Reviewer's report

Title: Operationalizing Frailty among Older Residents of Assisted Living Facilities.

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Reviewer: xiaowei Song

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This study evaluated the utility of frailty criteria as a feasible and valid measure of vulnerability in an at-risk older adult population. Over nine hundred assisted living residents from the Alberta Continuing Care Epidemiological Studies cohort were examined, applying two definitions of the frailty criteria that was developed based on a cohort of community-dwelling seniors; i.e., the original cut points as used in the Cardiovascular Health Study and that derived for this particular at-risk population. Primary outcome measures included one-year mortality and hospitalization. The authors reported that based on the original CHS definition, the frailty prevalence was 48% and the adjusted one-year risk ratios were 1.89 for death and 1.43 for hospitalization. However, such frailty criteria could only be assessed for 60% of the study sample. The modified definition, on the other hand, improved the feasibility by about 20%, but resulted in a more or less lower predictive accuracy for the outcomes. Based on this finding, the authors claimed that the CHS criteria for frailty might not be feasible and valid to understand the vulnerability in the at-risk population.

I think this is an important study. The authors have carried out careful analyses and presented data in detail. I would like to make a few comments about the work.

1. Considering that many assistant-living older adults could have various extents of health problems and be at a relatively high risk for adverse outcomes, it would not be surprising that a model based on just a few health items could not be more accurately predict individuals for outcomes within a short period of time. This should be discussed.

2. I am not sure it is a good or even a valid idea to adjust an established standard, simply to better represent the norms of the study sample at hand. One obvious drawback of such adjustment would be a reduced usefulness of the product out of it. It is common place that at-risk population would be frailer. In my view, a valid measure of frailty would allow comparisons the differentiation of frail status among populations, instead of being restricted to discriminate people in certain specific settings.

3. I would think improved feasibility of a frailty measure may be better achieved by allowing inclusion of a less-restricted chose of health items in the frailty criteria. I was wondering whether the frailty index approach might be applied to
this population (e.g., Rockwood and Mitnitski, 2007). The frailty index approach allows the use of multiple health measures of different domains to produce a continuous assessment of frailty that often does not require a subjective cut-point to apply. The authors may want to introduce/discuss this option in the paper and, even better, to test it.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.