Reviewer’s report

Title: Applying the Analytic Hierarchy Process in healthcare research: A systematic literature review and evaluation of reporting

Version: 0 Date: 19 Oct 2015

Reviewer: Leandro Pecchia

Reviewer's report:

This is a timely and well written paper, aiming to review systematically articles focusing on AHP applications in healthcare.

This review is of particular interest as it tries to use/adapt for the AHP studies, standards normally used for systematic literature review in medicine.

The review presents well articles published in the 3 years preceding the 2014. Why is it? We are almost in 2016. It would have been nice to read that this review covered also 2015 papers.

However, I have only one doubt, that the authors may be willing to address. Systematic literature review in medicine bases on the concept of pyramid of evidence. According to this pyramid, systematic literature review (with meta-analysis) are the most reliable study, just above (multicentre) well designed RCT. According to the same pyramid, opinion studies occupy the last step of the pyramid. According to my experience, AHP is this category of studies as it bases in the majority of cases on users/experts/patient… opinion. Is it really a good idea to just opinion studies using criterion developed to pool RCTs? I guess author could comment this in the intro.

Considering the review, it works fine for the reporting of AHP methodological issues. However, it lacks to provide information (and eventually recommendations) that I would have liked to read. For instance:

1) How the hierarchy was defined? Is it possible to give recommendation for future studies?

2) Why to use AHP (and in general MCDA in healthcare)? In which circumstances this is recommendable and when this is not?
However, I am not sure if those questions can be answered so easily starting from a review. Therefore I am giving those suggestion as optional.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

Yes

**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:

Acceptable

**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.

No

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