Reviewer's report

Title: Dietary pattern analysis: a comparison between matched vegetarian and omnivorous subjects.

Version: 3 Date: 26 April 2013

Reviewer: Sharon Kirkpatrick

Reviewer's report:

Major compulsory revisions:

2. The description of the refinements to the original HEI is somewhat confusing. It is important to note that the HEI-2005 and HEI-2010 are very different from the original HEI (e.g., the 2005 and 2010 versions are density based) and findings from studies using the original and the latter iterations may not be comparable. This also needs to be noted in the section indicating that the literature on HEI scores for vegetarians is equivocal.

3. The introduction and discussion would benefit from greater clarity regarding the extent to which the HEI-2010 and MDS are amenable to vegetarian diets. The HEI-2010 does not require any single commodity in order to achieve a perfect score (e.g., the protein groups include both animal and plant sources). In contrast, the discussion seems to suggest that this is not the case for the MDS in terms of fish, etc. It would be useful/helpful to make this point clearly earlier on.

4. In the first full paragraph on page 5, please further interpret - MDS scores not related to data-driven pattern among vegetarians - what does this tell us and what questions does it raise?

5. Please provide more details on how scores were calculated. Were population ratio scores used for the HEI-2010 (e.g., sum all fruit over all individuals - over all 3 days in this case - and then divide by the sum of all energy)? This is the preferred approach for estimating mean scores among groups since it is thought to better reflect usual intake. Are there multiple approaches to the calculation of MDS scores?

6. Why were two methods of matching employed? It seems that the proxies identified by the recruited vegetarians might be likely to introduce bias - e.g., if the proxy is a friend or spouse, there may be a correlation in diet quality even if one eats animal products and the other does not. Thus, the sample of omnivores is likely not reflective of the larger population of omnivores. This should be noted in the limitations discussion.

7. Did the secondary dataset used for matches involve complex sampling strategy? If so, was this accounted for through the use of appropriate weights and strategies for estimating variance?
Minor compulsory revisions

8. It is unclear what is meant by 'one can assume different scores when applying the HEI/MDS to vegetarian/omnivorous diets' - does this mean that studies showing differences in diet among these groups suggest that diet quality scores would also differ?

9. It is unclear what is meant by the last sentence in the first partial paragraph on page 5 - is this in contrast to the HEI-1995?

Minor discretionary revisions

10. While I am not aware of studies examining whether HEI-2005 or -2010 scores predict mortality, there is a study showing a relationship with one type of cancer, which may be worth mentioning - see Reedy et al., AJE 2008.

Quality of written English: Needs some language corrections before being published

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.