Author's response to reviews

Title: Is high body fat estimated by body mass index and waist circumference a predictor of hypertension in adults? A population-based study.

Authors:

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Author's response to reviews: see over
Dear Dr. Nehme Gabriel,

Thank you for the careful review of our manuscript. We truly believe that all comments and suggestions have greatly contributed to improve the text. On behalf of all authors, I am submitting a revision of the manuscript entitled “Is high body fat estimated by body mass index and waist circumference a predictor of hypertension in adults? A population-based study” - No.: MS: 7900079377836516 PM-12-459 - to your appreciation and to editorial analysis of the Nutrition Journal as to the possibility of its publication. In addition, please find below details on the changes made to the original manuscript.

This study is a part of a comprehensive research referred to as EpiFloripa Adults 2009, a health survey conducted in adults to investigate self-rated health, self-reported diseases, oral health, health services utilization, and the main risk factors for chronic diseases such as socioeconomic and demographic characteristics, diet, physical activities, blood pressure, anthropometric measurements, alcohol and tobacco consumption. The Project was sponsored by the Brazilian National Council for Scientific and Technological Development.

The article has not been published before, and it is not being considered for publication elsewhere and we approved the contents of the submitted manuscript. We agree to assign exclusive copyright to the Nutrition Journal if and when the manuscript is accepted for publication.

Sincerely,

Diego Augusto Santos Silva
Federal University of Santa Catarina, Brazil.
Reviewer: Christian Jung

Reviewers' comments

Reviewer:
Silva et al. reports about a study conducted with 1720 adults in Brasil, assessing the predictive capacity of body fat percentage estimated by equations using BMI and WC to identify hypertension in adults. This is a well written manuscript with adequate introduction, carefully designed data acquisition and analysis and a discussion addressing the limitations of the study, as well. The authors conclude that simple anthropometric measurements allow screening people at risk of hypertension. Although this information is not new a confirmation of this finding is welcome. However, the authors could revise the manuscript in order to outline what the current manuscript adds to the body of knowledge.

Authors: We appreciate the reviewer’s suggestions. We have added the following information to the second paragraph of the conclusions: "The findings of this study show that while people with obesity are identified through % BF equations, there are individuals at risk of hypertension. This information may be relevant to health systems in countries of low and middle income that do not have enough financial and material resources for the accurate diagnosis of obesity and hypertension"
Reviewers' comments

Reviewer:
In this interesting cross-sectional population based study Santos Silva and colleagues analyzed the accuracy of Body Fat Percentage (%BF) assessed through equations to diagnose hypertension. The best cut-off points with best properties to diagnose hypertension were identified in the equations with BMI for men and with WC for women.
The authors concluded that the use of this simple anthropometric measurement allowed the screening people at risk of hypertension.

Major Compulsory Revisions:
- The %BF formulas seemed not to be a “simple” anthropometric measure. Which are the advantages of the % BF formulas over the simple measures of WC and BMI? This should be presented in the Background section and discussed in the Discussion section.

Authors: The % BF estimation allows for more precise analysis of body components than simply BMI and WC measures. Through % BF, it is possible to estimate other body composition components such as lean body mass and fat mass. Thus, it is believed that the % BF estimation should also be considered in body fat and obesity evaluations at population level as widely performed with WC and BMI. The following paragraph was added in the introduction: "The % BF estimation allows for more precise analysis of body components than simply BMI and WC measures. Through % BF, it is possible to estimate other body composition components such as lean body mass and fat mass (Drinkwater and Ross). In this sense, if equations that estimate % BF have good predictive capacity for hypertension, they can, while analyzing body composition, identify people at risk for hypertension". In the discussion, the following paragraph was added: "Through % BF, it is possible to estimate other body composition components (Drinkwater and Ross). Moreover, analyzing only the absolute WC and BMI values does not allow estimating lean body mass and fat mass. Thus, it is believed that the % BF estimation should also be considered in body fat and obesity evaluations at population level as widely performed with WC and BMI (WHO, 1998). "

Reviewer: Miguel Gus
- Reference:

Reviewer: Major Compulsory Revisions:
- The results in the table 2 and 3 are presented according to age strata. As the authors pointed out in the discussion section, an easy screening test should have a good sensitive value. I think that it also should have a homogenous value in different adult age. Considering the multifactorial characteristic of hypertension physiopathology it is hard to believe that any anthropometric measure could fill these ideal characteristics. As presented in these two tables the results are a little bit confusing. For WC formula in women the %BF had a good screening property for all group (71%) but not to age strata. For men is good for 40-59 but not for younger ages. The results presented to the BMI have the same problem. Considering the practical aspects and the screening proposal of the %BF the results should be presented only considering the “all group”.
Authors: In the new version of the article, the results were presented considering the whole group. No stratification by age was performed.

Reviewer: Major Compulsory Revisions:
- The sensitivity values for “all group” should be between the lowest and the highest values in each age strata. For example: for BMI formula the value for “all group” of women is 68.1%. It is between 79.1% for 40-59 years and 42.7% for 20-39 years. For WC formula for” all group” is 71% but for 20-39 years is 58.3% and 40-59 is 54.4%. It sounds strange. Could the authors clarify these numbers?
Authors: We appreciate the reviewer's warning and checked the results. In the previous version of the article, we had entered wrong values in the table. In the new version of the article, these values were corrected.

Reviewer: Minor revisions:
- Some units are missing in table 1 (for example education level)
Authors: The missing data relate to questions not responded by subjects. There were some questions that were ignored by subjects who for some reason did not answer the questions. We included such information in the table to show that in epidemiological studies, situations like those can happen.

Reviewer: Discretionary revisions:
- Considering the results of figures 2 and 3 could the population attributable risk (PAR) of high BF% considering the WC and BMI formulas be calculated?

**Authors:** The attributable risk measures the excess of occurrence of outcomes between exposed compared to those not exposed. Additionally, the attributable risk in the population and the attributable fraction in the population are used to assess the impact of risk factors on the occurrence of outcomes in populations (Hennekens and Buring, 1987). The reason-based measures of association provide data on the strength of association between the factor under study and the outcome, allowing making a judgment about a causal relationship. Measures such as the attributable risk and population fractions have the perspective of public health and planning of health actions, since they are essential for assessing which impact of a risk factor on a population and which are the possible repercussions of their removal. However, this study did not aim to estimate the population attributable risk, because it was not the main object of the research, which was restricted to analyze the discriminatory power for hypertension of the fat percentage estimated by equations that consider waist circumference and body mass index.

- Reference: