Reviewer's report

Title: Disparities Exist Between National Food Group Recommendations and the Dietary Intakes of Women

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Reviewer: malcolm rily

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This manuscript assesses the dietary intake of a cohort of Australian women aged 25-30 years against public health dietary recommendations and finds that many women do not follow dietary recommendations. The manuscript makes a case that some women who do not follow dietary recommendations appear to have an adequate diet, and that dietary recommendations should be developed to accommodate them. It has been shown many times that generally few people follow all dietary recommendations and there is interest in how this could be improved.

- Major Compulsory Revisions

1. It is incorrect to assess the dietary intake of a cohort of women against dietary recommendations for pregnant women or breast-feeding women. If they are not pregnant or breastfeeding, the recommendations are not appropriate to them (final 2 major categories in Table 3 and 4). For this reason, the prevalence of cohort women who meet these recommendations is meaningless (results, paragraph 8). Strictly, for the comparison to adult recommendations, the women who were pregnant, or had been pregnant in the previous 12 months (both measured for the sample) should be removed because the reference period for the FFQ was the previous 12 months. A comparison of pregnant women to the dietary recommendations for pregnancy might be inserted into table 3 with full discussion of the problems of making this comparison when the FFQ reference period is longer than the period of the pregnancy. Table 4 should not be retained.

2. The authors identify those women who consumed simultaneously the estimated average requirement (or higher) for folate, iron, calcium, and zinc; and the Adequate Intake for fibre while consuming less than the recommended number of serves of ‘extras’. The diet of these women are categorised as ‘optimal diet’ and their food intake pattern is compared to the recommended food intake pattern. The different average intake of food groups serves to that recommended is offered as evidence for the need for alternative food group recommendations. There are a number of problems with this – perhaps the most important being the difference in nutrient targets (the development of the AGHE considered many more nutrients and used different nutrient reference standards). While the dietary intake is labelled ‘optimal diet’ there is insufficient evidence to determine whether they represent a nutritionally adequate diet. Furthermore, when a distribution of nutrient intake is compared to an estimated average intake,
those falling below the EAR are not necessarily having an inadequate intake because the individual requirement is not known. The method used appears to assume that women with an intake above the EAR have an adequate intake for this nutrient – this is not the case. The development of the AGHE recommendations was based on ‘optimising’ serve recommendations to achieve nutrient targets in minimal energy intake – it is well recognised that there are dozens if not hundreds of alternative eating patterns that also achieve a similar nutrient intake. While the authors call for ‘revised food selection guides’ providing ‘greatest flexibility’, this should be considered in the context of a large number of different recommendations for the same demographic group. When re-constructed with the correct data, the authors should consider what the ‘adults’ column of table 3 is saying – having identified all women meeting the nutrient targets, they have dichotomised them into those who meet an ‘extra’ foods target and those who don’t. Those having a ‘high extras diet’ at present appear to have almost 5 more serves (on average) than those who meet the extra foods target – they also have more daily servings of meat or alternatives (by an average of 0.6 serves) while the only compensating food group is dairy (with a difference of 0.3 servings in mean intake). The mean energy intake between the groups is very large – 3.1 MJ/day. This is difficult to interpret and perhaps should wait until the appropriate data is used – both of these groups appear to have a high food intake compared to the rest of the cohort (i.e. compared to table 2 final column) which is a reminder that nutrient intake is correlated with reported energy intake.

3. The problem of the dietary measurement instrument covering a reference period that is inconsistent with the categorisation of subjects is a major issue which is only covered briefly late in the discussion. The dietary recommendations for pregnancy are only intended for women who are pregnant, and the FFQ is intended to measure usual diet over the previous 12 months (which clearly covers some time pregnant, and some time not pregnant). It seems very difficult to sustain an argument that the FFQ measures usual diet at the time of completing the questionnaire (i.e. that the FFQ is invalid for its intended task, but valid for a different task) particularly when it has been stated that the FFQ has been validated. It is unlikely that the FFQ has been validated for the specific categories of women defined in this study – this could be a discussion point. However, the comparison of the dietary intake of women who are currently pregnant with dietary recommendations for pregnancy using an instrument designed to measure usual diet over 12 months is not very satisfactory. On this basis, one would expect the dietary intake of women who were pregnant to be similar to that of women who had given birth less than 12 months previously – except there is the added complication of higher nutrient demands of breastfeeding which would have occurred for different periods of time in one group only.

- Minor Essential Revisions

4. In the abstract, include the age range of the women and the date of the data collection.

5. NRVs refer to a range of values - throughout the manuscript name the actual
reference value intended rather than the generic term.

6. Throughout, take care to represent the data as cross-sectional data. For example, the authors state (results, paragraph 4) “Pregnant’ women reported increases in the daily grams of both fruit ...’ where a more appropriate alternative is ‘Pregnant’ women reported a greater mean daily intake of both fruit ...’.

7. The reference period for the FFQ is included in the discussion – it should be stated in the methods.

8. Demographic variables should be provided by ‘pregnancy’ category.

9. The sample is stated to be broadly representative of the general population of Australian women – from the reference cited, this must have been at recruitment. This should be stated, with the factors that were assessed, and a statement of the follow-up rate at survey 3.

10. The method of administration of the FFQ should be included. The method of converting the FFQ categories into the AGHE categories should be given (a conversion table might be shown unless each category had an unambiguous assignment).

11. The statement (statistical analysis, paragraph 2) ‘variations in food group intakes were analysed using the chi-squared statistic’ does not make sense to me – was food group intake treated as a categorical variable? Or does this refer to Table 4 comparison of demographic variables between groups? Was there any examination of the distribution of food or nutrient variables – these are often highly skewed.

12. Little time is spent considering the validity of the dietary data although it would appear that 1418 subjects were excluded on the basis of inaccurate energy estimates (too high or too low – no discussion). While the FFQ is stated to have been ‘validated’ with an appropriate citation, the possibility of an inaccurate dietary instrument for measuring usual dietary intake over a 12 month period is critical for the focus of the study. The total estimated mean daily food weight is shown in table 2 to be 1392 g with a daily mean energy intake of 7521 KJ – this could be compared to relevant data for this age group even if it means using the 1995 national survey data.

13. As explained elsewhere, because there appeared to be no measurement of whether a woman was breastfeeding or not, and because the FFQ was intended to cover a 12 month period, it appears spurious to compare the intake of any of the women with recommendations for breastfeeding (results, paragraph 5).

14. Note that the mean intake of ‘extra’ foods for women categorised as ‘High extras diet’ was 6.5 – 8.0 servings a day rather than 6.5-7.3 as stated in the text (results paragraph 7)

I think that the problems with the dietary measurement instrument reference period in relation to the ‘pregnancy’ status classification of the women undermine
a lot of the rationale for the study. It would be possible to assess the dietary intake of women who were not pregnant at the time of the study or 12 months previous to it against dietary recommendations, and to compare women intending to become pregnant to those who weren’t – this appears to be a different manuscript however.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I worked for Dairy Australia – a dairy industry services organisation – from 2006-2010. I declare that I have no other competing interests.