

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Multidimensional instruments with an integral approach to identify frailty in community-dwelling people: protocol for a systematic psychometric review
AUTHORS	Zamora-Sánchez, Juan-José; Gea-Caballero, Vicente; Julián-Rochina, Iván; Jódar-Fernández, Lina; Lumillo-Gutiérrez, Iris; Sastre-Rus, Meritxell; Urpí-Fernández, Ana; Zabaleta del Olmo, Edurne

VERSION 1 – REVIEW

REVIEWER	Rawan AlHeresh MGH Institute of Health Professions United States
REVIEW RETURNED	10-Aug-2019

GENERAL COMMENTS	<p>This manuscript is entitled “Multidimensional instruments to identify frailty in community-dwelling people: protocol for a systematic psychometric review”. This paper is certainly of interest to the scientific community if the below comments are addressed:</p> <p>Language and grammar need to be revised.</p> <p>What are the plans and the protocol for the articles that are found in other languages?</p> <p>Page 6 lines 29-33. Where did the authors come up with these definitions? I encourage the authors to use a conceptual framework like the International Classification of Functioning Disability and Health (ICF) and use universal definitions of all the constructs described in this manuscript (i.e. there is not definition listed to disability in line 16 page 6 which is of seminal importance to this paper.</p> <p>There is a need to distinguish between a screening tool, an assessment, an instrument, and most certainly multidimensional ones. I encourage the authors to investigate this matter further to assist in the clarity of the objective of this study protocol.</p> <p>The introduction doesn't provide a good reason to why this study should be administered. The authors mention that this review differs from existing ones in the literature but fail to explain what are even measurement properties and what are the importance of attaining them in different instrumentations.</p> <p>The question listed in page 8 line 12+13 opens a can of worms. Suitable is not the most appropriate word to be used in a study of this context. Consider using psychometrically sound instead?</p> <p>I would argue that the holistic approach the authors are trying to explain lack many other dimensions including personal and environmental factors. If the author used a conceptual foundation to back up their work (like the ICF) this would eliminate the selection bias, they fell in by choosing only three aspects of one's life.</p> <p>Very little information is found about the synthesis of the evidence to</p>
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	yield meaningful results. Good luck to the authors!
REVIEWER	Stephen J. Kaplan, MD, MPH Virginia Mason Medical Center, Seattle, Washington, U.S.A.
REVIEW RETURNED	18-Sep-2019
GENERAL COMMENTS	<p>This study protocol outlines a planned appraisal of multidimensional frailty assessment instruments for community-dwelling people. The inclusion criteria are broad, but use a previously-described, robust search strategy and rigorous analysis method.</p> <p>My only major suggestion is to not limit inclusion to instruments that examine at least two of the three frailty domains. As posited by the authors, there is limited knowledge of multidimensional frailty instruments, yet the authors aim to identify "the most suitable multidimensional measurement instruments for identifying frailty among community-dwelling people". One possible answer to this question is: there is no single instrument, but rather a collection of clinically-relevant instruments (2 or 3) that, in concern, could examine these domains in a pragmatic fashion. If the authors inherently blind themselves to single-domain instruments through study design, an important proportion (and likely majority) of frailty assessment instruments will never be analyzed.</p> <p>Minor secondary suggestions include: (A) syntax & grammar review: e.g. "Frailty people", etc.; (B) better match the protocol to the PROSPERO report verbatim (there are some differences); and (C) consider including the judicious use of subheadings as implied in the PRISMA-P checklist, which will make reading the protocol easier to read.</p>

VERSION 1 – AUTHOR RESPONSE

Reviewer 1

This manuscript is entitled "Multidimensional instruments to identify frailty in community-dwelling people: protocol for a systematic psychometric review". This paper is certainly of interest to the scientific community if the below comments are addressed: Language and grammar need to be revised.

Response: Thank you very much for the interest expressed. Following your suggestions the manuscript has been revised by a professional translator.

What are the plans and the protocol for the articles that are found in other languages?

Response: The reviewer's comment is very accurate. We have funds to translate articles that are not in a language that the reviewers are proficient in. For this reason, a comprehensive literature search strategy has been planned, with no language restrictions. We have clarified this in the manuscript as follows: "We will not use language restrictions in the search strategy. Reviewers are proficient in English, French, and Spanish, if any selected article is written in other languages, they will have financial resources to translate it."

Page 6 lines 29-33. Where did the authors come up with these definitions? I encourage the authors to use a conceptual framework like the International Classification of Functioning Disability and Health (ICF) and use universal definitions of all the constructs described in this manuscript (i.e. there is not

definition listed to disability in line 16 page 6 which is of seminal importance to this paper.

