Reviewer's report

Title: Gender and socioeconomic disparities in BMI trajectories in the Seychelles using birth cohorts generated from serial population-based surveys

Version: 2 Date: 29 July 2011

Reviewer: Jessica Jones-Smith

Reviewer's report:

Review of Revised Manuscript

The revised version of this manuscript addresses many of my previous comments; however, there are some important details that require additional clarification.

Compulsory Revisions:

Background

1. The flow of background might be improved if the all previous findings specific to Seychelles were moved to the end of the Background, right before the goals of this paper. So that the last paragraph introduces Seychelles as a rapidly developing country with 3 repeated cross-sectional surveys, then lets the reader know what is already known about Seychelles (ie direction of SES-bmi relation for men and women and BMI-age relation) and then gives the goals of the current study.

2. Page 3, paragraph 2, first two sentences: It seems necessary to make the distinction here between single cross-sectional studies and repeated cross-sections, which is the category that the presents study fits into.

Methods

3. I now understand that these are 3 independent random samples from the Seychelles population.

4. It seems as though the total number of participants in all three surveys is 1585 men and 1818 women. I am still unclear on how many of these participants could be included in the cohort analysis. It seems that a relatively small portion of the total survey in each year would be born in either 1944, 1954 or 1964, ie in 1989, only people aged 25, 35, or 45; in 1994, only people aged 30, 40, or 50; and in 2004, only people aged 40, 50, and 60. The N for these cohorts is not provided in the text nor is it in the “descriptive” plots in Figures 1 & 2. Is the N for the “descriptive analyses” plotted in Figures 1 and 2 smaller than the full sample?

Please clarify.

5. Is the entire sample is included in the regression analyses reported in Tables 2
& 3, ie including people born not in years 1944, 1954, and 1964? I believe they are, but this should be more clearly stated in the methods. If so, more justification for treating cohort as a linear variable should be provided, ie how was the assumption of a linear relationship between cohort and BMI assessed? This would be different than checking whether cohort/year varied by age (page 5, 3rd para).

The authors might consider doing a sensitivity analysis in which birth cohorts are formed based on grouping multiple birth years together, such as every 5 or every 10 years. In this way the birth cohorts could be modeled as dummy/indicator variables to see if results are similar.

6. It would be helpful to state at the beginning of the modeling paragraph (p5, para 3) that when using this type of data, one can either choose to focus on cohort or period in addition to age due to their collinearity in the data (this is currently stated at the end of this same paragraph). Then, instead of describing the modeling in terms of period and eventually switching to cohort, just alert the reader that you are focusing on cohort instead of period and use the word 'cohort' throughout. The introduction of the word 'period' in this modeling paragraph seems to add complication.

7. It is not clear to this reader what exactly the goals of the descriptive analysis in Figures 1 & 2 are in the context of the revised manuscript which includes a more elaborate model and also includes more of the sample (I think). Does it provide a check on the more highly modeled results from the adjusted linear regressions? How does this work since different portions of the sample are included in each? Is it meant to be akin to a crude analysis? Please clearly state the goals of the descriptive in relation to the adjusted models.

8. The descriptive analysis might be made clearer if it was simply the sex- and cohort- specific mean BMI and the sex-, cohort, and SES-specific mean BMI, rather than using the polynomial regression. These could be reported in a table instead of Figures.

9. Page 5, second paragraph: The ages do not match up with the birth year. I believe the 1944 and 1964 ages are transposed. I suspect this is just a typo. The current paragraph states that BMI for those born in 1944, bmi at age 25 was used in year 1989 etc…however people born in 1944 would be 45 in 1989.

10. In this same paragraph, the word “generated” seems misleading to this reader. I think it should be made clear that these are “estimated” means based on a model of BMI as a function of a polynomial regression. Unless I am mistaken and the results here are based on a nonparametric estimate of the mean BMI at each age.

Results

11. Page 6, 2nd para, first sentence: This sentence would be improved if the method used to generate Figure 1 was re-stated, ie “based on the sex and cohort
specific polynomial regressions.” I would also suggest this for the first sentence of the 3rd paragraph on page 6.

12. Second sentence in this same paragraph: “A cohort effect was evident…” Please tell the reader how they can tell that the cohort effect was evident, ie because, at a given age, the mean BMI for each successive cohort was higher than the previous cohort.

13. Figure 1 & 2: If a second degree polynomial regression was used to generate these BMI levels, why draw a straight line through these points?

14. Figures: Using different dash lines instead of color could improve the readability of the figures in print.

15. Tables: Instead of “simple” regression, perhaps “linear” regression

Discussion

16. Page 8, Second paragraph: It should be mentioned that the focus on period or cohort is often a necessary a priori choice since these age, period and cohort often cannot all be examined concurrently due to collinearity.

17. Page 8, Fourth paragraph: It might be useful to repeat here that low SES women had higher BMIs as early as 1989 in Seychelles, in addition to the observation that this has not changed over time.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests