Author's response to reviews

Title: A Preliminary Investigation into Diet Adequacy in Senior Residents of Newfoundland and Labrador, Canada: a cross-sectional study

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Author's response to reviews: see over
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Dr. Dara Ford and Ellen Smit
BioMed Center Public Health

Re: Manuscript # 1489500870109070

Dear Drs. Ford and Smit,

We are very grateful to the Editorial Board in considering a resubmitted version of the above-mentioned manuscript.

We sincerely thank the reviewers for their many insightful, constructive, and specific comments on improving our work. Our responses are consistent with those recommendations and the reviewers’ comments. We feel that we have addressed all comments from both reviewers. In addition to the changes made in the body of this paper, we have also reformatted the manuscript and supplemented all necessary information as required by the journal.

In addition to the itemized responses to reviewers’ comments/suggestions, we would like to point out some additional changes, which we believe, would further enhance the overall clarity and quality of this manuscript.

1. As micronutrients and macronutrients are defined differently, the new Figure 1 only includes micronutrients. As a result, we added a new table (Table 3) on macronutrients. Likewise, macronutrients were also taken off from Table 4.

2. As shown in Table 4, excessive intake of sodium (rather than low intake) is more like to be a concern; we removed “sodium” from Figure 1.

3. We further condensed Table 4 by removing the rows that did not have sufficient information, such as cholesterol.

Finally, we would like to express our gratitude for having extra time revising this manuscript. Thank you very much for your editorial advice and efforts.

Sincerely,
Peizhong Peter Wang, M.D, Ph.D
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Reviewer 1-Dara Ford:

Minor essential revisions:

Reviewer 1-1: Please carefully re-read the entire paper for spacing issue (particularly around citations) and spelling errors.

Authors 1-1: We thank the reviewer for pointing this out. These issues have been addressed in the revised version.

Reviewer 1-2: In this abstract, it would be helpful to clarify what is intended by “wherever possible”. Specify that this indicates where standards have been established.

Authors 1-2: We appreciate the reviewer’s comments and, as a result, additional clarifications were provided in the revised manuscript.

“The nutrients intakes were compared with the appropriate components of the Canadian dietary reference intakes (DRIs) adopted by Health Canada, and the adequacy were determined by Estimated Average Requirement (EAR), Adequate Intake (AI), Acceptable Macronutrient Distribution Ranges (AMDR) or Recommended Daily Allowance (RDA).”

Reviewer 1-3,4: In the background, it is stated that consumption of diet providing adequate nutrients could improve seniors’ health conditions. Please explain how and add some specificity regarding conditions.

It is important in the background to define how you are determining an “unhealthy” diet at first mention. Similarly, in the discussion define what you mean when you state “adequacy”. Given the mean calorie intake it would appear that the majority of your sample met calorie need.

Authors 1-3,4:

We understand/thank the reviewer’s comments. In this background section, we have defined “healthy diet” in paragraph 1 line 8, before the “unhealthy” diet was mentioned. “Adequacy” indicates adequate nutrients intake which meets values from EAR or AMDR recommended by Health Canada. The concept of “adequacy” was explained in both method and result part. Calories intake is just one of the indicators used to evaluate the “adequacy”, other micro- and macro-nutrients are needed to be taken into considerations. Clarifications for them have been added to the background as suggested.
A brief elaboration has been added to the revised manuscript.

“In this study, an adequate diet refers to a diet that contains all nutrients necessary for maintain a good health. Not only is an adequate diet essential for the elderly to build up resistance against disease, prolong lifespan, it is also important to engage in regular physical activities and maintain a healthy body weight [1].”

“Unhealthy diets include inadequate or excessive dietary intakes of energy and certain nutrients, or nutrients in the wrong proportions [3, 4].”

Reviewer 1-5: How was cognitive impairment/reading level determined?

Authors 1-5: Both of the above conditions would be informal assessed by the trained telephone interviewers. Trained telephone interviewers would first contact with potential participants to determine his/her eligibility to the study. Through the initial communication, the interviewer could make a decision if this person with apparent cognitive impairment by his/her performance, such as ability to copy a sentence, verbal fluency. The whole procedure was referring to The 6 Item Cognitive Impairment Test (6CIT) Kingshill Version 2000. Reading level was assessed through subjects’ education levels and words spelling in the Grade 8 Reading Level test.

