1.2) dataset. The main objective was to examine the potential of the SEM technique for such complex analysis. This sample size is large enough to disentangle the complexity of the relation between obesity and depression. In addition, the results could be used as an approximation for Canadian population given that Ontario represents about 40% of the total Canadian population.”

2. The paper still needs to be clarified. If the message of the paper is concerning the application of a novel modelling technique (SEM) to BMI and depression, this needs to be reflected in the objective, methods, results and conclusions. For example, one conclusion might be that SEM is a feasible modelling technique for modelling BMI and depression. If, however, the paper is concerning the relationship between BMI and depression then the paper needs to be written to support that objective.

The necessary changes have been made in the following sections to address the suggested comment:

Abstract
1. Last sentence of the “Background”
2. The first sentence and last sentence of “Conclusion”.

The main manuscript:
3. First paragraph on Page 4
4. The last sentence of the manuscript includes “this work shows that SEM can be used as an appropriate method to disentangle the complexity of the relation between obesity and depression.”

Thank you