



Review Article

Research Paper Writing and 'Peer Review': An Over View

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Abstract

A research paper presents the results of investigations on a selected topic. Based on researchers own thoughts and the facts and ideas they have gathered from a variety of sources, a research paper is a creation that is usually unique. In Bangladesh about 100 science and research journals are published annually in English language of which 45 are biomedical journals. Most of these do not reach their target readers and are not indexed or abstracted. Amongst many other deterrents, poor peer review is one of the most important hindrance to quality publication of science journals regularly. For quality publication, journals need careful and consistent editing. A well prepared systematic and organized manuscript is a prerequisite for this purpose. Critical but sensible peer review can enhance and enrich the whole process. The final outcome will be a journal with sound science that can play its proper role in the development of the country.

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Introduction

In Bangladesh about 100 science and research journals are published annually in English language of which 45 are biomedical journals. Most of these do not reach their target readers and are not indexed or abstracted. A study on the current status of science journals published in Bangladesh found that the major deterrents to promoting journals in Bangladesh were:

- Irregular publication
- Poor editing
- Lack of proper peer review
- Limited circulation.¹

Amongst these deterrents, poor peer review is one of the most important hindrance to quality publication of science journals regularly.

What is Peer Review?

Scholars criticize and evaluate the work of their peers before it appears formally in print. The system is called 'peer review.' Like democracy, it has imperfections, but it has no viable alternative, whether on paper or on the electronic airwaves.²

Subjects of Peer Review

Different situations call for different approaches to peer review. Selection of the proper approach is dependent on the type of proposal, program, publication, or other product being reviewed.

The "peer review" may be applied to the:

- Scientific study proposals,
- Ongoing projects,
- Programs,
- Publications and
- Other products by qualified scientific and/or technical experts in the relevant discipline(s).²

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Review Procedure

Submitted manuscripts are reviewed for:

- Originality,
- Significance,
- Adequacy of documentation,
- Reader interest,
- Composition, and
- Adherence to author guidelines.

Manuscripts not submitted in accordance with the guidelines are returned to the author for correction before peer review.

Manuscript sections for Research articles

Manuscripts for Research articles submitted to any journal usually should be divided into the following sections:

- Title page
- Abstract
- Introduction
- Aims and objectives
- Materials and methods
- Results
- Discussion
- Conclusions
- Acknowledgements
- References
- Tables and legends for illustrations

Title page

This should list the title of the article, the full names, institutional addresses, and email addresses for all authors. The corresponding author should also be indicated.

Abstract

The abstract of the manuscript should not exceed 250 words and must be structured into three separate sections: **Background**, the context and purpose of the study; **Results**, the main findings; **Conclusions**, brief summary and potential implications. The use of abbreviations is to be minimized and should not cite references in the abstract.

Introduction

The introduction section should be written from the standpoint of researchers without specialist knowledge in that area and must clearly state and,

if helpful, the background to the research and its aims should be illustrated. The section should end with a very brief statement of what is being reported in the article.

Aims and objectives

This section includes: 1) general objectives and 2) specific objectives.

A research paper needs to answer one or more questions about the problem or issue one would like to explore. In this situation, researcher's job is to figure out what aims and objectives he likes to work and write about.

Materials and methods

The scientific method means starting with a hypothesis and then collecting evidence to support or deny it. It should include:

- Study type
- Variables on which data was collected
- Population from which the sample was taken
- Sample size and sampling method
- Data collection techniques
- Procedures of data analysis

Results

It is the crucial part of the article. Description of findings may be complemented by tables and or graphs.

Discussion

The findings can be discussed:

- by objectives
- by cluster of related variables

It should mention findings from other related studies that support or contradict the findings of the present study. Limitations of the study should also be discussed.

Conclusions

This should state clearly the main conclusions of the research and give a clear explanation of their importance and relevance. Recommendations should follow logically from the discussion of the findings. They should be summarized according to the groups toward which they are directed:

- Policy makers
- Health and health-related managers
- Health and health-related staffs
- Potential clients
- The community at large

Action oriented groups are more interested about the concluding recommendation section of a research report.

Acknowledgements

These should be kept to a minimum. Authors should obtain permission to acknowledge from all those mentioned in the acknowledgements.

References

In general, every statement in a research paper must be supported either by a reference to published scientific literature or by original work. All references should be cited consecutively in the text, using numbers. Any references cited only in the tables or figure legends should be listed after references cited in the text.

Only papers that have been published, or are in press, or are available through public e-print/preprint servers may be included in the reference list.

Submitted manuscripts, personal communications (which can be included only with permission), unpublished manuscripts and unpublished data should not be cited in the reference list, although they may be referred to in the text (e.g. J. Smith, personal communication, 2001).

List of abbreviations

If abbreviations are used in the text either they should be defined in the text where first used, or a list of abbreviations can be provided, which should precede the competing interests and authors' contributions.