Reviewer 1-6: Has the FFQ been validated in the NL aging population as well as the NL general population?

Authors 1-6:

Yes, it was published in Nutrition Journal in 2013 and cited in the revised manuscript.

Reviewer 1-7: Please define “RDA” at first use.

Yes, corrected.

Reviewer 1-8: Discuss testing of interactions in statistical analysis section.

Authors 1-8: We agree with the reviewer that testing of interactions may help us understand how variables work together affecting the outcome. However, in study both bi-variate and multivariate statistical analyses revealed few statistically significant predictors. This implies that testing for interactions may not be well justified and expected to engender additional insight. We hope this is agreeable to the reviewer.

Reviewer 1-9: The statistical analysis section states that ORs were adjusted for gender, age, marital status, education and energy intake. Table 4 does not reflect all of these covariates. Additionally, discussion regarding the role of disease burden in these
relationships would be beneficial.

Authors 1-9:

We agree and table 4 was removed in the revised manuscript.

Discretionary Revision:

Reviewer 1-10: Discussing the age range and mean +/- SD of your sample would be helpful.

Authors 1-10: We thank the reviewer’s suggestion and, as a result, this has been added to the result section.

“The average age was 73.5 years [SD=6.45, age range: 66-93 years] and 57.8% were older than 70 years.”

Reviewer 1-11: Considering revising last sentence in “dietary intake adequacy” paragraph for clarity.

Authors 1-11: The reviewer’s comment is well taken and, as a result, rewording was made in the revised manuscript in the following way:

“The results also suggest that a sizeable proportion of subjects have inadequate intakes for multiple nutrients: 26% of subjects have inadequate intakes for over 5 nutrients, another 42% for 3-4 nutrients, and 25% for 1 or 2 nutrients.”

Reviewer 1-12: In the conclusions paragraph beginning “adequacy dietary intake” considering re-writing sentence 3 for clarity.

Authors 1-12: The reviewer’s suggestion is well taken. Instead of using the previous expression, we have reworded this sentence in the following way:

“For example, recent studies suggested that more than a half of elderly Americans (≥71 years) had inadequate intakes of vitamin A and E, and over one quarter of US seniors’ intakes of vitamin B12, C, D and K, folate were below EAR.”

Reviewer 1-13: Consider an additional limitation regarding further challenges in the old old (>80) with young old.

Authors 1-13: We understand and agree with the reviewer’s comment and add this point as limitation in the discussion part.

“Lastly, the nutritional status of seniors over 80 years should receive more attentions.”
We intend to suggest future research focus on this point further.”
Reviewer 2- Ellen Smith:

Major compulsory revisions:

Reviewer 2-1: The authors point out that the Canadian Community Health Survey (CHHS) estimated dietary intake previously in NL. The discussion should include a comparison to their findings, what was different/similar? Even if age specific data may not be from CHHS (and that is not clear, for example, see http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/art-nutr-adult-eng.php#b1), it still would be a good comparison of how the results from this study and this specific age group is similar/different from the general NL population and from the general Canadian population. Although the authors state that their results are similar to other studies in seniors, the references cited (30-32) appear to be much more disease specific versus population based; liver disease and carcinoma, age related eye disease, and Parkinson’s. Reference 32 is also referred to as “several surveys” while the reference cited is one case control study. One comparison is made to another study in NL seniors (reference 20) and findings were similar. This should be referenced back/put in context to the earlier statement that this study was done in 1996. The current manuscript leaves one wondering if these older adults are any different from the general population and the older adults in NL and Canada, and what this study adds to existing knowledge.

Authors 2-1: The reviewer’s comments are well taken and, as a result, 1) a comparison between the finding and CCHS was added to the revised manuscript; 2) problems appeared in the references have been revised in both the reference list and the text; 3) the references cited (30-32) reported nutrients intakes and indicated the relationships between inadequate nutrients intake and specific diseases among general population, rather than reported the nutrients intakes among patients with specific diseases.

