Trends in Scholarly Publishing

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What You Need to Keep in Mind While Peer Reviewing a Medical Research Paper

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ABSTRACT
Medical peer reviewing is a crucial component for ensuring the high quality of the research publications. Therefore, it follows that a peer reviewer should know his job inside out. There are key aspects of the peer-reviewing process that needs to be kept in mind. He should have a good grasp of the whole process as often the reputation of the journal is at stake, which cannot be compromised at any cost. Likewise, the hard-earned reputation of the reviewer, who is usually a leading scientist and an authority on the subject, will in all likelihood be tarnished. Therefore, this article attempts to highlight the key points that should be kept in mind, while reviewing a medical research paper.

KEYWORDS
Peer-review, medical research, quality Peer-review, ethical aspects

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INTRODUCTION

Peer review is an essential component of the publication pathway. The peer review process on the one hand increases the standard of the paper and on the other, elevates the journal's stature.

Peer review is done by peers and is of two types, namely, internal and external peer review. The former is carried out by in-house editors of the concerned journal, while the latter is carried out externally by scientists who have a good reputation in the niche area of the topic. These peer reviewers are trusted by the editor to provide their impartial opinion on the submitted paper. Their feedback to the authors and the editor helps to make the manuscript better and also ensure that doctors have access to the latest information on treating their patients[1].

Peer reviewers are highly dedicated people who spare their valuable time to conduct the reviews. Based on randomized controlled trials, it has been found that ideal medical peer reviewers tend to be younger than 40, affiliated with a reputable academic institution and have a strong background in statistics and epidemiology, as well as professional training in these fields[2,3].

QUESTIONS TO ASK BEFORE DECIDING TO PEER REVIEW

The reviewer should ask the following questions to himself before taking up a peer review assignment:

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- **Can I meet the deadline?** The peer reviewer must submit the peer review report on or before the deadline. If he thinks there isn't enough time to review the paper, he should decline to review it. However, if he has already accepted to review the paper, but still there is not enough time to conduct the review, then he should immediately inform the editor asking to extend the deadline[3]
- **Can I handle the topic?** Ideally, a peer reviewer should be familiar with the topic and have mastery over the subject. He should be comfortable reviewing the paper. If he doesn't feel confident about the subject, he should decline to review the paper. The peer reviewers should keep in mind not to go beyond their level of expertise, as this could jeopardize not only their credibility but also that of the journal[3]

KEY ASPECTS THAT THE PEER REVIEWER MUST ADDRESS

The peer reviewer must address the following aspects

- **Systematic approach:** The peer review must be done using an evidence-based and systematic approach. The reviewer should scrutinize the paper, based on its relevance, originality of the study, strengths and weaknesses, clarity of expression, accuracy of data interpretation, future prospects of the findings and whether the study is suitable for publication[3]
- **Impartial analysis:** The review must be well-balanced, carefully weighing the pros and cons, as well as without any bias or partiality. It should be thoughtful and useful for both the authors and the editor. Comments to the authors should facilitate the improvement of the quality of the paper while it is being revised. The comments to the editor should provide insight into the data quality, novelty and innovation involved in the study and other key aspects that will help the editor to take the final decision about the fate of the paper[1]
- **Identification of "plus" and "minus" points of the paper:** The strengths and weaknesses of the paper must be identified by the reviewer in order to make an informed decision. He should ensure that the review of literature is up-to-date, the study objectives and methodology are adequately aligned, the materials and methods are thoroughly described, the study is properly designed and executed and the generated data is rigorously analyzed. Any limitations of the study must also be identified and the reviewer must also determine whether the study adds to the existing knowledge base[1]
- **Positive vs negative comments:** Authors expect positive comments from the peer reviewer and rightly so. This is because constructive suggestions will help them improve the quality of their paper. The reviewer should also point out how the authors can increase the relevance, usefulness and completeness of their paper. Most importantly, the reviewer should make sure that his comments are devoid of sarcasm and negativity, as these would discourage the authors and break their morale[1,3]
- **Ethical aspects:** Authors and peer reviewers alike must maintain stringent ethical standards. Ethical issues that pertain to authors include authorship, conflict of interest, Institutional Ethics Committee (IEC) approval, informed consent, disclosure of funding source and assuring the authenticity of the study. The guidelines published by International Committee of Medical Journal Editors help to educate the peer reviewers and equip them with the relevant skills to do their job better[4]
- **Plagiarism issues:** The Latin word *"plagiarius"* is the origin of the word "plagiarism", which means "kidnapper". In literary terms, it essentially means stealing another person's literary works and publishing them in their name, without acknowledging the original author. The modern interpretation of the term was introduced in the 1600s and it encompassed not only language theft, but also the theft of ideas, expressions and thoughts of the original author. Hence, it follows that plagiarism amounts to not only academic dishonesty but also a gross violation of publication ethics. From this angle, plagiarism can be considered to overlap with infringement of copyright laws[5,6]

