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Methodological letter

# Peer review: is it important?

## La revisión por pares: ¿es importante?

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### Concept and development

The dissemination of scientific knowledge is conveyed through articles, structured writings published in specific journals. The task of editorial boards is to select articles that meet the editorial objectives of the journal. The qualification of the scientific quality of an article increases proportionally to the originality and specificity of new knowledge. Therefore, some external help is needed to prove the originality, accuracy and interest of a scientific paper. The most widely accepted method of evaluation is peer review (PR). The Oxford Dictionary defines it as a: *Process by which something proposed (as for research or publication) is evaluated by a group of experts in the appropriate field, or, a judgment on a piece of scientific or other professional work by others working in the same area*.

The use of PR is relatively recent. Its systematic implementation started in the 1970s. Until then, the Editorial Board assumed full responsibility for the acceptance of articles. The development of the scientific world over the last half century, the super-specialisation of areas of knowledge and the digital revolution, which has changed the way the publishing world is managed, have consolidated the usefulness of PR, which is considered essential in the process of scientific publication.[1]

### Types of peer review

There are 3 types of PR: single-blind, double-blind, or open. In single-blind PR, the authors do not know the reviewers, but the reviewers do know the authors. In double-blind PR, neither the authors nor the reviewers know one another and the original is evalVuated anonymously. Mutual ignorance between authors and reviewers is the ideal situation, as it allows for an evaluation without subjective or personal bias. Anonymity is relevant to try to avoid some of the criticisms raised against PR, such as the existence of personal differences between reviewers, theft of ideas or delay in the publication process. In open PR, authors and reviewers know each other. This option is more transparent and avoids plagiarism but has the disadvantages of mutual knowledge between author and reviewer.[2–4]

### Reviewer selection

Usually, the fact of being selected to review a scientific article makes the reviewer feel recognised, as he or she is considered to have the appropriate level of knowledge to give an opinion on the subject in question. Journals have a pool of reviewers, from which editors choose the most suitable profiles. The option of being a reviewer can be obtained either on a voluntary basis, sponsored through societies, by their prestige in an area of knowledge, among the authors of accepted articles on the same subject, or proposed by the author him/herself. It is the editors' responsibility to manage the pool of reviewers, which is one of the most arduous tasks for them.

### Peer review quality assessment

The most valued characteristics of a review are accuracy, clarity and brevity. In fact, the review is supposed to be carried out by professionals who have extensive knowledge of the

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subject, and who will act in an impartial, scholarly and responsible manner. The editor is particularly grateful for the speed, systematisation and rigour of the response. The most important commentary is the confidential commentary for the editors, and the section for the authors. In this section, the reviewer's opinion should be summarised in a concrete way. Some journals have sections to explain to the reviewer the stages and content of an ideal review. Two organisations (*International Committee of Medical Journal Editors and Committee on Publication Ethics*) have developed specific documents in relation to PR.[5,6]

## Reviewer loyalty

The work of reviewers is considered essential to ensure the quality of scientific publications. The scientific collaboration involved in reviewing articles carries an important responsibility because it helps to certify and qualify scientific contributions and, therefore, the advancement of knowledge in general. However, it is not easy to maintain a pool of academically mature reviewers, with the capacity for constructive criticism and the availability to review in a timely manner.

An additional problem is the recognition of PR. PR is seen as an altruistic activity, embedded in the academic philosophy of knowledge creation, evaluation and dissemination. Correctly performed PR requires time and dedication, so its recognition is a controversial issue, and there are multiple proposals for compensation, none of which is accepted as definitive.

The form of recognition of PR activity has been understood in a variety of ways: discounts on the purchase of editorial material; a six-monthly mention in an issue of the journals; written certification or a diploma. It is argued that the academic activity required to carry out a review involves a self-learning activity, which would give it a certain degree of intrinsic value. This concept has taken the form of credits in the English-speaking world, whereby the PR would be compensated as an accredited training activity.

Clavirate has recently developed an idea, embodied in the Publons website (www.publons).[7] This large database makes it possible to certify, quantify and qualify the activity of the reviewer, with the intention of adding value to the review activity.

The financial remuneration of the PR is a contentious issue. The argument in favour is that PR is crucial in the publishing world and is the source of a substantial profit for publishers. The counter-argument is that the commercialisation of the PR activity may favour possible conflicts both in the selection of reviewers and in the "professionalisation" of the PR, among others, which keeps this activity in an unpaid format.

## Weak points of peer review

While PR is considered the most widely accepted tool, many authors consider it to have weaknesses, which detract from its value and credibility.

One of these is the delay in the publication period. PR inevitably lengthens the process, especially if reviewers do not live up to expectations in terms of speed or quality of review. Another criticism is the lack of reliability, as reviews are often divergent or disagree in their opinion, despite being methodologically sound.

Another criticism, which cannot be attributed exclusively to the PR, is that it is not able to identify plagiarism or repetition of a project or study.

Especially in very cutting-edge or super-specialised topics, conflicts of interest may arise because the reviewer has access to information that may compete with his or her own interests, which may favour deliberate delay or negative bias in the assessment.[8–10]

## Future peer review options

There are very attractive theoretical proposals, experimented in Physics or Chemistry but less used in Biomedicine, such as on-line discussion and dynamic peer review. In on-line discussion, the article is published in the initial format as submitted by the author, and the discussants and readers add their comments and opinions on an ongoing basis. Dynamic peer review is based on repositories where the article is published in a pre-print format (arXiv, bioRxiv, medRxiv), which can be analysed and critiqued by any reader. The article is published in its original format, freely and publicly, almost immediately. This makes the article a "living" piece that is continuously completed. The advantages of this type of PR are that it is easier to avoid plagiarism, increases interaction and reduces publication time. The disadvantages are that they are much more complex to set up and that they are not well known and have not yet achieved great popularity.

Despite its potential shortcomings and limitations, the PR is still the most widely accepted and used instrument for reviewing scientific articles, and it is the responsibility of the entire scientific community (authors, editors and reviewers) to use it professionally and ethically for the sake of the development of scientific knowledge.

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