“It reports dietary intakes that are less than the recommended level for a considerable number of nutrients (the deficiencies of nutrients listed in a descending order: vitamin E, vitamin D, dietary fibre, calcium, vitamin K and magnesium etc.). As a result, a significant proportion of seniors in NL may not be meeting the daily requirements suggested by Health Canada [18, 22]. According to the CCHS, the highest inadequate rate of vitamins and minerals were vitamin D, calcium, vitamin A, magnesium among the Canadian adults; however, the report did not contain data of vitamin E and vitamin K [8]. It is noteworthy that the prevalence of vitamin D inadequate in seniors of NL is over 20% below the national level among 19 years and over; the prevalence of calcium and vitamin A inadequacy in Canadian adults is much greater than the prevalence in seniors of NL; the prevalence of magnesium inadequacy in Canadian adults is slightly higher than the prevalence in seniors of NL; inadequate fibre intake had been indicated among Canadian adults and seniors in NL [8].”
Reviewer 2-2: Methods: The study design included recruited by telephone. It should be made clear whether this included landlines and/or cell phones.

Authors 2-2: We appreciate the reviewer’s comment and, as a result, this sentence has been re-written as follows:

“Stratified random digit dialing for household landlines was used to ensure proportional presentation of rural/urban residency and gender.”

Reviewer 2-3: Methods: Methods: Response rates should be specified: how many participants were called; how many participants were deemed eligible based on the inclusion criteria; how many verbally consented; of those who consented via phone, how many returned the questionnaire; for each exclusion criteria (e.g. energy intake outside the range) how many were excluded.

Authors 2-3: We agree with the reviewer’s comments and, as a result, clarification has been added to the revised manuscript.

“At the first stage, a total of 1201 phone numbers stratified with rural/urban residency and gender were identified. After screening for eligibility, 252 eligible participants were contacted. Of the 252, 203 subjects agreed to participate and the survey package was mailed out to them. By March 2013, there were 119 completed packages returned, resulting in a response rate of 58.62%. We excluded some participants according to exclusion criteria and, as a result, the remaining 111 respondents were involved in the further analysis.”

Reviewer 2-4: Throughout the manuscript there are sentences that will require grammar and language editing.

Authors 2-4: We appreciate the reviewer for pointing this out. We have been editing the grammar and language issues.

Discretionary Revisions:

Reviewer 2-5: Methods: Subjects were excluded if they had substantial missing information in the general health questionnaire. Please define substantial.

Authors 2-5: We thank the reviewer’s comment and, as a result, we added a descriptive paragraph in the result section.
**Reviewer 2-6:** Methods: For the physical activity question: either add in a reference if this has been done previously, or add in how the classifications were defined (e.g. what was active?)

Authors 2-6: We thank the reviewer’s suggestion, and we have added a short description of physical activity classification in the method section.

“According to the information from these three questions, subjects were further categorized into four levels: 1) sedentary: light ≤ 3 days per week, 2) less active: light > 3 days per week or moderate ≤ 3 days per week, 3) moderately active: moderate > 3 days per week or vigorous ≤ 3 days per week and 4) active: vigorous > 3 days per week.”

**Reviewer 2-7:** Page 10: please define “long term conditions”

Authors 2-7: This comment is well taken; clarification has been added to the revised manuscript in the following way.

“Long-term conditions included any following conditions, including asthma, osteoporosis, high blood pressure, chronic bronchitis or emphysema, diabetes, cancer, heart disease, depression, urinary disorders, stomach or intestinal ulcers, arthritis or rheumatism, and other, that have lasted or are expected to last 6 months or more.”

**Reviewer 2-8:** Table 3: Cut-points for the level of intakes will need to be justified in the methods section, especially given the small sample sizes.

Authors 2-8: Thank the reviewer for the suggestion; the justification for these cut-points has been clarified.

“With these eligible results, we assessed their degree of satisfaction to RDA in our target age group. In specifically, four levels are used to describe, less than 33%, 33%-65%, 66%-99%, and total satisfied (equal to or over 100%).”

**Reviewer 2-9:** Possibly too many tables: for example, not clear why table 4 is needed: none of the odds ratios are significant and all of 95% CI are very wide.

Authors 2-9: We appreciate and understand the reviewer’s comment. The small sample size may be the main cause to the insignificant odds ratios. However, taken partly illustration role of these results into consideration, we just presented the analysis results of key nutrients, which have been pointed out as an important role in the prevention of chronic disease. Also, for key nutrients (vitamins A, C and D, calcium, zinc) and chronic diseases, the number participants (with adequate individual
nutrient & with inadequate individual nutrient; with chronic diseases & without chronic disease) tend to have relatively small imbalances after adjusted for gender, age, marital status, education and energy intake. Therefore, we presented results of logistic regression in table 4.