Reviewer's report

Title: Measurement Properties of Comorbidity Indices in Maternal Health Research: A Systematic Review

Version: 1 Date: 24 Jul 2017

Reviewer: Amy Metcalfe

Reviewer's report:

GENERAL COMMENTS

- There are issues with grammar/spelling throughout the manuscript, particularly with regards to the plural vs. singular form.

- References are mis-specified and mis-attributed throughout the manuscript

- Many inconsistencies are noted throughout this manuscript, for example:

  o The number of identified articles/included articles differs in Figure 1, the abstract and the results section.

  o There is a disconnect between the introduction which focuses on maternal critical illness (i.e. morbidity) and the methods that focus exclusively on mortality. The introduction should be re-framed to reflect that mortality/prediction of mortality is the focus of this study

- Given that the review aims to find studies that predict mortality, the inclusion of the obstetric comorbidity index by Bateman et al is questionable as the primary outcome from this study is a composite outcome of mortality or end-organ damage. Similarly, the external validation study by Metcalfe et al doesn't even evaluate mortality, but is included in this review. However, if this index is to be included, the Combined Comorbidity Score should also be included as an addition index as it's measurement properties are also available in the Bateman et al manuscript

SPECIFIC COMMENTS

Abstract

- Please include the final number of studies included in the review in the abstract
- Lines 4-5 "Although pre-existing comorbidity indices are sometimes considered proxies of acute presentations of maternal critical illness" - I disagree with this statement. While the pre-existing conditions that are included in these indices are risk factors for acute events, they are not necessarily critical illnesses or acute events in and of themselves.

- Lines 8-9 - 'using an administrative data" should be re-phrased to 'using an administrative dataset' or "using administrative data"

Introduction

- The definition of maternal critical illness requires more development - including some examples of specific conditions that fall under this general term may help clarify this

Results

- When describing the study by Metcalfe et al (ref 36), the authors last name has an 'e' on the end of it (this is consistently misspelt throughout the manuscript)

- Page 18 - lines 2-4 - when discussing the Brier score in the Metcalfe et al paper, you shouldn't refer to its ability to predict death as death was not an outcome in this study.

- Page 18 - line 15 - the authors imply that they did a key word search for the maternal comorbidity index; however, 1) this is not included in the methods section and 2) this is not included in the search terms provided in Appendix A

- Page 19 - lines 5/6 - the authors state that the validity of the Charlson and Elixhauser comorbidity indices have not been assessed in maternal health research; however, the validity of both of these indices (along with the Combined Comorbidity Score) are evaluated in the manuscript by Bateman et al (ref 33).

Figures, Tables, Appendices

- Figure 1 should be updated to clearly indicate the number of included manuscripts

- Appendices B, C and D are not adequately referenced
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.

No

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 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