Competing interests

Authors are required to complete a declaration of competing interests. All competing interests that are declared will be listed at the end of published articles. Where the author gives no competing interests, the listing will read: 'Competing interests: none declared'.

The questions that are asked of authors are:

- Have you received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this paper in the past five years? If so, please specify.
- Have you held any stocks or shares in an organization that may in any way gain or lose financially from the publication of this paper? If so, please specify.
- Do you have any other financial competing interests? If so, please specify.
- Are there any non-financial competing interests you would like to declare in relation to this paper? If so, please specify.
- Authors' contributions In order to give appropriate credit to each author of a paper; the individual contributions of authors to the manuscript should be specified in this section. We suggest the following kind of format (please use initials to refer to each author's contribution): AB carried out the molecular genetic studies, participated in the sequence alignment and drafted the manuscript. JY carried out the immunoassays. MT participated in the sequence alignment. ES participated in the design of the study and performed the statistical analysis. FG conceived of the study, and participated in its design and coordination. All authors read and approved the final manuscript.⁴

All manuscripts considered suitable for review are evaluated by a minimum of 2 reviewers.

Reviewers receive manuscripts with abbreviated title pages (no author names listed) to ensure unbiased review. It is unusual for a manuscript to be accepted for publication without first undergoing a process of revision. Revised manuscripts are judged on the adequacy of responses to suggestions and criticisms made during the initial review. All accepted manuscripts are subject to editing for scientific accuracy, clarity, and style.

Points to ponder during a review

R What was known about this topic before this research?

Restate essential research question.
Research Why?

E Explain how data was collected? Validity?

V Very thoroughly, explain what the research found.

What conclusions can be drawn from the research? How was information presented?

I Include your opinion about the research. Is it interesting, important, controversial...?

E Examine WHO conducted the research? Company, government...

Examine WHY they researched? Profit, bias, and provide information...

W What are possible questions or directions for further research?

What questions do you have?

What connections can you make to course content?³

What we expect from our reviewers?

The reviewers need to be careful, avoid too much editing and unnecessary changes and should have respect for authors and their views. A panel of peers for each journal is better. During the process of reviewing, they should take note of the following factors in consideration:

- Is the hypothesis of the study appropriate and clearly stated?
- Are the aims and objectives clearly defined?
- Is the methodology properly described?
- Are the findings and conclusions clearly stated?
- Is there any specific recommendation that may be helpful to the community at large?
- Reviewer's final comment

Peer Review Principles

In practice, peer review of scientific proposals and products occurs along a continuum, from colleagues recommends by the scientists to independent peer review managed by third parties, such as journal editors or funding officials. This requires a set of peer review principles that provide flexibility while retaining the independence and rigor of the scientific peer review process. These following principles will promote consistency and periodic reviews will be used to ensure that their implementation is adequate. Since the scientific peer review process is aimed at ensuring scientific rigor and quality of products, in situations where the need for review is unclear, or the guidance in this document does not apply, it is the responsibility of the investigator or author to obtain specific guidance from her/his supervisor and to ensure that both the letter and the spirit of the peer review principles are met. Reviews by outside peers should be a routine part of the peer review process, especially in the case of large funding decisions and when major publications are involved. Every set of peer review policies must adhere to the following principles:

- Objectivity and independence of reviews
- Scientific peer reviews will be coordinated by a supervisor at least one level removed from that at which the proposal of product was produced.
- Reviews conducted by true scientific peers as judged by demonstrable scientific achievements.
- Independence of peer reviewers.
- Provision of constructive feedback to the investigator or author.
- Informal advice will not substitute for formal independent scientific peer review.
- Selection of peer reviewers is the responsibility of the individual managing the peer review.
- Anonymity for reviewers when requested.
- Evaluation of the effectiveness of peer review guidelines.

Peer Review And Management Decisions

When properly implemented, peer review provides a fair and rigorous assessment of scientific merit, but determining how the results of peer review will be used in decision-making is a separate topic that must be addressed in the context of program management and administration. As rigorous peer review policies are implemented, it is important to remember that peer review is an aid in decision making; it is not the decision process.

Rapid dissemination of results of high-quality scientific investigations is desirable and now possible, prompting editors and researchers to examine ways to reduce the time from completion of a study to publication of the results.⁵ Delays from study completion to article publication can occur at many stages, including by researchers in submitting the manuscript,⁷ by editors and peer reviewers during editorial evaluation and peer review, by authors during manuscript revision, and by limitations imposed by journal space and frequency of publication.⁸ JAMA and many other international journals has made many efforts to minimize the delay, with an average turn around from submission to publication of 180 days and acceptance to publication of 60 days. For an article of substantial public health importance, however, even this time may be too long. Two journals have announced fast track processing of manuscripts.^{9, 10}

Conclusion

For quality publication, journals need careful and consistent editing. A well prepared systematic and organized manuscript is a prerequisite for this purpose. Critical but sensible peer review can

enhance and enrich the whole process. The final outcome will be a journal with sound science that can play its proper role in the development of the country.

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