

Peer review in academic publishing: threats and challenges

Durga Prasanna Misra¹, Vinod Ravindran²

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Correspondence to:

Vinod Ravindran
Centre for Rheumatology
Calicut
Kerala
India

Email:

drvindod12@gmail.com

Peer review refers to the evaluation of the appropriateness and validity of scientific research by one's own peers. From its origins in seventeenth-century Europe, when the need to evaluate work submitted to scientific journals by colleagues in the field first became recognised,¹ the field of peer review has evolved and grown, as well as developed its own peculiar issues. In this editorial, we shall discuss the types of peer review, discuss emerging issues in peer review and hope to enlighten readers as well as prospective reviewers about the nuances of this critical gatekeeping of scientific publishing.

Broadly, peer review can be either blinded, when there is an attempt to conceal the identity of reviewers, authors or both, or open, when the identity of reviewers and authors are revealed to each other. Furthermore, blinded peer review can be single blind, where the identity of authors is revealed to the reviewers (who remain blinded), or double blind, when both reviewers and authors remain anonymous to each other during the peer review process. Blinded peer review has its advantages, with the ability to shield the manuscript in question from either the scepticism associated with a junior author's work, or the privilege associated with work from a known group of authors in the specialty. This especially holds true in areas of the world where senior researchers may have significant authority, such that an early career researcher would hesitate to be named as a referee when evaluating such a senior peer's work for fear of later retribution in case of rejection or negative comments. However, many journals have now adopted open peer review, with transparent publication of named peer review reports, available along with the published manuscript (or provided to the authors in the case of a rejected manuscript).^{1,2} Another type of peer review that has been proposed is peer review for hire, whereby authors submit their work to a commercial agency that solicits paid peer reviews and includes the reviews

with the manuscript submission to journals. This absolves the journal of the burden of soliciting reviewers; however, this method may not be free of conflicts of interests, in the light of payments involved to the commercial agency as well as peer reviewers.³ Often, peer review has been considered to be sympathetic to 'positive' studies, as opposed to those studies that may report a lack of attainment of the hypothesised effect or difference between study groups. This has resulted in the concept of results-free review, whereby authors submit their manuscript at the stage of planning the study, written up to the methods section, which is peer reviewed, and, if successfully clears this step, the study is published after completion in the said journal, irrespective of the results.⁴ Increasingly, complex statistical tests are used in manuscripts, and these may further require a separate expert statistical review.¹

The International Committee of Medical Journal Editors (ICMJE), which is one of the core bodies recommending ethical practices in scientific writing, lays out ethical guidelines for peer reviewers. It recommends that reviewers should consider potential conflicts of interest (COIs) that they may have when they review a manuscript, and refuse to review in the presence of such COIs. Furthermore, reviewers should attempt to be as timely as possible while submitting their reviews, and attempt to be professional in their criticism of the said manuscript. Such reviewers should maintain strict confidentiality regarding the manuscript and its contents until publication, and should refrain from using this privileged information for designing or conducting their own studies in the meantime. At this stage, it must be emphasised that the ICMJE guidelines clearly state that reviewers can only recommend their decision to the editor, who is solely responsible for taking the final decision about acceptance or rejection of a manuscript, and editors can make such decisions even without seeking external review comments.⁵

¹Assistant Professor, Department of Clinical Immunology, Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow, India; ²Consultant Rheumatologist, Centre for Rheumatology, Calicut, Kerala, India

Figure 1 Dangers that may compromise the peer review system in the present day



Peer reviewing is mostly a thankless, rarely publicly acknowledged job, driven by the passion of scientists to serve as gatekeepers for science. This has resulted in an increasing difficulty in obtaining the help of peer reviewers to provide comments for manuscripts.⁶ Recent initiatives have attempted to address this imbalance. Publons is an endeavour that enables logging and verification of one's peer reviews anonymously, in a format that can be downloaded and presented at the time of job interviews or academic promotions.⁷ Similarly, numerous journals and publishers have begun to award their best reviewers, in the form of reviewer certificates, or published acknowledgements in journals. Others provide financial incentives, such as discounts on purchased scientific literature.⁶ The Open Researcher and Contributor ID (ORCID) is another initiative. ORCID provide a unique identifier, an ORCID number, which can be used to showcase one's publication and review record by quoting this number while reviewing or publishing articles. ORCID has the dual advantage of being able to verify reviewer identities, something that has gained traction in the light of recent instances of reviewer identity fraud, as discussed below.⁸ Since traditional courses teach little, if at all, about how to peer review manuscripts, online initiatives, such as the Publons academy⁷ or mentorship programmes by professional societies,⁹ can help train prospective early career reviewers.

Nowadays, scientific fraud is being increasingly recognised, and peer review is not immune to misconduct.¹⁰ Reviewing when one has COIs, whether positive or negative, is inappropriate, also so is seeking inappropriate citations to one's own work or to the work of one's colleagues while suggesting revisions for a manuscript.⁵ Similarly, providing adversarial review comments and identifying new criticisms at every round of revision, when authors have already addressed the previous concerns satisfactorily, is uncalled for.¹¹ A recent worrying trend has been the identification of peer review fraud, wherein authors submit recommended reviewers, using genuine names in the concerned area of research, but with false email addresses that are operated by the authors themselves. The ensuing favourable reviews manage to get one's paper published, but also has resulted in large-scale retractions and public shaming of such authors, once such peer review fraud has been identified. Instances exist of peer reviewers directly contacting authors of a manuscript and demanding authorship in revised future submissions of the same manuscript. Experienced editors will recall reviewers who may have stalled manuscripts with repeated, unnecessary comments, while themselves initiating and completing work on the hypothesis proposed by the same manuscript.⁸ Needless to say, the careless peer reviewer, who is impressed by the flow of language that expounds what can only be described as nonsense, is no less a danger (Figure 1).

To conclude, the landscape of peer review in scientific publishing is undergoing a sea of change in recent times. What was once a behind-the-scenes, purely voluntary contribution to science is now able to be catalogued and archived through initiatives like ORCID and Publons. Prospective reviewers, authors and editors should be aware of the principles of ethical peer review. Those who serve as gatekeepers of science, including reviewers, editors and editorial staff should remember to avoid misusing their privileges, while doing their best to ensure that submitted manuscripts are provided their just rewards. **!**

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