Reviewer's report

Title: Food and beverage portion sizes in Australian children: A secondary analysis of 1995 and 2007 national data

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Reviewer: Carley Grimes

Reviewer's report:

Author comments
The paper “Food and beverage portion sizes in Australian children: A secondary analysis of 1995 and 2007 national data” utilises data from the 1995 National Nutrition Survey and the 2007 Children’s Nutrition and Physical Activity Survey to examine differences in portion sizes over time. Whilst the background and rationale to complete this study is strong there are a number of methodological issues and points that are unclear in the current presentation of the data. It is not clear to this reviewer how portion size has been calculated, and with the current explanation in methods it appears that the data reported represent total daily (grams) intake of food groups from 1995 and 2007 as opposed to representing actual portion size. It would appear that eating occasion/ food frequency would need to be considered when calculating portion sizes – as is this is not clear. In addition, the statistical analysis is of concern given that no consideration has been given to the complex survey design of these datasets. In particular population weightings and clustering should be considered in all analyses (refer to 2012 Burden et al http://www.ncbi.nlm.nih.gov/pubmed/22153220). Other comments to consider are outlined below.

Minor revisions

Abstract
• Results: It is not clear why there is a range for the changes in portion sizes.
• Clarify what “refining dietary recommendations” would mean in view of these results

Intro
• More recent data on obesity/overweight is available from 2011-2013 Australian Health Survey

Methods
Page 6.
• Is the 61.4% response rate reflective of all participants i.e. adults that were also included in the 1995 survey or does this just relate to the child sample?
• Was a proxy used for 24 hr recalls completed in children? Please provide details
• Given the detail on sampling procedures provided for 2007 CNPAS can some
level of detail also be provided for 1995 NNS so the reader can interpret any differences/similarities between the representativeness of the 2 surveys

- Was the food model booklet used in both surveys validated? Given the current paper is on portion sizes, can some detail be provided relating to the rationale and selection of portion sizes of commonly consumed foods that were presented in the food model booklets for eg. For crisps, SSBs, confectionary i.e. were the portion sizes specified in the food model booklet reflective of current market place products?
- Where is figure 1? It does not appear to be included with the manuscript or supplementary files.
- Why is cordial included in additional file 1 food group classification? Earlier mention of exclusion due to inconsistent reporting across survey years. Please clarify.
- It is unclear what this means “Unpublished portion size data for each survey was obtained from the ABS” what exactly happened here?

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- As it is currently written it is unclear if the implausible intakes relate to the ACAES or the current study. Examining the reference it appears to relate to the ACAES FFQ. ? relevance of this here. Was any consideration given to under-reporters in the data sets being analysed i.e. 2007 + 1995 ?

Results

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- Clarify the final n for 2007 CNPAS i.e. n=4799. Most publications (including the KEKP publication?) report on n=4487 when utilising the CAPI data.
- Table 1. Please clarify why weight status is unknown for 2007 CNPAS. It would seem more appropriate to only include children who had all survey components complete i.e. n=4487 (likewise for 1995 NNS).
- ? is the interpretation of the changes in weight status over time accurate. Contrast to previous national reports http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features20Sep+2009. Of concern is that presented data has not been weighted and is thus not nationally representative and interpreting any changes across survey years is hence misleading (As per first paragraph in discussion)
- Clarify in methods what unusual intake might reflect. The proportion reporting unusual intake is very high – was any consideration given to excluding implausible intakes.

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- Language ? were 65 foods analysed or rather ‘food groups’ were analysed that consisted of many more individual foods? Suggest using food groups throughout

Major Revisions
Methods
• A clear definition of how portion size was calculated needs to be included within the methods.

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• Statistics – clarify why the median is reported as opposed to the average? The 2007 CNPAS uses a complex survey design including population weightings, clustering and stratification. To avoid biased estimates these design factors need to be considered and accounted for when completing inferential statistics. 1995 would also have similar sampling procedures that should be considered. Please specify how the sampling parameters were accounted for in this analysis. Was any consideration given to multiple comparisons completed?

Results
Page 8
• It is unclear exactly what the ‘portion size’ represents. This needs to be explained more thoroughly within the methods. It appears that (Table 2) the reported changes in portion sizes actually reflect the changes in the total daily amount of these food groups between 1995 to 2007. To assess portion size, eating occasions / the frequency of the foods consumed across the day would need to be considered to calculate actual portion sizes as opposed to daily grams of all food items consumed within each of the food groups. As is, it is unclear how this data reflects portion sizes and this needs to be addressed. Individual foods within these food groups may have been eaten several times across the day and hence alone do not reflect portion size.
• It would also be interesting to examine foods eaten outside of the home i.e. take away and see if portion sizes of these foods had changed over time. In 2007 CNPAS the location of foods is provided and foods that are take-away are recorded. Can this be included in any re-analysis. Given the different public health strategies required for in the home vs. foods eaten outside of the home, access to this data would seem relevant.

Discussion
• In view of the difficulty in interpreting the portion size results it is difficult to interpret the discussion here as is.
• Cannot claim strength is utilisation of nationally representative data as no attempt to weight data for national estimates has been made.
• Page 11. Not convinced that the rationale to use unweighted data is justifiable. The references refer to previous NNS analyses i.e. 1995 and 1985. I suspect there are further sampling differences from 1995 to only children’s survey of 2007. Sampling procedures should be considered in analysis.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests