Author's response to reviews

Title: Correlation between mean body mass index in the population and prevalence of obesity in Brazilian capitals: empirical evidence for a population-based approach of obesity.

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Author's response to reviews: see over
February 27, 2015  
Re: MS: 7564078341440523  
Dear editor of BMC Public Health,  
We thank reviewers for the comprehensive and thoughtful comments.  
We hope that the paper is clearer now. Changes are indicated as follows:  

Reviewer 1: Oscar Fernando Herran Falla  

1. The first has to do with the regression model used. It is well known that there are important determinants such as socioeconomic status, age and sex (confounders), for which I think would have been required to adjust the correlations. As the authors state, these determinants or not considered, or it is assumed that they behave the same way the capital twenty studied, which is highly unlikely.  

Answer: We thank the reviewer for this excellent point. Analyses were stratified by sex and prevalence estimates and were adjusted by age (page 5, lines 60, 61), but we did not have information about socio-economic status. We have added a sentence about this limitation (page 10, lines 175-178).  

2. In the discussion, the weakness of a model is not mentioned without considering these confounders. Moreover, in discussing issues not directly related to the results, as the themes of the interventions mentioned. While this may serve as an indicator of the impact of population-based interventions, the discussion is not in that sense, but it takes another level, not related directly to what I presented.  

Answer: We thank the reviewer for this point. In addition to aforementioned sentence about the lack of adjustment for socio-economic status markers, we have also included the following sentence on page 10, lines 175-178: “The regression model used did not take into account socio-economic status, such as schooling and per capita income”.  

“Notwithstanding these limitations, our analyses may serve as a feasible model to evaluate the impact of population-based interventions on outcomes of public health importance.” (page 10, lines 179-181). We are not sure what the
reviewer means by the discussion of items not directly related to the results. We believe that we provided a review of the literature on the effects of population-based strategies and contrasted them with our findings. The Brazilian policies were mentioned as potential approaches of a population-based nature.

3. Another aspect that needs to be widely discussed is the effect of modeling a dependent variable of another that gives origin to it. That also defines the magnitude and conceptually. That is, the origin of the prevalence of obesity is the BMI. I think the analysis "nonobese subjects" does not correct this situation.

Answer: We thank the reviewer for this point. According to Rose & Day (1990) when the population distributions shifts up or down, without a change in shape, the mean and the prevalence are correlated, but if the skewness changes, then mean and prevalence could be regarded as independent. As high values would contribute to the overall mean and may produce “autocorrelation”, the authors excluded the high values from the analysis, to estimate the independent component of the association. Reference number 7 (Rose G, Day S. The population mean predicts the number of deviant individuals. BMJ 1990; 301: 1031 – 1034.). We used the same approach to analyze our data.

Reviewer 2: Erly C Moura

1- Abstract – results (r = 0.86 – need parenthesis; 2- Methods – line 33 48 470 – need comma

Answer: We thank the reviewer for this point and corrected the text.

3- Methods – line 33 “autocorrelation” may be “selfcorrelation”

Answer: We thank the reviewer for this point. Rose’s publication used the term "autocorrelation", but we decided to drop this part of the sentence to avoid misinterpretation.
Reviewer 3: Ruth Kimokoti

1- Line 2: Cite a more recent publication for Reference #1.

Answer: We thank the reviewer for this point and have added a more recent reference: Malta DC, Andrade SC, Claro RM, Bernal RTI, Monteiro CA. Trends in prevalence of overweight and obesity in adults in 26 Brazilian state capitals and the Federal District from 2006 to 2012. Rev Bras Epidemiol 2014; suppl PeNSE: 267-276.

2- Background: Provide some information and data on obesity in Brazil.

Answer: We thank the reviewer for this point. Recent data on obesity in Brazil was added: “Overweight and obesity prevalence in Brazilian adults in 2012 were 51% and 17.4%, respectively” (page 3, lines 3, 4)

3- “Methods” section.

a- Structure this section. Suggested format for subheadings: • Study population • Exposure • Outcome • Statistical analysis

Answer: The reviewer made an interesting suggestion. The methods section is now formatted with the structure proposed.

b- Provide the following information under the appropriate sub-sections: • How were the participants dressed? • Criteria for BMI values and obesity. • While sex-specific analyses are appropriate, explain the rationale. • How were the age groups determined?

Answer: We thank the reviewer for this point. We added this text:

“As sex and age may be confounding variables, analyses were performed according to sex and age-group (20-39 years and 40-59 years), representing, respectively, young adults and adults.” (page 5, lines 60-62). Criteria for BMI values and obesity had already been addressed on page 4, lines 46 and 47: “Mean BMI (weight/height^2) and its standard deviation, and the prevalence of obesity (BMI ≥ 30.0 kg/m^2)…”

We used a secondary, publicly available database which did not have the information about how the participants were dressed.
4- Add Table 1 which shows the Brazilian States, their capitals, and the mean BMIs of men and women for each capital.

Answer: We thank for this important suggestion. The table was added.

5- Lines 92 and 97: The sentences beginning “When obese…” and “No significant associations…” are contradictory. Please clarify.

Answer: We agree with the reviewer and changed the sentence to: “When obese individuals were excluded, no significant associations or correlations were seen, regardless of sex and age” (page 7, lines 110-111).

6- The terms “gender” and “sex” do not mean the same thing. Please use “sex”.

Answer: We thank the reviewer for this point. “Gender” was replaced by “sex” throughout the manuscript.

7- Abstract
   a) Methods section: Indicate the sample size. b) Add the p value to the correlations.

Answer: We agree with the reviewer and have added the sample size and p values to the correlations.

8- Line 43: For the digital scale, indicate the manufacturer in parentheses.

Answer: We thank you for this point, however, we do not have this information, as we used a secondary, publicly available database which did not have this information.

Thankful for your careful review,

Yours sincerely,

The authors.