Reviewer's report

Title: Educational health inequalities in 18,000 Norwegian couples. The Nord-Trondelag Health Study

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Reviewer: Anton Carl Jonas Lager

Reviewer's report:

This is a study of couples’ resemblance in education and health, as well as the association between education and health; both within and between couples. It is a straight-forward paper and it deserves publication. However, a few points need to be clarified;

1. A first motive for studying couples is, according to the authors, that this context has received “scarce attention”. Yet, according to the next sentence; “the health impact of partner’s socioeconomic position has been thoroughly studied”. This seems a bit contradictory.

2. Secondly, the authors state, couple characteristics are likely to be important “above and beyond” individual characteristics. How exactly? It is easy to see how “neighbourhoods, wards, districts“, or even households, can be important over and beyond individuals (e.g. through local governments, policies, physical environments etc). But what type of factors act on this level for couples? What separates your partner’s education from other “individual” factors that you are exposed to?

3. Thirdly, studies on couples are “scarce” according to the authors. But in the next sentence, “the health impact of partner’s socioeconomic position has been thoroughly studied”. This seems a bit contradictory.

4. A fourth point with this paper is to properly account statistically for the correlation of health outcomes within couples. But whether this is a big problem or not is not possible to assess from the study. Showing the results for “Model 1” with adjustment for partners’ education would be illuminating.

5. In the methods section, it is stated that the authors used “cubic splines to prevent any restrictions dependent on the particular choice of categorization of education”. This is very confusing. No models with education as a categorical variable are presented if I understand it correctly – and the models that are presented seem to treat education as a continuous variable (with estimates corresponding to 1 extra year of education)?

6. In the results, one year of own education is compared to “one year increase in the couple average education”. But isn’t this a very unfair comparison as it compares 1 year of education to 2 years: i.e. 1 year increase of the average means either 1 year of own education and 1 year of partner’s education, or that the partner has studied for 2 extra years?

7. Finally, in the discussion it is stated that; “the individual educational gradient
may be overestimated in traditional models” (assuming partner’s education is not a consequence of your own…). But you could easily turn that point around: if individual education has an effect also for people in our close surroundings - we have previously underestimated the effect of education!

Thank you for an interesting paper and good luck finalising it.

Best regards,
Anton Lager

Level of interest: An article of importance in its field

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