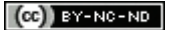


Medical Peer Reviewing: Key Points to Keep in Mind

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INTRODUCTION

Peer review is an activity that is very important and an integral component of the editorial process and is an essential element of scholarly publishing. It plays a crucial role in not only increasing the quality of the manuscript, but also enhancing the prestige of the journal. Peer reviewing is often learned 'on the job' without any specialised training.

Peer review, as the name suggests, involves review by peers, including internal peer review by editorial staff and external peer review by an expert having specialised knowledge in the core domain area of the paper to be reviewed. The external peer reviewer is identified by the journal editor for papers that have publication potential, following initial scrutiny by an editorial board member. The external peer reviewer provides feedback to the authors and the editor to improve the manuscript and take a decision on publishing, respectively. They also ensure that physicians have access to useful information that will help them to take better informed treatment decisions for their patients [1].

It goes without saying that peer reviewers are highly dedicated individuals who spare their valuable time to perform the reviews. Interestingly, results from randomised controlled trials have shown that ideal medical peer reviewers are usually aged below 40 years, are affiliated to a reputed institution, and have methodical training in statistics and epidemiology [2,3].

FACTORS TO BE CONSIDERED BEFORE ACCEPTING A MANUSCRIPT FOR PEER REVIEW

Before accepting an invitation to review a manuscript, the peer reviewer should dwell upon the following aspects:

Adherence to the Deadline [3]

It is very important for the peer reviewer to be able to meet the submission deadline for a paper assigned by a journal. Hence, checking if adequate time is available is of the utmost importance for carrying out a thorough review. If sufficient time is unavailable, the reviewer should decline the invitation to review the paper. However, if the paper has already been accepted for review and yet there is inadequate time, then the editor should immediately be informed about the delay and be requested to extend the deadline.

Familiarity with the Topic [3]

The peer reviewer should be comfortable about reviewing the paper and be familiar with the topic and its associated methodology in order to produce a good review. In case of any lack of confidence or hesitation about the subject matter, the reviewer should decline the invitation rather than producing a sub-standard review. Importantly, reviewers should not attempt to go beyond the boundaries of their knowledge or expertise as this could tarnish their reputation and credibility.

IMPORTANT ASPECTS TO BE ADDRESSED DURING PEER REVIEW

The following aspects should be addressed while carrying out the peer review.

Systematic Approach [3]

A conscientious, explicit, evidence-based, systematic approach should be adopted to guide the peer review process. The reviewer should evaluate the paper, based on the following aspects: (i) importance of the research question, (ii) originality of the work, (iii) strengths and weaknesses, (iv) clarity of writing, (v) interpretation of the results, (vi) future directions, and (vii) suitability for publication.

Balanced Critique [1]

The review should be impartial, balanced, unbiased, thoughtful, and useful for both the authors and the editor. The authors require comments that will help them to improve the quality of the paper. The editor, on the other hand, expects insightful comments about the importance and impact of the study, the validity of the generated data, any novelty or innovativeness involved in the work and whether it is suitable for publication. This will tremendously help the editor to take the final decision about the fate of the paper.

Strengths and Weaknesses of the Paper [1]

The reviewer should identify the strengths and weaknesses of the paper in order to make a correct judgement. Some of the areas include (i) up-to-date literature review, (ii) alignment of the study objectives with applied methods, (iii) thorough description of the methodology, (iv) adequate study design, (v) proper execution of research, (vi) rigorous data analysis, (vii) disclosure of study limitations, and (viii) addition of new information to existing knowledge base.

Constructive vs Destructive Criticism [1,3]

Constructive comments about the work should be provided to authors, which will help them improve the paper. Importantly, the authors should be advised on ways to make the paper more complete, useful, and relevant. The reviewer should desist from making harsh and disparaging comments to the authors, as these are destructive and serve no purpose other than discouraging the authors.

Ethical Issues [4]

Ethical aspects are applicable to the authors, as well as reviewers. In case of authors, common ethical concerns pertain to appropriate authorship, conflict of interest, approval by ethics committee, informed consent, funding source, role of sponsors, and authenticity of the study i.e., whether the work has been previously published or plagiarised. The peer reviewers, on their part, need to be conversant with the ethical guidelines as outlined by the International Committee of Medical Journal Editors in the *Uniform Requirements for Manuscripts Submitted to Biomedical Journals*.

