Peer Review File

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Reviewer A

Comment 1: "the question is very broad, focusing on both definitions and instruments. This is reflected in the search strategy, which only contains two domains, rather than a more focused search."

Reply 1: We would like to thank the reviewer for this comment. Although we understand reviewers' concerns, it seems crucial to understand that this is a scoping review (as indicated in the title). As the reviewer may know, a scoping review serves to synthesize evidence and assess the scope of literature on a topic (according to PRISMA). Thus, our aim was indeed gathering relevant and broad information about definitions and instruments to assess complexity in patients with palliative care needs. Furthermore, among other objectives, scoping reviews help determine whether a systematic review of the literature is warranted, which is also in line with our manuscript.

Comment 2: "I question whether some of the instruments described (such as the Charlston Index, the Frailty index, the PCSS) meet the definition of complexity instruments."

Reply 2: We would like to thank the reviewer for this relevant comment. We agree that some of the instruments were not created to assess complexity, yet and in line with reviewer comments this subject "has only recently gained prominence", which warrant the creation of new instruments and the adaptation of some of the existent ones, which in in line with the conclusions of the present manuscript.

In the text: "Among the instruments identified to assess complexity in PC, eventually applicable in clinical practice, the HexCom, IDC-Pal and the ID-PALL, seems to offer the broadest determinations of complexity, yet further investigation is needed regarding the adaptation and validation of these instruments to the clinical practice." (Page 19, line 436 to Page 19 line 439).

Reviewer B

Comment 1: "Perhaps in the introduction it would be relevant to mention the need for a systemic view when assessing complexity (Hodiamont, Pask), although they are already cited and explained in depth in the discussion (line 83)."

Reply 1: We would like to thank the reviewer for the input and suggestion. Although we agree with the relevance of the suggestion, we think that "the need for a systemic view when assessing complexity", as one of the conclusions of the present review, seems suitable to be include in the conclusion, rather than in the introduction.

Changes in the text: "Additionally, the present scoping review suggest a need for systematic reviews on both topics, which may be able to provide support to a

consensual definition of complexity, further contributing for instrument improvement." (Page 20, lines 440-442).

Comment 2: "It would have been pertinent to extend the manual search to include studies published in journals in other languages and not included in pubmed."
Reply 1: We would like to thank the reviewer for the suggestion. Although we agree that the present review would benefit from an extended manual search, it is not feasible, as it would be considered a new review. Yet, we think that the reference indicate by the reviewer is relevant to be included in the present manuscript. The suggested paper was cited, and one of the main conclusions used in the discussion section.
Changes in the text: "Clinical complexity concept in patients with PC needs is not well defined, being necessary to differentiate complex situations from complexity criteria (24)." (Page 12, lines 256-258).

Comment 3: "A surprising result is that 47% of the instruments are created in Spain. Perhaps some comment on this would be necessary in the discussion."
Reply 1: We would like to thank the reviewer for the remark. We have further discussed this observation in the discussion section, as suggested.
Changes in the text: "Interestingly, around 47% of the included studies were performed/conceptualized in Spain. This fact may be attributed to the use of "complexity" as a criterion for access to specialized palliative care, after a fall from 5th to 11th place in the European ranking of palliative care in 2013 (34)." (Page 15, lines 321-324).

Comment 4: "Bibliography: Need to review - Include DOI if available."
Reply 1: We would like to thank the reviewer for the relevant remark. The reference list was revised as suggested.

Reviewer C
Comment 1: "When manuscript explains definition of the complexity of palliative care needs, you do not mention PALCOM study. I think may be interesting consider including this concept in the definition of complexity section."
Reply 1: We would like to thank the reviewer for relevant input and suggestion. The manuscript was revised accordingly.
Changes in the text: "Although in 2018 Tuca *et al.* [21] have proposed a consensus definition of complexity in palliative care needs, based on a multidimensional model ("the clinical situation that depends on the interaction of the characteristics of the emerging symptoms, according to a multidimensional evaluation, that shows a special tendency to clinical instability, uncertainty in the result of the care intervention and to the subsequent need to intensify specialized measures of palliative support"), according to the present

scoping review, the proposed definition is not universally recognized." (Page 15, lines 326-332).

Comment 2: "The bibliographic references that support the adequacy of the instrument to the objective are those referred to in the research article itself. The arguments provided in the manuscript do not allow us to consistently conclude that one instrument is superior to the other."
Reply 1: We would like to thank the reviewer for the comment. Although we agree with the relevance of the comment, we would like to highlight that the discussion section is in line with the aims of the present scoping review, i.e., to identify and map instruments available to objectively assess complexity, and its suitability to the clinical setting (Page 5, lines 107-109). Also, we would like to recall that this is a scoping review and that more specific and deeper search on the topic should be addressed in a systematic review, as acknowledged in the present manuscript (Page 20, lines 440-442).

Reviewer D
Comment 1: "Although I agree that palliative care is paramount for our patients, I do not agree with concept that seems to be suggested by your article that palliative care consults/teams are required to achieve good palliative care. Primary palliative care can be provided by individual practitioners that successfully meet the needs of patients."
Reply 1: We would like to thank the reviewer for the relevant remark. We agree that that universal access to palliative care involves the integration of primary health care, as suggested by the WHO (2018). Yet, the present review focus on specialized palliative care, as it is suggested across the manuscript.

