Reviewer’s report

Title: Random or Predictable?: Adoption Patterns of Chronic Care Management Practices in Physician Organizations

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Reviewer: Christian Helfrich

Reviewer’s report:

Summary of paper:

This paper reports findings of an analysis of data from a national survey of physician organizations on their use of 20 care management practices (CMPs) for 4 chronic conditions: asthma, congestive heart failure, depression, and diabetes. The authors conducted item response theory to explore patterns in adoption and determine whether adoption of CMPs appears ordered, i.e., does the presence of one specific CMP appear to usually be dependent on the presence of (and presumed prior adoption) of one or more other CMPs, and does adoption of CMPs appear related to either the type of CMP or the chronic condition it is for.

Summary of review:

Overall, I think this is a novel application of item response theory and an interesting idea, i.e., that we might identify a more adaptive sequence for adopting evidence-based practices by treating the adoption of chronic care practices as items in a scale. My primary concern is that the analysis appears to me highly exploratory but the findings are presented in very strong language as drawing conclusions about theorized relationships.

Major compulsory revisions:

1. I think the authors' conclusions are too strongly stated given the methodology. In the abstract they state, "Patterns of adoption indicate that innovation characteristics can influence adoption." As the authors acknowledge, there are numerous limitations including an implicit assumption the adopting organizations are making adoption decisions limited to these CMPs rather than other CMPs, or other innovations altogether; self-reported data from a single individual carries significant risk of risk of systematic measurement error; and cross-sectional make it very speculative to draw conclusions about the order of adoption.

Overall, I feel the analysis is exploratory, and the results and implications need to be framed that way. I think the paper would make a stronger contribution by discussing the many questions raised by their findings and less about the immediate application of the findings to implementation projects. I would like to see more about what research needs to be conducted to build on this work.
2. The conceptual model isn't linked to the measures in the analysis, and it's only in the discussion that it becomes clear that the authors didn't see the chronic condition and CMP type as reflecting specific innovation traits in Rogers' model. This needs to be explained better in the background; related to comment #1, this makes the analysis much more exploratory.

3. The authors note that the mokken analysis can't take into account organizational characteristics. But couldn't stratified analyses be conducted? Especially given that the authors cite evidence that physician organizations serving populations with high levels of socioeconomic vulnerability tend to fall behind in CMP adoption efforts (pg. 3, lines 20-23), wouldn't it make sense to do stratified analyses by organizations that serve populations with high levels of socioeconomic vulnerability vs. those that don't?

Regardless, I think the discussion needs to include more about how innovation characteristics are relative to the adopter, and that we can't assume that innovation traits are fixed and universal, for example, that the compatibility of a CHF registry is largely the same relative to a depression registry whether the responding organization has a large adolescent population versus a large geriatric population.

Minor compulsory revisions:

1. Pg. 4, line 12. The authors assert that innovation characteristics can facilitate or impede innovation uptake. A citation is needed.

2. Pg. 7, lines 2-6. Are these 20 CMPs the only ones in the survey? The justification on page 5 makes it sound as those the authors decided to focus on these 4 conditions due to their prevalence and burden of disease, but an explicit statement is needed.

3. Pg. 11, line 4. There appears to be a broken link in the reference software to a citation.

4. Pg. 14, lines 6-7, "characteristics such as disease focus and CMP type matter." This language is causal and too strong. These characteristics are associated, but cross-sectional, self-reported data are not sufficient for concluding the relationship is causal.

Elective revisions:

1. Pg. 14, lines 18-22. The authors say the lack of overall ordering was not concerning as it does not make sense that there would necessarily have to be a single order of adoption. I agree, but at the same time, they observed sequencing of CMP type within 3 of 4 chronic condition, and apparent ordering of CMP by chronic condition. I found it interesting that those associations
didn't translate into a pattern of overall ordering. Right now it's addressed as though the lack of ordering is a potential limitation instead of an interesting finding. I think it's worth a little discussion.

2. Pg 5. lines 1-2, "To our knowledge, this study is the first..." This sentence confused me. What does it mean to "examine the reality" of something?

3. Pg. 6, lines 5-11. This section is largely redundant with the last paragraph of the background. I suggest eliminating this paragraph, incorporating any unique information in the last paragraph of the background and beginning the methods section with the data source.

4. Pg. 6, lines 13-14. No need to introduce an acronym for the NSPO3 when it's only used a couple of times. As a reader, acronyms are little speed bumps and I prefer as few as possible.

5. Pg. 14, line 16. I didn't care for the expression "it is now also defensible to discuss these CMPs as empirically and operationally linked." It sounds too strong (e.g., as though some specific hypothesis had been answered) and as though there is a debate raging.

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