Reviewer's report

Title: Nutrient intakes of rural Tibetan mothers: a cross-sectional survey

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Reviewer: Carl Lachat

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Major revisions

The paper describes the food intake pattern of Tibetan mothers. It aims to explore socio-economic differences and compares the diet with the average Chinese diet. The food intake methodology of the paper is adequate for the study. Data on this population are indeed scarce. Various sections require clarification to bring the paper up to standard. In particular

- Sampling and selection of participants
- Selection and recoding socio-economic variables
- The discussion needs to be rewritten. Most of the text needs to be moved to the result section and the findings of the study need to be interpreted more critically and linked to the objectives. Various findings need to be interpreted more carefully with other studies reporting on diets of mothers in remote, rural (high altitude) settings where possible.
- Limitations need to be acknowledged better.

Abstract

It is unclear how the authors come to the conclusion that more knowledge is needed. There are surely a number of important environmental constraints that play a role in the findings of the study and secondly, nutrition knowledge was not assessed in this study.

Introduction

The justification of the study states that there is no published information on the diet in Tibet. This is not entirely so

- Also, did the NNHS survey not report on the diet of Tibet?

The discussion needs to compare the findings of this study with the papers (and potentially others) cited higher.
The study compares its findings with the 2002 national survey from China. Why was this done? Could the authors not extract information for Tibet from this survey? What methodology was used in the national survey to measure food and nutrient intake?

Methods

The sample size calculations are not clear. The lack of data on nutrients would justify the use of other parameters. Why did the authors not calculate their sample size using estimates on energy intake? There must surely be an estimate from previous studies or the NNHS data.

The study needs to detail the sampling better. Simple random sampling was applied. How were the mothers selected for the study? What happened when the women were not at home?

What is the bias of selecting rural areas around Lhasa? How can the findings be generalized to the population of Tibet? This should be discussed in the limitations of the study.

The socio-economic variables are poorly described. Why were these variables selected and not others (e.g. employment of the husband, type of house, accumulated wealth and/or livelihoods?) How were the socio-economic variable treated for analysis. Table 6 mentions various groups per variable. Why was it decided to recode the variables in these groups?

How were height and body weight measured? What quality control measures were applied? Why BMI < 20 kg/m² to report for underweight (table 1). Please provide a justification for using these cut-offs for BMI categories.

Line 129. Why use moderate PAL levels? As stated in the results, most women were farming. They were quite likely to do vigorous activities on the field. The lack of an attempt to estimate PAL is a limitation of this study and needs to be discussed.

The paper needs to describe better how the FFQ was adapted to the local context. The authors mention that they added “some Tibetan foods”. More information on the testing and adaptation is needed to warrant the validity of the adapted FFQ (in particular since the recall period is 12 months)

Line 154. Please justify why median values reported and not means#SD. It would be informative to document a measure of spread of the estimates.

Results

It would be interesting to know if the variable were not internally correlated. (for example. years of education, age of the women, family size?)
Although the authors compare their finding with recommendations for lactating mothers, the paper does not document how many women were breastfeeding. This is a limitation of the study and should be discussed.

Discussion

A lot of the text in the discussion needs to be moved to the results. A description of information in the tables needs to be in the results not in the discussion.

Line 196. How did the authors conclude which foods were 'most consumed'. The list foods most consumed does not correspond with Table 2: Rice, green tea, shallot potato, pork, wheat noodles and sunflower seeds (not all typical Tibetan foods I would think) are as frequently consumed as some of the traditional Tibetan foods mentioned.

Line 225. Why do the authors conclude that it is the frequency that leads to the low intakes of vitamins? Can it not be the quantity?.

Line 251-252. This information is not presented and the conclusion drawn from it is speculative

Line 267-269. The link with nutrition education is speculative (see higher)

MINOR

The authors should consistently refer to the diet of Tibetan mothers with young children instead of “the Tibetan diet”. (e.g. 191).

Line 29. Later in the text, it is mentioned that the authors are not aware of any studies. Please clarify.

The methods should include the food intake methodology.

Line 45. This statement is very general and not informative

Lines 73. The findings of the study were compared to the results of the NNHS survey. Did these findings refer to the entire Chinese population? Adults only? or lactating mothers. This should be clearly stated and any potential bias should be discussed.

Line 117. How were food groups classified?

There are various inconsistencies in the nutrients reported. (Table 2, line 133 and line 121) Line 121 mentions which nutrients were included in the analysis as a reference but in line 133, various others are listed. It is not useful to report reference values for which no analysis can be conducted and will not be reported. Did the food composition table contain all the data for these micronutrients for the foods consumed by the mothers? If not, what was done?

Line 133. What does it mean ‘we chose the middle of the range’?
Line 170 Please make sure the figures in the text are consistent with the table. If I add the % contribution from the staple foods (wheat products, rice and naked barley) in Table 2, I get a total of 60.9% not 64.1% as mentioned in the text. (same for protein, fat..) Why do the figures not add up to 100%?

Line 185. Rephrase? Nutrients do not have intakes.

Table 1: Recode =0 into <1

Table 1: Report the family size in the text instead of the table. The column details the n and % and adding the median to the table makes it confusing.

Table 2 and Table 5 overlap. Table 2 could be reduced substantially by tabulating only the % contribution. The reader can calculate the absolute contribution with the figures from Table 5. Same remark for Table 6

Table 2 and table 3: what I meant with “/” ?

Table 2: why were drinks and snacks combined in one food group? The same for fruits and nuts?

Table 6: why was family size categorised like this?

Table 6: Use symbols to indicate statistical differences in the table with the respective figures.

The figures repeat the results in Table 3 and Table 5 and can be omitted.

Lines 191-193. The explanation on the lack of findings on the diet of Tibetans is speculative and should be omitted.

Line 195. Which findings support the statement that the diet is unbalanced? In terms of what?

Line 222. The objective of this study was to compare diets and nutrients in take with the NNHS study not nutrition status.

Line 241. These references essentially related to high income countries. Is the comparison with Tibet valid? There are surely papers detailing findings from rural areas of low and middle income countries.

Line 250. Please rephrase. This statement is not clear

Line 254. What is an ideal diet? Please rephrase.

Line 255. Nutrition knowledge was not assessed in this study.

DISCRETIONARY REVISIONS

Line 64. Omit the statement on the cold temperatures and hypoxia; this bears not relation with the objective of the study and is not further discussed.
Lines 70-72. The reference to the grant number can be omitted since this information is already included in the acknowledgments.

Line 74. Use associations instead of relationship. Causality cannot be inferred from this study.

Line 98 -101 should be deleted.

Line 125. What are food components (nutrients?)

Line 214. Please discuss bioavailability of iron and zinc from these foods.

Line 233. It is not clear to me why the researchers wish to use blood samples.

Line 243-244. Please provide reference.

Line 259. Why is the research urgent?

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests