Reviewer's report

Title: Dietary Correlates of an at-risk BMI Among Inuit Adults in the Canadian High Arctic: Cross-Sectional International Polar Year Inuit Health Survey, 2007-2008.

Version: 1 Date: 4 January 2012

Reviewer: Michel Vernay

Reviewer's report:

“Dietary correlates of an at-risk BMI among Inuit adults in the Canadian high Arctic: cross-sectional international polar year Inuit Health Survey”. It’s an interesting paper dealing with dietary habits of Canadian Inuit communities. It provides some interesting data on nutritional transition from a cross-sectional survey including anthropometric measurements and food survey (one 24-h and a FFQ). According to the reviewer, some revisions of the text should contribute to greatly improve the manuscript.

Abstract.

Methods section:
- The first sentence is unclear: in which way were characteristics of overweighted and obese participants similar? The point should be clarified.
- This section would be easier to read if details on data collection (assessment of food intake, physical activity…) were mentioned before the description of statistical analyses carried out.
- The objective of the present analysis is not clearly stated in the abstract. The authors didn’t define clearly the dietary characteristics they included in the statistical analyses.

Results section:
- To simplify, this section could be easier to read if results regarding high-fat foods were mentioned before mentioning further results obtained after adjustment of %E from high-sugar drinks for %E from high-fat food (1- results from the model 1 and 2- results from the model 2).
- In the rest of the manuscript, the authors didn’t use always the same expression to mention total energy intake, %E from high-sugar drinks and high-fat foods. It’s a little bit confusing.

Manuscript.

Methods section:

Study population and location:
- The authors stated that details on the methodology are given elsewhere. However, it would be necessary to provide more information on sampling
method. Especially, one could ask whether the sample was representative of the investigated regions.

Questionnaires:
- The objective of the comparison between data on food consumption from 24-hour recalls and from FFQ is not clearly stated. Moreover, it is unclear why the comparison is limited to high-sugar drinks. As expected, using a single 24-h recall was discussed in the limitations section of the discussion but not from this point of view.

Statistical analysis:
- The authors should mention which statistical software they used to carry out the statistical analyses. As previously mentioned, the sampling method is not completely described. Was the sample representative of the Canadian Inuit population? Did the statistical analyses take into account the sampling design? Did the authors carried out calibration to take into account potential bias of participation? All these points should be clarified in this section and potentially discussed in the discussion section (particularly potential bias of participation).
- The authors used the IPAQ short form to assess physical activity level of the participants. In the statistical analyses, the authors have only retained walking (estimated as MET; this point is not clear in the manuscript). Why did the authors use only this dimension of physical activity? They could also consider the total physical activity assessed through IPAQ short form in their regression models. This choice seems to be justified.

Physical measurements:
- It is not clear why the authors described waist circumference and percent body fat measurements since they didn’t include them in the statistical analyses presented here. The manuscript could be simplified adding in the discussion section that results obtained with waist circumference and %body fat were similar. The last sentence of the paragraph is unclear.

Coding variables.
- The authors should mention a reference for IPAQ short form.
- As previous mentioned for physical assessment, it seems useless to describe in details the categories used for waist circumference and percent body fat since these variables were not included in the regression models.
- The authors defined nutrient density as the ratio between energy from considered nutrient (in kilocalories) and total energy intake (in kilocalories). However, in Table 1, results regarding total energy intake are displayed in kilojoules and not in kilocalories. In the rest of the manuscript the authors used the expression “kilocalories” when they speak about total energy intake… It would be clearer and less confusing to always use the same expression “total energy intake”.
- The second sentence is unclear and needs to be completed, probably the authors mean “containing >25% of total energy as (or from) sugar”.

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- High-sugar drink intake was divided into tertiles since, according to the authors, the variable was not normally distributed. The authors should state why they didn’t consider a log-transformation of the variable in order to use it as continuous variable in their regression models?

- Dietary characteristics displayed in Table 1 and Table 4 such as soft drinks, SFA… are not listed in this section.

