PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Feasibility, Acceptability and Diagnostic Test Accuracy of Frailty Screening Instruments in Community-Dwelling Older People within the Australian General Practice Setting: A Study Protocol for a Cross-Sectional Study
AUTHORS	Ambagtsheer, Rachel; Visvanathan, Renuka; Cesari, Matteo; Yu, Solomon; Archibald, Mandy; Schultz, Timothy; Karnon, Jonathon; Kitson, Alison; Beilby, Justin

VERSION 1 - REVIEW

REVIEWER	Jennifer St. Sauver Mayo Clinic USA
REVIEW RETURNED	24-Apr-2017

GENERAL COMMENTS	Abagtsheer and colleagues describe a detailed plan to study the utility and acceptability of assessing frailty in an Australian geriatric population. The authors note that there is substantial controversy regarding the accuracy of existing frailty tools, and that there is limited data in diverse populations. The study is needed and important. Minor questions: 1. Authors briefly allude to planned efforts to recruit participants with limited English proficiency. It is not clear as written whether they will specifically target persons who speak English as a second language with recruitment letters written in the language of interest. It is also not clear whether they are trying to recruit a population large enough to conduct specific sub-analyses. Please clarify. 2. Sorting out which measures best capture frailty and which are most acceptable is an important question for future frailty research. However, any measure which must be actively administered will likely be more time-consuming and expensive to obtain than measures which may be obtained passively via medical records. The authors could also consider comparing the results obtained from the planned study instruments to a composite score (e.g. Rockwood frailty index).

REVIEWER	Lia Paula Nogueira Sousa Fernandes Faculty of Medicine - University of Porto, Portugal
REVIEW RETURNED	09-May-2017

GENERAL COMMENTS	The proposed protocol aims to produce data on the feasibility, acceptability and test accuracy of various frailty screening

	instruments within General Practice settings. To achieve this, two substudies are proposed. This is an important and updated research topic, considering not only the negative health outcomes associated with the frailty syndrome, but also the lack of consensus regarding assessment tools. The overall manuscript fits the BMJ protocol guidelines. The introduction is well structured, with important data on frailty prevalence, as well as an important and brief overview of the Australian elderly care. However, some aspects should be clarified. 1. According to BMJ guidelines the dates of the study must be included in the manuscript. 2. The emailed invitation could increase the attrition rate of this study. This choice needs to be taken into account for sample size calculation. It also needs some contextualization (like previous studies, education attainment of Australian elderly population…). 3. The psychosocial instruments should be part of the overall face-to-face protocol in order to avoid missing data and to minimize the bias of results. The rationale for choosing these psychosocial measures also needs to be indicated. 4. The number of psychosocial measures is clearly excessive when self-administered is planned. Strategies to warrant response rates should be included. 5. It is not clear how the psychosocial data will be included in the overall study. 6. An estimation of the protocol duration should be included to allow the assessment of viability. Moreover, considering the population, the possibility of dividing the screening session, should be guaranteed. 7. The authors should indicate the selection method planned for inter-rater reliability testing (page 15). The same would be expected for the selection of 10% of the sample that will answer the acceptability questionnaire (page 16).

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 comments:

We thank Reviewer 1 for her suggestions, which have clarified our approach, especially with regard to recruitment of participants, and for her positive comments regarding the need for and importance of our study.

1. Authors briefly allude to planned efforts to recruit participants with limited English proficiency. It is not clear as written whether they will specifically target persons who speak English as a second language with recruitment letters written in the language of interest. It is also not clear whether they are trying to recruit a population large enough to conduct specific sub-analyses. Please clarify.

In response to Reviewer 1's request for clarification, we have reworded this section (Under Eligibility/Inclusion Criteria and Exclusion Criteria) to include those with "limited" rather than "low" English proficiency, and have included a stipulation that those with insufficient English to participate will be excluded. In addition, we have removed commentary about employing translators and interpreters, in recognition of the fact that translation of the screening instruments into languages other than English will likely invalidate them. We have no aim to conduct a sub-analysis based on non-English speaking participants, but rather simply to ensure that such participants are not unduly excluded, and believe that the revised wording better reflects our intentions.

2. Sorting out which measures best capture frailty and which are most acceptable is an important question for future frailty research. However, any measure which must be actively administered will likely be more time-consuming and expensive to obtain than measures which may be obtained passively via medical records. The authors could also consider comparing the results obtained from the planned study instruments to a composite score (e.g. Rockwood frailty index).