Peer reviewers can cursorily check for plagiarism issues by simply googling random sentences from the paper. Besides this approach, nowadays, there are many commercial plagiarism checkers freely available on the net, as well as paid plagiarism software. The latter include Grammarly, iThenticate, Turnitin, ProWritingAid and Plagiarism Checker X, to name a few. The peer reviewer should have a fairly good understanding of the various plagiarism software, although practical knowledge is more important for in-house editors than external reviewers:

- **Onfidentiality:** The peer reviewer should always keep in mind that the paper is a highly confidential document, the contents of which cannot be disclosed to anyone, anytime and under any circumstances. Importantly, the reviewer shouldn't contact the authors at any time during the review process. If in doubt, he should contact the editorial office[3]

STRUCTURE OF THE PAPER

The structure of the paper is very important and should be checked by the peer reviewer. The structure depends on the type of paper. For example, original research articles include the following sections: (i) Abstract, (ii) Introduction, (iii) Materials and Methods, (iv) Results and (v) Discussion. The Abstract should provide a summary of the research concisely . In case of original articles, the abstract should usually be structured, whereas in case of other types of articles, such as reviews, case reports and case series, it is unstructured and is written as a continuous text. The Introduction should highlight the research problem, previous studies on the topic and the aims and objectives of the study. The Materials and Methods section should describe the experimental methods used to address the problem and the materials used in the study, including instrumentation, reagents and chemicals, as well as animals (if applicable). Notably, the manufacturer's name and place of manufacture should be clearly stated. The Methodology should be described in sufficient detail so that the work can be replicated by other researchers across the globe. For experiments conducted on human subjects, the guidelines stipulated in the Declaration of Helsinki (1964) should be strictly adhered to. Moreover, the study should be approved by the Institutional Ethics Committee (IEC) and informed consent must be taken from the study participants. If any statistical tests are used, these should also be stated in this section. The Results section should clearly present the data in an unambiguous manner. Tables, figures, graphs, flowcharts, diagrams, etc. should be used as necessary. The Discussion section should discuss the study findings and interpret the data in a robust fashion so that meaningful conclusions can be drawn.

In the last part, after the main body of the paper, the authors should state the source of funding (if applicable), conflicts of interest and any acknowledgments they wish to make. At the end of the paper, a list of references should be provided, either in chronological or alphabetical order in accordance with the journal's convention[7-9].

KEY POINTS TO REMEMBER WHILE CORRESPONDING WITH THE EDITOR AND AUTHORS

A glance through the paper should be able to establish whether there is sufficient information to conduct a concise yet comprehensive review. A summary of the paper's main points will help the reviewer to develop a comprehensive critique of the paper[1].

- **Cmments to the editor:** Confidentiality must be maintained at all times about the comments submitted to the editor. These comments should be judicious as they will influence the editor's decision on the paper's fate. It may be advised to (i) Accept the paper as it is, (ii) Accept after a minor revision, (iii) Accept after a major revision and (iv) Reject the paper altogether. The editor should be advised on whether the study is original and whether the findings are novel. The reviewer should also comment on whether the study findings contribute towards expanding the existing knowledge base in that particular domain[10]

- **Cmments to the authors:** While preparing the comments for the authors, the peer reviewer should ensure that general comments are given first, which provide an overall impression the paper has created in the mind of the reviewer. This should be followed by specific comments, which should discuss the nitty-gritty aspects of the paper, page-by-page, paragraph-by-paragraph and sentence-by-sentence. Here, all issues must be highlighted, including typography, grammar and syntax, among others. This will help the authors to thoroughly revise the paper so that its quality is enhanced[3,10]

CONCLUSION

The ultimate goal of the entire peer review process is to improve the quality of the science so that it positively impacts the overall health and well-being of the people. Besides this, there are also many other benefits. A properly peer-reviewed paper will produce a high-quality, polished paper that will be welcomed by readers. Also, the journal editors will be happy as good quality publications will enhance the prestige of the journal. Moreover, the peer reviewers themselves will also be greatly benefitted from the whole exercise, as it will help with critical thinking, as well as enhance their editing and writing skills. Hence, it's a win-win situation for all stakeholders.

SIGNIFICANCE STATEMENT

Peer reviewing is an important component of the publication process. Since medical science is a rapidly expanding area of knowledge, the need for ensuring that only the best and scientifically relevant papers are published is all the more important. Therefore, peer reviewers should be equipped with the knowledge and skills to do justice to the submitted paper. The objective of the present article is to provide an overview of the important aspects that should be remembered while peer-reviewing a medical research paper.

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