Reviewer’s report

Title: Hospital volume-outcome relationship in total knee arthroplasty: protocol for a systematic review and non-linear dose-response meta-analysis

Version: 1  Date: 24 Jan 2020

Reviewer: Daniel Gould

Reviewer's report:

This is a very well-written protocol, and I commend the authors on the comprehensive and rigorous manuscript they have prepared.

1. Typo on page 10, line 326 - the R package referred to is metafor. It has been misspelled it as 'metaphor'.

2. I believe the section on 'Meta-bias(es)' (page 10, lines 328-329) can be expanded upon. The authors have comprehensively incorporated into their protocol rigorous non-statistical methods of reducing publication bias, e.g. searching clinical trial registers, contacting experts in the field, and searching for conference abstracts. The use of more than one statistical test to assess publication bias is also prudent as it prevents over-reliance on a single measure, and a more liberal p-value of <0.1 has been chosen which will further reduce the risk of false negatives.

   - The authors could expand upon this section by further substantiating their decision to approach publication bias in this way, and may find the following paper helpful: Lin L, Chu H, Murad MH, Hong C, Qu Z, Cole SR, Chen Y. Empirical comparison of publication bias tests in meta-analysis. Journal of general internal medicine. 2018 Aug 1;33(8):1260-7.

   - It is also worth noting that, according to the Cochrane Handbook section 10.4.3.1, "tests for funnel plot asymmetry should only be used when there are at least 10 studies included in the meta-analysis" (Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from www.handbook.cochrane.org.). I believe referencing this will strengthen this section of the paper.

3. Page 10, line 326 - the R package 'meta' (Balduzzi S, Rücker G, Schwarzer G (2019). "How to perform a meta-analysis with R: a practical tutorial." Evidence-Based Mental Health.) can be helpful in calculating pooled estimates, as the authors state is their plan on page 9 (lines 305-307), when pooling effect estimates using the generic inverse-variance method. It might be worth including this in the given list of R packages.

As a general comment, I believe the scope of this research extends beyond Germany and Europe. I understand the research team has a specific focus-group project outlined to facilitate the advancement of policy change in Germany as a result of this study, but given that the included literature is from all over the world, readers could potentially apply the findings to their own healthcare settings outside of Germany. This might be worth mentioning.
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