Reviewer’s report

Title: The impact generated by public and charity funded research in the UK: A systematic literature review

Version: 1 Date: 30 Jan 2019

Reviewer: Stephen Hanney

Reviewer’s report:

I am pleased that the authors have carefully addressed various issues I raised in my original review, even if they could have gone a bit further in relation to a few of them. The paper is getting near to being ready for publication, but there are, in particular, two points from my original review that I'd like the authors to look at again please, plus 2 more minor issues (and 2 typos) that have arisen as a result of their revisions.

1. I hope the authors can carefully check the content of the paper by Hall et al. In their response to my first review the authors state that the aim of the Hall et al paper is "to assess the relation between investment in UK health research and disease burden......". While this is true in one sense, and explains why the Hall et al paper was identified in the search, the paper is totally irrelevant for the objective of the current review which is to "assess the evidence of the impact generated by public and charitable funded health research..". The relation Hall et al examined was whether the pre-existing proportion of tobacco-related disease burden of disease in the UK was matched by the subsequent proportion of the total UK research expenditure that it received. In other words Hall et al were looking at the relation in completely the opposite way to that being considered in the review, ie Hall et al examined whether the pattern of the burden of disease generated an impact on the pattern of research expenditure. It is not surprising that Hall et al found, to quote the authors of the current review, 'no positive impact of health research on health outcome' (p.18), because that is not what Hall et al were studying.

2. P.22: the authors report that the REF 'is likely to improve the way impact outside academia is assessed and measured'. In the context of the current paper, as it stands this is a somewhat misleading statement, but a comment along these lines may well be justified as part of a fuller analysis. Currently it is misleading because the authors state in several places, including lower down on this page, that papers show a high risk of reporting bias by "highlighting the aspects or domains that were more likely to show high impact than those that did not." But that is exactly what the REF case studies do. Therefore, according to that measure, the REF case studies would have a much higher risk than some, if not all, of the studies rated as high risk for reporting bias in the review. The REF case studies are also highly selective. So, while I am quite happy for the authors to describe how the REF is increasing the overall capacity in the UK to show the wider impacts of health research, they should also acknowledge that if the criteria being applied in the review are applied to the REF case studies then they have high levels of risk of bias.
3. Table 2: I am not clear why the paper by Peckham et al is classified as N/A under funding bias: Peckham was part of the organisation (ie the SDO programme) whose research was being assessed.

4. P.17: top line: It should probably be 'case studies' not 'case study'.

5. P.21, Conclusion, first line: the statement 'as sources are getting more scarce', might be questionable. While it is true there are many uncertainties because of Brexit, the UK Government's recent Industrial Strategy contains a commitment to increase UK research expenditure. At minimum, therefore, the authors should supply a reference to support their assertion that 'sources are getting more scarce'.

6. P.23: penultimate sentence in the middle paragraph: 'help' should be 'helped'.

7. Finally, I'll mention to the editors the possibility of including a list of the studies identified but not included in the final list, perhaps as an Additional file.

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