Reviewer's report

Title: Using qualitative synthesis to explore heterogeneity of complex interventions: A truth table approach

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Reviewer: Sharon E Straus

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Review of BMC Medical Research Methodology paper by Candy et al: Using qualitative synthesis to explore heterogeneity of complex interventions: A truth table approach

Summary
This study investigated a truth table approach to exploring heterogeneity of complex interventions. Completing syntheses of complex interventions is methodologically challenging and advances in this field are needed. Overall, this work has the potential to advance knowledge around how qualitative data can be included in systematic reviews, but the study has some limitations. The background and rationale of the study could be strengthened. The methods are very difficult to follow and because of this, it would be challenging for other researchers to reproduce their methods. This is a particularly important issue because doing systematic reviews of quantitative and qualitative literature is challenging and the field would be significantly enhanced with clarity around rigorous methods. In particular, the authors could consider strengthening their description of how “truth tables” are used and interpreted to help the reader understand the case presented here, its results and implications.

Major compulsory revisions

Introduction
# It would be useful for the authors to provide more information about “truth tables” - What are they? How do they work? Has anyone else done this before? Are there any examples? How is this work different?
# What was the rationale for selecting “truth tables” to address the problem in this study? It would be helpful to mention other strategies for doing systematic reviews of qualitative literature. In particular, it appears that their concerns could be addressed by considering other review methods such as realist reviews.
# The authors should consider discussing more about the difficulties related to combining quantitative and qualitative data in systematic reviews (particularly with complex interventions) – For example, Dixon-Woods, Pope & May, Greenhalgh, Pawson (and others) have previously described this issue

Methods:
# Some of the criteria to select the 2 reviews were not clear:

# Criteria 4: “the qualitative review aggregated thematically findings of individual studies on patients’ perspectives of disease management and themes were analyzed by considering how they may contribute to appropriateness of therapies” – This needs to be explained in more detail; also what does “aggregated thematically” entail?

# Criteria 5: “both reviews reported procedures to minimize bias in their findings” – What are these procedures?

- Why were these criteria used to select the 2 reviews? And why were only 2 reviews selected?
- PRISMA is not meant to be used as a quality assessment instrument but to help authors improve the reporting of systematic reviews and meta-analyses.
- PRISMA should not be used for qualitative reviews; there are some more appropriate resources for this:
- The first paragraph on the top of page 4 describing how the reviews were selected is confusing; it might be better to have separate headings for each of quantitative and qualitative review searching (and provide the rationale and a reproducible procedure for selection of each).
- How was the date on individual reviews used in the truth tables?
- The “data extraction, coding, and quality assessment of trial descriptions” section could be clarified to outline what information was abstracted.
- It would be useful to clarify the statement: “one reviewer extracted these data and generated the list, which a second checked”
- On Page 6 under the heading: “Configuring and comparing the data”, the authors describe a bit about how data are combined re: truth tables and state: “as described in the introduction”… but this was not described at all in the introduction.
- In this same paragraph, details on how a truth table is represented and how data are combined would be useful – An example of how to combine/match information would be particularly helpful here.
- The last paragraph of the Methods (page 6) isn’t clear, and some components could be placed in the Introduction (e.g., the first few sentences).
Results

# It’s difficult to understand the results without a clearer understanding of how “truth tables” work
# Is there a specific procedure for interpreting truth tables?

Discussion

# Most efficacy trials don’t explore beyond their findings to find out why and how the intervention works/doesn’t work, which can be informed via qualitative studies and this has been outlined in work by others including the realist reviews mentioned above by Pawson and colleagues.

# On Page 9, the authors state that they used “thematic analysis” for analyzing qualitative data – this information should be in the methods, and described in greater detail (rationale for selecting this method, and the process)
# What do the results mean in terms of future implications for applying the “truth table” procedure?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:

This review was completed by Monika Kastner, a postdoctoral fellow, and me and neither of us has competing interests to declare.