Author's response to reviews

Title: Developing a comprehensive definition of sustainability

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To Whom It May Concern,

Re: IMPS-D-17-00138R1

Developing a comprehensive definition of sustainability

Thank you for consideration of our manuscript for potential publication in Implementation Science. We have revised the above manuscript based on reviewers’ comments, and believe that incorporating their feedback has enhanced the quality of our paper. Our responses to each reviewer’s comment are summarized below.

Reviewer 1:

Overall: This study presents a comprehensive definition of 'sustainability' based on the literature identified across four systematic reviews. The authors abstracted 24 sustainability definitions from 209 original publications (11.5%). Constructs from each definition were abstracted and mapped to an existing definition, as well as new constructs were noted. Based on the mapped and new constructs, a comprehensive definition of the term sustainability was created that included five constructs finally.
The study focuses a relevant topic in health care research. The authors review a complex and theoretically based problem. The description of the systematic literature search may need a clarification to avoid a sense of selection bias. I would recommend: 'revision'.

1. The introduction section presents the relevance of the important research topic very well and detailed. The authors may want to shorten the section, as they repeat multiple times some statements, i.e. on missing of a clear and established definition of 'sustainability'.

We have deleted statements and phrases that were not essential for communicating the rationale and purpose of this study. (I.55, 69-73, 79-81, 88-98).

2. Since the study analyses a very theoretical topic of 'sustainability', the authors may want to provide stronger and more specific selection criteria for their systematic review. The submission of a study protocol would have been helpful for the analysts (and the reader) before the literature search was performed. It seems a bit unclear how the authors have combined the literature search terms in detail (advanced search builders 'AND/ OR'; literature search via title screening/ abstract screening/ full text screening, MeSH-Terms…). The authors may want to provide their complete search strategy in the appendix of the article. Specific criteria for including / excluding original studies, as well as the analysed publication period and the used language are important, too. It remains unclear; why the analysts searched in a single data base only (PubMed). Further databases or resources might be important, too (Embase, Cochrane, 'grey literature', study registers, etc.).

We have specified that we used a validated search filter from PubMed Clinical Queries (I.105). This filter is designed to retrieve citations identified as systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines. Despite this, we acknowledge that the search strategy that we used was not comprehensive because it did not look at more than two databases and it was not a peer-reviewed search. We have added these as limitations in the manuscript (I.375-385).

We would like to clarify that the literature search that we performed was not a systematic review, but an overview of knowledge syntheses. We have excluded the terms ‘review’ and ‘systematic review’ from our manuscript title in order to minimize confusion. The purpose of this study was to abstract definitions of sustainability from original studies that have already been compiled using the rigorous methods of 4 other knowledge syntheses (I. 25,30,104, 113,115, 183, 378, 382-385, 392, 405). We have offered clarification in the manuscript (I.106-109). We have also included appendix with the inclusion criteria for each of the included reviews as well as the AMSTAR rating for each review.

3. In the introduction the authors stated, the high number of synonyms of the term: 'sustainability'. But they describe data abstraction and analysis as: 'In phase 1, we identified all articles that provided any definition of sustainability or a synonym of sustainability.' It would be helpful when (if?) the authors would present the definitions of all the identified synonyms. The method for data extraction and analysis maybe biased when the authors play it like this: 'sustainability definitions were compared and discussed to resolve any discrepancies'. The
authors may want to provide a systematic process to handle discrepancies to their prospective protocol.

We have added a column to Table 1 in the supplementary materials that lists each of the sustainability synonyms beside their accompanying definition.

We have provided some more detail on the methods of phase 1 – specifically, we have offered a definition of what a discrepancy is and have described the process for resolving discrepancies (1.122-130).

We defined a discrepancy as either a) an instance where a definition was abstracted by one analyst and not the other, or b) an instance where one analyst extracted more or less textual detail than the other. Two analysts independently reviewed each study for eligibility and completed data abstraction. The analysts resolved discrepancies by discussing whether the included definitional content described the sustained implementation of evidence in a system, organization or community. Any definitions pertaining only to adoption, implementation, spread of implementation, or scale-up of implementation in new settings were excluded.

