Reviewer's report

Title: Determinants of long-term physical functional status after critical illness: a prospective, longitudinal, multicentre trial

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Reviewer: Chris Winkelman

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1. Is the question posed by the authors well defined?
I believe the question is posed in the title but still does not match the “goal” in the abstract/last sentence of the introduction. The goal was not to assess patients who have a poor long-term outcome but perhaps to identify patient or clinical characteristics that are associated? either change scores in function (calculated as the difference in ICU admission score minus score obtained 24 months after ICU discharge) or some other value. See my comments below. If the other value is to identify characteristics that are associated with decrements in physical function, then all subjects who had increments over the 24-month period should be excluded or analyzed separately.

2. Are the methods appropriate and well described?
The figures were not included in the pdf of the manuscript, so it is difficult to follow some of the data reporting. The rational for survival analyses followed by predictive MV regression is not provided.

3. Are the data sound?
The authors report that they used multivariate analyses to identify factors that predict/were associated with a “decline in function” (assuming decline of function). If that is so, then were participants who did not have a decline in function excluded from analyses?
Further, the authors state that the report of function could be from different participants at ICU admission versus 24 months later and this is a potential problem—variance could be from the variation of patient self-report and proxy report. How many pairs of data were not from the same participant?

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Yes, the numbers add up and the CONSORT figure is great.
However, in the discussion the authors imply they collected HRQoL data (under Limitations…”HRQoL information was often provided by a family member”) neither the format/tool of collecting thesis data, nor the results of HRQoL are reported.

5. Are the discussion and conclusions well balanced and adequately supported
by the data?

I am not sure why the authors include information about anxiety, depression, sleep disorders and PTSD—none of these are relevant to their findings of physical function. I appreciate that they are building a case for capturing physical function 24 months post-ICU discharge but I think they may want to use Herridge and her groups’ progression of studies of ARDS survivors at 1-5 years post ICU discharge to explain how physical function changes over time and that 2 years is a reasonable period to obtain the possibility of “good outcomes”.

I am not sure why the authors lead with the result of mortality when they build the case that function is the goal. Mortality is a side issue. It would seem that the patient characteristic of age is the important variable (greater age, worse physical function outcome) and that clinical factors of neurological injury, trauma, and prolonged respiratory failure influence physical function decrements. As well, those patients with either a medical diagnosis or an unplanned surgical intervention were more likely to have reduced physical function after ICU.

I am also not sure why the authors return to Health Related Quality of Life (HRQoL) in the discussion. They make a nice argument in the introduction that function is a key indicator of HRQoL. Perhaps a sentence would be sufficient to say there may be other indicators of wellness (e.g., mental health status, cognitive intactness) that are as important to examine in terms of understanding factors that influence self-reported HRQoL or even physical functional status after critical illness.

6. Are limitations of the work clearly stated?

Please place this content in a separate paragraph. I do not understand the point of (c) under limitations—are the author’s saying they did not collect HRQoL data and this non-collection is a limitation of the study? Or are they saying that physical functional status does not reflect all aspects of HRQoL? If the latter, then (c) is not a limitation as the authors did not wet out to collect HRQoL.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes

8. Do the title and abstract accurately convey what has been found?

See my comment under #1 above.

9. Is the writing acceptable?

No. These authors need an English editor.