We acknowledge Reviewer 1's comment that passive methods would under ideal circumstances be simpler than conducting face to face testing. However there are a number of reasons why we have opted not to follow this path (in part related to high variability in the quality and consistency of Australian electronic medical records), and so have included a paragraph within the 'Background/ Australian Care Context and Purpose for Screening' section explaining our justification for this decision (relevant section has been highlighted in yellow in the revised manuscript).

We were slightly confused by the reference to comparing results with a composite score; as this is what is intended by the inclusion of the Adelaide Frailty Index as a reference standard (highlighted in yellow within the manuscript). The Adelaide Frailty Index is a variant of the original frailty index methodology proposed by Rockwood et al and adheres to the widely accepted method for constructing a frailty index as set out in Searle et al (2008), as noted in the paper. As stated in our original cover letter to the Editorial Team, we are amenable to listing the items included within the Adelaide Frailty Index as a Supplementary Appendix if required.

Reviewer 2 comments:

We thank Reviewer 2 for her comments, which have substantially improved the study design, particularly with respect to the inclusion of psychosocial factors, and for her positive feedback on the Introduction to our study.

1. According to BMJ guidelines the dates of the study must be included in the manuscript.

We apologise for the omission and have now amended our manuscript to read 'The study will be conducted between April 2016 and June 2018', in the section immediately following the heading 'METHODS AND ANALYSIS'.

2. The emailed invitation could increase the attrition rate of this study. This choice needs to be taken into account for sample size calculation. It also needs some contextualization (like previous studies, education attainment of Australian elderly population…).

We wish to clarify that the invitation to participate will be mailed via postal mail, rather than emailed to participants; this is specified under 'Recruitment'. Hence we believe there is less need for contextualisation or justification of the recruitment method than might be required for an emailed approach. However, for purposes of clarity we have added a sentence under the 'Recruitment' section specifying that "recruitment will conclude upon successful achievement of the required sample size (n=120 from each practice)". This sample size 'builds in' a buffer of 25% above our required sample size which we believe will be sufficient to cover any attrition in the short period between recruitment and attendance at the screening appointment. We do acknowledge that the section required clarification and it has been reworded, as specified under sub-heading 'Statistical Methods/Sample Size'.

3. The psychosocial instruments should be part of the overall face-to-face protocol in order to avoid missing data and to minimize the bias of results. The rationale for choosing these psychosocial measures also needs to be indicated.

We acknowledge that collecting the psychosocial instruments on the same day as the frailty measures would be preferable to avoid missing data and the time lag in measurement. Consequently, we have moved collection of the self-complete questionnaire to occur immediately prior to commencement of the screening appointment at the practice rather than being mailed out to the patient with the invitation to participate.

In terms of the rationale for the inclusion of specific individual psychosocial measures, we acknowledge that this was not well justified in our original submission. In response to Reviewer 2's feedback we have consequently supported our selection of individual measures on the basis of more evidence drawn from the literature under sub-heading 'Psychosocial Instruments', and the corresponding section has been substantially rewritten in order to reflect these changes.

4. The number of psychosocial measures is clearly excessive when self-administered is planned. Strategies to warrant response rates should be included.

We accept that a large number of psychosocial measures were intended to be collected in the original protocol, with the aim of maximising comparability with a number of key prior studies in this space. We did have the opportunity to trial the survey on an informal basis with a small number of older patients from a local general practice known to us (n=5). The feedback received from these patients was that the survey as originally conceived was quite manageable within approximately 30 minutes and was perceived positively.

However in response to Reviewer 2's comments we have removed two measures altogether from the questionnaire; the UCLA Loneliness Scale (Version 3) in acknowledgement that isolation is largely covered by the inclusion of the Lubben Social Network Scale, and the General Self-Efficacy Scale (GSE), given that we consider the perceived control measure to be of more import.

We have also moved assessment of the Nottingham Extended ADL Scale (NEADL) from the self-report questionnaire to the screening session conducted by the practice nurse, as explained under the new Section Substudy 1: Diagnostic Test Accuracy/test Methods/Additional Measures.

Please note also that we will now be collecting the ICECAP-O rather than the SF-12 as a measure of quality of life in order to be consistent with other work conducted within our research centre.

5. It is not clear how the psychosocial data will be included in the overall study.

In terms of the overall justification for including psychosocial factors within data collection, we have two key rationales. Firstly, there is an increasing body of evidence to suggest that psychosocial factors are correlated with frailty, and it therefore seems logical to take the opportunity to include these within the scope of data collection along with the frailty measures in order to determine whether this association is also observed within our sample.

Secondly, preliminary results from an aligned study we are currently undertaking on health service provider perspectives on frailty (please refer to Archibald et al 2017 for study protocol) suggest that for general practitioners at least, psychosocial factors (isolation in particular) play an important role in their consideration of appropriate care provision for frail older patients. Collecting psychosocial data will enable us to better describe the characteristics of the patients found to be frail in our study, and thus to inform our thinking regarding pathways for care after a positive screening result.

We thank Reviewer 2 for highlighting the need for clarification of our approach with regard to analysis of the psychosocial data. We have now substantially revised our Statistical Methods/Analysis section

to include our intention to analyse the association of the psychosocial factors with frailty (as defined by the Frailty Phenotype) via binomial logistic regression. Please note also that we have changed the statistical software we will be using from STATA to SPSS.

6. An estimation of the protocol duration should be included to allow the assessment of viability. Moreover, considering the population, the possibility of dividing the screening session, should be guaranteed.

We agree that duration is an essential component of viability within this context; consequently, the practice nurses applying the index tests will be recording time taken by each patient to complete each test, as specified under sub-section 'Substudy 2: Feasibility and Acceptability/ Data Collection and Management/1) Feasibility'.

Addditionally, we understand Reviewer 2 to mean that patients should be given an option to attend a second screening session if the first proves too tiring; while we have intended this to be the case, we realise it may not have been clear in the protocol. We have now added a clarifying sentence under 'Ethics and Dissemination/Participant Safety'.

Please note also: we have also adjusted the wording in this section to refer to 'instruments' rather than 'tools' for reasons of consistency; changes have been highlighted in yellow.

7. The authors should indicate the selection method planned for inter-rater reliability testing (page 15). The same would be expected for the selection of 10% of the sample that will answer the acceptability questionnaire (page 16).

In acknowledgment of Reviewer 2's feedback we have reworded two sections within the manuscript and added a supporting reference.

Regarding the inter-rater reliability testing, we have now specified that every third participant interviewed for the main study at each research site will be asked to participate in the inter-rater reliability component, proceeding with recruitment until the site quota (n=16) is met. The reworded section can be found under sub-heading 'Statistical methods/Analysis'.

Regarding the 10% sample answering the acceptability questionnaire, we have increased the number of respondents by 2 to a total of 26 to reflect the threshold specified by Herzog (2008) in her consideration of these issues and to ensure an equal representation across metropolitan and non-metropolitan participants. We have also specified that every second participant interviewed for the main study at each research site will be asked to participate in the acceptability study, proceeding with recruitment until the site quota (n=13) is met. The reworded section can be found under sub-heading 'Substudy 2: Feasibility and Acceptability/Data collection and management/Acceptability to consumers'.

VERSION 2 – REVIEW

REVIEWER	Lia Fernandes Faculty of Medicine - University of Porto, Portugal
REVIEW RETURNED	21-Jun-2017

GENERAL COMMENTS	The authors have introduced new important information that helps the contextualization of the work, as well as clarified the main ambiguous aspects of the original submission. Considering this, only minor aspects should be addressed. 1. The last two lines of the inclusion criteria are unnecessary

	considering the exclusion criteria stated bellow. 2. The criteria used to select the frailty instruments should be reported again (not only under the limitations section). 3. Please revise the protocol to change “tool” for “instrument” in order to be congruent with the whole manuscript (e.g., pages 16 and 17).

VERSION 2 – AUTHOR RESPONSE

1. The last two lines of the inclusion criteria are unnecessary considering the exclusion criteria stated bellow.
These have now been removed.

2. The criteria used to select the frailty instruments should be reported again (not only under the limitations section)..

We have rewritten the original section under sub-heading Substudy 1: Diagnostic Test Accuracy/Test Methods/Index Test Overview and have added further clarification.

3. Please revise the protocol to change “tool” for “instrument” in order to be congruent with the whole manuscript (e.g., pages 16 and 17).

This has been done.