Reviewer’s report

Title: Socioeconomic determinants of weight gain: a prospective cohort study

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Reviewer: Petra H Lahmann

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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.

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 …”.

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
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.

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.

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

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

Quality of written English: Not suitable for publication unless extensively edited

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