4. The authors may want to provide further information on, how they 'subjected the list of definitions to calibration activity, similar to the familiarization phase in qualitative coding.' Did they designed a new process or did they refer to other research?

We have revised this section to offer more clarity. We have also chosen to use one term (familiarization) consistently throughout this phase and have excluded synonyms such as calibration and pilot. We used the familiarization approach of other qualitative researchers such as Ritchie and Spencer 1994 and Pope 2000 (1.133-157).

Familiarization is the practice of analysts immersing themselves in raw qualitative data to become “familiar” with the content and key themes. In our study, the analysts immersed themselves in the definitional content (i.e., data) by reading and re-reading the list of phase 1 definitions identifying constructs that align with an existing definition from the literature as well as new constructs. After this the analysts reviewed the entire list of constructs and looked for commonalities (i.e., repeated ideas).

5. In phase 3 the authors do not provide information on criteria on how they include or exclude research on 'constructs' or on how to distinguish 'constructs' from 'factors or determinants that affect sustainability'. In addition, the three analysts reviewed the lists of mapped definitions 'collectively' and not independently. It seems that the study selection and the data extraction are not easy to reproduce.

We have revised this section to explicitly describe the criteria that was used to include defining constructs and exclude determinant constructs (1.156-165).

The three analysts reviewed the lists of mapped definitions 'collectively' because this is a common practice in the familiarization stage of qualitative research. A single reviewer at this stage is considered insufficient and does not reflect a balance among the differing perspectives of
researchers, which is a strength of qualitative research approaches (Bradley, Curry, & Devers, 2007).

We have added headings throughout the paper in an effort to clarify the steps used in our methods (l.118, 133, 172). We hope that these changes will allow more transparency for those who may want to reproduce these methods.

6. The last part of the methods section seems a bit confusing, as there are some revisions and re-mappings of the constructs of the phase 2 and 3. It may be helpful to illustrate the workflow of revisions and re-mappings.

We have created a diagram that describes an abbreviated list of steps in each phase. Referred to here (l.116) in the manuscript.

The diagram includes the following details:

Phase 1:

• Analysts independently identify articles with sustainability definitions
• Analysts independently abstract definitions from included studies, compare, and resolve discrepancies.

Phase 2:

• Analysts independently familiarize with all definitions, map key constructs to an existing definition, and list new constructs
• Analysts collectively review all constructs, identify commonalities, and consolidate
• Exclude determinants of sustainability

Phase 3

• Analysts re-map all definitions to the consolidated constructs
• Inter-rater reliability is calculated

7. The results section also reflects the selection bias: 'Inclusion criteria varied across the four reviews.' As there was no study protocol neither a clear defined study question (PICOS ?) effects of subjectivity in the literature research and data extraction may have biased the results. Therefore, the comparability of the included reviews seems a bit unclear and some studies might not be part of the analyses.
You are correct in identifying the possibility of selection bias. We have acknowledged this in our limitations section (l.373-381). We have also included appendix with the inclusion criteria for each of the included reviews as well as the AMSTAR rating for each review.

8. In the discussion section the authors may want to avoid an extensive repetition of the results. The authors may extend the discussion on reflecting their aggregated findings with regard to included reviews and to other current research.

We have deleted certain sections of the discussion to make it more concise (l. 268-270, 275-277; 302-306, 311-317; 1. 339-341; 349-353, 355-357; 1.370-374, 377-378).

We have contrasted our findings with a concept analysis on the sustainability of healthcare innovations that was done by Fleiszer and colleagues (l. 342-348). Our comprehensive definition builds on their work by distinguishing between routinization (i.e., individual level change) and institutionalization (organization/system level change), and by including the construct of time.

