Author's response to reviews

Title: Reliability of dietary patterns assessed with a food-frequency questionnaire

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Author's response to reviews: see over
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BioMed Center Nutrition Journal

Re: Manuscript # 4296536591587187

Dear Editor,

We appreciate the Editorial Board’s willingness to consider a resubmitted version of our manuscript entitled “Reliability of dietary patterns assessed with a food-frequency questionnaire”.

We have been working on the revision diligently in the past few weeks. In this revision, the following activities were performed and we hope the concerns from you and reviewers have been addressed.

1. The title of this manuscript has been changed to “Comparison in Dietary Patterns Derived for the Canadian Newfoundland and Labrador Population through Two Time-Separated Studies”.
2. A figure (Figure 1) indicating study participant recruiting process and a table (Table 2) showing socio-demographic information of the two study populations have been added.
3. Upon your request, the texts were added/revised with different colour highlights according to Dr. Garden Tabacchi’s (yellow) and Dr. Katherine Silva-Jaramillo’s comments (red), respectively.
4. “Ethics Statement” and “Competing Interest” have been added to the revised manuscript as suggested.

While we hope the newly revised manuscript meets the high standard of this journal, we are happy to revise paper again if it is necessary.

Thank you again for your editorial advice and efforts.

Sincerely,

Peizhong Peter Wang, M.D, Ph.D

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Major Compulsory Revisions

**Reviewer 1-1:** “Reliability in statistics is related to assess consistency of a measure. In this paper, actually, a proper reliability was not evaluated. It is more a “comparison” between two food patterns in two populations (even though they were recruited through the same manner) after seven years. This should be then modified throughout the paper. I would avoid the term “reliability” or “reproducibility” and use “comparison”. This reflects on the objective of the study, and of the title, which have to be slightly revised.”

Authors 1-1: We agree with and appreciate the reviewer’s comment. In this paper, we identified two food patterns in two NL populations and then made a comparison between them. Corresponding changes have been thoroughly made in the revised manuscript.

“Comparison in Dietary Patterns Derived for the Canadian Newfoundland and Labrador Population through Two Time-Separated Studies”

**Reviewer 1-2:** “All the sections of the abstract should be revised, as they do not provide a clear idea of all the paper and are imprecise."

Authors 1-2: Changes (with yellow highlights) have been made in abstract as recommended.

Minor Essential Revisions

**Reviewer 1-3:** “In the title, the Canadian Newfoundland and Labrador population should be included.”

Authors 1-3: This information has been added to the title as suggested.

“Comparison in Dietary Patterns Explored for the Canadian Newfoundland and Labrador Population through Two Time-Separated Studies”

**Reviewer 1-4:** “In the section “background” of the abstract, add that Newfoundland and Labrador populations are from Canada.”

Authors 1-4: This information has been added in the revised manuscript as suggested.

“The objective of this study is to explore and compare major dietary patterns derived for the Canadian subpopulation residing in Newfoundland and Labrador (NL).
through two time-separated studies using an identical method.”

Reviewer 1-5: “background of the abstract: “The objective of this study is to examine if the dietary pattern identified in one study can be replicated in another similar study carried out several years later using identical methods...”. Please modify. From the paper, it looks like the actual objective is to identify dietary patterns of these two populations and compare them.”

Authors 1-5: We agree with the reviewer’s comment. The objective has been revised as suggested.

“The objective of this study is to explore and compare major dietary patterns derived for the Canadian subpopulation residing in Newfoundland and Labrador (NL), through two time-separated studies using an identical method.”

Reviewer 1-6: “In the section “methods” of the abstract, something about the factor analysis should be written.”

Authors 1-6: We agree. The following sentence has been added to the revised manuscript.

“Exploratory common factor analysis was conducted to identify major dietary patterns. A comparison was conducted between the two study populations.”

Reviewer 1-7: “In the section “results” of the abstract, the percentages in parenthesis are the percentages of the variance explained? In this case it should be clarified.”