- The authors explained how they identified participants who underreported their food consumption, but they didn’t indicate if they were included or not in the statistical analyses.

- The authors indicated that they used a modified version of the USDA Healthy Eating Index (HEI) but they didn’t explain why they calculated this score. The explanation is both mentioned in the results section (beginning of the first sentence of the last paragraph) – which is not the right place – and in the discussion section. Anyway, the authors should state here the way the score was calculated (and not in the results section) and why they did it.

Statistical analyses.

- Previously, the authors indicated that METs related to walking came from the short form of the IPAQ. In this paragraph, it doesn’t appear clearly.

- The authors should precise which nutrients were evaluated as categorical variables. Moreover, as previously mentioned, it is not clear why the authors didn’t use a log-transformation of the not normally distributed explicative variables they included in their regression models.

- According to the reviewer, it seems better to detailed combined analyses (overweight and obesity) and to state in the results section that separate analyses have shown that there were no differences between overweighted and obese participants regarding %energy intake from high-sugar drinks, high-fat foods…

Results section.

Prevalence of overweight and obesity

- The authors didn’t mention the size of the sample and the main characteristics of the participants.

- As previously mentioned, the sentence on waist circumference and % body fat seems to be useless.

Energy intake from 24-h recall according to overweight and obesity.

- Table 1. The authors should add “total energy intake” in the title. Total energy intakes were displayed in kJ in the table whereas they were displayed in kcal in the text.

Dietary factors associated with an at-risk BMI:

- The second sentence of the paragraph regarding adjustment procedure should be clarified. Maybe it should be divided and completed: “After further adjustment for %E for total carbohydrate and %E from high-fat foods, a significant and
positive relationship was observed between consumption of high-sugar drinks and the likelihood of an at-risk BMI. A significant inverse association was also observed between %E from carbohydrates and the likelihood of an at-risk BMI, after further adjustment for %E from high-fat foods and %E from high-sugar drinks.”

- Table 2:
o According to the reviewer, it seems useless to mention beta coefficients and SE, since OR and 95%IC were already mentioned. To the contrary, it would be of interest to modify the table to add p-values for each model.
o For the model 2, adjustment procedure should be described more clearly by adding “not adjusted for %E CHO” for the %E CHO model, “not adjusted for %E from high-sugar drinks” for %E from high-sugar drinks model, and “not adjusted for %E from high-fat foods” for the %E from high-fat foods.
o “CHO” and “SFA” should be defined and mentioned in the text.
o footnote 5 should be clarify: “>40%E of energy as/from fat”

- Second paragraph and table 3:
o Since a significant association has been already reported between %E from carbohydrates, considered as a continuous variable, and risk of being overweighted or obese (table 2), table 3 didn’t provide supplementary information. According to the reviewer, the first part of the table can be suppressed. The second part can be synthesized indicating in the result section that no significant association was found between %E from high-fat foods (using quartiles) and at-risk BMI without displaying detailed results in Table 3.

- Third paragraph and table 4. This paragraph needs to be clarified regarding Table 4’s mains results. The purpose of this table is not clearly stated.

Discussion.
High-sugar drinks:
- first paragraph: The authors mentioned the existence of a table 5 which it’s not presented in the text. Results regarding %E from different nutrients are of interest and should be more detailed and presented in the results section. Table 1 could be advantageously completed with results regarding nutrients intake.

Macronutrients and at-risk BMI:
- second paragraph: The authors stated that low carbohydrate diets often have no restriction on SFA. Since percents of total energy from SFA have been assessed (table 2), it would be of interest to present the average %E from SFA according to quartile of %E from carbohydrate in Table 4.

Limitations:
- As previously mentioned, the authors used the IPAQ short form to assess physical activity of the participants. The fact that only walking activity has been included in the regression models seems to be justified and discussed in this section.
- As previously mentioned, the authors should discuss potential limitations due to the sampling method and potential bias of participation (in terms of sampled communities, gender, SES…) and their impact on results.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

No conflict of interest