Reviewer's report

Title: Risk factors of functional disability among community-dwelling elderly people by household in Japan: a prospective cohort study

Version: 3  Date: 9 December 2013

Reviewer: Danan Gu

Reviewer's report:

While I have enjoyed reading the paper, I do have several crucial comments to share with the authors

1. Abbreviations should be spelt out in abstract.
2. Abstract, results: "Risk factors of functional disability are different according to households." should be dropped. Also in this section, "In the spouse-only group,..... were significantly associated with functional disability" is awkward and should be rephrased. In other words, this section should be entirely rewritten.
3. Abstract, conclusions: The first sentence should be rephrased.
4. Background: very first sentence should be rephrased.
5. Background: There is only one sentence about the association between living arrangements (household structure) with admission to institutional care. There are a plenty of studies in the literature on elderly living arrangements and subsequent functional disability in both developed and developing countries. The authors need to review them.
6. Background: The second paragraph is less relevant to the topic. I would suggest shortening it and adding more literature on living arrangements and functioning disability. Of course, in that case, the authors need to write some new sentences to make smooth transitions to the third paragraph.
7. Method Section, Subjects and settings: In the first sentence, please specify the baseline year(s). It is better to note them here instead of noting them in the next paragraph.
8. Method Section, Subjects and settings: In the last sentence, what is the age range of the older population here refers to? (It seems that it does not refer to 70 years old or order.)
9. I am not sure whether all episodes of functional disability were collected in the survey. If no, there would be an underestimation about onsets of functional disability. If yes, then some or perhaps many participants should have multiple episodes of onset. I just wonder how the authors adjust the intrapersonal correlation between episodes for the same person (if there were multiple episodes). As far as I know, SPSS does not have such a command to adjust intrapersonal correlations in survival analysis. The authors have to find some alternative software to perform their analyses.
10. Cox regression analysis is commonly used in event history analysis. However, there is a strong assumption for all variables in Cox regression. That is, the relative hazards (of onset of disability) of all categories of a variable in the model are assumed to change proportionally. I just wonder whether the authors have tested its proportionality assumption of each variable used in Cox regression. If there is a violation, the authors may need to apply parametric hazard regression. In my knowledge, there is no parametric hazard regression in SPSS. The authors may need to consider using other statistical packages. A more relatively detailed description about analytical strategy should be presented.

11. Results: The second paragraph should note the covariates as did in Table 2.

12. It is unclear to me what new contributions of this study will add to the existing literature comparing to previous studies (4) and (6). To be a new research paper, it must have sufficient new contributions to the previous studies. The authors need to provide some descriptions about the difference between the present study and the earlier two if they are based on the same data survey. If these two studies used different data sources, it would be good for the authors. However, in that case, the authors need to explicitly state it clearly when they compare the current study with these two.

13. Throughout the manuscript, the authors have not clearly defined the measurement of functional disability, although there are descriptions on Pages 9-10. It is unclear to me which it is a single indicator or a set of indicators. According to Table 2, it should be a single variable, whereas there is no any clue for Table 3. In any case, the authors need to clarify them and explicitly define them.

14. Table 3, what does the symbol "-" mean?

15. English is poorly written. The paper needs editing thoroughly.

Major compulsory revision.

**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