

## Peer Review: A Guarantor of Quality & Validity

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### Abstract

The quality & validity of published medical research depends upon the peer review process.

Publishing papers of poor quality, bad methodology or non-valid results can have far-reaching implications for individuals, patients and society. It is necessary to have a process in place which reduces the possibility of poor or inferior papers being published. Peer review is a guarantor both of the quality of a published paper and the status of the publishing journal.

The paper outlines the different approaches to peer review used by different journals and advises authors on the approach they should take when a paper is rejected or when reviewers suggest amendments. The benefits authors can derive from practising peer review before submitting manuscripts is outlined, and the paper advocates that the peer review process can be a crucial element of an author's personal development plan and advancement both as a writer and a researcher.

### Introduction

Scholarly peer reviewing or refereeing is the practice of scrutinising an author's submitted academic work or research paper by experts in the same field before a paper is accepted for publishing in a journal. It endorses the significance, authenticity and value of individual articles by checking research methods and previously published data and therefore is considered to be integral to scholarly research.

Publishing papers of poor quality, bad methodology or non-valid results can have far-reaching implications for individuals, patients and society. It is necessary to have a process in place which reduces the possibility of poor or inferior papers being published. The initial filter in checking the validity and value of a paper for publication is the peer review process; it is the means by which the publisher decide whether a work should be accepted. It follows that accepted and published articles are, in all probability, of high or at least acceptable quality. Moreover, the status of the publishing journal is predicated on publishing sound scholarly articles and therefore the peer review process is central to achieving and maintaining this status.

The process of peer review by a journal is necessarily time-consuming and thorough.

First, a preliminary check is made by the editor to decide if the manuscript is suitable in both subject matter and content, and submitted in the format dictated by the journal in its "guide to authors". He decides at this point as to whether the manuscript should be sent for peer review or be immediately rejected.

If the manuscript is selected for peer review, the editor must source qualified experts in the same field. Most journals use at least two reviewers initially.

Reviewers assess the editor's preliminary view as to whether the manuscript topic is acceptable to the journals requirement to check whether a research question has been clearly stated, and to decide if suitable methodology has been used to address the scientific issues involved.

They are generally provided with a checklist to help in this process. The methodology, including statistical methods used and the originality of the research findings, are assessed as well as the ethical aspects of the study.

An essential aspect of the reviewers' function is to appraise the knowledge of authors on the subject by noting how logically the hypothesis has been composed, whether references are contemporaneous, primary sourced and relevant and whether the conclusions are understandable and justifiable.

Journals frequently use a questionnaire which is sent to reviews. Once completed this is returned to the editor and forms the basis for deciding whether the manuscript should be accepted, requires minor or major revisions before being accepted, or rejected. Rejection usually means that the journal will not accept another manuscript by the authors based on the original submission.

As indicated above, a rejected manuscript does not inevitably mean the work is inadequate with regards to scholarly quality but may fall short of the high standards of originality and innovativeness expected by an elite journal.

Invariably, journals send the views of all reviewers to the authors with useful advice on how to improve their work; this is given even when the journal has rejected the manuscript. Authors should heed the advice given by reviewers in most cases, and incorporate these into their manuscript. Even when a manuscript has been rejected, authors should follow the given advice, re-write the paper and submit it to a different journal after an initial rejection.

It follows that the peer review process not only helps to nurture the quality and integrity of submitted paper but is also key to a researcher's training. It has an educational component which should be welcomed especially by younger authors. By taking cognisance of reviewers' advice and deliberating on these, authors will soon recognise common flaws in research papers use this and improve future manuscripts. Peer review encourages keeping in touch with current research and sharpens critical analysis skills, all of which lead to an enhancement in the likelihood of being a successful published author.

A standard reviewer checklist is appended to this paper. This also is useful to authors as it indicates what editors require. Review your paper before submission by using this check-list.

There are several different approaches to peer review used by different journals. Each journal will indicate, in its guide to authors, which practice it uses.

In the single-blind review, the reviewers' names are not made known to the author(s), but the authors' names and institute may be known to the reviewers. This is the traditional review process and used by the majority of journals.

In the double-blind review, neither the reviewers nor the author(s) is known to each other. In both single-blind and double-blind there are usually at least two reviewers, and neither reviewer is known to the other.

A third or more reviewer may be asked to assess the manuscript when there is a difference of opinion expressed by the original reviewers. Additionally, journals may ask specialists in methodology or statistics to comment on these.

In this electronic age, many journals now use anti-plagiarism software and check if illustrations are original and have not been acquired from other published sources or manipulated by sophisticated software.

Authors should be acquainted of the fact that the editor will, in most cases, abide by the final collective suggestion of the reviewers, whether this is for acceptance, the requirement of minor or major modifications or rejection, and appeals by authors are not usually accepted.

A third review process, the open review in which authors and reviewers are known to each other is used by a small number of journals.

Each process has its advantages, conceived disadvantages and criticism. The review process should allow the all authors equivalents in manuscript acceptance. Papers should be accepted solely on the basis of their academic worth and not on the authors, reputation, status or country of origin.

The single-blind review, with reviewer anonymity, is said to prevent reviewers being influenced by authors. However, as the authors are known to the reviewers, concerns have been raised that this may lead to unnecessarily harsh or unjustifiable criticism and even personality clashes, where a reviewer may take steps against the authors to prevent or delay acceptance of a manuscript. On the other hand, the double-blind review with author anonymity prevents such reviewer bias. Recently, a novel alternative to the standard peer review process, called open peer review, has been piloted to address, in part, the critics listed above.

This model includes "crowd-sourced" peer review where articles are published either immediately or after superficial initial checks by the journal, leaving and the definitive and authoritative assessment to the scientific community. The method is not without inherent problems, the principal being the difficulty in finding an appropriate number of experts who are capable of offering a professional assessment. An in-depth evaluation of open review is inappropriate within this article, but the overall consensus is that open peer review should be complementary to the existing peer review process rather than supplanting it.

It follows from the above that fulfilling a peer review is time consuming and far from easy or straightforward. The reviewer is accountable both for protecting the scientific community and the public from bogus, false and ambiguous pronouncements at the same time ensuring that legitimate and innovative data is not suppressed.

Authors can derive significant benefit from practising their peer review before submitting manuscripts; it is necessarily a systematised process which can be learned and improved. By becoming involved in the peer review process, at whatever level, an author will gain confidence in manuscript writing and benefit from the process. It can be a crucial element to an author's personal development plan and advancement as a researcher. In engaging in the process critical analysis skills are honed, the individual is up-to-date and well-informed of current research, and well able to spot common flaws in research papers. These attributes once acquired improve one's chances of being a successful published author.

**Conclusion:** Peer-reviewed articles provide an established and reliable form of exchange of scientific ideas and in general ensures quality requirements of scientific publications. Scientific knowledge is by its very nature incremental and accumulative, and the quality of previously published material is of particularly important. Unreliable studies should never be allowed to become the basis of ongoing research. The peer-reviewed process cannot always prevent this occurring or ensure that all published work is factually accurate or conclusive, but it does go a long way to meeting these requirements.

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