Author’s response to reviews

Title: Association between egg consumption and elevated fasting glucose prevalence in relation to dietary patterns in selected group of Polish adults

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Author’s response to reviews:

Dear Editors of Nutrition Journal,

We thank Reviewers for the constructive comments on our manuscript. The manuscript has been revised strictly according to the Reviewers’ comments. All changes are highlighted in yellow.

Answers to Reviewer #1:

1. Lines 92-94: this sentence should be at the end of the introduction section.
Response: The aim of the study was put at the end of the introduction section.

2. The manuscript should be read carefully for minor typos (ex: lines 112, line 107)
Response: The manuscript was checked carefully for existing typos.

3. I find it surprising that men don’t report consuming more calorie when we know they spend more than women. Maybe include a comment on potential underreporting to try to explain that?
Response: The comment on potential underreporting of habitual food intake was put in the limitations section.
4. Lines 185-186: I find that the sentence doesn't fit there. Just remove it perhaps?

Response: The sentence was removed from the text.

Answers to Reviewer #2:

1. My main point concerns the way data is processed. The Authors should rethink the way of statistical analysis and newly develop it. Currently, the tables (results) do not match each other or important data are missing.

Response: All performed statistical analysis were carefully rethought and corrected if necessary. Major changes were made especially in table 4 (currently table 5), as Reviewer’s other comments were taken into consideration. The sample characteristics and the distribution of the sample by categories of egg consumption were presented in table 1. The odds ratios of elevated FG level per 10 grams of eggs consumed per day were calculated and presented in table 5. The design of tables was improved.

2. The aim of the study is unclear and insufficiently justified in an abstract and an introduction.

Response: The aim of the study was put at the end of the introduction section. The introduction section was extended.

3. The introduction contains simple information related to eggs as a source of nutrients (as in school textbooks), but there is no information related to egg consumption and impaired glucose metabolism.

Response: The information about the relationship between egg consumption and impaired glucose metabolism was discussed in the introduction section, whereas some information about eggs as source of nutrients were removed.

4. Why only one marker of impaired glucose metabolism was chosen? This should be clearly justified.
Response: The aim of the Prospective Urban and Rural Epidemiological Study was to examine the relationship between environmental risk factors (including dietary habits), primary risk factors (including dysglycemia) and cardiovascular diseases. Fasting glucose was the only marker of impaired glucose metabolism analyzed in the baseline PURE study. No data about e.g. insulin level or 2 hour postprandial blood sugar was collected. Fasting glucose is one of the markers most commonly used in epidemiological studies and it was also used in the most known Polish epidemiological study on diet and CVD – WOBASZ study (Drygas W. et al. Multi-centre National Population Health Examination Survey (WOBASZ II study): assumptions, methods, and implementation. Kardiologia Polska 2016; 74, 7: 681–690). According to the Reviewer’s comment this justification was added to the limitation section.

5. When reading the manuscript, I am confused: are the study focused on impaired glucose metabolism only or metabolic syndrome components because the risk of CVD is discussed and used in the conclusion.

Response: The objective of the study was focused on the impaired glucose metabolism as a risk factor of type 2 diabetes. However, diabetes is also one of the main risk factors of CVD. According to the Reviewer’s comment the manuscript was checked and references to CVD have been removed to avoid confusion.

6. In my opinion, the use of factor scores for dietary patterns (DPs) is not sufficient to show an association between egg consumption, FBG, and DPs. A more detailed statistical analysis related to DPs should be done.

Response: According to the Reviewer’s suggestion statistical analysis was carefully rethought and various changes were done. We unified the categorization of egg consumption per week in the results of the study and we calculated the odds ratio of elevated FG level per 10 grams of eggs consumed daily. We used a new model in order to assess the odds ratio of the elevated glucose level in relation to egg consumption and we performed statistical analysis without stratification by gender. We showed the sample characteristics by gender and a flow chart of sample collection. We also corrected the presentation of the data to clarify them.

7. Food grouping should be shown in details (see e.g. Nutrients 2018, 10(10), 1488; https://doi.org/10.3390/nu10101488)

Response: Food grouping was presented in new table (table 1) in the methods section.
8. All variables used as confounders should be justified and shown, e.g. in the table with sample characteristics. Why other dietary variables are not used as confounders? It should be explained in detail.

Response: Sample characteristics was presented in table 2. On reflection, we decided to use simple sugars intake per 1000 calories as another confounder in model 3, 4, 5 and 6 in table 5. Simple sugars were chosen as their consumption is directly associated with diabetes development. Eventually we used simple sugars and saturated fatty acids intake due to the fact that they are among the components the most often used in epidemiological studies as determinants of the quality of the diet. Other dietary components were not used as confounders due to the fact that our analysis comprised dietary patterns which are characterized by different nutritional value themselves.

9. If the key study outcomes are results presented in table 4, so all previous data should complement the data presented in this table. For example, table 4 presents the odds ratios of elevated fasting blood glucose (FBG)... by categories of eggs consumption (2-4 eggs and &gt;=5 eggs vs reference &lt;=1 egg) but there is no data showing e.g. distribution of the sample by these categories.

