Reviewer's report

Title: Potential predatory and legitimate biomedical journals: can you tell the difference? A cross sectional comparison

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Reviewer: Jelte Wicherts

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Review of BMED-D-16-01491 by Jelte Wicherts (signed)

In this manuscript the authors present an interesting and timely cross-sectional study comparing supposed predatory open access (OA) journals with OA journals published by established publishers and traditional journals in the biomedical field. With a rapid increase in OA journals, and increasing worries about predation in this system this study is clearly relevant for biomedical researchers and suits BMC Medicine well.

The study is broad scope, reasonably well done given the challenges in rating journals, and described well. The results are clear and the conclusions are straightforward.

I have several comments.

First, the selection of journals in the three categories could be described in more detail. Specifically, how many journals did PubMed Central list as immediate open access and how many journals were on Beall's list as of July 2014? Also, what types of journals are included in the AIM? I wonder about the possibility the journals are predominantly high impact multidisciplinary medical journals and am curious whether this perhaps skewed the selection or created an important confound when comparing the three sets of journals.

Second, I was wondering how the authors arrived at their list of indices to be scored. It would be reassuring to learn that all of these indices were chosen before the groups were compared rather than selected from a larger pool of indices that did not show any meaningful differences.
Third, although I am sympathetic to the authors' choice of not testing the differences between the journals formally, I wondered why they chose to only report the descriptive statistics after having randomly selected the journals to be included in the analysis.

Fourth, a clear drawback of the Beall methodology is that it is solely based on scores by one expert rater (Beall) on a list of criteria that have not yet been tested formally for inter-rater reliability or validity. The current data does add some validity to his scoring, but we cannot preclude the possibility that many of the criteria scored here overlap with those used by Beall. This potential overlap should be discussed in more detail.

Fifth, the golden standard of academic quality remains rigorous peer review by experts, which is hard to measure if only because of the obscurity with which many journals (both OA and established) exercise peer review. I have done a study that has similar goals and is quite similar to the current one in terms of methodology (Wicherts, 2016, PLOS ONE, "peer review transparency"). In my study, I developed a scale to measure the transparency with which journals present their peer review system. This scale shows good internal and inter-rated reliability and predicts whether or not the journal accepted Bohannon's (2013, Science, "who's afraid") flawed paper. I think it is warranted to ask the authors to discuss my study.

Sixth, the authors should also perhaps discuss the DOAJ and OASPA membership guidelines in relation to their own criteria.

Seventh, the term phising e-mails is commonly used to refer to emails that attempt to get the receiver to provide confidential data like passwords etc. This is not what publishers typically do when soliciting papers for OA journals.

Eight, I feel that it is crucial that the authors share their protocol used to assess the journals as an (online) appendix. Particularly, sharing a scoring protocol for items listed in their box I would allow others to use their results in practice and to follow-up on their study.

Ninth, in my experience, it is not always obvious to rate journals on all aspects, creating some ambiguity for some of the journal characteristics. I was wondering whether the authors have any data on inter-rater reliabilities. At the very least, the lack thereof should be discussed as a limitation of the study.
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?
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Yes

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Not relevant to this manuscript

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