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

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Reviewer: Tim Olds

Reviewer's report:

This study reports on a 6-year follow-up of weight status in children aged 10 at baseline, examining time trends in adiposity, time x sex and time x SES interactions. The main finding is that SES differences were consistent across time, with no time x sex or time x SES interactions.

The study has a number of strengths. The sample is reasonably large. Cohort retention has been quite good. Height and weight have been measured. Longitudinal data are relatively rare. I have a number of comments and suggestions.

Major Compulsory Revisions

(1) SES differences exist at baseline, and persist for 6 years. This suggests either that influences prior to age 10 have determined SES differences, or that genetic factors are at play. It would be interesting to see whether SES differences persist when adjusted for midparent BMI, which the authors have access to. If differences are eliminated when this adjustment is made, then the case for a genetic or early childhood influence is strengthened. I think this would be one of the most interesting results which could emerge from this study.

(2) The authors claim that they have tested whether there has been a plateau in the prevalence of overweight and obesity. I can’t see where they have done this. No test of stability has been performed, and even if it had been done it would not be valid because prevalence changes with age, generally increasing at puberty (around the period of the “pre-pubertal fat wave”). In almost all Australian datasets, the prevalence of overweight and obesity is lower in younger kids, and this has been the case over time, so it doesn’t seem to be a secular effect. In short, without serial cross-sectional analyses of kids of the same age, I don’t think this hypothesis can be tested.

(3) I was confused about which measure of SES was eventually used. Was it ICSEA? Was it a combination of the educational measures and ICSEA? (This would be odd because it would combine individual and group-level metrics). Is the "school SES category variable" different from the national government school socioeconomic index”? If they were combined, how were they combined?

(4) Did the statistical analyses correct for school-level clustering? If not, they
should.

(5) I would have liked to see a power analysis.

(6) Since the sex x time and SES x time and sex x SES x time interactions were not significant, I didn’t understand why so much time was spent on looking at these differences (pp6-7).

(7) I disagree with the conclusion regarding the failure of interventions targeting low SES groups. Since there were no SES x time interactions, each group is developing at the same rate — none is doing relatively worse or better than any other. This would tell me that any interventions are working equally well, or equally badly, for all groups.

(8) The children were from regional NSW schools. How representative are they likely to be of the general population of NSW kids, or of Australian kids? On p10 line1-2 you describe this as a “large representative longitudinal cohort from NSW”. Not quite true: it is perhaps representative of regional NSW. And is it? How were the 10 school chosen?

(9) Table 2 and Table 3
Please provide data for ALL kids, in addition to the breakdown by SES.

(10) Given that there is no sex x time interaction, I don’t see the need for separate male and female figures. Just stick to Figure 1. If they are retained, then use the same symbols as in Figure 1 — the filled dots and boxes are impossible to distinguish from each other.

Minor Essential Revisions
(1) p4 para4
Spearman’s alpha: Do you mean Spearman’s rho?

(2) p6 para4 line2
add “kg/m2” after “0.24”

(3) p7 line7
Delete “was”

(4) p9 para3 line 3
“its” not “it's”

(5) p10 line16
Delete ”at time”

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