Author's response to reviews

Title: Embedding health policy and systems research into decision-making processes in low- and middle-income countries

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Author's response to reviews: see over
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Dear HRPS Editorial Team & Reviewers,

RE: Embedding health research into decision-making processes in low-and middle-income countries

We greatly appreciate your comments and suggestions on our manuscript. We were delighted to hear that the reviewers felt our study would make an important contribution to the literature. We found the reviewers’ comments to be extremely helpful and have incorporated their suggestions into the revised manuscript. While collectively these amount to a substantial revision, and a much longer manuscript, we are confident that the manuscript more accurately reflects the research conducted by the authors. A point-by-point response to the reviewers’ comments is presented at the end of this letter.

Thank you for this opportunity and we hope that you find the current manuscript acceptable.

Sincere Regards,

Adam Koon
1) Major Compulsory Revisions:

a. Methods - this section requires strengthening. The authors note that the following electronic databases were searched up to December 2011. How far back did they conduct the search and why?

- We added the following sentence to paragraph 3 of the methods on page 5, “We used a generous time frame, grey literature, and combinations of eleven search terms to account for a perceived paucity of information from LMICs.”

- Also, we inserted the inclusive years into the aforementioned sentence on page 5 “The following electronic databases were searched up to December 2011 (inclusive): PubMed-Medline (1965 - 2011); EBSCO Global Health (1973 - 2011) and Global Health Archive (1910 -1983).”

b. Were inclusion and exclusion criteria were used?

- Inclusion criteria was set liberally and explained more clearly in the following sentence added to the bottom of page 4: “We included original health research articles and review articles that matched our search criteria, were explicitly conducted in or focused on LMICs, and incorporated some aspect of the processes above.”

- Exclusion criteria was also used and is described in the new sentence on page 4/5: “Commentaries, editorials, dispatches from the field, news articles, studies conducted in high-income countries, and non-health articles were excluded from the review of the peer-reviewed literature.”

c. Did they use an iterative process to arrive at the search terms used?

- We inserted the following into line 9, page 5: “Search terms were develop a priori by ADK and KDR...”

d. What was the role of the author(s) in the review of search results?

- We inserted the following new paragraph on page 5-6 that describes the data extraction process and how this led to the conceptual framework:
“Descriptive information was extracted from selected articles by ADK. All authors agreed on extraction of the following information from each article: year, location, representative health system building block (see below) and characteristics of evidence-generating organizations. Articles were excluded if this information was not explicitly reported. Authors consulted with each other when ambiguities arose between papers. KDR repeated the search for verification. Also, snowball sampling was employed whereby relevant citations from included studies were pursued and included if appropriate. All authors discussed the descriptive information generated from the review and collaboratively packaged the findings into a conceptual framework that reflected the configuration and attributes of embedded HPSR organizations in LMICs.”

3) Minor Essential Revisions:

a. Introduction/Background - The authors provide a useful background on the concept of "embeddedness" to situate their analysis. However, information is lacking on their conception of health systems.

   - We included our operational definition of health systems from WHR2000. This sentence is the third sentence in paragraph 2, page 5: “Likewise, we used the definition of health systems defined by WHO in 2000 as, “all the activities whose primary purpose is to promote, restore, or maintain health.”

b. Some reference is made to the WHO health systems framework. While this framework is well-known, the authors should still provide an operational definition of each building block of the framework as these are used to report on results later on.

   - We agree with the suggestion, but feel that the definitions are best suited to be included in a supplemental file with the framework for the following three reasons: 1) the framework is well-known; 2) the article has already exceeded its allotted word count; 3) each block’s title is relatively descriptive and straightforward.

c. There is some mention of why this framework was selected (i.e. " Since health systems are characterized by a diversity of institutions and activities, we organized our data according to the World Health Organization’s Health Systems Framework"), however, the rationale for using this framework is not sufficiently convincing. Is there an imperative for organizations to use this framework? Why did you think that it lent itself to the study of embeddedness?
We did not feel that this framework was better than any other, rather it was selected conveniently when discussing a number of potential, equally viable frameworks. It was selected primarily for two reasons: 1) for its simplicity; and 2) because of its acceptability by the wider global health community, but we could have selected any number of related health systems frameworks to organize our findings.

This sentiment is reflected in the new sentence **paragraph 2, page 5**: “This well-established framework was conveniently selected from a number of different frameworks [25] for its simplicity as opposed to its analytical value.”

d. **Conclusion - This section could be strengthened. Are the concluding statements applicable in most LMIC contexts or was the literature review more indicative of certain country contexts?**

- We feel that we addressed the previous shortcoming with the conclusion in three ways.

- First, the overhauled methods section on **pages 4-6** should provide the reader with a clearer idea of what we attempted to accomplish in conducting the literature review and in designing the conceptual framework.

- Second, we added a limitations section on **page 13** which should, at least partially, address some of the concerns here.

