

DECEMBER 12, 2019

Re: Response to editor comments on nutrients-634456, titled: "Improved Understanding of Interactions between Risk Factors for Child Obesity May Lead to Better Designed Prevention Policies and Programs in Indonesia "

Dear Editor in Chief and Reviewers of the Nutrients Journal,

Thank you for your email on December 2<sup>nd</sup>. We are very pleased to provide further revisions of our manuscript entitled "Combinations of Fruit-and Vegetable and Junk Food Intakes and Sedentary Behavior May Affect Risk of Child Obesity in Indonesia" (nutrients-634456). As suggested by the reviewers to change the title of our manuscript, our revised manuscript is entitled "Improved Understanding of Interactions between Risk Factors for Child Obesity May Lead to Better Designed Prevention Policies and Programs in Indonesia".

We want to thank you and the reviewers for the very useful and helpful comments. Here we have made clarifications to the title, introduction, methods, results, and discussion, based on the comments made by the reviewers.

Appended to this letter is our point-by-point response to the comments raised by the reviewers. In addition we also provide the FFQ and CPAQ questionnaires used in our study to be included in the supplement. We want to take this opportunity to express our sincere thanks to the reviewers who identified areas of our manuscript that needed clarifications or modification. We would also like to thank you for allowing us to resubmit a revised copy of the manuscript.

Should you have further questions or concerns about our manuscript, please do not hesitate to let us know. We look forward to hearing the results of the ongoing review of this manuscript.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Hamam Hadi'.

Hamam Hadi, MD., MS., Sc.D

Reviewer(s)' Comments to Author:

REVIEWER 1:

Comments and Suggestions for Authors

Overview and general recommendations:

Dear authors,

first, thank you for the opportunity to review this manuscript which describes the

risk of Obesity in Indonesia taking into considerations some factors such as Fruit-and-Vegetable, Junk Food Intakes and Sedentary Behavior, as well as their associations.

The manuscript deals with a timely topic for developing countries (childhood obesity) which is appropriate for the Journal scope and area of interest.

However, the authors need to make clearer the originality of this study. There are other research studies which show correlations between the factors highlighted in this work. The novelty of the approach needs further investigation.

My suggestion is to improve the quality of the manuscript, especially the discussion, before further considering it for publication.

Response: We thank the reviewer for the positive and useful comments. We have modified our manuscript based on your suggestions and comments to improve the quality of our manuscript.

Major comments:

First, throughout the manuscript the authors report the references using a classical parenthesis (); however I believe that for the journal guidelines it is required to use these parenthesis []. Please double check this.

Response: We have modified references throughout the whole manuscript using the Nutrients guideline standards.

The abstract is well-written and summarizes the problem, objective of the research, and its method and results. However, please also include the country (next Yogyakarta Special Province). More over, it is not clear “usual practice questionnaire”: what does it mean?

Response: We thank you very much for your comments on the abstract and we have changed it as requested. We include the country in the text (line 88) and explain about the questionnaire more detail (2.3. Measurements, line 113 - 130).

The introduction provides some review literature explaining the background; however as far as I understood the authors stated that they already did similar study (probably with the same data !?) as in the text: “We have previously reported that obese school-aged children in Indonesia had 60 a lower FV intake than non-obese children”. So they need to clarify what is the real novelty of this study (is the combinations of the factors? And if so why they have not done it before).

Response: We thank you very much for your attention to this particular point. Yes, we analyzed our data and published early findings. We did the earlier analysis to answer research questions about each individual risk factor for obesity. At that time, we were not concerned about the interaction or combined effect of fruit and vegetable intake, sedentary behavior, and junk food energy intake on the risk of childhood obesity. In the earlier manuscript, we did not analyze and write about the interaction between these multiple risk factors and childhood obesity, which is the focus of this manuscript. On seeing recent studies from other countries published different interactions between fruit and vegetable intake, physical activity level, and obesity, especially in adults, we decided to do further analysis on the potential interaction in our data. Fortunately, the Ministry of Research and Technology and Higher Education of the Republic of Indonesia was also interested and supported further analyses with a grant (No: T/56/D2.3/KK.04.05/2019, May 22, 2019). Therefore, the novelty of this study is centered on the unique interaction between fruit and vegetable intake, sedentary behavior, and junk food energy intake with obesity among school children in Indonesia. We then reveal these focuses on the result part point 3.2 (line 191) and point 3.3 (line 227).

The aim is defined but hte hypothesis to be tested are missing.

