Reviewer’s report

Title: Measuring frailty in clinical practice: a comparison of physical frailty assessment methods in a geriatric out-patient clinic.

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Reviewer: Brian Buta

Reviewer's report:

The manuscript by Dr. Pritchard and colleagues is a useful contribution to the literature on frailty assessment in the clinical setting. The authors have chosen the Short Performance Physical Battery (SPPB) and the physical frailty phenotype (PFP), two commonly used tools for measuring physical function and frailty among older adults, and tested their feasibility in a standardized reproducible manner. Most studies to date that have assessed the feasibility of frailty assessment in a clinical setting describe: a) time to complete the assessment, b) resources needed for the assessment, and c) whether the assessment includes objective/performance measures, self-reported items or a mixed approach. The common perspective is that more feasible frailty instruments require less time and minimal resources and include self-reported measures.

The authors describe frailty as being "characterized by a loss of energy, physical ability and cognitive function, which results in vulnerability to disease and worsening of health" and as "a multidimensional concept involving many physical, psychological and social aspects of health." However, no clear definition of frailty is provided. A 2013 consensus effort led by Dr. Morley defined physical frailty as "A medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual's vulnerability for developing increased dependency and/or death" (Morley, J Am Med Dir Assoc, 2013). This type of conceptual definition may be well worth including, given that the tools used and compared in this study focus on physical domains of frailty.

Regarding other aspects of health, the majority of the participants in this cross-sectional study have cognitive impairment. It would be useful to know the percentage of participants who were cognitively impaired among those who were non-frail, pre-frail and frail by SPPB, by PFP or by both. In the discussion, the authors write that "studies suggest [that cognitive impairment] may contribute to the development of frailty." This is true but it should be noted more research is needed to understand the directionality of the relationship between frailty and cognition (Robertson, Ageing Res Rev, 2013).

Additionally, a version of Table 1 that also includes columns for SPPB frail/pre-frail/non-frail and PFP frail/pre-frail/non-frail would be helpful in better understanding the differing or similar characteristics of the participants as categorized by these tools.
In this study the authors examine common feasibility factors (time for completion, resources required, type of measures) and additionally use published strategies in order to attempt a more in-depth assessment of feasibility. Their framework for testing feasibility is strengthened by including the percentage of participants who agree to attempt each assessment, and by surveying clinic staff about their views, attitudes, and intentions related to frailty assessment in this outpatient clinic. The resulting feasibility rates are high (+90% attempted for both tools) and it is interesting to learn that the main reason for participants' declining is because they want to limit the time of the clinic visit.

The authors provide sufficient summaries of the time to complete each assessment, the resources needed, and the items assessed. Regarding the time to complete and items assessed, the authors write that the frailty phenotype takes longer to complete largely due to the physical activity questionnaire. The author's intent to measure phenotypic frailty exactly as specified by Fried et al. (Fried, J Gerontol A Biol Sci Med Sci, 2001) is commendable, as it facilitates cross-study comparisons. But it should be noted that Eckel and colleagues validated an abbreviated six-item version of the eighteen-item physical activity questionnaire and determined it to be an efficient surrogate (Eckel, Aging Clin Exp Res, 2011). The use of the shortened questionnaire would likely reduce the PFP assessment time.

For the survey questions, it was unfortunate that not all clinic staff completed the survey, given the small N=11. However, the viewpoints of the clinic staff about frailty assessment and barriers, import, intent to utilize, and alignment with organizational objectives is valuable. In general, "buy in" from the clinic leaders and staff should be considered when introducing frailty assessment to the clinical setting. The value-added of frailty measurement must be clearly articulated for a given clinic, and strategies to manage pre-frail and frail patients need to be determined.

In terms of correlation between frailty classifications using the SPPB and the PFP, the authors used kappa statistics to test agreement. The authors describe their comparison findings for categorizing participants as frail (0.488 [0.082], p<0.001) and pre-frail (0.272 [0.084], p=0.002) as having "good" agreement, as well as "strong" and "high" agreement. With the kappa statistics presented, it may be more appropriate to interpret these instruments as having fair to moderate agreement (Vierra & Garrett, Fam Med, 2005).

Finally a few questions and minor items of note:

* Per the inclusion/exclusion criteria, were any participants included who did speak English but had a translator present?
* In the methods section that describes the SPPB, a sentence in the second paragraph says that "individuals who scored ≤9 on SPPB are classified as frail;" I believe this should be revised to "≤6."

* References for Fried 2001 and Bouillon 2013 are included twice.

Thank you for the opportunity to review this interesting manuscript.

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If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
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