- Three, we added a new paragraph to the results **page 6** and discussion section **page 10** which should help provide more context for making claims throughout.

e. **The authors make general statements but it is unclear in which contexts they might be most applicable. Perhaps you aren’t able to make such a determination but it may be worth acknowledging this limitation elsewhere (see earlier comments) given the importance of contextual influences in shaping health systems and related decision-making.**

- We have noted throughout that the decision-making process is highly contextual (or context-specific). We addressed this comment in our first point in the new limitations section on **page 13**.

f. **Relatedly, are there particular areas that the authors might wish to suggest that require further research (i.e. to further test the attributes of your conceptual framework for embeddedness in health research?)** For example, the authors could comment on the need to further study the relative influence of historical, political and other forces in shaping the “pathways through which research enters into the decision-making environment “, or the need to further understand under which conditions are a more complex array of actors engaged (your results point for instance to the type of policy), etc.
• We added the following sentences to the conclusion on page 14: “Researchers could test certain components of the conceptual framework presented in this study or use it to guide empirical and critical inquiry into the complicated processes of knowledge-translation and knowledge-utilization. The development of HPSR or ‘health research systems’ [64] and novel embedding techniques such as alignment exercises and contribution mapping [65] also warrant further investigation.

Reviewer 2 (MK) Comments and Author Responses

• Overall, we found this critique interesting and useful, but the reviewer did not indicate constructive ways in which we could strengthen the manuscript. Furthermore, the critiques seem to be aimed at the study conception and design, which would be beyond the scope of a revision to address. To attend to this review fully, we would have to design a different study and write a different paper that focused more specifically on the social dynamics of policy formation in all sectors and outside of low-income countries. Any attempt to address these critiques within the context of this study would not be possible given the space considerations and word count as the manuscript stands.

• Nevertheless, we did address some of the author’s suggestions as indicated below

  a. A key question, essential for considering its embeddedness, is what is meant with ‘research’. The authors seem to alternate between research as a ‘process of producing knowledge’ and research as a knowledge output (e.g. in the conclusion).

• We have changed the term research to HPSR throughout to more precisely illustrate the kind of evidence we have considered. This is seen to be an knowledge output as opposed to a process, because we did not evaluate the process by which research was conducted in LMICs, but rather, how it was used.
b. The authors do not make this explicit, but seem to indicate that they focus on decisions made at the MOH in LMIC. I find this rather narrow, as many analyses indicate that key decisions, in which research is used, are constantly made at all levels in the health system.

- We have removed any implications of the MOH as the only decision-maker, but have retained the use when it is used to illustrate a specific point.

c. It remains unclear where this framework comes from and what is meant by concepts as ‘reputation’ (between which actors?) ‘quality’ and ‘quantity’ of connections to decision makers, etc.

- We added a new paragraph in the methods section page 6 that indicates how the conceptual framework was constructed. Also, we listed the unsystematic process by which the conceptual framework was constructed in the new limitations section on page 13.

- The definition of “reputation” is given on line 6, page 4. The sentence states: “Similarly, organizations perceived to be performing at a high level and producing quality outputs for others within its domain were said to have a strong reputation.”

- We describe the quality and quantity of connections line 15, page 12: “If a given organization has several linkages to decision-makers, as well as other organizations within the network, then it is more likely to have greater centrality and embeddedness in the network. The ‘quality’ of these connections also matter – an organization that has links with another highly central organization in the network will possess at least as high a degree of embeddedness. Also, strong links to decision-makers, or highly influential decision-makers, greatly enhance the degree to which an organization becomes embedded in the flow of evidence into policy.”
Reviewer 3 (SRH) Comments and Author Responses

1) Major Compulsory Revisions:
   a. The second sentence in the Methods states: ‘We hypothesized that the quantity of research, the quality of research, relevance of research, and legislation would dictate the extent to which research is embedded in decision-making.’ It seems rather an overstatement to hypothesize that these 4 factors would ‘dictate’ the extent to which research is embedded, as opposed to perhaps influencing the extent to which it would.

      • We have altered the phrase “would dictate,” to “would influence,” on page 4, line 19.

   b. Furthermore, having set out the hypothesis in the Methods, it was not clear to me that the authors came back to consider how far the data supported the hypothesis.

      • In response to the above point, we added the following sentence to the new paragraph in the Methods section at the top of page 5: “All authors discussed the descriptive information generated from the review, compared it to the original hypothesis, and collaboratively packaged the findings into a conceptual framework that reflected the
configuration and attributes of embedded HPSR organizations in LMICs."

- Also, in the discussion section, we provide a clearer link between the hypothesis, literature review, and the outcome (namely the development of our model), through the addition of a new paragraph at the beginning of the discussion section on page 10. This paragraph begins, “The findings of the literature review caused us to reject our original...”

c. The Methods should set out more details about how the review was conducted once the searches had been run: ie, what were the inclusion criteria?

- In response to this and the other comments below we reshaped the methods section by substantively changing the second paragraph, clarifying the other three, and inserting a new paragraph based on the data extraction and review process.

