Reviewer’s report

Title: Predictive performances of four frailty screening tools for community-dwelling older people

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Reviewer: Emiel Hoogendijk

Reviewer's report:

This paper investigates the predictive performance of 4 frailty screening instruments, which is an interesting approach. The main problem of this paper, is that the scope is rather limited (only one outcome measure, which is poorly operationalized). I have several comments for the authors to consider:

1. I have major concerns regarding the research questions and the chosen approach. The second research question "investigate risk factors for frailty" is not very logic, and is not introduced in the Introduction section. And it is very strange that for this second research question, disability is used as the frailty measure. So, first the authors study if frailty measures predict disability, and later they study risk factors for frailty with disability as frailty measure. And the 4 frailty instruments were included as risk factors to predict frailty. That makes no sense in my opinion.

2. There are some flaws in the design of the study. I do not understand why only one outcome measure was used, disability? There were no other outcomes? Such as mortality, institutionalization? Disability is just one of many outcomes of interest in primary care. Also, why was the outcome measured after 1 year OR after 2 years. That is quite a big difference, and should not be combined in one measure.

3. This study includes, as far as I understand, only 1159 people with follow-up data. All the analyses are based on this sample. So, I do not understand why in text and in Table 1 the characteristics of the total FreLE sample are described (1643 people). The authors should describe this flow in the Methods section, and continue with only these 1159 people. Please remove the first two columns from Table 1 (the 1643 and 1315 people) and from the text, because they are not relevant for this study. Provide in the Methods section non-response analyses in which you compare 1159 participants with the characteristics of the 156 people lost to follow-up.

4. The statistical approach is not clear. Why did the authors choose to use Cox regression when the outcome is measured at one fixed time moment? Logistic regression would be more logic. No details are given about incident disability at 12 and 24 months.
5. For the predictive ability of the frailty instruments, it would be better to combine information from association models and diagnostic accuracy models. So, the AUC analyses should be combined with univariate logistic regression analyses, then you can see if associations were significant at all or not with these low AUC values. And later one could continue with multivariable analyses.

6. A justification for the choice of these specific 4 frailty instruments is missing. They include instruments based on physical frailty and broader definitions (including mental/cognitive/social items). I miss the connection with a definition of frailty: no clear definition is given in the introduction. Why were these instruments chosen, and not some other more common used instruments (such as the frailty index)? Now these 4 instruments come a bit as a surprise in the introduction and the Methods section. For example, the aCGA, that is not really an easy instrument for primary care, and also not very often used. The argument "we chose these tools because of their earlier use" (page 4) is not really a strong argument. Also, the Buta reference cannot be a justification, because it was published 5 years after the data collection of the FreLE study.

7. The frailty instruments should be described in detail. For example, for Fried`s frailty criteria: which instruments/questionnaires were used, which cut-offs were used etc.? Were original measures adapted or not? Who did the translation of the GFI and the other instruments from English? Was the GFI validated in French? Or was it assessed in English?

8. The prevalence of frailty in the abstract, results section and discussion should be based on the sample of 1159 people. Now, the prevalences of the 1643 people are reported, which is not the sample included in this study. Please change this.

9. Please add a reference for using 0.7 as indicator for a "good" AUC.

10. None of the measures in this study had missing values? That is not very common in older populations.


12. The Introduction of the paper is difficult to read. Please revise the text, and make it more fluent. Now, there is often totally no connection between the sentences in one paragraph.
13. Remove the paragraphs of the "risk factors for frailty" from the Discussion, as these are risk factors for disability, not frailty (disability was used as frailty indicator in this study, see comment no.1).

14. Abstract: a) the first sentence of the Background misses the word "frailty", b) the abstract does not mention the outcome measure, what will be predicted by frailty?, c) the conclusion of the abstract is a bit of a circular argument, it repeats the research question. Try to formulate a conclusion that builds on the findings of this study, or referring to the results, d) It should also be mentioned in the Methods section of the abstract that only fully independent or mildly disabled people were included in the analyses, e) Remove the numbers from the results section of the abstract which are not relevant: the 209 moderately and 119 severely disabled are not included in the study and should also not be mentioned here, f) It is not completely clear for me if the authors are only interested in frailty screening in primary care, if that is the case, mention that in the abstract.

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?
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No

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I am able to assess the statistics

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