Reviewer’s report

Title: A systematic review of implementation frameworks of innovations in healthcare and resulting generic implementation framework

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Reviewer: Alex Ramsey

Reviewer’s report:

This manuscript aims to systematically review the literature on implementation frameworks, identify the degree to which existing frameworks include core implementation concepts, and present a generic implementation framework that comprehensively represents the core concepts involved in implementation efforts.

There are a number of strengths to this manuscript, including its conceptual clarity, competent literature review methodology, and useful tables and additional files. In particular, the framework analysis (Additional File 2) provides a valuable tool in describing the type (explanatory, predictive, etc), orientation (target innovation, setting, users, aim), and comprehensiveness across stages, domains, and key elements (factors, strategies, evaluations) of the implementation process. Additional File 1 is also very useful in providing definitions and helping to orient a somewhat splintered field of implementation science.

However, there are a number of issues that reduce enthusiasm for the manuscript in its current form:

Major Compulsory Revisions

1. The current review seems to be missing key implementation models (e.g., RE-AIM, Precede-Proceed). It’s unclear if this is a limitation of the search strategy or the inclusion/exclusion criteria; however, these models would seem to fit with the established criteria and are highly influential frameworks in implementation science.

2. The Methods section does not sufficiently describe the coding and analysis process. It is mentioned that a single reviewer (with assistance from secondary member, when necessary) was responsible for article inclusion, but there does not appear to be any description of who conducted the data extraction. Was this done by the single reviewer as well? With only one coder, one might question the accuracy of the coding, particularly for more evaluative components such as “degree” and “depth” for each framework. Such concerns can sometimes be alleviated by double coding a fraction of the data to ensure coder consistency and accuracy. At the very least, this is a limitation worth mentioning.

3. Relatedly, it is still unclear how the authors assessed the degree and depth for
factors, strategies, and evaluations. For instance, how would one code the degree of substantiation for a framework that included a comprehensive range of factors but with no explanation for their inclusion OR a framework that included very few factors but with strong justification for their inclusion? Please elaborate on whether such cases existed and, if so, how these issues were resolved.

Minor Essential Revisions

4. Additional File 2 partially replicates the goals of the Tabak et al. (2012) paper which provides a categorization of dissemination and implementation models, yet differs from the Tabak paper results, significantly at times. For instance, Pronovost’s 4E’s Process Theory (titled “John Hopkins Quality and Safety Research Group translating evidence into practice model” in the current manuscript) is identified in Tabak et al. (2012) as addressing the community, organization, and individual level; however, in the current manuscript, none of the overlapping domains (local environment, organization, individuals) were found to be addressed. What might explain these discrepancies?

5. The issue of combining multiple models is a major decision point for users and an issue of debate in the field of implementation science. While seemingly relevant to the current paper, it is only mentioned in passing and warrants more discussion. Does the developed framework presented here bear any implications for the use of multiple models?

6. The authors included 'models' and 'theories' in their search terms (likely in an effort to not miss any frameworks), but then judged all selected models on the criteria of a framework, even if the intent was only to model a specific stage or domain of implementation. It seems that this approach led the authors to the conclusion that so few "frameworks" address all the possible components involved in the implementation process. While such comprehensive frameworks are useful, there is also value to more specific models that focus on particular stages and other elements of the implementation process. It should be acknowledged that some of the models selected are not intended to be holistic frameworks.

7. The point is well made that researchers and practitioners should consider frameworks in addition to those developed for the particular innovation being used, particularly when other frameworks are compatible with the given setting. However, the value of another implementation framework that theoretically applies to all types of innovations, settings, and implementation facets is not entirely clear. The authors argue that the GIF can serve as a starting point for researchers and implementers prior to less generic model selection; however, the GIF figure is presented at such a high level that it may be of limited use in providing any meaningful direction for users. The need for developing this composite framework is not obvious, given that the CFIR and other consolidated frameworks include most of the implementation facets included in the GIF, and with greater construct development. The CFIR also applies across multiple settings/contexts and innovation types, which is a purported addition of the GIF. While the utility of the systematic review and resulting framework analysis is
clear, additional justification for developing the GIF would be helpful.

Discretionary Revisions

8. A brief “future directions” section would be helpful. The authors could consider recommending the development of a decision tree or other decision support tool that factors in a number of elements for a given implementation effort, such as relevant innovation and setting, desired framework type (explanatory, prescriptive, etc), stages and domains addressed, and the degree and depth in which factors, strategies, and evaluations are addressed. Such a tool might help direct researchers and practitioners to the most comprehensive and compatible implementation frameworks.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests