Author's response to reviews

Title: Multiple socioeconomic determinants of weight gain: The Helsinki Health Study

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Author's response to reviews: see over
Reviewer 1

Title: Socioeconomic determinants of weight gain: a prospective cohort study
Version: 2 Date: 12 July 2012
Reviewer: Petra H Lahmann

Reviewer's report:

Manuscript 'Socioeconomic determinants of weight gain: a prospective cohort study'

This study from Helsinki/Finland investigates prospectively self-reported weight gain among over 8 000 public servants (80% women) over a time period of 5-7 years. Special focus is given on the effect of socioeconomic position on weight gain, particularly the simultaneous analysis of seven different socioeconomic indicators. The topic is timely and a valuable contribution to obesity research, but lacks clarity in presentation and interpretation, and detail in methods and statistics.

MAJOR Revisions

Title: Suggest to introduce country/nationality or study name in title, given that this study (repeated cross-sectional surveys) is established and has produced previous publications. The focus on multidimensional socioeconomic position could be integrated as well.

Response:
We have changed the title as suggested.

Abstract
- The background section is poorly phrased and can be more informative and interesting. Should address the “novelty” of this research.
- Please include duration of follow-up period, range or mean (sd), otherwise only mentioned once on p.5.
- Please provide a more detailed sentence on Log Reg analysis and mention mutual/simultaneous adjustment for all SES indicators in the final multivariable model.
- (Results) provide more specific information on which socioeconomic factors were associated with weight gain; “most ... determinants ...” is vague; e.g. authors could state “except for xy, all ... determinants were associated ...”.

Response:
- The novelty has been added: “Socioeconomic differences in weight gain have been found, but several socioeconomic determinants have not been simultaneously studied using a longitudinal design.”
- Duration of follow up and range/mean have been added
- Logistic regression analysis has been clarified and simultaneous adjustment mentioned.
- What socioeconomic factors were associated with weight gain are now specified.

Background
- This section is very long (almost 2.5 pages). Suggest to shorten, specifically paragraphs line 80-108 and to use description of other studies in discussion where suitable.
- line 57-58: obesity/weight gain is a risk factor for CHD and type 2 DM in women, too; not clear why mention is restricted to men only.
- line 104-108: the aims could be more succinct

Response:
- We have condensed the background in particular were suggested.
- we have corrected the sentence to refer to both sexes.
- The aims have been revised to be more succinct.

Methods/Results
- Introduction of additional table (new table 1): the manuscript would benefit, if more information about the age distribution was presented (e.g. % in each age category by sex: 40, 45, 50, 60 y at survey baseline), weight (or BMI) at baseline and average and range of subsequent wt change. Even though wt gain is of main interest in this study, information on the distribution of wt change is necessary.
- line 116-117: specify what type of missing data and use final cohort or study population instead of “final data”.
- statistical analysis: provide more detail for statistical analysis and modeling (line 162-165), including mention of testing other potential covariates (confounders), such as physical activity (line 258) and vegetable consumption/d (line262), and mental disorders (line 291).
- potential confounders: it is not clear to the reviewer why other covariates specifically lifestyle factors known to be associated with weight or body mass and weight change, such as smoking, are not considered in this analysis. It would be surprising, if information on these common lifestyle factors have not been queried in the surveys and seem to exist (see above). Could the authors consider this and also provide an explanation in the manuscript why this has not been done. For women, reproductive factors play a major role in weight change throughout life and should be at least acknowledged as such.
- line 168-169 & 173-174: provide mean weight with SD and/or consider above mentioned additional table.
- line 170-172: prevalence - please clarify which category is the reference group, otherwise not clear (e.g. women: intermediate and basic own education have overlapping CIs).
- Modeling, Table 2 & 3: There is not much difference in risk estimates when adjusted for age only (model 1) or both age and weight at baseline (model 2). Therefore, authors should consider restricting their presentation of results to model 2 and model 3 only. Weight at baseline is important to include due to the regression to the mean.
Response:
- A new Table has been added including age and weight change. The details are given in the revised text.
- Missing data have been specified and “final cohort/study population” is used in the text.
- Statistical analysis and modelling are specified. Sensitivity analyses included physical activity, binge drinking, smoking, vegetable consumption and mental and reproductive health. These covariates had negligible effects on the studied associations and are therefore not included in the reported analyses. The text has been clarified to mention these analyses.
- The reference category has been specified.
- Models 2 and 3 have been emphasised in reporting the results, but we also preferred to test the age-adjusted effects of baseline weight and therefore retained the 3 original models.

Discussion (and results)
- Interpretation: the description and interpretation/discussion of results need to focus on the multivariate (fully adjusted) model. As is, it is difficult to follow the authors’ line of descriptions/arguments. Often too much emphasis is placed on age-adjusted ORs which provide not much different results than the prevalence data presented in Table 1 (which is predictable).
- Structure: Helpful, if discussion followed a sequence of discussion of childhood, then own socioeconomic position, then current material resources and respective indicators.
- line 264-65: this conclusion is incorrect, if one considers the multivariable model. In either sex, parental education was not associated with weight gain > 5kg.
- line 267: citation #11 is missing (parental occupation was used in this study as well).
- The discussion is sketchy/incomplete or lacking regarding a) self-reported weight (line 294 ff), b) recall bias and potential effects (line 306 ff), c) compatibility with findings from earlier paper on obesity (ref #16). Please include (more) relevant references.
- line 311-313: large and diverse population: this should be toned down, since not correct. The study population was comprised of civil servants (?) in the metropolitan area of Helsinki. Not clear how age distribution (retired persons during follow-up) contributes to “diversity”. Need for clarification.

Response:
- Interpretation: The fully adjusted models have been given preference over age adjusted models in the discussion.
- Structure: we preferred to emphasize the main findings and therefore retained the structure as it was.
- The incorrect conclusion re: parental education has been corrected.
- Citation #11 has been added.
- The discussion has been revised re: self-reports, recall bias and findings from earlier studies.
- The description of the population studied has been revised, as suggested.

Conclusions
- The conclusions are very generic and do not relate properly to the findings of
this study and aspects of novelty.

Response:
- The conclusions have been fully revised to be better related to the study and its novelty.

MINOR Revisions
- Manuscript – throughout: Suggest to use terms and definitions as in previous papers. E.g. home ownership (y/n), see Laaksonen et al. 2004 (#16 in this manuscript), instead of housing tenure (owner-occupiers, renters); these descriptors don’t seem to be the appropriate terms.
- References #1 + #2 are incomplete.
- Line 138: categorized or grouped and not “divided”.
- Line 282: replace “drops” with another word.
- Line 288: ... mental disorders assessed by the General ..., GHQ-1, ...
- Titles/Tables 2 & 3: please provide proper description in title.
- Manuscript needs editing throughout.

Response:
- All suggestions have been taken into account and the text has been edited throughout.
Reviewer 2

Title: Socioeconomic determinants of weight gain: a prospective cohort study
Version: 2 Date: 2 August 2012
Reviewer: Lauren Williams

Reviewer's report:

The research question addresses the important topic of weight gain and provides longitudinal data on measures of socioeconomic status and weight gain. The need for such research is well justified, and the title is appropriate.

Major compulsory revisions

Background:
1. Line 106: The aim specifies ‘employed’ people, but there is no rationale for this in the background. Please justify (either here or in the method).

Response: 1. We have revised the aims as also suggested by the Reviewer 1. We have no specific focus on employees.

Method:
2. The methods section needs to be more detailed, and the choice of measures and cut-offs more clearly justified in general. In particular: Line 124: Please justify why the figure of 5kg was chosen. This is important given other studies have used 5lb, or a % of baseline weight. The figure chosen obviously affects comparability of results with other studies.

Response: 2. Methods have been revised to be more detailed. This cut-off point was based on the WHO recommendations stating that weight gain should not exceed 5 kg during adult life. Sensitivity analyses used 5% weight gain. These analyses showed very similar results.

3. Line 151: Why only 2 categories for home ownership (owner occupiers and renters)? Owner-occupiers could own their own home outright or have a large mortgage, and thus the financial stress on the two categories is very different – is this not be the case in Finland? Please justify your choice of categories, and/or note it as a limitation in the discussion.

Response: 3. The use of home ownership/housing tenure has been better justified and limitations added. The difference between owner-occupiers and renters is the main division and covers practically all participants. Thus we preferred to use the dichotomy.

4. Please explain more fully how the socioeconomic indicators were entered into the statistical model. In particular, whether all 7 determinants were included in
every model ( eg was education included even when you tested for education?)

Response:
4. The strategy of modelling has been better explained in the revised Statistical methods. Model 1 included only age, model 2 also included baseline body weight. Model 3 was the fully adjusted model adjusting simultaneously for age, baseline weight and all seven socioeconomic determinants.

5. This paper obviously arises from a bigger piece of work, and some of the points mentioned in the discussion arise from measures that are not described in the measures. For example, in Lines 257-9: you discuss food habits and physical activity, but you have not mentioned these variables in your method. Please do so in order to be able to discuss.

Response:
5. We have revised the Methods and Discussion to mention the included covariates and sensitivity analyses. This was also requested by the Reviewer 1.

6. Lines 289-91: Again, you are introducing variables (mental health) not shown in method or results.

Response:
6. See answer #5 above. As the additional variables were tested only in the sensitivity analyses and were not included in the main analyses, further details are not shown.

Conclusions
7. You need to be really clear on what this paper has contributed that we didn’t know before and describe it clearly here.