Response: We thank you very much. We have provided the hypotheses in the revised manuscript. We hypothesize that low consumption of fruit and vegetable intake in

combination with high sedentary behavior or high junk food energy intake will lead to a higher risk of obesity, as compared to their individual effects on obesity among Indonesian school children. It can be seen in line 81-83.

In the method section, it is missing the age of the children. This is very crucial information. Is the age 7-12years old as reported in Table 1?

Moreover, the country Indonesia is missing again.

Response: Information about the age of the children and the country of Indonesia now are provided on the revised manuscript. We mentioned that the age of the children was 6 to 12 years and the study was conducted in Bantul Regency and Yogyakarta City representing both rural and urban setting in Indonesia. Please see line 86-88.

The method reports that information such as ownership of TVs, motorbikes, and cars was asked but then it is not discussed further in the manuscript. Why?

Response: We thank the reviewer for this question. The ownership of TV was found to be a potential confounder, and is now included in table 1.

Again, children from 1st to 5th grades: what does it mean? Please report the age. Not all the readers could be familiar with the grade system of education in Indonesia.

Response: We thank you very much for this reminder. We have added information about the age of the children to the revised manuscript.

In table 1, please change girls and boys into females and males.

Response: We changed Table 1 based on your suggestion.

Why the age is not a continuous variables?

Response: Thank you very much. Yes, as we can see in Table 1, age was treated as a categorical variable; being  $\geq 10$  years or  $< 10$  years. The reason was to show the

distribution (in percentage) of the children in these two categories. This is important as we mentioned in Line 233-236 that according to Indonesia Dietary Allowance (RDA) [34], the RDA of energy intake for children ages 6-12 years old is about 2100 kcal/d with a little difference between males and females after 10 years of age. However, age was treated as a continuous variable in the analysis of conditional logistic regression model for adjustment.

Line 111-112: I believe that the authors should report the design and the questionnaire structure/items to make the research replicable. This will also help to understand better what has been asked.

Response: We thank you very much for your comments. We have added some sentences about the questionnaires used in this study (at point 2.3. Measurements). Also, we include a copy of the questionnaires in the supplement to this manuscript.

Figure 1 and 2 are not needed because the results are reported in the text.

Response: Thank you very much for your suggestion. However, figure 1 and figure 2 are still necessary to show the reader how significant was the combination effects of these factors in affecting the obesity risk. Therefore, we would like to keep showing the picture with some modification of the text.

The discussion should answer the research questions that are proposed in the Introduction, at the moment it seems based on the results and is a little bit redundant (i.e. 236-237; 255-257).

Response: Thank you very much for your comments. We have changed the discussion as you suggested. In this section, we emphasize on the findings that there is a strong interaction between FV intake and SB as well as JFE intake. Please see line 250-262.

This section lacks direction of interpretation or over interpretation (e.g. The expected reduction in child obesity prevalence would diminish to 51.9% if the prevention program only targeted and effectively increased daily activities but did not target and improve dietary intakes of fruits and vegetables).

Response: We thank you very much for your comments. We have changed the sentences to make it clearer. We believe this section is still in line with our findings. This expected reduction in child obesity prevalence from 73.4% to 51.9 and 11.5% (line 259-267 in previous manuscript) or the new expected reduction in child obesity prevalence from 72.2% to 65.1% and 6.5% (line 279-293 in the revised manuscript) were derived from our calculation using Levin's Formula for Population Attributable Risk [48] (new manuscript), assuming that the prevalence of school children aged 6-12 years with or exposed to high fruit and vegetable intake ( $\geq 3$  serving/d) and low sedentary behavior ( $< 5$  hours/d), the prevalence of school children with low fruit and vegetable intake ( $< 3$  serving/d) and low sedentary behavior, and the prevalence of school children with high fruit and vegetable intake but also high sedentary behavior ( $\geq 5$  hours/d) were 22.6%, 40.9%, and 13.5% respectively. In this calculation we used the ORs of 0.08, 0.18, to 0.66 presented in figure 1.

The new sentences explaining the expected reduction in child obesity in Indonesia is as follow (line 279-293 revised manuscript): "Based on data of the Indonesian Basic National Health Research conducted in 2013, we found that the prevalence of school children under 13 years of age with or exposed to high fruit and vegetable intake ( $\geq 3$  serving/d) and low sedentary behavior ( $< 5$  hours/d) was 22.6%, the prevalence of school children with low fruit and vegetable intake ( $< 3$  serving/d) and low sedentary behavior was 40.9%, while the prevalence of school children with high fruit and vegetable intake but also high sedentary behavior ( $\geq 5$  hours/d) was 13.5% [47]. Accordingly, based on these prevalences and the adjusted ORs presented in Figure 1, we used Levin's formula to calculate the population attributable risk [48]. Our results suggest a potential reduction of up to 72.2% in child obesity prevalence if prevention programs successfully increased fruit and vegetable intake, and reduced the sedentary time of school children. They also suggest a potential reduction of up to 65.1% in child obesity if prevention programs only increased daily physical activity, but did not increase fruit and vegetable intake. Alternatively, estimates from this study suggest that the expected reduction in child obesity might only be 6.5% from current levels in Indonesia if policy efforts successfully but solely focused on improving dietary vegetable and fruit intakes without addressing physical inactivity".

Line 279-280: what does it mean? It seems a statement without a context.

Response: Thank you very much for your question. It means, that in daily life of Indonesian people, local (Indonesian) junk foods are sold and provided to children (and other customers) solely. The local junk foods are not provided together with salads or other fruits and vegetables. It is different with Western fast food which are, normally,

sold in combination with different types of salads. Please see line 307-312 of the revised manuscript.

Line 282-285: this is not suggested from your findings. The authors can extrapolate from the results, but should not introduce ideas which are outside of the original stated aims of the paper, and should not make claims that the evidence from the research does not support.

Response: Thank you very much for your comments. We believe this section is still in line with our findings and represent a viable intervention strategy in line with our study. As normally, local junk foods were sold solely and not provided together with different types of fruits and vegetables, we would suggest (based on our findings) that providing many varieties of fruits and vegetables especially in convenience stores or school canteens together with other foods, and with additional health education would be more marketable and could increase sales, and more importantly might help Indonesian government in preventing child obesity. Please see line 310-312.

The conclusions are poorly explained and very general describe (line 289-291). Please consider adding the limitations of the study and future research avenues.

Response: Thank you very much for your comments. We have changed the conclusions and described the limitations of our study as well as the need for future research. In this section we concluded that the combined effect of fruit and vegetable intake, sedentary behaviour, and junk food energy intake outweigh their individual effects.

Finally, why the authors in the acknowledgements referred to a grant of 2019 if the study was carried out in 2013?

Response: Thank you very much for your comments. We conducted this further analysis and manuscript writing with the additional financial support from the Ministry of Research and Technology and Higher Education, the Republic of Indonesia through the grant of World Class Professor Scheme B, No: T/56/D2.3/KK.04.05/2019, May 22, 2019.

Minor comments:

First, I believe that the email contact should include the affiliation email and not gmail contact.

Response: We thank the reviewer. We have changed it.

Second, I would recommend not to mention keywords which are already present in the title.

Right now all keywords listed are already in the title (i.e. obesity; sedentary behaviors; fruit and vegetable; Indonesia). Please use different keywords thinking terms that will help someone locate your work at the top of the search engine.

Response: We thank the reviewer. We have modified it to "sedentary behaviours; fruit and vegetable; junk food; school children; Indonesia; obesity".

Third, the title is not framed in way to create interest to the readers. It is quite obvious that these factors affect the risk of obesity; please elaborate a title which better describes your findings in a unique way.

Response: We thank reviewer for the valuable suggestion. We have changed from "Combinations of Fruit-and-Vegetable and Junk Food Intakes and Sedentary Behavior May Affect Risk of Child Obesity in Indonesia" to "Improved Understanding of Interaction between Risk Factors for Child Obesity May Lead to Better Designed Prevention Policies and Programs in Indonesia"

The article is written with appropriate academic language and follows a clear line. However sometimes I found some words not clear, double spaces (Line 29, 261, 264, 265, 269), grammar errors and I would just suggest a double check for minor typo errors. Examples:

Line 22-23: This is school-based, case-22 control study was conducted in 2013.--> two verbs are present; please correct.

Line 37: delete one of the dots



Line 65: (18) is before the .

Line 158: child →children

Line 287: “a lot of” is not academic, maybe significant

Response: We thank the reviewer for the valuable corrections. We have changed all above.

## REVIEWER 2

### Comments and Suggestions for Authors

in general:

the argument is interesting and the experiment is well designed. The introduction has to be improved and extended. Some inaccuracies in the text. The references section has to be arranged using the guidelines of Nutrients.

Response: We thank the reviewer for the valuable suggestion. We have modified and changed based on your suggestions.

In detail:

Abstract section, you have included and explained the abbreviations in the Introduction section, so there is no reason to duplicate this in the abstract section. Do not include the abbreviations in the abstract section;

Response: We have revised based on your suggestions.

Line 53, insert a space after Health;

Response: We have revised based on your suggestions. Please see line 52.

