**Reviewer’s report**

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

**Version:** 0  **Date:** 08 Sep 2019

**Reviewer:** Lidia Wadolowska

**Reviewer's report:**

The relationship between egg consumption and health outcomes is still controversial, so each new information in this area is valuable, and the aim of the study is justified. The study presents results coming from the Polish arm of the PURE study, therefore the results can be interesting for international and Polish readers of the Nutrition Journal. The paper has great potential, but it requires great changes before a decision to publish it.

Major comments:

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.

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

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.

Why only one marker of impaired glucose metabolism was chosen? This should be clearly justified.

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.

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.

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

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.

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.

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.

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?

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.

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,

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?

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

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

I did not carry out a detailed review of the text, because such an evaluation can only be made after a thorough correction of the way data is developed. Although, some minor comments are listed below.

In general: the Authors should consider 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.

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

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.

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

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.

Table 4: The reference category (\( \leq 1 \text{ egg} \)) should be listed up the modeled categories (2-4 eggs and \( \geq 5 \text{ eggs} \)).

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