Response:
7. We have revised the Conclusions. This was also suggested by the Reviewer 1.

Minor essential revisions
Abstract:
8. Line 31-33: The sentences under the ‘Background’ section are repetitive. The first sentence could be reworded to state why this topic of research is important.

Response:
8. The background has been revised to state the importance of this research.

9. The phraseology needs to be tightened in some sections of the text eg line 41 ‘gained weight at least 5kg...’ should be ‘gained at least 5kg in weight...’ also Line 52: ‘Better economic situation...’ is not correct English. I won’t identify all the other examples. Instead it would be useful for the authors to have the article professionally proofread.

Response:
9. The text has been revised and the language improved throughout.

Background
11. Line 75: replace ‘i.e.’ with ‘such as’

Response:
10-11. amended as suggested.

12. Lines 80-95: This paragraph lists the findings of various studies, but would benefit from an introductory and/or concluding sentence linking the argument and putting it in context of the research.

Response:
12. The paragraph has been revised.

Method
13. Line 127: ‘All seven indicators...’ I am not sure what this sentence means? Do you mean the same measures were used in both surveys? Please clarify.

Response:
13. The sentence has been clarified. Socioeconomic determinants were asked at baseline.

14. Line 150: what do you mean by ‘weights of each person’? please clarify

Response:
14. The sentence has been clarified. Income was weighted by the number of adults and children living in the household.

Discussion
15. The discussion is overly long in comparison to the results and could be tightened. For example, the paragraph Lines 206-215: re-states your results. You could cut or reduce to 1 sentence.

Response:
15. The discussion has been tightened.

16. Lines 225-6: These claims (about men as breadwinners and about engaging in PA require references – otherwise they are merely speculation. Line 226-7: delete sentence ‘This leads to...’ This is a definitive conclusion, which doesn’t follow on from the previous unreferenced sentences. It could be left in if the section is supported by references.

Response:
16. The text has been revised. We acknowledge this discussion is hypothetical. We are not aware of suitable references.
17. Line 231: re ‘attenuated association...’ Please comment on what you think this means?

Response:
17. Potential explanation is given.

18. Lines 232-4: Please reconcile these seemingly contradictory sentences.

Response:
18. The seemingly contradictory sentences have been revised to avoid any confusion. The first sentence referred to a study focusing on any weight gain and the second reference is to a study which focused on major weight gain only, as our study.

19. Line 235: ‘higher BMI’ - which BMI category are you talking about?

Response:
19. The BMI category has been specified.

20. Line 247-8: ‘...but these variables failed....’ To what are you referring to here? To reference 21 or your study? Please clarify.

Response:
20. This has been clarified. The sentence referred to our study.

21. Line 250: how do these last two sentences add to your point about SEP?

Response:
21. The text has been revised to clarify the points about SEP.

22. Line 252: Why is the weight gain ‘accelerated’? Please justify, or cut this word.

Response:
22. The text has been revised to be clear.

Conclusions
23. Line 321: Delete first sentence as repetitive

Response:
23. The Conclusions section has been revised, the first sentence has been deleted.

References
24. References 1 and 2 are incompletely listed.

Response:
24. References 1 and 2 have been amended.
Tables  
25. Table 1: Please report on the missing numbers for variables in each analysis  
and show what was included in the model. 

Response: 
25. Missing data for variables have been included in the revised text and each model has been 
specified. 

26. Table 2: the Table heading could be more descriptive. Missing values should  
be noted here also. Highlight or indicate statistical significance in some way. 

Response: 
26. Table 2 heading has been revised and missing values given in the revised text. We do not wish  
to overemphasise statistical significance. Statistical significance is given in Table 2. 

Discretionary revisions 

Background 
27. Line 82: delete ‘previous’ 
28. Line 102: delete ‘conclusively’ 

Methods 
29. Line 115: delete ‘to the baseline respondents’  
30. Line 130: replace ‘one’ with ‘level’ 
31. Line 141-142: delete ‘but reflect educational hierarchy in the society’ 
32. Line 144: delete ‘such’ 

Discussion 
33. Line 221: Replace ‘Better’ with ‘More highly’ 
34. Line 244: add ‘in this study’ after ‘socioeconomic positions’ 
35. Line 248: Delete ‘ Also’ to read ‘In a middle-aged...’ 
36. Line 266: delete ‘also’ to read ‘have been more consistent...’ 
37. Line 270: replace ‘previous’ with ‘US’ for United States 
38. Line 276: delete ‘weight’ and add ‘in weight’ after 5kg 
39. Lines 275-7: suggest that you cut the sentence in lines 278-9: as repetitive,  
and join up the remaining short section in 275-7 with the next paragraph 
40. Line 305: delete ‘s’ from affects 

Response: 
27-40. These suggestions have been considered and amendments made where applicable.