Authors 1-7: Yes, the percentages in parenthesis are the percentages of the variance explained. Accordingly, it is clarified in the revised manuscript.

“Four major dietary patterns were identified: Meat, Vegetables/fruits, Fish, and Grains explaining 22%, 20%, 12% and 9% variance respectively, with a total variance of 63%. Three major dietary patterns were derived for the controls of the CCS: Meat, Plant-based diet, and Fish explaining 24%, 20%, and 10% variance respectively, with a total variance of 54%.”

Reviewer 1-8: “In the section “conclusion” of the abstract, what is exactly meant with “anticipated reliability”?”

Authors 1-8: The conclusion part has been changed in a more accurate and articulate manner.

“A comparison between two time-separated studies suggests that dietary patterns of the NL adult population have remained reasonably stable over almost a decade.”
Reviewer 1-9: “Line 47: The second objective of the study has to be reviewed: “to examine if the dietary pattern identified in one study can be replicated in another similar study conducted several years afterwards”. “Whether there are differences in dietary patterns between two studies conducted several years afterwards””

Authors 1-9: We agree with and appreciate the reviewer’s comment. Accordingly, corresponding changes have been made.

“2) to explore whether there were differences in these dietary patterns between these two studies conducted several years apart.”

Reviewer 1-10: “Line 56: check “from 2011 to 2005” (change 2011 into 2001)”

Authors 1-10: Corrected.

Reviewer 1-11: “The response rate is quite low. Maybe it could be interesting to explain why they did not send the survey package back.”

Authors 1-11: We agree with and thank the reviewer’s suggestion. One of our early studies (PMID19296741) compared among respondents and non-respondents and the results suggest that respondents tended to have a higher socioeconomic status (SES). Therefore, in our former studies, we underscored the importance in controlling SES through multiple variable regression (PMID 25592002). However, the reasons of low response rates are not clear.

Reviewer 1-12: “Lines 118-124: these have to be included in the methods section, and not in the statistical analysis.”

Authors 1-12: This paragraph has been moved to the data collection session as suggested.

Reviewer 1-13: “Line 126: specify that the Bartlett's test is used to test the homogeneity of variances, and the Kaiser-Meyer-Olkin measurement is for the sampling adequacy”

Authors 1-13: We thank the reviewer for the comment. This information has been added to the revised manuscript.

“BTS was used to test the homogeneity of variances and KMO measurement was conducted for testing sampling adequacy.”

Reviewer 1-14: “In the methods section, the cut-offs for the KMO have to be mentioned.”
Authors 1-14: Corrected as suggested.

“KMO values could not be less than 0.5 to ensure the suitability of factor analysis use in this study [22].”

Reviewer 1-15: “Results: revise the “demographic information” section.”

Authors 1-15: We have revised this section and added a table (Table 1 shown below) to make it more clarified.

“In total, the study sample was made up of 554 participants from the CCS population and 192 participants from the FFQVP population. All of the study participants were aged 35-70 years. Individuals from the CCS (58.7±7.7) were significantly older than those from the FFQVP (56.2±8.7). The gender distributions between the two populations were significantly different (p<0.0001). The percentage of males in the CCS (58.1%) was much higher than in the FFQVP study (22.4%). Also, distributions of education attainment and marital status between these two study groups were significantly different (Table 2).”

Reviewer 1-16: “An analysis after stratification by age was not done. It could be expected, for example, that younger people can have different patterns compared to older ones...”

Authors 1-16: We thank and agree with the reviewer’s suggestion. Yes, from one of our early studies (PMID25636348), older people are more likely to choose a healthier dietary pattern according to results from multivariable linear regression. However, because of the small sample size after stratification by age group, factor analysis is not proper to be conducted. This point has been added to the discussion section as a limitation.

“According to previous studies, dietary patterns are likely to vary between genders as well as age groups. For example, an association between women and higher loadings on healthy dietary patterns has been reported by previous studies [28, 31, 37]. Also, according to one of our earlier studies, older people are more likely to follow a healthier dietary pattern according to results from multivariable linear regression [38]. However, small sample size (stratified by sex or age groups) limited us to conduct factor analysis in this study.”

