Reviewer's report

Title: A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous evaluations

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Reviewer: Rachael Powell

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In this paper, the authors address the important issue of the use of theory in Implementation Science. It is useful to know whether and how theories are being used, and to improve the standards of reporting theories.

- Major Compulsory Revisions

1. It would be good to see more detail in the Background. This is a very brief introduction to the area and could argue more strongly as to why this is an important study. For example, why might using theory be important? What can theories offer? Why is it important to know the extent to which theory has been used? In addition, it would be helpful to include examples of theories and their constructs. For example, as a health psychologist, I am very familiar with some theories but know little about organisational theories and it is difficult to appreciate the importance of the unfamiliar (e.g. readers are not told what PRECEDE stands for).

2. A major limitation of this paper is the timeframe of studies assessed (published 1976-1998). As noted in the Discussion, ‘it is only in the last five years that there has been greater discourse about the role of theory in implementation research’ – and standards of reporting studies have also improved in recent years. As such, while an interesting historical report, it is difficult to determine the importance of this study for today – it seems likely that the 1998 levels of theory use, and the standards of theory reporting, will have been surpassed. If it is not feasible to update the review, it would be useful to know what the pattern of results were – e.g. were studies distributed evenly over the years covered, or was a steady increase seen? Have the theories chosen, and the way they have been used, changed? Can hypotheses be drawn for the next ten years’ studies? This is important because if use of theory has changed such that researchers do now give careful consideration to theory choice and report theories appropriately then the authors’ conclusions may not be relevant to the current situation.

- Minor Essential Revisions

3. Methods: These are generally well described. It would be good to clarify in this section what is meant by ‘stage of research’. It is not made clear why the authors placed more importance on the early stages of category use (i.e. if theory was used at more than one stage then it was categorised according to the earliest
stage). I assume this is because it demonstrates the importance of the theory in designing the study but this needs to be clarified in-text.

4. The authors should check the CSO citation – I believe it is now known as the Chief Scientist Office of the Scottish Government Health Directorates.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I have recently completed a Research Training Fellowship which was funded by the CSO, to me, at the University of Aberdeen. The CSO also funded this study as the funders for the first author’s PhD. However, it is unlikely that the CSO would gain or lose financially from the publication of this manuscript. Therefore I believe it is appropriate to declare that I have no competing interests.