Reviewer's report

Title: Protocol registration or development may benefit the reporting, design and conduct of dose-response meta-analysis: Empirical evidence from a literature survey

Version: 0 Date: 22 Nov 2018

Reviewer: Katharina Allers

Reviewer's report:

Thank you for the opportunity to review this manuscript. The authors have conducted a study to investigate the prevalence of registration among dose-response meta-analyses (DRMA) and to compare the reporting and methodological quality of DRMA with and without a registration or published protocol.

While I think this is a relevant topic and an interesting study, there are some major issues I am concerned about.

The authors limited their study to DRMA, which leads to a very small number of included studies (n = 45). I think the study and its significance would be improved by a wider inclusion of meta-analyses. The definition of registration and published protocol is rather broad including heterogeneous registration methods. Almost half of all included DRMA with a registration or a published protocol were funded by the World Cancer Research Fund UK with a study protocol reported at their website and 14 of the studies were published by the same first author, which might limit the generalizability. Presentation of methods and results is partly unclear.

1) Introduction:
Overall, this is a clear and well written introduction, only the limitation to DRMA does not seem reasonable to me. How exactly should these DRMA differ to other meta-analyses, e.g. those on efficacy.

2) Methods:

a) How did the authors define meta-analysis and was a thorough systematic review component required? Otherwise some items of the PRISMA and AMSTAR checklists might not be applicable. This could lead to a difference between cases and controls (with more meta-analyses without a thorough systematic review component in controls) which would affect the results.
b) Page 4, line 15-25: The authors only write about registered DRMA but also included those meta-analyses with a published protocol but no registration, as this is a difference, I would prefer to mention both or otherwise be consistent and explain once that registration means that a DRMA had a prospective protocol (registration or protocol publication) and use the same term throughout the manuscript (see also title and abstract).

c) Did the independent variable has to be continuously (e.g. sleep duration in minutes) or could it also be a categorical variable (e.g. sleep duration in 2-hour intervals)?

d) Please be more precise about the inclusion criteria of included meta-analyses: Did you include meta-analyses on all kinds of included studies, meta-analyses on RCTs and cohort studies but also on observational studies?

e) Consider to explain why you limited your search to studies published after 2010 (because PROSPERO was launched in 2011? Very few DRMA were published before 2011?), in this way, it will be easier for the reader to understand the rationale for this limitation of the period of time.

f) The search terms mentioned in the methods section are not consistent with the search strategy in the appendix (but rather limited to one part of the search). Consider just referring to the appendix or otherwise you should describe your search terms in a more comprehensive way.

g) Study selection process: "...they read the full texts together to check against the eligibility criteria ... For each of the steps, the authors carefully cross-checked the assessment of eligibility, collected data, and assessed the methodological and reporting quality."

a) Was the full-text screening (and data extraction) done independently by the authors or together?

h) „Those DRMAs claiming registration or protocol publication, which failed to provide any details and cannot be obtained by our further attempt (searching the websites of the institution of the first and corresponding author), were not treated as such."

b) I am not sure if searching the websites of the institutions of the first and corresponding author is sufficient. Searching PubMed and PROSPERO seems to be a better way to identify further protocols.
i) Page 7, line 12-15: What is about the option „not applicable“? Some of the items might be not applicable for some meta-analyses.

j) Please specify which test for normality was used.

k) The definition of registration and published protocol is rather broad including meta-analyses with a supplemented protocol and those referring to a protocol reported on a homepage. Though you discuss this point as a limitation of this study, you should also explain the rationale for this definition in the method section, especially, as the introduction is just referring to the advantages of RROSPERO (page 4, line 31-35).

3) Results:

a) It would be interesting to analyze how the proportion of registered DRMA compared to those not registered changed over the years. It would be expected that this proportion increased during the last years.

b) Table 1: How did you differentiate between general and specialist journal?

c) Table 1: Why did you not calculate a p-value for the AMSTAR and PRSIMA score at the end of table 1?

d) Appendix 4: Please check the appendix table 4. The column for the registration information does not fit to most of the studies (e.g. Aune et al. registered their protocol not within PROSPERO but have a protocol at the website of the WCRF, the protocol of Kelly et al. is registered within PROSPERO and not at the website of the WCRF…).

e) What did you do if a DRMA had two different registrations or if a protocol was registered and published? For each study there was just one registration mentioned but e.g. Ju et al. registered their protocol at PROSPERO and clinicaltrials.gov.

f) Table 2: Consider providing proportions and p-values for cases and controls instead of the numbers and rate differences (as these are no rate differences), this could improve readability.
Page 9, line 10: What do you mean by „mean score of methodological quality”? Did you mean the mean score of AMSTAR? How can there be a difference in the mean score of methodological quality but not in the median score of AMSTAR?

The presentation of the results in the result section is much too detailed (many numbers, confidence intervals and p-values) especially with regard to the small number of included studies you might consider to refer to the numbers in the tables more often instead of mention all of them in the text.

4) Discussion:

a) It should be critically discussed that many of the included DRMA are from the same authors, as the quality of a meta-analysis will in the first line depend on the authors conducting it rather than from the registration alone.

b) Page 11, line 31: "AMSTAR and PRISMA checklist were wildly used…" I guess you mean "widely" instead of "wildly"

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published
Declaration of competing interests

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal