Reviewer's report

Title: The mediating role of dietary factors and leisure time physical activity on social inequalities in body mass index among Australian adults

Version: 1 Date: 9 September 2013

Reviewer: Richard Shaw

Reviewer's report:

The paper investigates whether dietary factors and leisure time physical activity (LPA) mediate the relationship between socioeconomic position using cross-sectional data from 1990-1994 in Melbourne Australia. The use of product of coefficients to establish mediation appears sound. The discussion is reasonably balanced although perhaps some critical issues have been omitted. Whilst this paper is not tremendously novel, the paper does perhaps bring some new insights into to the development of obesity. Overall it is a reasonable paper, apart from one major concern.

Major compulsory revisions

1. The biggest concern is the lack of reporting of response rates and discussion of potential biases created by the recruitment process. A difference in sample sizes for women (n=18,489) and men (12,141) would suggest that the data may be seriously biased making it difficult to generalise from the sample to the general population.

Minor essential revisions

2. p. 7: The very low levels of some dietary behaviours also merits more discussion in the text

3. p12. “[Ball review, social Science and medicine]” replace with numbered ref.

4. P12. The exclusion of people of Southern European origin needs to be discussed in the context of generalisability, particularly as these people may have healthier diets.

5. p.13. The authors should discuss at greater length the potential impact of upstream social determinants that might influence and limit individuals ability to make healthy choices.

6. p.14 FFQ needs to be defined in the abbreviations.

7. p. 15-16, Some of the references are lacking important details for example Wall et al 2009 appears to lack page and volume numbers.

8. p. 8: The units described in table 2 appear somewhat misleading. I assume that for fruit and vegetables the unit used is meeting recommended minimum
consumption levels and not times per week.

Discretionary revisions

9. p. 2 Abstract Conclusions: Tone down the degree to which health behaviours may be modifiable. The generation of an obesogenic environment is a consequence of numerous factors operating at many levels and I am not sure how easy it is for individuals themselves to modify their behaviour in the context of other factors.

10. p. 7: I would suggest that some of the descriptive statistics might be better presented in a different way for example for soft drinks, with the exception of low educated women the median, Q1 and Q2 are all 0.

11. p.12: People with a Southern European origin could potentially have different diets and this perhaps merits discussion with respect to their exclusion and generalisability.

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

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests