Reviewer's report

Title: Socio-economic patterns of overweight, obesity but not thinness persist from childhood to adolescence in a 6-year longitudinal cohort of Australian schoolchildren from 2007 to 2012

Version: Date: 2 December 2013

Reviewer: Adrian Cameron

Reviewer's report:

The authors have used data from repeated measures over six years on a cohort of school children from Australia to examine changes in body weight status according to socioeconomic position. The main conclusion of the study appears to be that obesity prevalence has plateaued over time and that a SEP gradient exists.

Major compulsory revisions:

Please note - it seems that no abstract was submitted??

The primary conclusion that "The study found no longitudinal changes in overweight and obesity prevalence over the six year period, suggesting a plateau" is problematic for several reasons. Firstly, and most importantly, this study type (longitudinal study with repeated assessments) should not be used to assess changes in prevalence. The correct study type to assess change in prevalence is repeated cross-sectional studies (on different participants each time). Interestingly, the authors have in fact used the correct study design previously to examine this exact question (http://link.springer.com/article/10.1007/s00038-011-0280-6). The study type used here can be, however, very useful to look at how children change over time, and whether SEP gradients increase or decrease throughout childhood. Secondly, even though they would be invalid for the purpose of looking at whether obesity prevalence has plateaued, no statistical test for change in prevalence of obesity was actually conducted that I could see. Despite not being useful for looking at population trends, such a test would still have been useful to determine change in the prevalence of ow/ob/thinness as children age, however this is not a novel question at all.

Given that the main question of interest in this paper is therefore how the SEP gradient in weight status changes over time, this question should have been the focus of the literature review and discussion.

Other additional essential revisions include:

- There is increasing evidence that even where the prevalence of BMI may be stable, waist circumference can increase. A recent study demonstrating this in children would be particularly pertinent here:
- last sentence of first para, background - I think the authors mean mortality, not morbidity.
- last sentence, 2nd para, background - prevalence does not decelerate - the rate of change in prevalence may decelerate.
- I feel that the authors could have handled the debate of whether or not body weight is status is plateauing or not more clearly. At some stages, it appears they believe this while at other stages it is reported as controversial. A more thorough review of the recent literature on this topic may have been helpful had this been a valid hypothesis to be pursued.
- background - please define "low SES schools" - page 3.
- In the methods, it remains unclear how SES is considered - is it just the school SES category, or was the combined indicator used. It is also unclear how the correlation between the final measure and the components that were used to create it is useful (by definition there should be a strong correlation I would have thought). And what is "Spearman alpha"? Do the authors mean correlation co-efficient?
- Results, second para - I see no value in reporting the associations between weight status and SEP for particular years - we are interested in how this changes over the time of the study, not in particular years.
- Results, last para - given the sample size of respondents from Pacific Islands, I do not believe that sub-group results from this ethnic group should be reported.
- Discussion - first para - "childhood overweight and obesity is not increasing exponentially as previously expected". While this sentence is not relevant based on the earlier comments, the word exponential is clearly not accurate here.
- Page 9, first and second para - Both paragraphs should be deleted as the results from this study cannot be used to support these claims.
- a demonstration of how representative the cohort is of all children in Australia of that age would be helpful.
- I found the increase in obesity prevalence over the years of the study in the mid and high SEP groups to be interesting - in both groups, there is a roughly tripling of the percentage classified as obese (compared to no increase at all in the low SEP kids). This could perhaps be evidence that in these children, the increase in obesity is happening fastest in the higher SEP groups. A comment on this observation (and perhaps some statistical testing for the change in obesity prevalence) would be helpful.

**Level of interest:** An article of limited interest

**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.