

How to write a scientific article?

Editorial

Many times we, as editors, face a dilemma of having to review an article with good contribution to the scientific/medical field yet this article is poorly planned or written which raises the question of whether to recommend for publication or to decline. In this short editorial, I will try to summarize few steps or points that a young researcher needs to pay attention to when designing and executing his manuscript in order to send a clear message in an objective and scientific way void of bias or personal opinions. It is of no doubt that writing scientific papers is one of the most effective methods to communicate research results and expert opinions among scientists and health professionals. Hence it's critical to consider, when writing a paper, objectivity, honesty and clarity. The process of writing the article starts as early as the planning phase of the research/review process.¹ With few exceptions such as case reports, qualitative articles and review articles, a generally accepted format for scientific articles should be organized into four major headings: Introduction, Methods, Results, and Discussion.²

The first and very important step in writing an article starts by choosing a suitable title. Such a title should reflect the contents of the article in the clearest, closest and shortest way possible. The title should not contain abbreviations or phrases that waste space or use up characters that do not convey the message. Each paper should be preceded with an abstract that should state the purpose of the paper and be able to persuade the reader to continue with the full manuscript. In addition, it needs to state the basic methods, the main findings and the main conclusions reached in the paper. In summary, a good abstract is a miniature of the paper. Key words that follow the abstract carry a very important role in indexing and retrieval of the article during search.¹

The body of the article, as stated above should contain four sections referred to by the acronym IMRAD (Introduction, Methods, Results and Discussion). Each section should be directed in a way to answer a specific question:³

Introduction: Why did the authors start?

Methods: What did they do?

Results: What did they find?

Discussion: What do the results mean?

It's very important for authors to stick to a scientific structure in writing a paper and avoid using the style of a short story or a novel. In the Introduction, a clear question that the research is set to answer should be stated without explaining obvious conclusions about the subject being researched. It should not be over referenced and should not contain results or conclusions about the research being reported.¹

In the "Methods" section, it's of utmost importance to give a detailed report of the research design and any statistical model or computer software used as this will help readers to replicate the research in order to validate the data. When reporting research on human or animal subjects, this is where it should be stated whether

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ethical standards according to the respective committees were followed or not.^{2,4} Any identifiers of the human subjects in a paper should not be stated including, names, initials, and hospital record numbers.

The "Results" section should contain only the results pertaining to the question raised in the "Introduction" and should be stated in a logical sequence in the text, tables and illustrations. The tables need to contain more data than the text and need to be readily understood by the reader and need to be cited in the text and referenced by numbers and titles.^{2,4} Further details about table design and use of illustrations can be found in the cited references and will not be stated here for the purpose of simplicity.

Last, but not least, is the "Discussion" section which highlights the new findings from the study and the conclusions to be drawn from them. Docherty and Smith suggest a nice 6-component structure to follow:^{2,5}

- i. Statement of principal findings
- ii. Strengths and weaknesses of the study
- iii. Strengths and weaknesses in relation to other studies
- iv. Meaning of the study, possible mechanisms and implications for clinicians and
- v. Policymakers
- vi. Unanswered questions and future research

Conclusion

The reference section is a non-separable part of the manuscript and should be accurate. A study conducted by De Lacey et al.⁶ found out in a random check of references of articles that as many as 20% of the references were misquoted and half of those 20% were seriously misleading. It's of utmost importance to check in the author section of

the journal the manuscript is intended to be sent to about the citation system used by the journal in order to avoid delays in reviews and publication.

In conclusion, writing a scientific manuscript is a systemic process that starts at the planning phase of each research and should be designed to maximize the understanding of the reader for a better communication and spread of new findings in our field of study.

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Conflicts of interests

Authors declare that there is no conflict of interest.

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