Plagiarism [5,6]

The word plagiarism goes back to the 1st century AD and derives from the Latin *plagiarius*, which literally means a "kidnapper". In this sense, it refers to stealing another's writings (literary theft) and passing it off as one's own work, without giving due credit to the original author. However, the modern interpretation of the term introduced in the English language in the early 1600s- is not as simplistic and encompasses not just language, but also expressions,

ideas, and thoughts of the original author of the work. Therefore, plagiarism can be considered as a form of academic dishonesty and a violation of scholastic ethics. Although plagiarism is not the same as copyright infringement, these two terms may overlap considerably. This arises from the fact that original ideas expressed in words can be considered to be intellectual property and therefore can be protected by copyright laws, just as scientific discoveries are protected by patents.

To identify the plagiarism, reviewers can check the title in the Google database along with 2-3 sentences from the abstract. Also, the peer reviewer should be aware about scientific plagiarism and its various academic ramifications. Therefore, the peer reviewer should be well conversant with the latest plagiarism checking software packages, such as Grammarly Plagiarism Checker, iThenticate, Turnitin, ProWritingAid, and Plagiarism Checker X, among many others. Knowledge of plagiarism software is applicable more so for in-house editors of a journal, who carry out internal peer review, as opposed to external peer reviewers. However, the latter should also have a basic understanding of these aspects.

Journal Format [7,8,9]

The peer reviewer should check whether the research paper is properly formatted. The format generally varies with respect to the type of article being published. Original research papers are subdivided into (i) abstract, (ii) introduction, (iii) materials and methods, (iv) results, and (v) discussion. The abstract should contain the gist of the paper, highlighting what was done in a nutshell. Most journals require that the abstract be structured in case of original research papers. The introduction should highlight the problem that was addressed and the aims and objectives of the study. The materials and methods should address how the problem was solved and what materials and methods were used. Some of the materials include chemicals and reagents for laboratory-based *in vitro* studies or animals in case of *in vivo* studies. If human subjects are involved in clinical studies, approval by the institutional ethics committee, as mandated by the Declaration of Helsinki (1964), as well as informed consent from the study participants should be sought. This information should be clearly stated in this section. The methods used should also be indicated so that other researchers are able to replicate the experiments to verify the results. The results should clearly present the data in a comprehensible manner with the help of tables, figures, graphs, diagrams, and illustrations as required. The discussion should focus on how the data can be logically interpreted and properly compared with other similar studies. Importantly, the discussion should be able to draw a rational conclusion based on the study findings.

Following the main body of the research paper, an acknowledgement should be included to acknowledge those who helped in the study. Any conflict of interest on the part of the authors should be declared so that the peer reviewer and editor become aware whether any bias was present while conducting the study. At the end of the paper, a list of references should be included that must be up-to-date and appropriate with respect to the paper's topic. Moreover, the references must comply with the style followed by the journal. Importantly, the peer reviewer should be conversant with the various referencing styles, such as Vancouver, Harvard, Chicago, American Psychological Association (APA), and Modern Language Association (MLA), among others. Language and grammatical issues, if present, must also be addressed.

Confidentiality [3]

The manuscript should strictly be treated as a confidential document. Its contents should never be disclosed to anyone nor used in any way, directly or indirectly. Moreover, the authors should not be contacted by the reviewer under any circumstances during the review process. If any clarification is required, the editorial office should be contacted.

Conflict of Interest [1]

The peer reviewer should confidentially declare any conflict of interest to the editor, as these could affect judgement, leading to biased comments, thereby reducing the quality of the review. Some common conflicts of interest include financial aspects (paid consultancies or stock holdings), personal relationship with authors, professional rivalry with authors, animosity towards the research question/approach, as well as political affiliations.

Acknowledgement for Assistance [3]

Any individual, who has assisted the peer reviewer with conducting the review, should be duly acknowledged.