Line 54, insert a space after day;

Response: We have revised based on your suggestions. Please see line 53.

Line 60, include the references 12, 13 and 14 between the same couple of brackets;

Response: We have revised based on your suggestions. Please see line 57.

Line 61, insert a space after children;

Response: We have revised based on your suggestions. Please see line 60.

Line 62, insert a space after obesity;

Response: We have revised based on your suggestions. Please see line 61.

Line 65, remove the dot after weight and place it after (18);

Response: We have revised based on your suggestions. Please see line 64.

Line 66, insert a space after balance;

Response: We have revised based on your suggestions. Please see line 65.

Line 66, after your reference 20, extend this section and explain that flavonoid content in fruit and vegetable is influenced by fertilizers [x1], ripening stage of fruit [x2], storage method [x3], cooking method [x4].

[x1] Use of digestate as an alternative to mineral fertilizer: effects on growth and crop quality.

Panuccio M.R.; Papalia T.; Attinà E.; Giuffrè A.; Muscolo A.

Archives of Agronomy and Soil Science 65 (5) 700-711 (2019).

<https://doi.org/10.1080/03650340.2018.1520980>

[x2] Bergamot (*Citrus bergamia*, Risso): The Effects of cultivar and harvest date on functional properties of juice and cloudy juice.

Giuffrè A.M.

Antioxidants 8, 221 (2019). doi:10.3390/antiox8070221

[x3] Physico-chemical Stability of Blood Orange Juice during Frozen Storage.

Giuffrè A.M., Zappia C., Capocasale M.

International Journal of Food Properties 20:sup2, 1930-1943 (2017).

<https://doi.org/10.1080/10942912.2017.1359184>

[x4] Various cooking methods and the flavonoid content in onion.

Ioku K, Aoyama Y, Tokuno A, Terao J, Nakatani N, Takei Y.

J Nutr Sci Vitaminol (Tokyo). 2001, 47(1):78-83.

Response: We thank the reviewer for the very valuable suggestion. These suggested references may explain how flavonoid content of the food may be influenced. However, we argue that they may not be relevant to be put in the manuscript as the focus of the paragraph is not about flavonoid. We do not see the point of adding this information and it may detract from the flow of the argument about the benefits of fruit and vegetable which we'd like to emphasize.

Line 72, include the references 23, 24 and 25 between the same couple of brackets;

Response: We have revised based on your suggestions. Please see line 70.

1 section, explain why you have conducted this study in Bantul Regency and Yogyakarta City;

Response: We have modified and changed based on your suggestions. We explain that, in general, there is no study investigating the interaction between fruit vegetables and sedentary behavior in Indonesia, including in Bantul and Yogyakarta, both representing rural and urban setting. Please see line 87-88 the revised manuscript.

Line 91, insert a space after ... method;

Response: We have revised based on your suggestions. Please see line 91.

Line 109, insert a space after obesity;

Response: We have revised based on your suggestions. Please see line 109.

Line 119, include the references 30-31 between the same couple of brackets;

Response: We have revised based on your suggestions. Please see line 119.

Line 127, include the references 32-33 between the same couple of brackets;

Response: We have revised based on your suggestions. Please see line 127.

Tables 1 and 2, when you indicate (hours/ d), (kcal/ d), sometime you insert a space before d and sometime not. Please, always delete the space before d;

Response: We have modified and changed based on your suggestions.

Line 183, change servings/ d as servings/d;

Response: We have modified and changed based on your suggestions.

Line 186, change servings/ d as servings/d;

Response: We have modified and changed based on your suggestions.

Figure 2, in the y axis replace the comma with a dot, the same above the bars;

Response: We have modified and changed based on your suggestions.

Line 241, include the references 36-37 between the same couple of brackets;

Response: We have revised based on your suggestions.

Line 241, include the references 39-40 between the same couple of brackets;

Response: We have revised based on your suggestions. Please see line 255.

Lines 251 and 252 include the references using the guidelines of Nutrients;

Response: We have revised based on your suggestions. Please see line 272 and 273.

Line 269, insert a space after decades,

Response: We have revised based on your suggestions. Please see line 295.

Line 271, insert a space after risk; Line 271, include the references using the guidelines of Nutrients;

Response: We have revised based on your suggestions. Please see line 297.

Conclusions not Conclusions. You have to extend this section with the most important results of your study;

Response: We have modified and changed based on your suggestions.

The References section has to be arranged using the guidelines of Nutrients and the citations have to be completed including volume number and page numbers. Please color in blue the corrections you will do.

Response: We thank the reviewer for the very valuable suggestions. We have made necessary changes based on your suggestions.