Reviewer’s report

Title: Living alone and mortality among older people in Västerbotten County in Sweden: a survey and register-based longitudinal study

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Reviewer: Jussi Tanskanen

Reviewer's report:

The manuscript "Living alone and mortality among older people in Västerbotten County in Sweden: a survey and register-based longitudinal study" is mostly well written paper focusing a current and important topic.

The study is based on a big and good sample, which is one of the many strengths of the paper. There are however some concerns relating to the study and the manuscript needs to be developed.

The introduction needs to be strengthen regarding the health effects of living alone. Now the paper discuss only about the health problems related to loneliness and social isolation and only kind of implicitly hints that living alone is connected to loneliness and social isolation. This link needs to be grounded better theoretically and empirically.

The procedure of obtaining the data needs to be clarified. What measures were obtained from VIP data and what from the register data? If the measures of living alone and confounders were obtained from register data as you state ("we extracted their socioeconomic, living arrangement, and death data from the Linnaeus database") would it be possible to utilize follow up-data on these instead of only baseline information. If only baseline measurement for living alone was utilized, then the limitation of the study design should be discussed as it is possible that living arrangement can change in the long follow-up time.

There are some issues in the measurement section that need rewriting. First, this definition is hard to understand: "(ii) married (or cohabitant with common children) living without children at home".

In addition, the age of the participants is unclear. First, the paper mentions that participants were aged 50 or 60 when entering to the study, but later the paper defines "age group (40-49, 50-59,…, 80+ in the first study and 40, 50, 60 years in the second study). Also, the second study is mentioned here for the first time. The number of the studies needs to be addressed in the introduction.

Acronyms need to be defined in the text: "Individuals who responded positively to at least two of the CAGE questions were categorised as having a risk of alcohol dependency [19]."
Why was factor analysis conducted with chronic disease risk factors? Paper needs to clarify what excess value stems from the factor analysis comparing to modeling risk factors separately and how the limits of low (the lowest 60%) and high (top 40%) load were decided. Have you considered the possibility that some of the chronic disease risk factors are on the causal pathway between living alone and mortality?

It would be good to have some kind of information about how to study population represent the whole population. The percentages of those who are in partnership with children at home (40% men, and 30% women) at the age of 50 or 60 seems a bit high.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**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.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

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