Author’s response to reviews

Title: Food taboo among pregnant Ethiopian women: magnitude, drivers, and association with anemia

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Please note that the following is also uploaded as supplementary file, in case it is convenient for checking.

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Dear Editor,

First, we thank you for the opportunity to revise the manuscript. We are very grateful for the time and effort the reviewers put on our work.

We have thoroughly worked on all the comments, revised the manuscript as needed. Details of our responses are provided in bullet points in front of the reviewers’ comments. The changes made based on the comments are highlighted in yellow in the manuscript uploaded.

Summary of changes

- All grammar and spelling errors and edit suggestions have been fully incorporated
- We realized that reviewer #1 had misunderstood some of the issues. Thus, we provided clarifying rebuttal without a change in the document.
- No other change in analyses, results, and interpretation.
Additionally, the reviewer has requested for the original paper. We have attached it as a supplementary file, which can also be accessed from the system.

We have also attached our rebuttal, as a supplementary file, in case it is more convenient for reviewing than the online system.

Thank you again for your support and cooperation.

Best regards,

Ahmad Esmailzadeh

Tehran University of Medical Sciences

Reviewer reports:

Thank you for responding to all the reviewers and editors comments and queries.

Please amend the following grammatical errors:

- Response: Thank you a lot for all the comments and suggestions below. All the suggestions have been fully incorporated.

Page 6 Line 29: Remove the word 'Besides' at the beginning of the sentence
- Removed

Page 10 Line 37: in the sentence which begins "A third of participants...." please replace the word 'as' with the word 'that'
- Done

Page 11 Line 9: Please include the word 'prevalent' after the word 'more'
- Done

Please specify what AOR stands for the first time the abbreviation is used
- AOR was first introduced in the abstract, where it was defined. Page 3, line 4 of the abstract reads as “adjusted odds ratio (AOR)…” In addition to the abstract, it was defined again when first used in the main text, statistical analysis section. Page 9, line 4, reads as “Adjusted odds ratios (AOR)…”

Page 16 Line 4: Please change the sentence to read "Second, most of the participants may not have been iron deficient”

- Done

Throughout the manuscript please change any reference to 'this work' or 'our work' to 'this study' or 'our study'

- Done throughout the document

Under the abbreviations section please amend AOB to AOR

- We were wrong with AOB. Now, we have replaced it by AOR. Thank you for noticing it.

Reviewer #1:

My primary concern is that the authors state they have removed two food items from the list of PRFTs, but there is no way to confirm that the actual reported analyses reflect these changes. I need the original review paper for comparison.

- First, the reviewer is much thanked for the time and effort s/he put on the current and previous versions of the paper.

- We disagreed with the reviewer’s comment. We are sorry that we noticed that the reviewer misunderstood the concept and misquoted our statements. This also happened in the previous round. For example, in the first round of review, the reviewer made the following comment, which was not right, and we responded as follow.

Reviewer comment was : “…P7 L17: you say you did not include 'unsafe' foods, yet you included raw meat in the list of taboo foods. Raw meat is more "unsafe" than cooked meat, even if it is commonly consumed in Ethiopia. “

Our response then was: “The statement at P7 L17 of the previous document read “Unsafe and medically proscribed food items were not included” … such that we did not consider ‘avoiding raw meat’ as a taboo. As the definition of taboo is updated in this revision, the issue of raw meat has been made clear.”
The reviewer made the above comment, despite we the following statements were found in the very same document:

a) Previous document, Page 7, exposure variables: “Unsafe and medically proscribed food items were not included”.

b) Page 14, lines 49-58: “A third of our study participants reported as they used to eat meat raw before the current pregnancy. Eating raw meat, particularly strips of fresh beef and lamp in various forms, is a pervasive practice in Ethiopia. However, provided the health consequences of eating meat raw are clear, it was included in this work neither in the estimation of PRFT magnitude nor in the evaluation of the PRFT-anemia association.”

Besides to the above, we had even made the issue clearer during the prevision revision, by paraphrasing the original statement “Unsafe and medically proscribed food items were not included” into “Unsafe food items like raw meat and food items not nutritionally recommended during pregnancy like liver were not considered in the PRFT classification…” and also repeating it in the result and discussion sections. We had also made a lengthy rebuttal earlier. We wonder if the reviewer had checked our response and the document thoroughly. Otherwise, the document is clear in itself on the issue.

