Author's response to reviews

Title: Inadequacy of nutrients intake among pregnant women in unrest areas of southern Thailand

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Author's response to reviews: see over
Inadequacy of nutrients intake among pregnant women in unrest areas of southern Thailand

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Dear Editors:
The point-by-point responses of reviewers’ comments have been performed with the notes of revision as seen below. The revised words or sentences in the revised manuscript have been edited by red colored texts.

Referee 1 comments

Major Compulsory Revisions
1. First of all the most important results have been put in additional tables and not in the main manuscript. This is especially true for table 4 and 5.
   Answer: Sorry, it was mistaken when submitted. Now, all Tables are in the main manuscript as seen in pages 16-21 (Tables 1 - 6).

2. In the abstract results are given that have not been stated before in the manuscript.
   Answer: The results in abstract have been referred to the same figures in Table 3 thus they were not repeatedly written in the text of results. However, we have added the sentence as in the abstract in the results again in page 8.

Results, page 8
Characteristics of nutrients intakes
Table 3 describes nutrient intake among the participants comparing against the Thai RDA.
Carbohydrate, protein, fat, calories, calcium, phosphorus, iron, thiamine, riboflavin, retinol, niacin, vitamin C, folic acid and Iodine inadequacy was 86.8%, 59.2%, 78.0%, 83.5%, 55.0%, 29.5%, 45.2%, 85.0%, 19.2%, 3.8%, 43.2%, 0.8%, 0.0% and 0.8% respectively.

3. The dietary data collection is not satisfactory described. For the reader it is impossible to follow the description on page 5 beginning with the sentence A data collection form on daily..............
   Answer: The details of dietary data collection have been revised in the methods section in pages 5-6.
Methods, pages 5-6

The table of food intake recommendation for pregnant women published in an antenatal care handbook provided by the Ministry of Public Health, Thailand was considered as the guidance of food items required. The six food groups including rice, vegetable, meat, fruit, fat and milk were listed. The units for measuring the amount of each food was recorded as ladles for rice and vegetables, portions for fruit, tablespoons for meat, tea-spoons for fat and glasses for milk. Photographs of types and amounts of foods were shown to the women to improve estimation of portion size. The subjects were requested to recall their average daily intake for breakfast, lunch, dinner and supper over the previous two weeks for all food groups and their amount using the standard units mentioned above.

4. The model built for violence score calculations is not given, page 6.

Answer: Violence score was calculated by factor analysis to identify one value of weighted violent score of each district using three parameters including number of violent event, number of injuries and deaths from violence adjusted by mid-year population of each area. The details of analysis of model built have been added in the methods section page 6-7.

Methods, pages 6

Measurement of violence

Information related to degree of violence for each study district in 2008 was retrieved from the Violence-related Injury Surveillance database [16], established in 2007. Three parameters of violence, namely number of violent events, number of injuries and number of deaths from violent events were obtained and divided by the mid-interval population to obtain the standardized scores of numbers of events, injured cases and dead cases, respectively. The most common violent event was bomb blast and shootings. Factor analysis was run on these three violence-related variables to obtain a weighted violence score for each district, reflecting the level of violence. Women in the same district thus had the same weighted violence score.

5. Comparable studies given in table 6 and used in the discussion should have been included in Introduction.

Answer: All studies in Table 6 of discussion have been included in Introduction on page 3 as commented.

Introduction, page 3

Globally, macronutrient and micronutrient inadequacy in pregnant women are both common, especially in developing countries such as Bangladesh[3], China [4], Sudan[5], Nigeria[6],
but also exits in developed countries such as the USA [7]. In Thailand, the prevalence of iron deficiency anemia (IDA) among pregnant women was found to be 13% [8], with the highest prevalence found in the southern region (37.8%). In addition, 55% had their daily nutrient intake less than the minimum acceptable levels based on the Recommended Dietary Allowance (RDA) [9]. Inadequacy of micronutrient consumption also emerged in a recent study in southern Thailand [10].