Response: The distribution of the sample by three categories of egg consumption was presented in table 2.

10. Table 4: what is the justification for the categorization of egg consumption per week (&lt;=1 egg vs 2-4 eggs and &gt;=5 eggs) - there is no presentation of the distribution of egg consumption per week - add this data and also others related to these three categories of egg.

Response: According to the Reviewer’s comment the distribution of egg consumption in three categories was added in table 2. Egg consumption was categorized based on the percentage of individuals in each category. In FFQ data about habitual consumption are recorded in nine different categories: “never or less than once a month”, “1-3 times a month”, “once a week”, “2-4 times a week”, “5-6 times a week”, “once a day”, “2-3 times a day”, “4-5 times a day” or “more than 6 times a day”. According to the Statistics Poland in 2017 the average intake of eggs per week was 2.7 pcs. per person (https://stat.gov.pl/infografiki-widzety/infografiki/infografika-jajka,27,5.html). This amount is in the range 2-4 eggs per week, which is the medium category of egg consumption in our study.
11. Since egg consumption is the only food under study, the more statistical analysis should be done, e.g. the odds of elevated FBG per 10 grams of eggs consumed per day should also be calculated.

Response: The odds of elevated FG level per 10 grams of eggs consumed per day were calculated and presented in table 5.

12. Table 3: What is an idea to show such data by seven categories of egg consumption if these categories are not used in further statistical analysis?

Response: We agree with the Reviewer that showing two different classifications of the category of egg consumption may be unnecessarily misleading. That is why we have decided to remove table 4 from the manuscript. However, we think that the data presented previously in table 4 are extremely valuable because they evidence different relationships between egg consumption and elevated FG prevalence in group of men and women. Based on the data it appears that in group of women the exposure to high egg consumption is not associated with elevated FG level, regardless of their overall dietary habits. Instead, in group of men this relationship is apparent, but only for those individuals who do not eat well. This indicates the synergistic effect of the overall dietary intake and possible overlapping of the risks. For this reason, we shortly presented the data in the results section.

13. What is justification for presenting all data stratified by gender? Check if gender was a significant variable and if not - perform statistical analysis for the total sample, with an adjustment for gender. When data combined (male and female), there will be more subjects per category and you may get significant differences.

Response: In compliance with the Reviewer’s comment, we performed statistical analysis without stratification by gender and presented them in tables 4 and 5. We also left prior data stratified by gender in tables in order to show the complete range of the obtained results. We decided to show the results for men and women separately due to the fact that the dietary intake was different in these groups in the baseline PURE study (Różańska D. et al. J Health Inequal 2016; 2 (2): 148–154).

14. Other data which should be shown due to being important but are not presented in the manuscript: (1) sample characteristic, e.g. by gender to find differences (or not) between males and females), (2) flow chart with sample collection,
Response: The sample characteristics by gender and a flow chart of sample collection were showed in table 2 and figure 1.

15. Line 186: I'm surprised the Authors cite only one source from the same team Ilow and Regulska-Ilow [18]. Are there no other studies of Polish authors in this area, i.e. related to metabolic abnormalities and/or dietary patterns?

Response: According to the overall Reviewer’s suggestions the introduction and discussion sections have been re-edited and extended about the results of other Polish studies in this area. The previous reference no. 18 was removed from the manuscript.

16. I recommend attaching the FFQ as supplementary material. There is no access to this FFQ.

Response: The FFQ was attached as a supplementary material.

17. The design of the tables (row and column layout) should be improved, the data is not well enough presented to be easily understood.

Response: The design of the tables was improved.

18. In general: the Authors should consider a using throughout the text (also in the title) rather 'elevated glucose' instead of 'abnormal glucose' for better clarity - they should choose one term and use it with the consequence.

Response: The term “abnormal glucose” was substituted by “elevated glucose” both in the title and throughout the text of the manuscript.

19. The aim of the study should be put at the end of the introduction instead of the methods section.

Response: The aim of the study was put at the end of the introduction section.

20. The discussion section is a space for presenting your own results, so the four first paragraphs of the discussion section (it is a literature review) should be used to improve the introduction section.
Response: According to the Reviewer’s comment some parts of the discussion section were used in the introduction section.

21. Throughout the text: 'eating patterns' (e.g. line 273) or 'dietary patterns' - choose one and use the same phrase across the text.

   Response: The term “eating patterns” was substituted by “dietary patterns” in the text of the manuscript.

22. Lines 116-117 and table 1: The Authors should choose one cut-off point (0.2 or 0.5) for factor loadings and use it in both results interpretation and data presentation.

   Response: Factor loadings higher than 0.50 were accepted as cut-off point. The presentation of the data in table 3 was corrected.

23. Table 4: The reference category (&lt;=1 egg) should be listed up the modeled categories (2-4 eggs and &gt;=5 eggs)

   Response: Tables section has been revised.

I hope that the revised manuscript will be taken into consideration for publication in Nutrition Journal.

Yours sincerely,

Dorota Różańska