This time again, the reviewer stated: “My primary concern is that the authors state they have removed two food items from the list of PRFTs, but there is no way to confirm that the actual reported analyses reflect these changes”. Response: We disagreed with the comment because of the followings:

First, as stated in our previous rebuttal and could be verified by cross-checking the papers, there was no removal of any food item during the course of the revision. What we did and reported in the original paper remains the same, except for the grammatical and paraphrasing changes as suggested by the three reviewers. There was also no instance where we stated that we removed food items from the list of PRFTs during the revision. There was also no instance where we stated that the analysis was rerun. Thus, analysis and results remained the same in all documents. Thus, the statement of the reviewer is not right.

Second about the original paper: It seems the reviewer was not able to access it from the online system. As far as we know original paper might be accessed on the system. But, as requested, we have also attached a copy of it as part of this resubmission. However, we would like to note to the reviewer that there is no change in the analysis or the findings because there was nothing that warranted re-analysis.

Third, we believe it is important to explain what might have created the misunderstanding on the reviewer. The reviewer is saying that during our last revision we had removed two food items, which were part of the PRFTs list in the original submission. Probably, the reviewer is referring to liver and raw meat. Thus, s/he had expected this to be reflected in the result. But, that was not the case. As we have clearly stated it in the documents as
well as the previous rebuttal, there was no change in list of PRFTs during the revision. What we did was just elaborating and making clearer the PRFTs criteria of the study, because both reviewers asked to do it that way. For example, in the original paper, there was this sentence “Unsafe and medically proscribed food items were not included in the list of PRFTs”. The same reviewer had commented the followings on the same sentence “what do you mean by unsafe and medically proscribed...”. Thus, we replaced the sentence by a more elaborated one, which reads in the revised document “... Unsafe food items like raw meat and food items not nutritionally recommended during pregnancy like liver were not considered in the PRFT classification...” We think this is the point misunderstood by the reviewer, i.e. the reviewer thought as we removed raw meat and liver from the PRFTs list after the original submission. That seems the point of misunderstanding. Besides, in all documents including the original paper, we had stated it clearly, in both the result and discussion sections, that raw meat and liver were not included in the PRFTs list. Why not these items, we have provided our reasons in the document as well as the next response below.

The paper still needs some review by an editor, for example in the abstract:

"Adherence to PRFT was 26.2% and 14.6% among the anemic and the nonanemic individuals, restrictively." This should be "... respectively." Or "... green leafy green..." should be "... dark green leafy..." ; L13-18: "... 40%... TWO percentage points from ...43%"; L23 "a reversing trend" should be "an increasing trend". L33: "including endorsing and attending food taboo" should be "... including following food taboo."... L53 "Thus, a further restrictive eating due to..." should be "Thus, further restricting eating due to..." etc

- All have been corrected. The reviewer is thanked for the note and the suggestions.

P14 L24-29 state that you did not consider raw meat, but results indicate that 1/3 of participants reported avoiding raw meat. This needs to be clarified.

Also, given the P14 change, where are your new analyses? You have not highlighted any changes in the tables of data as being new, and your response gives no indication that you redid the analyses. You removed both liver and raw meat from the list of potential PRFTs so there should have been some shifts in the results.

As for liver: what is your reference for removing liver and page 17 L32 "it is not recommended during pregnancy"? This statement requires reference from Ethiopia or globally. You are totally allowed to remove it and state your reasoning, but you also need to give some justification. Perhaps your statement could be "potentially harmful" or "potentially unsafe" instead of "harmful" or "unsafe"

The WHO mentions the risk of large amounts of liver, but also recommends liver as a good source of vitamin A (see two quotes and link below) and the updated "WHO recommendations on antenatal care for a positive pregnancy experience" does not list liver at all. Certainly remove
it if in Ethiopia there is a concern that women will consume large amounts of liver during pregnancy, but large amounts of liver are contraindicated for non-pregnant women and men as well as those pregnant…

"Dietary sources of provitamin A include vegetables such as carrot, pumpkin, papaya and red palm oil; animal foods rich in preformed vitamin A include dairy products (whole milk, yogurt, cheese), liver, fish oils and human milk (7, 8)."

