

# Time to Review and Revise the Peer Review Process: A Critique

Pawan Sharma<sup>1\*</sup>, Swarndeep Singh<sup>2</sup>, Yatan Pal Singh Balhara<sup>2</sup>, Sandip Subedi<sup>3</sup>

1. Patan Academy of Health Sciences, School of Medicine, Lalitpur, Nepal
2. All India Institute of Medical Sciences (AIIMS), New Delhi, India
3. Universal College of Medical Sciences and Teaching Hospital, Bhairahawa, Nepal

## Abstract

### INTRODUCTION

Biomedical publishing is valuable as it is the process of disseminating novel and valuable scientific information. The publication of an article relies mainly on the peer review process that has been regarded as a gold standard for a long time. Despite being successful, the process has had a fair share of criticism. There is a need for considering some reforms in terms of transparency, accountability, and quality for this process. In this review, we aim to bring forward some criticism and provide recommendations for improvement of the peer-review process.

### KEYWORDS

Peer-review, retraction, scientific publishing, biomedical ethics

### \*Corresponding Author

**Dr. Pawan Sharma**

Department of Psychiatry

Patan Academy of Health Sciences, Lalitpur, Nepal

Email: pawan60@gmail.com

### INTRODUCTION

The recent spate of retraction of publications related to the COVID-19 disease led by the two articles published in the prestigious scientific journals namely the Lancet and The New England Journal of Medicine, has brought back the discussion around the peer review process to the forefront.<sup>1</sup> The blinded peer-review of manuscripts is an important step in the entire vetting process, and is often considered as the gold-standard to ensure the quality of scientific works by many researchers and professionals.<sup>2</sup> Despite its successes, peer review has attracted its share of criticism. Reviewers might exhibit bias or only support expected, pedestrian results. They might be overtaxed, uninformed, or ask for unnecessary experiments from the authors.<sup>3</sup> The peer-review process that is so widely used, largely remains untested with its effects on the overall quality and comprehensibility of scientific publications remaining uncertain.<sup>4</sup> A popular online blog tracking retraction of scientific papers from different journals, shows that the retraction of papers from several high-impact factor scientific journals is a regular phenomenon even prior to the COVID-19 times and for topics unrelated to the COVID-19.<sup>5</sup> The retraction of studies due to sub-standard peer review represents only tip of the huge proportion of articles with invalid or poor research results, which are published in scientific journals but are not retracted due to little scrutiny of them post-publication.<sup>6</sup> The peer review process alone in its present form cannot be a sufficient safeguard against this. This brings back the focus on the shortcomings of the existing peer-review system,<sup>7</sup> and highlights the need for having critical discussion among the scientific community about the process of peer review and need for its improvement to safeguard the research ethics.

### Perils of the present peer review process

Peer review is often done by reviewers selected by the editorial staff of a journal based upon the availability and willingness to review from their pool of reviewers.<sup>2</sup> There can be times where the manuscript may reach on the table of a reviewer who might not have sufficient expertise or up-to-date knowledge on the topic of study. Further, these reviewers often do this work as a pro-bono activity during their free time, and do not receive any compensation based upon the quality of review done by them. This might lead to unnecessary delays in the review process by authors, and several reviewers declining to review after initial acceptance or missing their agreed upon deadlines to complete the review.

The decision to accept or reject the manuscript is done by the editor, which is guided by the quality of peer-review comments.<sup>8</sup> There are times when this process becomes opaque, and no specific explanation(s) is provided to the authors for the decision to reject a manuscript despite of favourable reviewer comments. It is likely that the editors are biased to favour publication of manuscripts with conclusions to their liking in contrast to the other manuscripts. There are multiple biases which could vitiate the peer review process such as prestige bias, affiliation bias, nationality bias, language bias, gender based bias, content bias, bias as a function of reviewer characteristics, confirmatory bias, bias against innovative and ground-breaking research (conservatism), bias against interdisciplinary research, publication bias, among others.<sup>9</sup> The bio-medical research papers use complex statistical techniques for data analysis, which might be difficult to be reviewed adequately by their peers (researchers or professionals) from the same broad field as the scientific journal under which the submission has been made. On contrary there are times when peer reviewers have been guilty of finding statistical flaws which are not there.<sup>10</sup>