KEY POINTS TO REMEMBER WHILE COMMUNICATING WITH THE AUTHORS AND EDITOR

At the outset, the manuscript should be briefly scanned to see if the information is sufficient to make the judgement that a concise yet comprehensive review can be made. The essence of the paper should be briefly summarised prior to presentation of the detailed comments. This overview of the paper will also facilitate the reviewer to formulate the main body of the critique [1].

Comments to Authors [3,10]

The peer reviewer's comments to the authors should be separated into general and specific comments. The comments should be based on a thorough examination of the whole manuscript, critically analysing each section. The comments should ideally be separated according to the sections present in the paper and labelled by page, paragraph, and line. This will be very helpful for both the authors and editors to easily locate the particular section of the paper being referred to in the comments. Moreover, the comments should be written in clear, easy to understand language.

Comments to the Editor [10]

The comments to the editor should be highly confidential. In these comments, the editor should be advised about the fate of the paper, such as (i) acceptance in the present form without any revision, (ii) acceptance after a minor revision, (iii) acceptance after a major revision, and (iv) rejection at the present stage. The editor should be informed about the novelty and originality of the research and its contribution to the respective field of knowledge. While providing the comments to the editor, the reviewer should disclose if there is any conflict of interest in reviewing the paper. This information will allow the editor to weigh the comments submitted by the reviewer while making the final decision.

AREAS OF THE RESEARCH PAPER REQUIRING SPECIAL ATTENTION [1,10,11]

Particular attention should be paid while reviewing the paper section wise, which is highlighted below:

Title

It must be ensured that the title is accurate. It should clearly and succinctly convey the major focus of the study in a nutshell and should be capable of attracting the reader's attention.

Abstract

It should be checked that the abstract is structured, informative and concisely summarises the study. It should be an accurate representation of the paper. Numerical data presented in the abstract should match the data presented in the main body of the text. Importantly, the conclusions should correctly interpret the results and be focused and incisive.

Introduction

This section should be scrutinised to ascertain that it clearly and concisely states the research question, the aims and objectives, as well as the underlying rationale.

Materials and Methods

This section should be closely examined to develop a clear understanding of the study process and how it was conducted. It should be ascertained that the study design was flawless and strictly adhered to while conducting the experiments. Importantly, in case of clinical studies involving humans, it should be ensured that institutional ethics committee approval was sought and informed consent was taken from the study participants. Moreover, it should be checked whether the correct statistical test was used in data analysis. If there is any doubt, the editor should be informed to take the opinion of the journal's statistician.

Results

It should be ascertained that the results are clearly presented without any repetition of data in the text and tables/figures. The numerical values presented in the tables and figures should add-up correctly and be easy to understand and properly labelled. All the study participants should be accounted for. Moreover, it must be ensured that all numerical values are consistently presented throughout the paper i.e., in the abstract, results, tables and figures.

Images

Reviewers must also comment on the quality of images, specially the histopathological images. The legends must be checked against the finding presented in the image.

Discussion

It should be checked whether the study has been compared with similar publications in the literature and whether it agrees/disagrees with previous findings. The strengths and limitations of the study should be clearly stated, as well as their possible impact on interpretation of the results. Moreover, it should be carefully assessed whether the conclusion is justified and warranted by the data presented in the paper and not exaggerated. Importantly, the conclusion should provide a "take-home" message.

References

It should be ensured that the references are appropriate, up-to-date, and comply with the style of referencing followed by the journal.

Moreover, it should be clearly mentioned if any relevant references are missing. Importantly, in case of internet publications, it should be checked whether the relevant link is valid/working.

CONCLUSION(S)

The ultimate objective of medical peer review is to publish useful papers that eventually promote health and wellbeing. Importantly, the entire peer review process also provides multiple benefits, not only for the authors, readers, and editors, but also for the peer reviewers themselves. The authors and readers benefit from a well-polished paper that is comprehensible and easy to read. The editors benefit from the fact that the quality and standard of the journal is enhanced through the efforts of the peer reviewers. Finally, for the peer reviewers themselves, the whole exercise helps to improve their critical thinking and hone their editing and writing skills, which appreciably contributes to the enhancement of their own research careers.

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