Followed by "Toxicity generally results from excessive ingestion of vitamin A supplements but regular intake of large amounts of liver, although usually not a problem in vitamin A-deficient areas, may also result in toxicity due to its high content of vitamin A (19)."

Link:
https://apps.who.int/iris/bitstream/handle/10665/44625/9789241501781_eng.pdf?sequence=1

- Response to the above comments: We disagreed on some of the above comments, though we agreed on some of points.
- First, the removal of the raw meat and liver was done from the very beginning, not during revision as the reviewer stated. Thus, the comment is from misunderstanding. For more, please check our response to the first comment of the reviewer.
- Second, we did not include raw meat in the PRFTs list does not necessarily mean the participants did not report it. Besides, all information the participants provided does not necessarily have to be included in the PRFTs list because we have criteria of what should be included and excluded, which were already stated in the document. In case the reviewer is questioning the exclusion of raw meat and liver from the PRFTs, we would like to describe our position on the issue. Food taboo is defined when it happens due to unscientific basis, like traditional beliefs, misconceptions, and myths. For example, some participants said, “I want to eat banana but could not now, because I am afraid that the banana may stick on the fetus head and complicate the pregnancy and birthing process”. This is a good example of PRFT, because it is due to an entirely wrong conception about the banana. There is no imaginable scientific basis for banana to stick to fetus head. So, we could surely consider it as taboo based practice. On the other side, 1/3 of the participants said: “I want to eat raw meat but could not now, because people told me raw meat is not good during pregnancy…” . Few also stated that they were afraid of liver during their pregnancy period. This is not a taboo, at least not fully taboo, because avoiding raw meat and liver during pregnancy could not be considered as due to an entirely non-scientific conception. There are some scientific reasons that could justify the avoidance of raw meat, and also liver sometimes. Irrespective of the level of evidence, there are potential dangers which could be linked to eating raw meat or liver at any state, and more particularly during pregnancy. Thus, it is not logical to count a woman who avoided eating raw meat as she practiced taboo, like those of the banana case. The same logic holds for liver consumption. As far as we know, there is no strong evidence for unlimited (free of concern) liver consumption during pregnancy. The strength of the
evidence aside, it is a widely held presumption among medical circles that liver consumption might increase the risk of teratogenicity. Thus, the mothers might have been informed to avoid or limit liver, even by the health workers. Are we ourselves clear enough with many of the nutrition stuffs out there? We need to be fair enough and note that nutrition is a very young science, with many issues needing much further works. Some of the widely help presumptions do not have strong evidence basis. Even the WHO recommendations, the reviewer referred to, are not meant for face value taking and blanket adoptions. They need to be customized to local conditions. Specific to the liver case, the WHO document, the reviewer referred to, is in line with our opinion that excess vitamin A intake, be it in dietary or supplemental form, might be unsafe. In addition to the statement, it is also important to note the strength of the evidence basis for the recommendation, which in the liver case even in VA case, is generally low. The threshold for liver intake, or even retinol toxicity, risk remains controversial. This has been mentioned in the same document. Thus, we would like the reviewer to note it that there is at least some level of scientific concern about raw the raw meat/liver case, and mothers may avoid it out of precaution. Thus, our position of not considering liver and raw meat avoidance during pregnancy as a taboo practice is not problematic.

- The reviewer stated “results indicate that 1/3 of participants reported avoiding raw meat. This needs to be clarified.” Here again, we disagreed with the comment. We had already clarified the issue the document. We are of the opinion that additional information would not improve the manuscript.

Example, the discussion section of the document reads as follow:

“A third of our study participants reported as they used to eat raw meat but stopped after becoming pregnant. Eating raw meat, particularly strips of fresh beef and lamb in various forms, is a pervasive practice in Ethiopia. However, because eating meat raw is unsafe, we did not consider its avoidance as a taboo or PRFT.” Page 14, lines 49-58

- The reviewer suggested “Perhaps your statement could be "potentially harmful" or "potentially unsafe" instead of "harmful" or "unsafe". Here, we have incorporated agreed on the reviewer’s suggestion and changed the terms as suggested. Also included a reference. Page 7, lines 24-29 reads the following “The food item should not be potentially unsafe during pregnancy. Thus, potentially unsafe food items like raw meat of any variety, and liver which might also be potential unsafe during pregnancy [13], were not considered in the PRFT classification.”

