Author’s response to reviews

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

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BMC Geriatrics

Response to the reviewers’ comments

Jussi Tanskanen (Reviewer 1): The manuscript has developed nicely. There are however few minor considerations.

Response: We thank Dr Tanskanen for his appreciation on our revised paper. We have now addressed the few minor considerations pointed out by Dr Tanskanen.

Comment 1. In abstract it would be better to rather present the number of participants than the person-years of observation.

Response: We have now presented the total number of men and women aged 50 and 60 years old who participated in the VIP during 1990-2006. We, however, keep the number of person-years of observation in the abstract as we think that it is important for the readers to appreciate the length of the VIP follow time. We hope this is acceptable.

The sentence reads as follow.
“This register-based study included 22 226 men and 23 390 women aged 50 and 60 years in Västerbotten County who had participated in the Västerbotten Intervention Program (VIP) during 1990-2006, with a total of 445,823 person-years of observation.”
Comment 2. The introduction should state the age-groups that are studied.

Response: We have now added the age groups in the Introduction section.

The sentence in the last paragraph of Introduction now reads as follow.
“In this study, we examine the association between living alone and mortality among men and women aged 50 and 60 years in Västerbotten County.”

Comment 3. There is still ambiguity regarding the age of participants. First you mention: "In this paper, we focused on individuals aged 50 and 60 years…” (also in abstract and conclusions) but later on: "Socio-demographic variables included were: sex (men and women); age group (40, 50, 60 years)…” Are there 40 year olds in the data or not?

Response: We thank Dr Tanskanen for his careful observation on the typo in the paper. We have now removed the description of age 40 years old in two instances.

Under Study Design and Population section:

“In this paper, we focused on individuals aged 50 and 60 years who had participated for the first time in the VIP during the years 1990-2006 (n= 45,616, with a total follow-up time of 445,823 person-years).”

The 1st sentence in the Results section.

“We analysed a total of 45,616 individuals aged 50 and 60 years who had first participated in the VIP during the years 1990-2006, with a total of 7,019 deaths observed within 445,823 person-years of observation.”

Comment 4. I think the Discussion or Results would be a better place for discussion about sensitivity analysis than Methods section.

Response: We had indeed put the presentation of the sensitivity results in the Results section. We think that the presentation is in-line with the suggestions from Dr Tanskanen already.

In the Methods section (see the last paragraph), we only state two sentences about the sensitivity analysis as following.

“As a sensitivity analysis, we also conducted a similar analysis for all population age 50 and over who lived in the Västerbotten County in 1990 and followed them until death or censored in October 2015. For this analysis, we did not control for chronic disease risk factors and access to social capital as this information were not available in the register data.”

In the Results section (see the last paragraph), we have one full paragraph presenting the results of the sensitivity analysis.
“The analysis on the whole Västerbotten population age 50 and over also showed a similar higher risk of mortality among individuals who lived alone with a hazard ratio of 1.32 (95% CI=1.26-1.37) among men and 1.20 (95%CI=1.14-1.26) among women (Appendix 3), which were quite similar to the hazard ratio observed among the VIP participants when also controlled chronic disease risk factors and access to social capital.”

Comment 5. You wrote in the introduction: "By including various covariates in the analysis, we have explored the extent to which the association between living alone and mortality can be explained by lifestyle factors, socioeconomic position, ill-health and access to social capital.", but interpreting and discussion of this topic is lacking. Because you don't perform mediation analysis it might be wise to change this sentence.

Response: We agree with Dr Tanskanen about the description of “explained by” might be misunderstood as a mediation analysis. We have now revised the sentence as the following.

“By including various covariates in the analysis, we have explored the association between living alone and mortality after adjusting for lifestyle factors, socioeconomic position, ill-health and access to social capital.”