- In response to the specific point above, about the inclusion criteria, we have re-worked paragraph 2, page 4 of the methods to explicitly state our inclusion/exclusion criteria. The following sentences were added to this paragraph: “Inclusion and exclusion criteria were formulated to account for the abstract nature of research on the...We included original health research articles and review articles that matched our search criteria, were explicitly conducted in or focused on LMICs, and incorporated some aspect of the processes above. Commentaries, editorials, dispatches from the field, news articles, studies conducted in high-income countries, and non-health articles were excluded from the review.”

d. who reviewed the papers to make the inclusion decisions?

- The last paragraph, page 5 was included to clarify the review process, including who made the inclusion decisions and the internal system of checks that the authors created. This paragraph begins, “Descriptive information was extracted...”

e. how were the included papers categorized?

- To clarify this, we inserted the following sentence into paragraph 2, page 5: “this categorization is by no means absolute and judgment was made through consultation between the reviewing author (ADK) and at least one additional author when ambiguity arose.”

f. Then either in the Methods, or the start of the Results, some indication should be given of the total number of papers included in the review, and the number in the major categories, for example how many attempted to analyse the use of research in a country at an overall national level, and how many focused on decision making in each of the building blocks taken from the WHO framework. There are a
few references to ‘very little evidence’ or ‘scant evidence’, but it would be useful to
give more indication of the number of publications involved.

- We addressed this shortcoming in two ways. First, we inserted a
  new paragraph, into the results section on page 6, (prior to the
  service delivery building block). This paragraph more systematically
  illustrates the quantitative output of the literature review. The total
  number of articles is included and reference is made to how many of
  the articles are located in the building blocks and how many are too
  broad or conducted in multiple countries, to be categorized.

- Second, we included the number of articles in the first line, first
  paragraph of each building block in the results section.

g. In the Results each sub-section would benefit, as indicated above, from some
more specific analysis of the overall picture from the publications relevant for that
sub-section. Then it could be made clearer if the very interesting examples given
are representative of the general picture, illustrative of what can be achieved in
the most favourable circumstances, or what?

- As noted above, we included the number of publication into the first
  line, first paragraph for each building block.

- Also, given space considerations, we added the following sentences
to the new paragraph on page 6: “Still, nearly half of the articles
(n=44) pertained more directly to one of the health systems building
blocks. Some of the strongest examples are described below.”

h. Furthermore, it would also be helpful if rather more explanation could be given
about whether the examples in the case of service delivery are thought to be
representative of decision making about service delivery in general in those
countries, or specific to the particular diseases mentioned.

- We added the following sentence to the end of the service delivery
  paragraph on page 7: “Lastly, it should be noted that considerable
  variation was found within the services delivery block and it is not
  clear from these studies the extent to which decision-making for
  vertical programs in a given country is indicative of decision-making
  for health other health services.”

i. In the section on the conceptual framework it would be helpful if there could be
more links shown to the data gathered in the literature review. It would not
necessarily need long explanations, but it would be useful to include a range of
references to show how the examples discussed previously were being drawn
upon in developing, or testing, the various components of the conceptual
framework

- We addressed this concern by describing in greater detail the
  process by which data was extracted and the conceptual framework
  constructed in the new paragraph in the methods on page 5.
• Also, the new paragraph that discusses the rejection of our initial hypothesis and the re-packaging of information into the new conceptual framework on page 10 should help resolve this issue.

• As indicated below, given space considerations, the lack of a systematic process or formula by which the results section informed the abstract construction of the conceptual framework was described in the new limitations section on page 13. Also, this process was affected by the paucity of information, which is also suggested in the new limitations section.

j. Figure 1 and the text around it need some further explanation and/or some revision. For example, Regulatory Bodies and Legislature appear to be included in the red ring of the ‘agents that produce research’ rather than as being decision-makers. Is this correct for most LMIC countries, and if is then should the term ‘Regulatory Bodies’ really be used as opposed to something like advisory bodies?

• We agree with the comment and have changed the term in the figure and text from “regulatory bodies” to “advisory bodies”

• Legislature’s presence in the red ring is likely an artifact from previous iterations since it is now located in the decision-making environment. Thus we have removed it from the Figure 1.

• Also, we added the following sentence to paragraph 3, page 11 to make a clearer distinction between the two rings. “In this ring, actors tend to commission or actively source HPSR from the surrounding environment rather than conducting empirical HPSR themselves. They are shown outside the decision-making sphere in this diagram because their primary responsibility is to assist, not make, decisions in the health sector; however, the distinction is not always clear in some countries.”

k. The paper should have a limitations section, and at minimum if some of the items above cannot be fully addressed then acknowledgement of this should be included as part of the limitations.

• We have written a new section on limitations on page 13. This describes what we have identified as the four over-riding limitations of the study.

2) Minor Compulsory Revisions:

a. In the section on ‘Conceptual framework for embeddedness in health research’ there is a reference to Figure 3, which seems incorrect.
• We changed the words “Figure 3” to “Figure 1” on page 12, to link the two graphics together and show how they relate to one another.

b. In the references, there is variable use of initial capitals for the titles of journals: initial capitals should be used throughout please.

• We updated the relevant citations by downloading the HARPS style output from the endnote website and reformatting the bibliography. Where this did not resolve the issue, we manually edited the references per the HARPS format located on the website.