Reviewer's report

Title: Australian children's consumption of caffeinated-formulated beverages: a cross-sectional analysis

Version: 1 Date: 13 June 2014

Reviewer: Rosanna Watowicz

Reviewer's report:

The objective of this paper is to present data on caffeine intake in children. However, there are several issues that I believe need to be addressed before publication. Most importantly, the authors try to present an argument in the introduction that caffeine intake is detrimental to the health of children. However, this argument is not well supported by literature. Furthermore, it is unclear why added caffeine is examined separately from naturally occurring caffeine. If caffeine is “bad”, then wouldn’t all sources of caffeine be a problem? The caffeine intakes presented in the data fall within the recommended ranges, indicating that caffeine intake may not even be a problem, therefore the intervention suggested in the conclusion may not be appropriate. The article overall is written in a tone that seems to be biased against caffeine, however this is not supported by the data presented. Finally, the data in Table 1 seem to be percentages of the unweighted values, though the authors state that the values are weighted. If the data should be weighted but the unweighted data is presented, then the results and conclusions are invalid. More detailed comments are below.

Major Compulsory Revisions

1. After reading the introduction, I’m not sure I’m convinced of the dangers of caffeine intake in children based on the information presented. There was one study that showed increased anxiety and one that shows potential for increased blood pressure in adolescent males. I’m not familiar with the negative consequences of caffeine intake in children, but I expected them to be more severe, especially if consumed in excess. The reader needs to be able to see very clearly why caffeine intake is important to study.

2. For 24-hr recall data (lines 134-142), I would like to see a citation that shows the validity of the 3-pass approach. Also, a citation for the AUSNUT2007 database would be helpful so that the reader can see how that was developed.

3. The second paragraph in the beverage classification section needs some additional clarity (lines 165-186. Why were soft drinks singled out? Are they the only type of drink that was considered to possibly contain added caffeine? Why not classify beverages by caffeinated versus uncaffeinated? Line 172: excluded from the definition of what? CFBs? Description of using the 8 digit code in lines 172-176 is unclear to me. Was the same process used for calculating caffeine from food?

4. In line 185: is “intense sweetened” a standard term meaning artificially
sweetened? American readers may need clarification.

5. Table 1, all of the percentages (which you state are weighted percentages) seem to exactly match the unweighted percentages. Is this just a coincidence? Please double check that percentages are weighted.

6. Please explain how the age categories in Table 1 were chosen

7. Data are presented as consumers of CFB and non-consumers of CFB. But if caffeine is dangerous, why do we care where it comes from (i.e. naturally occurring versus formulated). Does naturally occurring caffeine not have the same affect as formulated caffeine.

8. Lines 223-226: Stated that 81% of caffeine was consumed through beverages, but only 34% was from CFBs. So is the rest from caffeine that is naturally occurring in beverages?

9. Tables 4 and 5, lines 246-247: is g/day of CFBs the best way to measure this? It seems like there is an assumption that mg caffeine per g CFB is stable across beverages. Isn’t it possible that children could drink similar grams of CFB, but the caffeine content could vary? If we are interested in caffeine intake, then why not compare mg caffeine intake across SES and day of the week (and age groups) instead of comparing grams of CFB?

10. Lines 304-306: These recommendations seem important, and should probably be included in the introduction. Since the mean mg caffeine intake falls well within this recommended range, I would be interested in seeing what proportion of children were above the recommendation. I expect that this can be done since you have body weight for each child and therefore should be able to calculate the recommended intake for each child. Interpretation of these data may be different if most children within a particular category (i.e. SES, age, weight) are within the recommendation. If most children were within the recommended range, then why would we need to intervene?

11. Lines 307-311: this is a tough argument to swallow. If you are arguing that current intakes may be very different from intakes in 2007, then why this study is important? I think you can address the fact that consumption patterns may have changed since 2007, but the way it is presented here makes it sound like we should ignore all of the results in this paper.

12. Line 316: earlier in the paper you seem to argue that there are known negative consequences of caffeine consumption. Here it seems like we don’t really know what the consequences are.

13. Lines 345-347: wouldn’t the weighted data account for this sampling bias?

14. Lines 356-358: what does age have to do with misclassification of meal times?

15. Not convinced that seasonality is addressed, what about the other 6 months?

Minor Essential Revisions

1. Line 63: I believe this should be 145mg/L instead of 145mg/kg

2. Line 80, I think the term “negative impact” here is intended to mean
“undesirable”, however it could be interpreted as meaning “decreased”. For clarity, suggest changing lines 79-80 to say something like “…caffeine consumption was related to increased cognitive and physical performance as well as increased anxiety levels”.

3. Line 113- data were

4. Lines 139-140, what about children who were 9 years old?

5. Line 240: better to avoid the word “increased” when presenting cross-sectional data since we cannot assess longitudinal change over time

6. Table 2: unclear what “Proportion of soft drink caffeinated” refers to. Is this the proportion of caffeine from soft drinks? The proportion of CFBs that are soft drinks? Something else?

7. Line 310: reference missing

8. Lines 311-315: sentence repeated

9. Figure 1: two labels are shown on the Y axis

Discretionary Revisions

1. Unsure about the term caffeinated-formulated. I think the grammatically correct phrase would be ‘caffeinated, formulated beverages’. Or maybe ‘formulated beverage with added caffeine’.

2. Line 55-56: suggest changing to “caffeine is sometimes added to formulated beverages”.

3. Lines 55-57: is caffeine only used as a flavoring agent, not as a stimulant? Again in lines 89-90, somewhat unclear here. Do manufacturers claim that caffeine is added only as a flavoring agent?

4. Instead of the term “place of residence”, consider “home”, may improve readability

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**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