Response: As the reviewer comments, it is very important to define the conceptual framework of the review and to clarify the definitions of the concepts. In this sense, we have made an in-depth revision of the "introduction" section and we have included the definition of frailty that will serve as the framework for the review in the "methodology" section. Moreover, this review does not focus on the measurement instruments of disability, we have clarified this aspect in the "methodology" section as follows:

“Frailty, disability for activities of daily living and multimorbidity are overlapped but there is some agreement that these concepts should be separated.[14,19] Disability for activities of daily living should be seen as an adverse outcome of frailty and multimorbidity as an antecedent.[14] For this reason, it is suggested that these components be approached separately, since although they are related, their management is different and considering them as frailty components may confuse the interventions designed to prevent and mitigate frailty.[6,7,14,18]

There is a need to distinguish between a screening tool, an assessment, an instrument, and most certainly multidimensional ones. I encourage the authors to investigate this matter further to assist in the clarity of the objective of this study protocol.

Response: The reviewer's comment is very important. This review is aimed at providing recommendations for the selection of the most appropriate instrument for a given purpose and particular context of use. Therefore, we will collect comprehensive information on the characteristics of each instrument, its purpose and its context of use. Based on this information we will classify the different instruments identified. We have clarified this aspect in the methodology section as follows: “We will also extract data on the characteristics of the instrument (characteristics of the included samples and results on the measurement properties) and on information about interpretability and feasibility of its scores (distribution of scores, floor and ceiling effects, purpose and context of use, completion time, cost, length, type and ease administration,...)”.

The introduction doesn't provide a good reason to why this study should be administered. The authors mention that this review differs from existing ones in the literature but fail to explain what are even measurement properties and what are the importance of attaining them in different instrumentations.

Response: Thanks. We have made an in-depth revision of the "introduction" section and we have added information about the aspects that reviewer comments.

The question listed in page 8 line 12+13 opens a can of worms. Suitable is not the most appropriate word to be used in a study of this context. Consider using psychometrically sound instead?

Response: Thanks for the comment. It is true that "suitable" may seem an inappropriate word. However, we have used this word following the COSMIN guidelines. COSMIN recommends formulating recommendations based not only on psychometric properties but also on aspects of interpretability and feasibility. Therefore, COSMIN proposes to use the word "suitable" instead of the expression "psychometrically sound". We have included the quotations from the COSMIN guidelines in the sentence to better support this word as follows: “Finally, we will formulate recommendations on the most suitable instruments [34, 40] into three categories”.

I would argue that the holistic approach the authors are trying to explain lack many other dimensions including personal and environmental factors. If the author used a conceptual foundation to back up their work (like the ICF) this would eliminate the selection bias, they fell in by choosing only three aspects of one's life.

Response: We agree with the reviewer and we have carried out a profound revision of the introduction' section, making it clearer that an integral approach to the instrument is understood. This revision of the approach has led us to change one of the eligibility criteria. We have considered that for the evaluated instruments to have an integral approach it is necessary that they measure aspects of the three domains (physical, psychological and social) otherwise their approach would be partial.

Likewise, if frailty is measured in only one domain, there is a danger of carrying out prevention and management strategies focused on a single domain. Moreover, if only one domain is measured, there is a risk that frail people will not be identified because the domains not evaluated could be affected.

Very little information is found about the synthesis of the evidence to yield meaningful results.

Response: We have created a section with a specific subheading and have described the information suggested by the COSMIN guidelines as follows: "Data synthesis and confidence in cumulative evidence. If the results of all available studies per measurement property are consistent, the results of studies will be quantitatively pooled or qualitatively summarized, and compared against the criteria for good measurement properties. The quality of evidence will be graded using a modified Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach as a high, moderate, low, very low evidence.[31] If the results are inconsistent, we will use several strategies: (a) find explanations and summarise per subgroup, (b) do not summarise the results and do not grade the evidence, or (c) base the conclusion on the majority on consistent results, and downgrade for inconsistency."

Good luck to the authors!

Response: Thanks!

Reviewer: 2

This study protocol outlines a planned appraisal of multidimensional frailty assessment instruments for community-dwelling people. The inclusion criteria are broad, but use a previously-described, robust search strategy and rigorous analysis method.

Response: Thank you very much for the interest expressed.

My only major suggestion is to not limit inclusion to instruments that examine at least two of the three frailty domains. As posited by the authors, there is limited knowledge of multidimensional frailty instruments, yet the authors aim to identify "the most suitable multidimensional measurement instruments for identifying frailty among community-dwelling people". One possible answer to this question is: there is no single instrument, but rather a collection of clinically-relevant instruments (2 or 3) that, in concern, could examine these domains in a pragmatic fashion. If the authors inherently blind themselves to single-domain instruments through study design, an important proportion (and likely majority) of frailty assessment instruments will never be analyzed.

Response: The reviewer's comment is very pertinent. Following the comments of reviewer 1, we have carried out an in-depth revision of the conceptual framework of the review. The review aims to identify instruments based on an integral approach to the frail person in the community setting. After carefully reviewing the conceptual framework, we have considered including only those instruments that have a holistic approach to the person, as otherwise they would have a partial approach and would contribute to fragmentation of care. Likewise, if frailty is measured in only one domain, there is a danger of carrying out prevention and management strategies focused on a single domain. Moreover, if only one domain is measured, there is a risk that frail people will not be identified because the domains not evaluated could be affected. We have clarified these aspects in both the "introduction" and "methodology" sections. We have also modified the aim of the review as follows: "The aim of this review is to critically appraise, compare and summarise the quality of the measurement properties of all multidimensional instruments with an integral approach identifying frailty in community-dwelling people." We have also reworded the title of the manuscript to make it consistent with the objective.

Minor secondary suggestions include: (A) syntax & grammar review: e.g. "Frailty people", etc.;

Response: Thank you. A professional translator has revised the manuscript.

(B) better match the protocol to the PROSPERO report verbatim (there are some differences);

Response: We have prepared and submitted a revised protocol version for the PROSPERO registry. This revised version justifies and describes the protocol amendments made. It does not yet appear in the registry as its incorporation is not immediate. We have sent these modifications in a "Supplementary file for Editors only". We consider that it is not necessary to include it in the manuscript since the PROSPERO register allows for and tracks amendments of registered protocols.

and (C) consider including the judicious use of subheadings as implied in the PRISMA-P checklist, which will make reading the protocol easier to read.

Response: As advised by the reviewer, we have included the headings according to PRISMA-P to make it easier to read the protocol, but since the review follows the COSMIN guidelines some of them do not correspond exactly.

VERSION 2 – REVIEW

REVIEWER	Stephen J. Kaplan, MD, MPH Virginia Mason Medical Center, Seattle, WA, USA
REVIEW RETURNED	06-Nov-2019

GENERAL COMMENTS	<p>The authors have adequately addressed my concerns and feedback in their revisions. Two minor points to make:</p> <p>1) please use the nomenclature "frailty assessment instrument" without the hyphen, as that is an accepted standard in the literature on this topic.</p> <p>2) consider adding some limitations to the "Strengths and Limitations" section (otherwise, it's just strengths). Specifically, I would add that frailty assessment instruments without all 3 domains will not be included in this review/analysis. I brought this up in my initial review and I still think is a major limitation. The proposed review is quite narrow and the results of which, perhaps intentional, may be a self-fulfilling prophecy of "there are no pragmatic, three-domain frailty assessment instruments". I contend that a collection of multiple, validated instruments may be worthwhile if they, in combination, satisfy the need to assess all three domains. As it stands, all of these single- and dual-domain instruments will be ignored.</p> <p>If these two points are addressed I believe the protocol is publication ready. Thank you again to the authors for the opportunity to review your work. I look forward to reading the results/conclusions of your review.</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Please leave your comments for the authors below The authors have adequately addressed my concerns and feedback in their revisions. Two minor points to make:

1) please use the nomenclature "frailty assessment instrument" without the hyphen, as that is an accepted standard in the literature on this topic.

Response: Thank you. We have used the nomenclature proposed by the reviewer.

2) consider adding some limitations to the "Strengths and Limitations" section (otherwise, it's just strengths). Specifically, I would add that frailty assessment instruments without all 3 domains will not be included in this review/analysis. I brought this up in my initial review and I still think is a major limitation. The proposed review is quite narrow and the results of which, perhaps intentional, may be a self-fulfilling prophecy of "there are no pragmatic, three-domain frailty assessment instruments". I contend that a collection of multiple, validated instruments may be worthwhile if they, in combination, satisfy the need to assess all three domains. As it stands, all of these single- and dual-domain instruments will be ignored.

Response: Reviewer's comment is very accurate. We share the reviewer's concern. Therefore, in the initial protocol we decided to include instruments that measured at least two domains, in order to identify the maximum number of instruments. But after the in-depth revision of the conceptual framework that we have carried out, we believe that it is more congruent to analyse the instruments that measure all three domains. We have considered that for the evaluated instruments to have an integral approach it is necessary that they measure aspects of the three domains (physical, psychological and social) otherwise their approach would be partial. Likewise, if frailty is measured in only one domain, there is a danger of carrying out prevention and management strategies focused on a single domain. Moreover, if only one domain is measured, there is a risk that frail people will not be identified because the domains not evaluated could be affected.

The initial searches we have carried out have identified around 40 instruments that measure the all three domains. So we believe that there will be enough three-domain frailty assessment instruments. If these two points are addressed I believe the protocol is publication ready. Thank you again to the authors for the opportunity to review your work. I look forward to reading the results/conclusions of your review.

Response: Thank you for your interest and your time