Reviewer’s report

Title: The contribution of risk factors to socioeconomic inequalities in multimorbidity across the lifecourse: A longitudinal analysis of the Twenty07 cohort

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Reviewer: Marianna Virtanen

Reviewer’s report:

BMED-D-17-00107 The contribution of risk factors to socioeconomic inequalities in multimorbidity across the lifecourse: A longitudinal analysis of the Twenty07 cohort

The authors examined socioeconomic inequalities in developing multimorbidity across the lifecourse and investigated the contribution of five behaviour-related risk factors, i.e. smoking, alcohol consumption, diet, body mass index (BMI), physical activity to these inequalities.

This is well-written study using adequate methods to examine the study questions, although I think you perhaps promise too much with the title "across the life course", given that the study period is 20 years and the youngest cohort members were 35 years at study entry.

You should provide more information on previous literature. It is unlikely that practically no previous studies would exist. See for example: https://www.ncbi.nlm.nih.gov/pubmed/27258649

BMI cut-points are included in different categories twice (for example, 29.9).

P. 8 line 164: You say the sample was restricted to those who were not multimorbid at previous wave while on p. 7 lines 146-7 you say that explanatory variables age, sex, cohort, and multimorbidity at the previous wave were entered in the model. Which way was it?

Given that population health has improved, how is it possible that multimorbidity increased among the younger cohorts?

Legens for red, green and blue lines in Figures 1 and 2 are not given.

P 10-11: at age 59, never smokers had about a third smaller risk of developing multimorbidity than current smokers, at age 23 the probabilities were 11 % and 7%, again a third smaller among never smokers. So there is no difference?

Why do you need so many figures? I think they are not all particularly informative and it is difficult to see in them the results described in statistical analysis section.

It would be important to know more about multimorbidity; which were the most prevalent diseases? Which diseases were more often prevalent together?
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Unable to assess

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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