Author's response to reviews

Title: Increasing blood pressure and its associated factors in Canadian children and adolescents from Canadian Health Measures Survey

Authors:

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Version: 3 Date: 12 April 2012

Author's response to reviews: see over
Responses to reviewer’s comments:

**Reviewer 1**

Minor essential revision:

1] Page 2, paragraph 3: age/se. Authors mean age/sex?
   *Age/sex - this error has been corrected (page 2 line 18).*

2] Page 4, line 5: Once ‘blood pressure; has been abbreviated authors should use the abbreviation thereafter. Please replace ‘Blood pressure’ in the beginning of the sentence with ‘BP’.
   *Thank you for pointing that, we have replaced ‘Blood pressure’ in the sentence indicated with ‘BP’ (page 4 line 5).*

3] Page 4, last line: ‘with increasing levels f’. Please correct.
   *In response to reviewer 2’s comment, we have shortened the Introduction section to one and a half page. This sentence was eliminated as the result of this.*

4] Page 12, paragraph 1. ‘Moderate physical activity’. Once the physical activity has been abbreviated, please use the abbreviation thereafter. Please replace ‘physical activity’ with ‘PA’.
   *Thank you. As mentioned above, the manuscript has been reviewed extensively with this in mind and, where applied, the abbreviation has been used.*

5] I am puzzled about the effect of physical activity on SBPZ and DBPZ in adolescent boys. In the Results section it is stated that moderate physical activity is associated with increases in both variables, but in the Abstract with decreases. Please correct.
   *Thank you for bringing our attention to this important conclusion. In adolescents, levels of physical activity were defined as: active, moderately active and inactive. In the Result section, we concluded that moderately active was associated with increases in both SBP and DBP compared with physically active in adolescent boys. For clarity, this sentence has been revised to avoid confusion in the Results (page 12 line 6), as well as in the Abstract (page 2 line 22).*

6] Page 13, paragraph 2: ‘2-3 percent’. Please replace with ‘2-3%’.
   *This has been corrected (page 13 line 18).*

7] Table 3. Please use ‘p’ for significance instead of ‘#’.
   *This has been corrected in Table 2 and 3.*

Discretionary revision:

1] I suggest that authors should clearly state in the Text or Tables the variables
included in multivariate regression analysis models, the R2 changes for each variable and the R2 for the model.

Thank you for this suggestion. We have modified relevant sentences in the Methods section to clarify variables included in multivariate regression models. (page 9 line 11) as well as in the footnotes of Table 2 and 3. We agree with the reviewer that R2 should be reported to help understand how well our variables have explained the models, but felt that we did not fit the models by stepwise selection, but rather fitted with all relevant variables with no selection. Therefore, we decided to report the R2 for the full model. Results on R2 have been added to Table 2 and 3, and significant R2 result for adolescent boys was also reported in the Result section (page 12 line 13).

2] Page 13, last paragraph. In the Discussion section it is assumed that obesity-induced elevated BP in early life may be associated with sympathetic overactivity. It would be interesting to know about the heart rate in this population.

Thank you for your insight on this. We agree with the reviewer that differences in heart rate as one of the manifestations of cardiovascular sympathetic overactivity between obese/non-obese children and their association with BP variability warranted some discussion. We have added heart rate as a covariate to the multivariate linear regression models, and reported its associations with BP in the text and the tables, respectively (page 7 line 22, page 11 line 21, page 12 line 12, page 14 line 5).

Michael S. Kostapanos, MD

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Reviewer 2
This is an interesting study on the association between obesity and blood pressure in a large population of children and adolescents in Canada. The effects of physical activity, family history of hypertension and socioeconomic status on blood pressure are also evaluated.
Minor essential revisions
1) The authors should discuss in more detail the apparent paradox of the positive association between family income and SBP in young boys and both SBP and DBP in young girls.

Thank you for bringing our attention to this. We agree with the reviewer that the apparent paradox of associations of family income with obesity and BP warranted
some discussion and have added more detailed discussion in the text (page 17 lines 1-17).

2) The introduction is rather long and should be shortened. We have reduced the Introduction to one and a half page.

3) There are some typographic errors in the abstract and in the text. Thank you. We have carefully reviewed the manuscript and have corrected all typographic errors.

4) Please limit the number of abbreviations in the abstract to the commonly used ones. Yes, we have limited the abbreviations to only the commonly used ones in the abstract.

**Level of interest:** An article of importance in its field
**Quality of written English:** Acceptable
**Statistical review:** Yes, and I have assessed the statistics in my report.
**Declaration of competing interests:**
I declare that I have no competing interests.

**Reviewer 3**
1) Please get your manuscript copy edited. Perhaps a colleague, preferably a native English speaker, could look it over for you. Alternatively, we can supply the contact details of a professional copy editing service. As requested, both of co-authors of this manuscript are native English speakers, they have reviewed and professionally edited this manuscript.

2) Please include the email addresses of all authors in the title page. A title page should contain; Title, Author list, Affiliations (department names, institution name, street name, city, zip code, country), email addresses. The author list and email addresses must be identical in the manuscript file and on the submission system, and it must be clear which affiliation pertains to each author. Thank you. We have included all the information required for the title page by the journal.

3) Please include an Authors' Contributions section after Competing interests. Please check the instructions for authors on the journal website for the correct format to use for Authors' Contributions. We have added the Competing interests and Author's contribution sections according to journal guidelines.

4) Please remove the 'Competing interest' section from the Title page. This should be placed after the Conclusions/Abbreviations.
This has been removed from the title page and placed after the Conclusions.

) The figure file should not include the title (e.g. Figure 1... etc.) or the figure number. The legend and title should be part of the manuscript file, given after the reference list. Please ensure that the order in which your figures are cited is the same as the order in which they are provided. Every figure must be cited in the text, using Arabic numerals. Please do not use ranges when listing figures. For more information, see the instructions for authors: http://www.biomedcentral.com/info/ifora/figures.
Thank you, errors in the figure file have been corrected according to submission requirement.