### Way ahead for improving the peer review process

1. **Formal training of reviewers:** The practice of providing resource materials offering guidance on peer-reviewing, conducting periodic workshops, and editorial feedback could help improve the quality of peer-review.<sup>11</sup> However, the limited available research suggests that providing training to reviewers improves the quality either marginally or not at all. Further, the positive effects of training were short-lived, with no significant differences observed in the quality of peer-review during long-term. This might be because learning how to do a quality peer-review is a difficult task requiring a lot practice, or due to limitations in the existing systems used for capturing the quality of peer-review.<sup>12</sup> Also, the evidence suggest mentoring didn't improve the peer review process.<sup>13</sup> Thus, there is a need for carefully considering different ways of training reviewers based upon their effectiveness and practical feasibility.
2. **Open peer review:** This includes the practice of making the reviewer and editor's name public to the authors and other readers. Further, few biomedical journals have started publishing reviewer comments and author

responses to reviewers' comments along with the published manuscript to give the readers an idea about how the manuscript has evolved over the course of peer review. This approach is believed to make the peer-review process more transparent and accountable. The available evidence suggests that open peer-review improved the quality of the peer review report (standardized mean difference, 0.14; 95 % CI, 0.05 to 0.24) and decreased the rate of rejection (odds ratio, 0.56; 95 % CI, 0.33 to 0.94), without having any significant change in the time peer spent by the reviewers on peer review (mean difference, 0.18; 95 % CI, -0.06 to 0.43).<sup>14</sup> However, few researchers have cautioned that this might lead to tempering of criticism against fellow colleges or seniors by peer reviewers and lead to an increased acceptance of manuscripts with lower quality.<sup>15</sup> A balance between this could be achieved by publishing peer-review reports while protecting the anonymity of reviewers. This system has been shown to work effectively without significantly compromising the reviewers' willingness to review, recommendations, and turn-around time.

3. **Additional statistical review:** The inclusion of separate statistical review by expert(s) from a dedicated panel of experts for the journal in addition to the traditional peer review by field-experts would help in ensuring that appropriate statistical analysis has been performed. This approach has been shown to be significantly better in improving the quality of published scientific papers in several randomized control trials, when compared to the use of statistical checklists or traditional peer review alone by field experts.<sup>16</sup>
4. **Mandatory data sharing:** The practice of encouraging data set sharing by the authors with the reviewers and readers has been made mandatory by some journals like the Journal of Health Psychology, PLoS One etc.<sup>17</sup> If not, at least the same must be shared with and scrutinized by the editorial staff for any obvious problems prior to being accepted for publication. This will help in keeping a check on studies published using either fraudulent or inappropriately managed data sets. Further, it will allow other researchers to independently assess the results of the published study.
5. **Post-publication peer review:** The practice of posting reviewer comments on already published scientific papers (assigned a DOI or available on certain preprint repositories like the arXiv, F1000R) at online platforms could supplant the existing peer-review.<sup>15</sup> This would lead to a paper being reviewed by a wide range of experts from around the world instead of a small number of people [peer reviewer(s) and assigned editor(s)], and provide a greater degree of scrutiny and quality assessment. This would promote sharing of ideas between experts with different views or opinions working in that particular or other related broad fields, and help in focussing discussion related to a particular paper at one common online thread or place. For example, comments posted by fellow experts at PubPeer led to corrections and even retractions of flawed published scientific

studies which escaped the scrutiny of traditional peer-review.<sup>18</sup>

6. **Promoting reviewer recognition initiatives:** A quality peer review is a time consuming and laborious job for peers who often themselves are busy with their own research, clinical, and/or teaching work. The present peer review activity is considered as a service to science, and is done by anonymous reviewers on a voluntary basis with little or no accountability. There are often no financial or other incentives for the reviewers which are contingent on the quantity and quality of peer-review performed by them. This might discourage or dissuade several scholars from spending their time and effort on peer-review, knowing that they will not be recognized or rewarded sufficiently for the same. However, the financial incentives could be a double edged sword.<sup>19</sup> The initiatives could be to develop the culture of providing certificates to peer reviewers, provide training and guidance and lobby for academic credit points in national councils.<sup>20</sup>

A recent systematic review and meta-analysis of 24 randomized trials evaluating the effects of different author-, editor-, and reviewer- level interventions for improving the peer-review process of bio-medical manuscripts concluded that only reviewer-level modifications in the traditional review-process were associated with significant improvement in review quality, but longer duration of review too.<sup>21</sup> Also, the need for conducting more systematic studies was

acknowledged. Thus, the modifications in traditional peer-review process suggested in this paper could improve the quality of published manuscripts, and needs to be carefully tested for both efficacy and feasibility prior to their wider implementation.

## CONCLUSION

The existing peer-review process is pragmatic, but not the perfect system for ensuring that only good scientific papers of sufficient theoretical and methodological rigour are published. There is an urgent need for carefully considering above mentioned reforms for increasing the transparency, accountability, and quality of the present peer-review process. However, the effectiveness and feasibility of several of the proposed changes in the peer-review process need to be studied in systematic manner before they are widely adopted across the scientific community.

