Reviewer’s report

Title: Specification of Implementation Interventions to Address the Cascade of HIV Care and Treatment in Resource Limited Settings: a Systematic Review

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Reviewer: Cheryl Hunter

Reviewer’s report:

Thank you for the opportunity to review this interesting and novel systematic review. Whilst the aim of the review differed somewhat to the standard systematic review, it should be of interest to an audience involved in implementation science as well as to those interested in implementation of HIV care.

Major comments

- It seems that you used principal component analysis to group intervention types into broader intervention approaches. As this is quite novel, it would be beneficial if the authors went into further detail as to how they did this and why. The section on analysis in the main paper is not very clear. How were the intervention types mathematically transformed or determined in order to enable PCA? What decisions did the authors make and how, to name the particular components? When they mention collapsing 2 factors into the 10 main component intervention approaches, how did they decide this?

- Connected to this, the authors have decided to analyse at the level of intervention types and approaches, but they do not present anywhere in the paper on the individual studies (n=106) and how they fell into these two categories, and where the overlap may have been. It is likely that a number of intervention types or approaches might have been taken in one study (as they acknowledge), but the reader is not able to get a sense of the full variety and complexity of the studies drawn on here, apart from a brief mention on lines 174-182 of the Franke and Igumbor studies. I am not sure how meaningful it is to solely focus at the level of intervention approaches when many studies will have combined multiple approaches.

- Line 131, the authors say that they report on the 6 dimensions of Proctor but not on "quality of reporting". The reasoning for this should be made explicit. It would also be helpful, given the aim of the study is to look at reporting of implementation interventions, if the authors did some quality appraisal of the 106 studies beyond the Proctor framework. Is the body of work flawed in general, or is it more specifically to do with intervention reporting?

- Table 1: This table is not completely clear. Why have they named the columns "n or median" and "% or IQR"? Is column 2 not reporting number of studies by design, region, level of behavioural target, positive effect, and publication year? Should each of these categories add up to 106, given n of studies? Only design and positive effect groupings currently do.
IQR - if this is referring to interquartile range, it makes little sense that the authors report a full range (392-5425) on line 169 and in table 1. Do they simply mean to report the range of sample sizes?

- In table 2, only 32 intervention types are listed, but the authors summarise elsewhere that there were 35 types (line 247). Could they clarify?

- What do the authors mean by "semi-coded or coded form" on line 111? Perhaps they could include a data extraction form as supplementary material, to make it clear what they extracted per study?

- Could the authors define "resource-limited settings", as mentioned in line 100? Are they referring to the countries, or something more specific or at a different level?

- Table 3 is referred to in the text with means, and on the table heading with percentages, but is reported in decimal form in the table. It would be helpful if the authors could clarify this table and be consistent in their reporting.

- The discussion re-emphasises the importance of clear reporting and summarises the results further, but does not go into much depth on critically discussing why reporting might be unclear or the potential meanings of certain intervention types and certain cascade steps being better specified than others in the Proctor framework terms. Could the authors discuss this a bit further? It would also be helpful for the authors to discuss this in light of the studies themselves - with sometimes multi-faceted approaches - and the quality of the studies.

- The authors could mention the purpose of process evaluations here - which tend to explore mechanisms and implementation of interventions in more depth - did they choose to exclude these types of studies? If so, why? Did any of the studies they included have process evaluations alongside their intervention studies? I think there is a critical point to be made around the specification of interventions in the types of studies included (which may be weak) and the likely enacted mechanisms of action, which may differ from what was specified.

- Appendix 2 - this is almost another paper. The background part is probably unnecessary as it doubles with the paper background; however, the part on cascade steps and rationale for this being used should probably be in the main paper rather than the appendix. The Proctor framework could be shortened and made more accessible to the reader (e.g. defined in a table with examples included in the full paper)

Minor

- Keywords are not provided

- Mistake in line 32 ("are have"), abstract

- Mistake on line 96 ("practices research community")
- Mistake on line 114 ("until")

- Mistake on line 259 ("issuing")

- Mistake on line 264 ("of reporting of reporting")

- Lines 308-312 - this is unclear as they state technological interventions report action and action target better then state technology interventions report action and behavioural targets less well.

- Mistakes on line 302 ("HCW's" and "peers health workers")

- the reference on line 300 is not in keeping with referencing elsewhere

- Figure 1 - define "PMTCT"

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