Author's response to reviews

Title: Long-term prediction of changes in health status, frailty, nursing care and mortality in community-dwelling senior citizens - results from the Longitudinal Urban Cohort Ageing Study (LUCAS)

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Author's response to reviews: see over
Dear Ms Jose

Herewith we resubmit our manuscript MS: 1550990069145053 “Long-term prediction of changes in health status, frailty, nursing care and mortality in community-dwelling senior citizens - results from the Longitudinal Urban Cohort Ageing Study (LUCAS)”.

We have made the required changes and added page and line numbers and removed page breaks in our manuscript. We also have edited the language of the paper and improved its style. Due to time restraints and due to the comment of Dr. Ruth Hubbard, that “The paper is well written […],” however, we did not employ any professional language editing services. If you feel that professional editing is still needed, please let us know.

We thank both reviewers for many valuable and substantial comments which helped us to improve the manuscript. Below we have commented on each single point of each reviewer, and have indicated how we implemented each suggestion.

Referee 1: Report

Major concerns:

1. Introduction: A major concern I have is that the (expected) added value of the Functional Ability Index over other available frailty screening instruments such as the TFI, GFI, SPQ, and TMIG is not described clearly in the introduction. I would advise the authors to emphasize the (expected) added value of the F index in the introduction to emphasize the relevance of their study.

We addressed this by adapting the text on page 4, line 26 – page 5, line 4.

2. Introduction, research questions: I think that the readers understanding of the manuscript could be improved by specifying the research questions (e.g. add to research question 1 to what criteria you will compare the FA index to determine whether it differentiates between robust, pre-frail, and frail people, add to research question 2 which health measures you are focusing on, add the timeframe for predictive value to research question 3).

This point was addressed by adapting research questions 2, 3 and 4, see page 5, lines 12-16.

3. Methods, description of FA index: The authors state that they operationalized the frailty phenotype and added several resources to create the FA index. When I look at the FA index in table 1 I do not understand how the five criteria of the frailty phenotype were incorporated (e.g. which items in the FA index represent exhaustion and weakness?).

We do not understand the problem of the reviewer as on page 6, line 26 – page 7, line 1 the sequence of the Fried criteria is given; the same sequence is followed in Table 1.

In addition risk factor 5 and recourse factor 2 of the FA index seem to be measuring the same thing. This seems strange and the authors only report on it in the discussion (where
they present new spearman rank results regarding this factor which should be presented in the results instead of the discussion section).

We moved the discussion of risk factor 5 and resource factor 2 from the discussion to the methods section, see page 7, lines 7-9. The spearman rank correlations were moved from the discussion to the results section, see page 8, lines 21-23.

In addition, the authors explain that disability was not incorporated in the FA index but when I look at the items that it consists of it seems that several items relate to mobility disability or IADL activities. It would help if the authors would add a definition of disability to the manuscript.

Commonly, disability is defined as needing help in basic activities of daily living (B-ADL) and not in instrumental activities of daily living (I-ADL). For references see Figure 4 of our paper.

The authors have classified participants into categories: robust, prefrail 1, prefrail 2, and frail. The purpose and meaning of differentiating between prefrail 1 and 2 is difficult to understand.

We agree with the reviewer and thank for this very valuable comment. We have improved our terminology accordingly; see e.g. page 7, lines 11-19.

4. Methods, statistical analyses: The authors do not describe in the methods how the health measures/outcomes/end points were operationalized which makes it difficult to interpret the outcomes.

We do not understand the problem of the reviewer as on page 6, line 13-22 the operationalization of need of nursing care is described as well as the mortality endpoint. Health measures were obtained from the extended questionnaire described on page 6, line 13-14. This questionnaire is based on validated questions only, see page 7, line 7.

In addition no information is provided on the handling of missing data.

We thank the reviewer for this suggestion and have adapted the statistics section accordingly, see page 7, line 26 to page 8, line 3.

5. Results, a) mortality & Stability and transitions: The authors differentiate between preFrail 1 and preFrail 2 in the paragraph a) mortality and combine these 2 in the stability and transitions paragraph. I think this is somewhat confusing and the underlying reason for splitting/combining is not really clear.

We improved the description of the FA index including the above, see page 7, line 18-19.

6. Discussion, first paragraph: the authors state here that the aim of this study was to develop a workable self-administered FA index which was not stated as a goal or research question in the introduction. If this was the aim, this should be clearly described in the introduction.

We agree and have changed the wording of the introductory paragraph of the discussion accordingly, see page 10, lines 17-22.

7. Discussion: I think readability of the discussion could be improved by briefly stating the purpose of the study followed by a short summary of the major results and after that start relating these finding to earlier work. Now, the results of this study and previous work are somewhat intertwined.
We agree with this valuable suggestion and have inserted three sentences qualitatively describing the major results, see page 10, line 24 to page 11, line 2.

8. Discussion, paragraph 5: The authors state that the FA index is hardly comparable to other frailty indices and models because resources are integrated in the index. However, the predictive value of the FA index can still be compared to the predictive value of other frailty screening instruments and therefore I do not understand this statement. The authors could make try to provide some insight in this issue by comparing their work to the paper by Daniels et al that they refer to (REF nr 21).

We agree with the need for such comparisons. This would involve a systematic review of all known indices and their thorough assessment. However, this was not the aim of our paper.

9. Conclusions: the main conclusions (especially 1 & 2) presented in the paper do not relate to the research questions that were studied in the manuscript and are therefore not supported by the data and analyses presented in the paper.

Our conclusions are based on the findings of this paper and constitute an interpretation of these in the context of public health. However, we have removed the old conclusion 1, see page 14, line 14.

Minor:
1. Structure: In the methods section the authors refer to several figures which show results of the analyses. This information should be moved to the results section. In addition the tables and figures are not numbered in order of appearance.

We have adapted the structure according to the suggestion of the reviewer, see whole manuscript.

2. Language: I think that the paper could benefit from using proof reading services.

We have adapted some of the language. However, we did not use a proof reading service, as in the view of reviewer 2, “The paper is well written […].”

Referee 2:
http://www.biomedcentral.com/imedia/4294690601493503_comment.pdf

Reviewer: Ruth Hubbard
Reviewers report:

Impression
The aim of this study was to derive a Functional Ability Index: a self-reported questionnaire operationalizing the Fried phenotype plus health resources. Cross sectional associations of the FA index are described and, more interestingly, it is related to institutionalization and death over 6 years of follow up.
The paper is well written and current literature is soundly referenced. The cohort is moderately sized and participants comprehensively evaluated. The rationale for the study is clear. The study does have significant limitations, but these are addressed in adequate detail by the authors.

We thank Dr. Ruth Hubbard for perceiving the value of our study.

Major Points
The terminology PreFrail 1 (risks plus resources) and PreFrail 2 (neither risks nor resources) is confusing and difficult to follow. Since neither group is archetypally "pre-frail" (with 1 – 2 Fried criteria), the authors could consider renaming these 2 categories.

We agree and thank Dr. Hubbard for her very valuable suggestion to rename the classes preFrail1 and preFrail2. We have improved our terminology accordingly and explained the differences between Fried's criteria and our classification; see e.g. page 7, lines 11-19.

On behalf of all authors
with kind regards

Ulrike Dapp