Don't duplicate sentences in methods and results, fpr example, the following is only required in methods: The green leafy green vegetables group included food items like spinach, lettuce, kale, and broccoli.

- The repetition happened during the previous revision as we were addressing the same reviewer's comment in the discussion section, “P14 L42: which dark leafy vegetables?”
We now have reversed it back to the original form, by just stating “dark green vegetables” instead of mentioning the specific items in the discussion section.

You do not need to repeat methods in discussion, such as avoiding raw meat. (P14)

P15 L9, remove "quantity" you have not justified its inclusion here.

- Quantity has been removed.

P15L14: you are comparing anemia to non-anemia among PRFT vs no PRFT, so how can you compare which items are PRFT more or less? Your analyses only compare those who avoided PRFT, including cereals, to those who did not avoid PRFT. True those items that are PRFT might have more iron than fruits (because you have no fruits listed in your PRFTs) or compared to "non-meat" in general, but you did not compare those who avoided cereals to those who did not avoid cereals.

- As we have stated it clearly in the paper, our objective was not to evaluate the association of avoidance of a specific food item with anemia. It was rather to evaluate the association of the overall practice of PRFT with anemia. That is what is missing in the literature. Notwithstanding that, we are however aware that food item might moderate the PRFT-anemia association, such that strength of the association may vary by the type of food item. Thus, we had already included the following statements as part of the limitation of the study. We wonder if the reviewer has seen it.

“We did not evaluate the association of anemia with each of the specific food items avoided. Thus, the strength of the PRFT-anemia association may change by the specific food items avoided as hematologic response to food varies by the type of food item. Thus, the estimate we reported might not be applicable to any of the specific food items. Page 17, lines 14-25

- If the reviewer is asking we should do item by item PRFT-anemia analysis, that we disagree with. It is not recommended, though not prohibited, to do analyses out of a planned protocol. Sample size calculation and other procedures require prior assumptions, including assuming the type of analyses to be done on the sample. Otherwise, it would be kind of p-value hacking and fishing. Our sample size was calculated based on the overall PRFT's prevalence, not based on any of the specific food items. Thus, the sample might not be adequately powered to do item specific analyses. Of course, to the best of our knowledge, there is no study anywhere that evaluated item specific PRFT-anemia association. The usual and most important reporting practice is to mention the limitation, which was done earlier from the outset. Page 17, lines 14-25.

P17 L32-34, please provide a reference for the lack of dieticians in hospitals. You have corrected the double negative, but are you sure there are no nutritionists in the hospital workforce? 8 years ago they were going to non-hospital staff for dietary advice, but that should have changed by now.
Two of the authors are part of the system, then and now, working at capacities of physician and public health nutrition expertise. Hospitals in Ethiopia have not yet integrated nutritionists/dieticians professionals in their service provisions. This is not a case unique to Ethiopia. In almost all developing countries, the integration of nutrition professionals in hospitals has not yet materialized.

With regard to the request to provide a reference for our statement, of course, it was already provided. In the previous manuscript, reference#25 was Ethiopian national nutrition program, which mentioned the scarcity of nutrition professionals as one of the challenges of the nutrition programs in Ethiopia. In case the reviewer wants another reference, probably want to see the numbers etc, we now have replaced it by a new reference, reference#26. We have provided the website of the Ministry of Health of Ethiopia, which provides updated information about the health workforce in the country. It does not include nutritionists and dieticians as service providers. http://www.moh.gov.et/es/web/guest/fact-sheets, Additionally, please refer to the following document about the professional profiles of the hospitals in Ethiopia. Page 19-20, table https://phe-ethiopia.org/admin/uploads/attachment-721-HSDP%20IV%20Final%20Draft%2011Oct%202010.pdf http://www.moh.gov.et/es/web/guest/fact-sheets

Finally, we would like to thank the reviewer for all the queries, and suggestions, more importantly for the time and effort put to improv