Author's response to reviews

Title: Fruit and vegetable intake and characteristics associated among adolescents from southern Brazil

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Version: 3 Date: 7 August 2012

Author's response to reviews: see over
August 7, 2012.

Dr. Nehme Gabriel
Editor-in-Chief
Nutrition Journal

Ref.: MS: 1476289386506715

Dear Dr. Gabriel,

Enclosed you will find the revised manuscript: "Fruit and vegetable intake and characteristics associated among adolescents from southern Brazil", which we are resubmitting to be considered for publication in the Nutrition Journal.

In this round, we addressed the main point differently. The previous version showed separate analyses including or not rice and beans in the five-a-day. In this version of the manuscript, we incorporated the demands of the reviewer who defended their exclusion. We agree with the reviewer that the results are now more easily interpreted since they are clearly presented. The current version was modified in all sections that mentioned five-a-day, and the manuscript was re-written. As expected, some results have changed and a new figure 2 was generated, presenting the characteristics associated with five-a-day.

The other reviewer was satisfied with the version previously presented.

We look forward to hearing from you. Please, feel free to contact us if you need any additional information.

Best regards,

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Answer to the reviewers' comments (Jalila El Ati):

We thank to the reviewer for the previous comments, which help us to improve the manuscript. Since he did not request additional changes, the new version was done based on the other referee.

Answer to the reviewers' comments (Renata B Levy):

The article biggest problem is still there. You did not solve it. Was the classification of beans and rice as part of Day 5. The concept of the 5 a Day is recommended by WHO and adopted by several countries, including Brazil. The food guide for Brazilians that the authors mention also adopts this same recommendation. There is nothing to suggest in the guide that rice and beans is part of this indicator.

The third guideline - guideline corresponding to fruit and vegetables also indicates what should be considered fruit and vegetables. I quote below the picture taken from page 163 of the Food Guide's population, translated to English to facilitate the understanding of the editors. I highlight the sentences that directly address the issue for easy reading.

Copied portion of the Brazilian Guide Below
"What are Fruit and Vegetables for the Purpose of this Orientation Guide?
Vegetables are plants or plant parts that serve for human consumption. The parts that are normally eaten are the leaves, fruits, stems, seeds, tubers and roots (Philippi, 2003).

What is called "green" are the edible portions of the plant such as leaves, buds, flowers, or stems. We use the term "vegetable" when the parts are the edible fruits, seeds or parts that are developed on earth. Fruit is the pulp that surrounds the seeds of plants and has flavor, is rich in juice, and tastes sweet. (Philippi, 2003).
The variety of this food group is immense, some having only local or regional occurrence. Those more readily available are, for example: Vegetables: spinach, watercress, celery, lettuce, chicory, broccoli, kale, cauliflower, endive, spinach, mustard, cabbage, arugula, parsley and celery, as well as carrots, beets, zucchini, squash, cucumber, onion.
Fruit: cherry, orange, tangerine, banana, apple, mango, lemon, papaya and many others.
In the Brazilian food guide plant foods such as tubers and roots are considered foods high in carbohydrates (Guideline 2), as well as beans and other grains. Legumes are considered rich in vegetable protein (Guideline 4), therefore they are not included in this guideline.
Encouragement for the consumption of these food groups is mainly concentrated in their natural forms. Products with a high sugar content such as fruit jellies and drinks flavored with fruit and pickled vegetables with high salt
content are not part of the range of foods whose consumption is being encouraged in this guideline."

Therefore, it is important to describe the consumption of rice and beans apart from the consumption of fruit and vegetables; it is not admissible to include these items in a five days group, which is an international standard measure. Wrongly adding the consumption of rice and beans to that of fruit and vegetables leads to a misinterpretation of the pattern of consumption found in the paper.

Since the remaining point was rice and beans as part of the five-a-day, we removed the analysis presenting both conditions and changed the manuscript in the following sections:

1) Material and methods

Answer: We removed rice and black beans from the five-a-day, and presented them separated, as grain and fiber components. We also incorporated some of the text presented by the reviewer from the Brazilian guide, which help to describe the components of the five-a-day.

Change in the manuscript (page 7):

The questionnaire investigated cropped vegetables, defined as leaves, fruits, stems, seeds, tubers and roots used for human consumption, as a whole or in part, including: lettuce, watercress, broccoli, cauliflower, spinach, cabbage, arugula, parsley and celery, carrots, beets, zucchini, squash, cucumber, onion, and others. Fruits were identified as the pulp surrounding the plant seeds and having juice, flavor, and tastes sweet, such as: orange, bergamot, banana, apple, lemon, papaya, grapes, mango, and many others [28].

Daily intake of fruits and vegetables, in grams, was categorized on standardized servings, such as 1 medium sized fruit, ½ cup of fruits, leguminous or vegetables, 200 ml fruit juice, 1 cup of leafy vegetables, ¼ cup of dried fruits. The total of servings was computed for fruits and vegetables. The overall consumption of fruits and vegetables
was categorized into five-a-day based on intake of at least five servings a day. Rice and beans, grain and fiber components, were also measured by servings a day.

2) Results

Answer: in order to the exclude rice and beans some analysis were repeated, mostly the multivariate analysis, and the results were re-written:

The overall consumption of fruits was below three servings a day for most of adolescents (Table 2), similar among boys and girls. The intake of at least three servings a day of vegetables was below 10%, half of the adolescents reported less than one serving a day, but it was more prevalent for boys than girls. There was no difference in the intake of five-a-day between boys and girls. The majority of boys consumed three or more servings a day of rice and beans, versus only a third of girls.

Table 3 shows that education, smoking and BMI were not associated with intake of fruits and vegetables. However, education was inversely associated whereas physical activity directly to the consumption of rice and beans. Vigorous physical activity can probably explain the consumption of fruit per day, which could have contributed to five days. Body mass index was positively associated with five-to-day.

Figure 1 shows that boys were more likely to consume higher number of servings a day of rice and beans than girls, independently of age, education, and physical activity. However, there was no association of gender with fruits and vegetables, even after the control for confounding factors.

Figure 2 demonstrates that adolescents who had overweight had a prevalence of five-a-day intake 40% higher than those with normal BMI, independently of age, sex, alcohol consumption, and physical activity.
3) Discussion

Answer: Most of the discussion regarding prevalence of intake, comparisons, and implications for public health changed and the discussion was re-written, excluding the discussion of rice and beans as part of the five-a-day. Please, see the manuscript.

4) Conclusions

Answer: the conclusion changed to:

In conclusion, adolescents from southern Brazil have a low frequency of five servings a day of combined fruits and vegetables. The detailed description of the current pattern of diet by adolescent may guide a strategy to recommend five-a-day in the country. The data about adolescents from developing countries helps to fulfill a gap on intake of fruits and vegetables. Our study provides information for adolescents from a representative population-based sampling from southern Brazil, and dietary intake was acquired through rigorous epidemiological methodology.