Author’s response to reviews

Title: Diet quality is associated with malnutrition and low calf circumference in Canadian longterm care residents

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Author’s response to reviews:

Please find below our response to reviewers’ comments regarding our paper. We wish to thank you and the reviewers for taking the time to examine our paper and for your comments.

Reviewer #1

General comments

This study on a large stratified sample of senior home residents is very well done and the paper is well written (although further editing for English would be a plus). It is quite innovative as it examines diet quality in detail based on 3 non-consecutive 24h dietary recalls, and it connects it with nutritional status using appropriate methods while taking account of selected determinants. The literature review appears exhaustive and the discussion well done. A few minor issues need to be addressed, however.
Specific comments

1. The M3 Project would need to be described in more detail.

Response: We’ve added further details in the methods section on recruitment of homes and data collection (Methods section, pages 5-6, lines 110-117).

2. Was CC correlated significantly with other nutritional status indicators? This simple analysis would be recommended and it would justify the use of "not surprisingly" on Line 250

Response: A recent published analysis demonstrates that calf circumference is associated with all measures of malnutrition used in this study. This reference has been added (reference #35). The “Not surprisingly” has been removed from this sentence (Discussion section, page 12, lines 265-267).

3. Oral nutritional supplements were not taken into account to compute energy and nutrient intake. What is the rationale for this and how different would the findings be if these were included? If justified, the exclusion of ONSs in computing intake should be stated as a limitation of the study.

Response: Oral nutritional supplements were included in the nutritional analysis. A sentence to clarify this data collection has been provided (Methods section, page 8, lines 171-173).

4. Study limitations are missing from the paper.

Response: The study limitations are presented in the Discussion section on page 15, lines 322 to 327. We have further added to this section to address concerns of reviewers.
5. The adjustment for several variables needs to be better justified, and made clearer in table footnotes.

Response: Footnotes have been added to Tables 2 and 4. The Statistical Analysis section provides further details to justify the multivariate analysis (Methods section, page 9, lines 188-195).

6. The authors should consider referring to the new Canadian Food Guide in their discussion.

Response: We felt that a reference to Canada’s food guide would fit better in the Conclusion section. A paragraph and a reference were added (Conclusion section, page 15, lines 339-343, reference #45).

7. Please limit the number of abbreviations.

Response: A careful revision of the abbreviations was conducted. We removed the following abbreviations: IU, NE and RDA. However, since most abbreviations are used in the tables, we felt we needed to keep the abbreviations instead of the full words as it would make tables too wordy and lengthy.

8. The presentation of the tables needs to be improved.

Response: We have decided to leave the tables as presented as they are clear and complete. If the journal has a certain format that is preferred, we will be pleased to modify the tables.

9. In Table 1, does footnote b) really apply to CC? Please provide Cis for percentage values.
Response: Yes, the footnotes refers to the CC that is included in the Mini nutritional assessment (a CC < 31 as per used in the MNA). “Cut point” has been added to this footnote to promote clarity.

10. Table 3 would be clearer if the 'descriptive results' column were deleted. It is not necessary since these data are presented in Table 2.

Response: We feel we should keep the column that refers to the Median for each variable that refers to diet quality (Energy, Protein, MAR and each individual NAR) as this is adjusted for age and sex of the resident, whereas Table 2 is not.

Reviewer #2
Specific comments:

1. title=> needs the place and time where and when it is done.

Response: Title was modified to include the place “Canadian” long-term care residents. However, we felt that adding the time to the title was not appropriate. Instead we included the data collection timeline in the text (Methods section, page 5, lines 109-110).

2. Don't start with abbreviation in the abstract and the whole document

Response: Changes made where needed.

3. Which model did you use for the analysis of your outcome variable of interest? linear or logistic
Response: Both regression models were used. A linear regression model was used for MNA since the total score was used, which is a numerical variable. PG-SGA and low calf circumference were categorical and thus logistic regression was used.

4. Which OR? AOR or COR?

Response: It is noted in the footnotes to tables that OR are adjusted for key covariates.

5. What about CHO and fats? When we say PEM?

Response: Protein energy malnutrition refers to protein and energy specifically. Calories and protein are of greatest interest with respect to macronutrient malnutrition and thus the focus of this analysis.

6. Since you are using purposive or convenience method to select the sample or home, how could you generalize the data to your reference population?

Response: Thank you for this comment. It is noted in the limitations that the analysis should not be generalized (Discussion section, page 15, line 323).

7. What type of software did you use for data collection, data entry and data analysis?

Response: All data were collected on paper forms and transferred to RedCAP (Vanderbilt University) for transfer to the research centre for analysis. Nutrient analysis from ESHA was downloaded to EXCEL. This was clarified in the text (Methods section, page 8, lines 182-184). All analyses were performed using SAS/STAT® 9.4 statistical software (SAS Institute Inc., Cary, North Carolina) as indicated (Methods section, page 9, lines 196-197).

8. is in line 223
Response: On the original line 223, reviewer indicated to change “are” for “is”, however the verb refers to “The full models adjusted for MTD, ONS prescription and physical assistance with eating are presented in Table 4.” We kept “are” instead of changing it to “is” (Results section, page 11, line 237).

9. How did you manage/minimize the bias regarding using such type of sampling method?

Response: Random selection of units and residents within units minimized selection bias. This has been further discussed in the limitations section (Discussion section, page 15, lines 324-327).

Additional edits throughout the manuscript were made as suggested by Reviewer #2. Further editing to improve on language has been made. All but one co-author use English as their first language.

END OF COMMENTS AND RESPONSES

We hope that these explanations and changes respond well to Reviewer and Editorial comments and we appreciate the opportunity to improve this paper.

Kind regards,

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