We have also referenced findings recent reviews on the sustainability of health interventions (l.357-369). In a recent systematic review on the sustainability of health interventions in Sub-Saharan Africa (Iwelunmor et al., 2016), only half of studies clarified what it is they are sustaining and used different definitions from the literature. The majority of included studies reported outcomes on the continued delivery of a program. Similar results were found in a scoping review on the sustainability of chronic disease health programs (Francis, Dunt, & Cadilhac, 2016) where the majority of studies included sustainability indicators related to the maintenance of program activities. The system or organization was the unit of analysis for the majority of studies in this review, with few studies measuring individual-level sustainability outcomes (Francis et al., 2016). These results suggest a more narrow understanding of sustainability (Francis et al., 2016). Our comprehensive definition of sustainability prompts implementers to think about what it is they hope to sustain at the individual level, the organization/system level, and the level of intervention outcomes.

Reviewer 2:

Overall: This is an interesting and important piece of work that engages with contemporary concerns and which makes a potentially important contribution to the field.

1. My first observation on reading the title was that systematic reviews with their aggregative function and their tendency towards homogenising would not be a good source for an interpretive purpose such as arriving at a definition. Fortunately, however, the title is misleading - the authors are not reviewing the reviews they are reviewing data from included studies identified from the reviews. I suggest that the title be amended to "Developing a comprehensive definition of sustainability: A review of included studies from published systematic reviews"

Thank you for your comment. We have now revised the title to "Developing a comprehensive definition of sustainability"
2. The Abstract is exemplary, not only clearly describing Methods but also giving a clear and full interpretation of the findings.

Thank you for your comment.

3. The Authors make a clear case for the need for their research and support this with a well-written Background section.

Thank you for your comment.

4. It is unclear why the Authors chose to use the PubMed Clinical Queries search rather than a more sensitive way of identifying reviews. That apart they should make it explicit that they were using the Systematic Reviews facility on PubMed Clinical Queries as it has three default options. They should also discuss this later as a possible limitation of the study along with the fact that they developed their definition using only a medical/healthcare database.

We acknowledge that our search strategy was not comprehensive. There may be knowledge syntheses from non-healthcare literature (e.g., social services research) that were excluded from our study. We have acknowledged this in our limitations (l.375-388).

5. Although revisiting the included studies to ensure the definition accommodated them is good, it would have been better to have tested the new definition on another different test set e.g. on studies using sustainability in their titles and abstracts in a different disciplinary database. Again the authors should discuss this limitation. (They do mention two related limitations but not specifically the disciplinary limitation or the possible non-retrieval of relevant systematic reviews).

Thank you for your suggestion. We have enlarged our limitations section to reflect your comments (l.375-388). We have also suggested that future work could include testing our comprehensive definition of sustainability by doing a similar analysis of sustainability definitions from included studies in these knowledge syntheses (l.389-390).

6. "program and he environment" - presumably a typo, unless reflecting male dominance?

This was a grammatical error that has been fixed (l.222).

7. As sustainability is often referenced alongside "spread" it may be helpful to distinguish these concepts explicitly in the article i.e. that sustainability indicates continuation in its original setting whereas spread means the migration of the intervention to a new, and potentially different setting.

We have clarified that the focus of this study is on the sustainability of evidence implementation and not or scale-up of interventions (l.111-114).

8. Table 1 would be best split into a Summary Table of studies with associated concepts and crosses (to be included in the main body of the text) and the current version of the Table (to be
included in Supplementary material). At the moment the Table falls between the two purposes. The Summary Table could use brief labels for the concepts with the fuller version in the supplementary material.

We have created a summary table (labelled as Table 1) of studies with associated concepts and crosses in the main body of the text (PG23). We have also referred to the original Table 1 (relabelled as Table 2) as a supplementary resource (l.263-264).

References

doi: 10.1111/j.1475-6773.2006.00684.x

doi: 10.1136/bmjopen-2015-010944


https://doi.org/10.1186/s13012-016-0392-8

We hope that we have sufficiently responded to reviewers’ comments. Many thanks for your consideration.

Sincerely,

Dr. Julia Moore