Reviewer 1-17: “Quality of written English: Needs some language corrections before being published”

Authors 1-17: Polished
Dr. Katherine Silva-Jaramillo

Major Compulsory Revisions

Reviewer 2-1: “The manuscript entitled "Reliability of dietary pattern assessed with a food-frequency questionnaire" contributes to the Nutrition Evaluation Topic. Needs more clarification about the reliability analysis, it is clear that factor analysis was used to identify food patterns in both populations but it is missing the reliability test or the correlation coefficients used to assess the reliability. Maybe the title does not convey with what has been found.”

Authors 2-1: We appreciate the reviewer’s comment. This study explored and compared major dietary patterns derived for the two study populations; however, we did not conduct reliability test because of the study design. Therefore, we have changed the title and thoroughly modified the expression “reliability” to “comparison” in the revised manuscript. Hopefully, this could be acceptable to the reviewer.

Reviewer 2-2: “The setting in which study is developed needs more clarification. It is clear that the location is Newfoundland but for foreign lectors it is important to mention that this city is in Canada. Also, I suggest adding the setting in the title it is important to mention the location where the reliability analysis was assessed.

Authors 2-2: We agree. Expression “Canadian population from Newfoundland and Labrador” has been added to the title and in the revised manuscript.

Reviewer 2-3: “Methods: Statistical analysis is not described in the Abstract section. The methodology section in the Abstract describes more the population rather than the methodology used to assess the question posed by the authors.”

Authors 2-3: Thank the reviewer for the comment. Statistical method has been added to the abstract under method session in the revised manuscript.

“Exploratory common factor analysis was conducted to identify major dietary patterns. A comparison was conducted between the two study populations.”

Reviewer 2-4: “Conclusion: How did the authors conclude that the reproducibility of dietary pattern analysis used in NL population is reasonable without a correlation coefficient? Please clarify.”

Authors 2-4: We appreciate the reviewer’s comment. As we mentioned ahead, we compared the dietary patterns derived from these two time-separated studies for NL populations but did not conducted validation. The conclusion has been changed as follows.
“A comparison between two time-separated studies suggests that dietary patterns of the NL adult population have remained reasonably stable over almost a decade.”

Reviewer 2-5: “Lines 45-46: You do not assess the reliability of a food pattern you assess the reliability of an instrument that identifies food patterns.”

Authors 2-5: We agree. The expression has been changed in the revised manuscript.

Reviewer 2-6: “Lines 46-49 describe the objectives of the study and Lines 56-58 describes the purpose of the study. Please correct.”

Authors 2-6: Corrected. The duplicate purpose of this study has been removed in the revised manuscript.

Reviewer 2-7: “Line 56: The CCS was from 2001 to 2005. Please correct”

Authors 2-7: Corrected.

Reviewer 2-8: “The study participants are not well describe and is confusing. If possible, add a figure with the study participants, the year and the final sample of both studies used in the secondary analysis.”

Authors 2-8: The flow diagrams of sample selection for both CCS and FFQVP studies have been added to the revised manuscript.

![Sample from CCS (2001--2005) Sample from FFQVP (2011--2012)](image)

**Figure 1** Participant recruitment for FFQVP and CCS

Reviewer 2-9: “Lines 62-69: Even though the detail description of selecting the CCS can be found elsewhere, please include at least the characteristics taken into account
for the FFQVP population. Was level of education taken into account in the CCS? Speaking and reading skills? Residence in NL?, etc.”

Authors 2-9: Thank the reviewer’s suggestion. CCS project was a case-control study to explore the association between lifestyle factor, demographic information and colorectal cancer. In the current study, the study participants are part of population controls to colorectal cancer patients, aged from 35-70. They might be families of the cases or persons who are interested in cancer and/or nutrition. However, the samples of FFQVP were recruited for a food-frequency questionnaire validation. Therefore, the inclusion criteria are not exactly the same. We have discussed this point in discussion section as a limitation. Accordingly, we clarified the CCS controls in the method section as follows.