Minor Essential Revisions.
The aim of the study is very complicated stated in the Introduction. Wording in the manuscript made it hard to understand the meaning, like forth line page 5 and second line page 9,

Answer: The wording was checked and revised in forth line page 5 and first line page 10. The manuscript was edited by a native English speaker before last submission; however, this revised manuscript has been reviewed and scrutinized again.

Forth line, page 5 (Sample size)
The prevalence of inadequacy of nutrient intake in a previous study varied considerably [9], so the average prevalence (55%) was considered in this study. In order to estimate this prevalence with a 95% confidence interval and a precision of 5%, a total of 380 pregnant women were needed.

First line, page 9 (Discussion)
Table 6 shows a summary of various studies on the levels of daily nutrient intake in pregnant women. Five studies, conducted in the USA, Nigeria, China and Thailand, are shown for comparison [4, 6, 7, 9, 10]. The gestational age at recruitment and definition of inadequate intake varied across studies. In our study, gestational age and definition of inadequacy was similar to the study from USA [7] but different from the other two studies in Thailand, which both studied pregnant women in their late trimester [9, 10]. Inadequacy of both macronutrient and micronutrient intake was commonly detected in developing countries [4, 6] in contrast to the study from USA [7].
Referee 2 comment

I- Major compulsory revision:

1. With regards to the Methods section:

The authors should describe and characterize even succinctly and justify the criteria of the selection as well as the interest of the population sample area for the study.

Answer: The criteria of the selection as well as the interest of the population sample area for the study have been described in methods, study setting on page 4.

Methods, study setting, page 4

Narathiwat province was purposively selected to be the study setting because this province has been embroiled in the ongoing political conflict and unrest. In addition, the culture, diet and lifestyles of people in this area are specific and different from those of people in other regions of the country.

2. Concerning the Results and Discussion sections:

2.1 The authors did not explain or discuss the results presented in the Table 1 such as the nature of violence, violence rates as well as injury rates.

Answer: The results of nature of violence, violence rate and injury rate have been explained in measurement of violence on page 6, results on page 8 and discussion on pages 11.

Measurement of violence on page 6

Measurement of violence

Information related to degree of violence for each study district in 2008 was retrieved from the Violence-related Injury Surveillance database [16], established in 2007. Three parameters of violence, namely number of violent events, number of injuries and number of deaths from violent events were obtained and divided by the mid-interval population to obtain the standardized scores of numbers of events, injured cases and dead cases, respectively. The most common violent event was bomb blast and shootings. Factor analysis was run on these three violence-related variables to obtain a weighted violence score for each district, reflecting the level of violence. Women in the same district thus had the same weighted violence score.
Results, page 8

District Characteristics
Table 1 shows the district characteristics in 2008. Ragae had the highest population while Chi-i-rong had the highest population density. Ragae district had the highest average household income and violence rate compared to other districts. The districts with a high violence rate (per 100,000 population) also had high injury and death rates.

Discussion, pages 11
Higher level of violence in the community was associated with an increased risk of all nutrients inadequacy except fat, calorie and calcium. This finding might be explained by the agricultural nature and lifestyles of people in this area. It is quite common for people living in the study area to set aside land surrounding their house for gardening and farming. Locally grown fruits and vegetables are rich in nutrients and provide the residents with adequate sources of calcium. Fresh fruit, such as banana, durian, jackfruit and rambutan, which are popular in southern Thailand, contain high amounts of fat and calories, and thus the intake of these nutrients were found to be adequate in our study subjects. Coconuts a food high in fat, are also eaten throughout the region, as a cream in curries and as an ingredient in many desert. Long term political violence may cause stress[19, 20], which may subsequently decrease appetite [21, 22]. Foods are also less accessible in the area of violence due to safety problems and difficulties involved with food transportation. These and other consequences of violence eventually reduce nutrient uptake for the people living in the area leading to nutrient inadequacy.