Reviewer E
Comment 1: "Does clinical complexity change the classical palliative care approach and equitable access to palliative care in the setting of limited resources?"
Reply 1: We would like to thank the reviewer for the comment. The definition of complexity can help in the decision of health resources allocation, aiming to best respond to symptomatic relief, psychosocial and spiritual support, thus in the presence of limited resources its use seems even more relevant, as is suggested in the manuscript (Page 5, lines 101-102).

Comment 2: "If clinical complexity determines palliative care approaches what framework do authors recommend to "redirect "efforts and logistics for palliative care patients?"
Reply 2: We would like to thank the reviewer for the question. Although we agree with the relevance of the question, we would like to recall that the answer to the question is far from the aims of the present review. Nevertheless, as stated in the discussion and conclusion sections, complexity is a dynamic concept,

reflecting the reality and needs of patients and families, and that must be systematically adjusted to the stage of the disease (Page 19, lines 425-427), thus its use may point to one of the two possible directions, i.e., the need of specialized palliative care, or the reversion of this decision, as is implicit in the "dynamic" concept.

Comment 3: "Clinical complexity appears to be a dynamic concept. How frequently do authors suggest changes in complexity in palliative care patient to "re-structure" efforts and approaches ?"
Reply 3: We would like to thank the reviewer for the question. Although we agree with the relevance of the question, we would like to recall that the answer to the question is far from the aims of the present review. As the reviewer may be aware, it may be unrealistic to raise a timeline to assess complexity, since it may depend on the several dimensions addressed in the present manuscript, i.e., patient, health, and sociocultural context (Page 15, lines 326 to Page 17, line 380). For this reason, as a conclusion is it stated that "services must therefore be flexible and adapt the response to the dynamic complexity of each person." (Page 19, lines 727-428).

Comment 4: "And can we differentiate between patients: how complex they are what might they need?"
Reply 4: We would like to thank the reviewer for the question. In fact, those questions were the trigger for the development of the concept and instruments to assess complexity, and the starting point of the present review, as is addressed in the rational and objectives sections (Page 5, lines 94-105).

Reviewer F
Comment 1: "The introduction focuses heavily on interdisciplinary care and I would suggest being more deliberate about tying this to the foundational point of complexity."
Reply 1: We would like to thank the reviewer for relevant remark. Although we agree that the introduction focuses on interdisciplinary care, is in line with the results and conclusions of the present paper, highlighting the need of specialized interdisciplinary care in complex patients.

Comment 2: "Please clarify the exclusion criteria - (no books, or posters; abstracts didnt answer the questions?)"
Reply 2: We would like to thank the reviewer the pertinent remark. The manuscript was revised in order to clarify our option.
Changes in the text: "Although the identified sources may be included in systematic reviews without a critical impairment of quality [9], to the best of our knowledge there is no evidence on the impact of it inclusion in scoping reviews." (Page 6, lines 124-126).

Comment 3: “simplify the search criteria for readability.”
Reply 3: We would like to thank the reviewer for the suggestion. The manuscript was revise accordingly.
Changes in the text: “using the search terms: (“palliative care” AND “hospitalization criteria”; “palliative care” AND "complexity criteria"; palliative care AND "complexity assessment"; “palliative care” AND "clinical complexity" (Page 6, lines 130-132).

Comment 4: “The domains listed in the results section were a bit confusing and may benefit from bulleting or some more structure.”
Reply 4: We would like to thank the reviewer for the suggestion. Although we agree that the identified information could be “more structured”, it should be noted that the information is already organize in bullet points, highlighting the number of domains identified in the papers included in the review. (Page 8, lines 163-175).

Comment 5: “The discussion is fascinating but I found it extremely complicated. I wonder if most of it might be better described in the results section and worked into the domains (or replace the domains). I would suggest concentrating most effort on making the discussion more digestible.”
Reply 5: We would like to thank the reviewer for the relevant remark. The discussion section was revised in order to improve readability.

Comment 6: “I did not feel I understood how this model was developed (aside from Gestalt).”
Reply 6: We would like to thank the reviewer for the remark. As stated, the model was created at the light of the models developed and reported in the included studies, illustrating a fusion of those models, and highlighting the identified dimensions.

Comment 7: “I am torn about whether two questions are too much for this paper. (1- what is complexity; 2 - what tools to measure complexity) Both questions are fascinating but I did not feel as though I understood if there was some unifying reason to include them together. Do they inform each other?”
Reply 7: We would like to thank the reviewer for the remark. Although we agree that the two questions/aims addressed in the present review could justify distinct systematic reviews, the aim of the present scoping review was to address the two, since they complement each other, as it is suggested in the manuscript (Page 5, lines 100-102). In fact, in the context of a scoping review, it seems unreasonable to identify the instruments available to objectively assess complexity (2nd aim), without addressing the definition of complexity (1st aim). We would like to recall that a scoping review serves to synthesize evidence and assess the scope of literature on a topic (according to PRISMA), helping to determine whether a systematic review of the literature is warranted.