Author’s response to reviews

Title: The role of children and their socioeconomic resources for the risk of hospitalisation and mortality – A nationwide register-based study of the total Swedish population over the age 70

Authors:

Anna Meyer (anna.meyer@ki.se)
Hannah Brooke (hannah.brooke@ki.se)
Karin Modig (karin.modig@ki.se)

Version: 1 Date: 15 Mar 2019

Author’s response to reviews:

Reviewer reports:

A Miyawaki (Reviewer 1): Thank you for giving an opportunity to review this paper. The association between the number of children and mortality and the association between children's education/income level and mortality in old age have been investigated in several studies. In this context, the present study used hospitalization, readmission, and mortality after admission, as well as mortality, as outcomes. This attempt may help us understand part of the mechanism in the effect of having children on mortality. However, the reviewer thinks there are some problems as indicated below in the interpretation of the results.

Major comments

1. Throughout the text, the authors regard hospitalization as the onset of diseases. Is there any study that validates this interpretation in this Swedish cohort? If not, the reviewer does not agree with this interpretation. Hospitalization is a result of several factors including onset of disease, the kind of diseases, social supports, knowledge of health, available financial resources, etc. For instance, those who did not have children would not or could not go to the hospital until the disease conditions become severely worse because children cannot take them to the hospital. In this case, the hospitalization should be regarded not as the indicator of diseases onset, but as lack/insufficiency of social support. Even though the authors know and refer to this problem in the Discussion section, the reviewer recommends that the authors should regard hospitalization as just hospitalization, not the onset of diseases throughout the text.

Authors response: Thank you. The reviewer is correct that hospitalization is not the same as disease onset. Even if we believe hospitalization is a better proxy of disease onset than
lack/insufficiency of social support, since many old individuals in Sweden arrive to the hospital without assistance of their children, for example by ambulance, or has an alarm system in their home. Also, by requiring the hospitalisation to be at least 2 nights we capture rather severe diseases for which the vast majority reach hospital in Sweden (e.g. myocardial infarctions, stroke, hip fractures, respiratory problems, pneumonia etc.). We have, however, taken the reviewers opinion into consideration and changed the manuscript to talk about hospitalisations instead of disease onset.

However, we have still kept the interpretation that it seems to be a larger effect for survival than for disease onset, if hospitalisation can be seen as a proxy for disease onset. And we have added to discussion that this is not necessarily true if parents are more likely to be hospitalized than childless.

2. In this context, the author can refer to the increasing effect of having children on hospitalization might be explained by more availability of social supports or resources from children (for example, in P9, L204-207)

Authors response: Thank you. We have taken this into consideration as a possible explanation in the discussion, specifically at the places the reviewer points out.

3. The argument in P10, L209-211 is saying too much. The survival after hospitalization would depend on the cause of admission. In this case, the selection effects might still explain the survival after hospitalization via the cause of hospitalization.

Authors response: Thank you. We agree and have edited this section.

4. To refute the argument stated above (point 3), if possible, the authors can consider focussing on hospitalization with diagnoses of some specific diseases (for instance, acute coronary syndrome or cerebral infarction). This attempt will also resolve the point 1 in part because hospitalization with diagnoses of severe acute diseases are less likely to depend on social supports, knowledge of health, available financial resources compared to the hospitalization of chronic diseases.

Authors response: Thank you. We agree that it would be very interesting to study specific diseases, but it is unfortunately not possible for this study.
Minor comments

In No. 21 of the reference list, "Social Science & Medicine" appears twice.

Authors response: Thank you, we have corrected this.

Yoshiharu Fukuda (Reviewer 2): The manuscript examined the role of children and their socioeconomic status for the hospitalization and mortality. It used nationwide large-sample data and analyzed the data suitably. The result was interesting and was discussed and interpreted well. I proposed only a few minor points for revision.

1. Table 1: Asterisks for Married, Index person's education, and other should be explained.
   Authors response: Thank you, we now explain this.

2. Table 2: The value should be rounded to one decimal places. Horizontal lines could be drawn over and below the line of "Adult children's education level".
   Authors response: Thank you, we have corrected this.

3. Figure 1 and Figure 2: The meaning of vertical line (probably 95%CI) should be mentioned. And the reference should be clarified.
   Authors response: Thank you, we now explain this.