“Briefly, eligible cases were newly diagnosed colorectal cancer patients. Controls were frequency-matched with cases by sex and age on 5-year strata. Both cases and controls were selected from NL residents, aged from 20-74 years.”

“Current study participants were part of the population controls from the CCS project, aged from 35-70 years.”

Reviewer 2-10: “The methodology to assess the dietary pattern analysis is well described but how is the study going to assess the reliability is not clear. Please clarify.”

Authors 2-10: We appreciate the reviewer’s comment. As we mentioned, we actually conducted “comparison” other than “reliability”. Therefore, in the revised manuscript, we changed the expression thoroughly in the revised manuscript.

Reviewer 2-11: “If possible, I suggest adding a table with the socio-demographic characteristics. Even though in lines 146-151 some characteristics are described still there is no enough information about other socio-demographic information available as describe in lines 114-116 (marital status, level of education, etc).”

Authors 2-11: We appreciate the reviewer’s suggestion. A table indicating socio-demographic characteristics has been added to the revised manuscript.

<p>| Table 2 Demographic information of study participants from both CCS and FFQVP |
|---------------------------------------------|----------------|----------------|--------------------|
| Demographic information | CSS | FFQVP | P^3 |
| Age (mean ± SD) | 58.7±7.7 | 56.2±8.7 | &lt;0.0001 |
| Sex | | | |
| Male | 322 (58.1%) | 43 (22.4%) | |
| Female | 232 (41.9%) | 149 (77.6%) | &lt;0.0001 |
| Marital Status | | | |
| Single | 17 (2.9%) | 15 (7.8%) | |</p>
<table>
<thead>
<tr>
<th>Status</th>
<th>CCS</th>
<th>FFQVP</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separated/divorced/widowed</td>
<td>74 (13.4%)</td>
<td>26 (13.5%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Married/living together</td>
<td>463 (83.7%)</td>
<td>151 (78.7%)</td>
<td></td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some school without high school certificate</td>
<td>156 (28.4%)</td>
<td>27 (14.0%)</td>
<td></td>
</tr>
<tr>
<td>High school certificate</td>
<td>300 (54.6%)</td>
<td>51 (26.6%)</td>
<td></td>
</tr>
<tr>
<td>Post-secondary education</td>
<td>98 (17%)</td>
<td>114 (59.4%)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

*: P value from t test within CCS and FFQVP groups.

**Reviewer 2-12:** “The results describe the methodology to assess the dietary patterns but again no reliability analysis is described.”

**Authors 2-12:** Thank the reviewer for the comment. The expression “reliability” has been modified in a more appropriate way.

**Reviewer 2-13:** “It is not clear how the authors discuss and conclude about the reliability of the food pattern analysis in the NL population without a reliability analysis. Please clarify.”

**Authors 2-13:** We appreciate the reviewer’s comment. The expression “reliability” has been modified in the revised manuscript.

**Reviewer 2-14:** “Please check the references according to the journal guidelines.”

**Authors 2-14:** Corrected.
Comments from the Editor:

Editor 1-1: “Ethics statement. As your research involves humans please include a statement of ethical approval in the Methods section of the manuscript, including the name of the body which gave approval, with a reference number where appropriate. Any experimental research on humans must be in compliance with the Helsinki Declaration”

Authors 3-1: We thank the editor’s suggestion. The ethics statement has been added to the Methods section if the revised manuscript.

“Ethics Statement
This research was approved by the HREB at Memorial University of Newfoundland. (Reference number 14.098).”

Editor 1-2: “Competing interest. Please include a competing interests section at the end of the manuscript, before the Authors' contribution list. If the authors have no competing interests, please state: "The authors declare that they have no competing interests."”

Authors 3-2: Competing interest section has been added in the revised manuscript.

“Competing Interest
The authors declare that they have no competing interests.”