Reviewer’s report

Title: The impact of iodine supplementation and bread fortification in a mildly iodine deficient population of pregnant women in South Australia

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Reviewer: Yozen Fuse

Reviewer’s report:

The study by Clifton et al. has evaluated iodine status and gestational change of urinary iodine concentration in pregnant women living in iodine deficient area in South Australia. The authors also assessed the effect of dietary iodine-containing supplements and fortified bread on urinary iodine concentration during pregnancy and postpartum. In general, the topic is interesting, however, background, methods and discussion need to be much better described in the paper.

The author’s conclusion is that pregnant women in this area are iodine deficient and the fortification of bread with iodized salt increased the median urinary iodine concentration (UIC) of this population. The latter conclusion is questionable because data analysis by authors is rather confusing. The following notes and suggestions are offered.

- Major Compulsory Revisions

Abstract:
Abstract should be substantially revised according to reviewers’ suggestions.

Introduction:
More background should be given on iodine status of general population in the study area over the years if available.

Materials and Method:
Study Participants
1. How many urine samples were provided from one subject? If all subjects (196) provided 5 samples the total number of sample should be 980.
2. How much iodine is containing in the fortified bread?

Results
1. The subjects should be divided into two groups according to the use of iodine-supplement.
2. How much iodine is taking daily from iodine-containing supplements and fortified bread in the subjects?
3. The sample size is too small to evaluate gestational change of UIC. According to Figure 1 legend, the total number of collected urine sample is 278 (only 28% of 980 samples) and the percentages of subjects who provided urine sample are 47.1% at 12w, 38.7% at 18w, 26.6% at 30w, 18.8% at 36w and 10.7% at 6
postpartum months. It is better to combine all UIC samples in each gestational trimester and compare them.

4. L9-13

In which study group, UIC increased during and after pregnancy? Or are all UIC values of total subjects are combined?

5. L14-20

5-1. Iodine fortification of bread was introduced in October 2009 and the study period was from January 2009 to July 2010. The effect of bread iodine on UIC should be taken in to evaluate the effect of iodine-containing supplements.

5-2. “The consumption of dietary supplements containing iodine significantly increased UIC --- ” This phrase is inaccurate and inappropriate. What is the evidence for this conclusion?

6. L21-25

6-1. For lactating women the optimal UIC range as recommended by the WHO is 100µg/L and not 150µg/L. In Fig 1 the median UIC value of postpartum women is more than 100µg/L and they are not iodine deficient.

6-2. Median UIC values should be presented.

7. L26-31

7-1. Is the median UIC value of 82µg/L for overall subjects? Mention the mean (SD) gestational week.

7-2. How was the change of UIC in subjects using iodine-containing supplement after intervention? How about in total subjects?

Discussion

1. L22-24 "Charlton et al.3 reported that 35% of pregnant women used ----” This phrase is not consistent with the content of reference 3.

2. L29-39 This sentence is too long. These facts are well known and established.

3. The pattern of change in UIC during and after pregnancy should be discussed.

Figure 1: Revision is needed.

Table 1: Subjects should be divided in two groups.

Table 2: Median UIC with IQR and total number of subjects should be presented in each column.

- Minor Essential Revisions

Introduction: Line 9, use "µg" instead of "micrograms"

Materials and Method: Urinary Iodine Concentration

1. Is the urine sample spot urine?

2. This analytical method is already established and the detailed description is not necessary.

3. Calculate the inter- and intra-assay CV of iodine measurement.
References: In Ref. 3 and 19, the published year “2010” is missing.
Some important papers are neglected, such as Andersson M et al. J Nutr (2012),
Glinoer D, Best Practice in Research in Clinical Endocrinology and Metabolism

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the
statistics.

Declaration of competing interests:
I declare that I have no competing interests.