Reviewer’s report

Title: How do researchers conceptualize and plan for the sustainability of their NIH R01 implementation projects?

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Reviewer: Martin Mlinarić

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GENERAL COMMENTS:

This paper explores how implementation researchers conceptualized and planned for sustainability within their funded (NIH R01 grants) implementation projects. Such a topic is pertinent in a scientific environment where health research is mostly funded 2-3 years and less is known on sustainability of such grants.

The methodological approach of a sequential mixed-methods design could be appealing for many researchers and seems to be at a first look a clear strength of this study, but next to the debatable correspondence or need of mixed methods (MM) instruments in this study (see points below), there are substantial concerns regarding this paper in its current form. Especially the need of this study/report (“why do we need this study/report?”) and the existing state of art (“what do we know about "evidence-based health intervention and its implementation"?”) are poorly elaborated in the Introduction part. This can be due to the shortened version (from original research-report) of this manuscript, but the Introduction and Results are relatively sketchy edited (see points below).

The reviewer has serious doubts if this type of mixed-methods research, especially the quantitative part, is needed to add new insights to existing implementation knowledge about sustainability in evidence-based health interventions. The presented qualitative results entail findings which may be even sufficient to answer the research questions ("defining", "using", "planning", "influencing" sustainability). The (quantitative) document review of an online database could be omitted and the presented benefit appears to be rather small.

ABSTRACT/ INTRODUCTION

-For non-US readership it needs online research to understand and figure out that NIH grants are (mostly) US-based. NIH (National Institutes of Health) could stand for any country in the World, so the Abstract & Introduction lacks focus and should explicitly name that this paper is about an US context.

INTRODUCTION
-the need of this study/report ("why do we need this study/report?") and the existing state of art ("what do we know about?") are poorly elaborated in the Introduction part

-e.g., lines 45/46: "interventions are either partially sustained or not sustained"…What does that mean? What kind of (health) intervention (there may be differing barriers and challenges) are sustained or not sustained and why?

-Are NIH R01 interventions already studied? If yes, what do we know about it? If not, why is it even important?

-The study focusses "implementation researchers" (PIs). PIs are "experts" in their fields. If expert knowledge/perceptions and a qualitative assessment of it is a research gap in the field of NIH-granted interventions, this should be stated more clearly.

-Given the research questions, it could be even sufficient to report only these (qualitative) expert perceptions in the whole report. This raises also the question why a MM design is needed? Are there either qualitative | quantitative studies on this issue? Why wouldn't be a qualitative assessment of researchers' perceptions on "defining, using, and planning sustainability" sufficient? Why do we need 1st a document review of an online database next to the qualitative (2nd) analysis? What is the added benefit?

-The authors aim to answer 4 research questions in 1 paper. Might lack focus for a brief report. Why these 4? This was not anticipated when reading the prior paragraphs. "Defining", "using", "planning", "influencing" sustainability were not derived from existing evidence. Why are these 4 stages/dimensions important?

-One option to get a better focus for the whole study would be to pay more attention to "influencing". See last bullet point in Results comments (below).

METHODS

-General: See above, one should reconsider if a MM design is really needed. A purely qualitative study would be sufficient, given the research interest ("defining", "using", "planning", "influencing" sustainability).

-Phase 1: (any) inclusion vs. exclusion criteria of documents applied?

-Phase 2: the authors refer to many supplementary files, but words like "topic guide" or information on the response rate should be stated in the original manuscript and should not to be found only in Supplementary files.

-Appendix B: Why were kappa coefficients calculated to compare codings between coders? There is a serious debate if Kappa is even in content analysis a useful tool to resolve interpretative disagreements, which is more relevant for qualitative research than a measure of
distant or near codes. What does Kappa really add to qualitative analysis of expert perceptions? This must be added in the Supplementary file.

-Data integration: Qualitative and quantitative evidence are synthesized by a "contiguous approach" which is reasonable, but how? What kind of steps/stages were applied? One misses 1-2 sentences where the authors describe "1st we did this, 2nd this, etc.".

RESULTS

-The Results of the document review raise again the question, if this quantitative part of the study is really needed and innovative. The Results is - not very surprising - that a majority of programs (67%) makes reference to "sustainability", but none referred to "sustainability planning."

-Again, the presented qualitative Results entail findings which may be a sufficient data source and need no prior document review of an online database.

-Information on recruitment, sample, demographics, analysis, response rate, coding/Kappa are not really qualitative "Results", it is part of the methodological chapter and should be moved to Methods ("Sample/Sampling")

-a qualitative Results part entails usually more quotes/citations, in the current manuscript there is only 1

-The authors present at the end of the Results "individual" and "environmental" factors that influence sustainability planning, here comes also the 1st and only quote. This part entails important and interesting findings. Maybe these 2 factors should be described more in-depth in order to get a better understanding, whereas the quantitative part of the whole study could be removed completely.

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