2.2 The authors did not discuss also some results that need more deepened statistical analyses including other variables that are collected by the authors such as BMI and religion. In addition, the authors did not explain why violence was associated with all the macronutrients and micronutrients but not fat and calcium.

Answer: One remaining significant factor which was discussed in manuscript (BMI) has been presented in results pages 9 and discussed in page 11. The explanation of fat, calorie and calcium has been revised in discussion on pages 11.
Results, page 9
BMI was associated with only carbohydrate inadequacy. Women with low BMI had a lower risk of inadequacy compared to those with normal BMI.

Discussion, page 11
The lower carbohydrate inadequacy among women with low BMI compared to normal BMI might be explained by the counselling of increasing food consumption during prenatal care for low BMI women but the significant difference among age groups was shown only in carbohydrate.

Discussion, pages 11
Higher level of violence in the community was associated with an increased risk of all nutrients inadequacy except fat, calorie and calcium. This finding might be explained by the agricultural nature and lifestyles of people in this area. It is quite common for people living in the study area to set aside land surrounding their house for gardening and farming. Locally grown fruits and vegetables are rich in nutrients and provide the residents with adequate sources of calcium. Fresh fruit, such as banana, durian, jackfruit and rambutan, which are popular in southern Thailand, contain high amounts of fat and calories, and thus the intake of these nutrients were found to be adequate in our study subjects. Coconuts a food high in fat, are also eaten throughout the region, as a cream in curries and as an ingredient in many desert. Long term political violence may cause stress[19, 20], which may subsequently decrease appetite [21, 22]. Foods are also less accessible in the area of violence due to safety problems and difficulties involved with food transportation. These and other consequences of violence eventually reduce nutrient uptake for the people living in the area leading to nutrient inadequacy.
2.3 Also, no analyses were made to compare the impact of violence on pregnant women nutrient intake according to different districts.

Answer: We analyzed the impact of violence on nutrient intake using the data of violence as number of violence, number of injury and number of death from each district. It can replicate that any district has high rate of violence will has the high impact of nutrient inadequacy. We did not put district in the model because of collinearity. The information of violence calculation has been revised in methods on pages 7.

Methods, page 7

Three parameters of violence, namely number of violent events, number of injuries and number of deaths from violent events were obtained and divided by the mid-interval population to obtain the standardized scores of numbers of events, injured cases and dead cases, respectively. The most common violent event was bomb blast and shootings. Factor analysis was run on these three violence-related variables to obtain a weighted violence score for each district, reflecting the level of violence. Women in the same district thus had the same weighted violence score.

In the Conclusion section:

- There is confusion to conclude on the results as presented. Indeed the authors made associations between nutrients inadequacy and violence but did not define the violence nor raise any link with pregnant women status, as all the dietary intake components were not equally affected.

Answer: The points of suggestion by the reviewer have been cooperated in the revised conclusion on page 12.

Conclusion, page 12

Pregnant women living in an unrest area of southern Thailand face problems of nutrient intake inadequacy particularly in macronutrients. Maternal age, education, gestational age, body mass index and violence situation measured by weighted violence score were associated with nutrient intake inadequacy; however, all the dietary intake components were not equally affected. Our evidence suggests that education and political unrest were shown to be the strongest social determinant of nutrient inadequacy and indicates that there is a need to put more effort in improving both.

II- Minor Essential Revisions

1. References:

The references should be revised, for example the authors should mention if the reference 14 is a book or a report.

Answer: The reference 14 is a book published by Ministry of Public Health. Now it is the reference 15 as seen.

2. The manuscript requires revision and editing. There are numerous grammatical and writing errors that would require rewriting to strengthen the manuscript prior to publication.

   Answer: A native English speaker has been edited.

   **Additional revision**

   1) Table 1

   - The data of violence in 2008 is presented, not 2007-2008.

   2) Table 6


Thank you for your consideration.

Respectfully yours,

Phnom Sukchan