Reviewer’s report

Title: Snacking patterns, diet quality, and cardiovascular risk factors in adults

Version: 1 Date: 12 July 2013

Reviewer: Jessica Grieger

Reviewer’s report:

This is a fairly well written paper that impacts public health and makes a contribution to the area of dietary pattern analysis, particularly regarding to snacking and cardiovascular outcomes. There are a few issues with this paper that I believe should be addressed before it is published.

Major Compulsory Revisions:
- Please change the tables around so that the snacking patterns are in columns and the demographic/diet data is described in rows.

Minor Essential Revisions:
- In the introduction, please include more rationale as to the purpose of the study, the reason for including a large age range, and the point of using cluster analysis (as opposed to something like factor analysis).
- Methods: was there any significant difference in dietary intakes between the 2 different 24-hr recalls? Even if the data is not included in the paper, this should be mentioned somewhere.
- was the "time of eating meals" defined in the 24-hr recall? This should be stated so the reader is aware of the time frame that snacks may have been consumed.
- where were the data on quartiles reported? (mentioned on page 7)
- how many times was blood pressure/waist circumference measured before the reading was used?
- were the bloods measured fasting?
- CVRF should be spelled out in the first instance (page 8)
- a separate section for "cluster analysis" and "statistical analysis" should be used.
- were any population weights applied to the analyses given the large sample size?
- be clear when the 12 snack patterns are are stated (stats section page 9) that one included "no snacks".
- how was physical activity measured?
- Results: demographic information should be reported first, and then information on the clusters.
- Table 1. Percentage of adults in each age group would be useful to understand
what sub-groups were particularly consuming the different snacking patterns.
- Table 1. PIR needs to be explained in footnote.
- Supplement table 1. Please check.
Figure 1. Be consistent with reporting 12- or 11- snacking patterns.
Supplement Fig 1. What does the p value represent?
- Discussion: please expand on the snacking time-frame used in the current analysis.

Discretionary Revisions:
1. A lot of snacking patterns were identified, despite reasonable sample sizes amongst them. It is not uncommon that people would consume more than one type of snack-food over the day? What was the reason for choosing cluster analysis instead of factor analysis?

2. This analysis is covering a large age range. Although age has been added as a confounder as a continuous variable, it is still likely there will be significant difference in snacking patterns between older and younger age groups. Could age be included as a categorical variable?

Level of interest: An article of importance in its field

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'