## CONFLICT OF INTEREST

None

## FUNDING

None

## ACKNOWLEDGEMENT

None

## REFERENCE

- Sengupta S. An editorial perspective on the infamous COVID-19 studies retracted by Lancet and NEJM. *Indian J Ophthalmol*. 2020 Jul;68(7):1247–8.
- Mayden KD. Peer Review: Publication's Gold Standard. *J Adv Pract Oncol*. 2012;3(2):117–22.
- Raff M, Johnson A, Walter P. Painful Publishing. *Science* [Internet]. 2008 Jul 4 [cited 2022 Jan 16]; Available from: <https://www.science.org/doi/abs/10.1126/science.321.5885.36a>
- Jefferson T, Alderson P, Wager E, Davidoff F. Effects of Editorial Peer Review: A Systematic Review. *JAMA*. 2002 Jun 5;287(21):2784–6.
- Öngür D, Bauchner H. Notice of Retraction: Maslej et al. Individual Differences in Response to Antidepressants: A Meta-analysis of Placebo-Controlled Randomized Clinical Trials. *JAMA Psychiatry*. 2020;77(6):607–617. *JAMA Psychiatry*. 2020 Aug 1;77(8):786.
- Balhara YPS, Mishra A. A study exploring attributes and nature of the retracted literature on mental disorders. *Indian J Med Ethics*. 2015 Mar;12(1):30–7.
- Smith R. Peer Review: A Flawed Process at the Heart of Science and Journals. *J R Soc Med*. 2006 Apr 1;99(4):178–82.
- Menon V, Varadharajan N, Prahara SK, Ameen S. Why Do Manuscripts Get Rejected? A Content Analysis of Rejection Reports from the Indian Journal of Psychological Medicine. *Indian J Psychol Med*. 2020 Nov 11;0253717620965845.
- Lee CJ, Sugimoto CR, Zhang G, Cronin B. Bias in peer review. *J Am Soc Inf Sci Technol*. 2013;64(1):2–17.
- Bacchetti P. Peer review of statistics in medical research: the other problem. *BMJ*. 2002 May 25;324(7348):1271–3.
- Freda MC, Kearney MH, Baggs JG, Broome ME, Dougherty M. Peer Reviewer Training and Editor Support: Results From an International Survey of Nursing Peer Reviewers. *J Prof Nurs*. 2009 Mar 1;25(2):101–8.
- Warne V. Rewarding reviewers – sense or sensibility? A Wiley study explained. *Learn Publ*. 2016;29(1):41–50.
- Houry D, Green S, Callahan M. Does mentoring new peer reviewers improve review quality? A randomized trial. *BMC Med Educ*. 2012 Aug 28;12(1):83.
- Bruce R, Chauvin A, Trinquart L, Ravaud P, Boutron I. Impact of interventions to improve the quality of peer review of biomedical journals: a systematic review and meta-analysis. *BMC Med*. 2016 Jun 10;14(1):85.
- Kelly J, Sadeghieh T, Adeli K. Peer Review in Scientific Publications: Benefits, Critiques, & A Survival Guide. *EJIFCC*. 2014 Oct 24;25(3):227–43.
- Cobo E, Selva-O'Callaghan A, Ribera J-M, Cardellach F, Dominguez R, Vilardell M. Statistical Reviewers Improve Reporting in Biomedical Articles: A Randomized Trial. *PLOS ONE*. 2007 Mar 28;2(3):e332.
- Marks DF. Increasing the transparency, openness and replicability of psychological research: Mandatory data sharing for empirical studies in the Journal of Health Psychology. *J Health Psychol*. 2020 May 1;25(6):729–32.
- Didier E, Guaspere-Cartron C. The new watchdogs' vision of science: A roundtable with Ivan Oransky (Retraction Watch) and Brandon Stell (PubPeer). *Soc Stud Sci*. 2018 Feb 1;48(1):165–7.
- Garg PK, Gasparyan AY, Gerasimov AN, Voronov AA, Kitas GD. Financial Incentives to Reviewers: Double-edged Sword. *J Korean Med Sci*. 2015 May 13;30(6):832–3.
- Hamal PK, Dungal G. Peer Review Initiatives in Nepal. *J Nepal Health Res Council*. 2018 Oct 30;16(3):I–I.
- Gaudino M, Robinson NB, Di Franco A, Hameed I, Naik A, Demetres M, Girardi LN, Frati G, Fremes SE, Biondi-Zoccai G. Effects of Experimental Interventions to Improve the Biomedical Peer-Review Process: A Systematic Review and Meta-Analysis. *J Am Heart Assoc*. 2021 Aug 3;10(15):e019903.