

Scientific Article Writing: An Overview

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ABSTRACT

Writing an article by an author and publishing the same by an editor are both key issues. Both need to know the expectations of one another. This article highlights the guidelines of a good writing in order to minimize or avoid the chances of an article being rejected by any journal. With time and patience most professionals can write a scientific article. The various parts of a scientific article are analyzed, and guidelines are discussed to make writing systematic, simple and easy.

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INTRODUCTION

Scientific writing in English started as early as in the 14th century.¹ “Not all who look at a journal are going to read even one article in it; writers must know therefore what turns a looker into a reader”—JW Howie.²

The steps toward publication can be summarized as:

1. Undertake research
2. Write the manuscript
3. Submit to the editor
4. Editor sends for peer-review
5. Manuscript returned with comments
6. Do the necessary corrections and re-submit
7. Editor sends the letter of acceptance
8. Article published.

Before going into further discussion on the art of writing, it is necessary for all authors to realize before hand as to ‘What generally happens to manuscripts submitted to a journal?’ For both editorial staff and authors, the selection of articles for journal publication is a key issue.³

Manuscripts submitted to a journal will enter a two-stage review process.⁴ At first, they are read by the editor and assessed for quality, relevance and style. Sometimes the associate editors may also read manuscripts for scrutiny. A small number of

articles may be rejected at this stage itself. Having passed this first scrutiny, manuscripts enter the critical second phase—peer review. These reviewers are the experts in that field of subject, who have the knowledge, experience and interest in the manuscript topic. The process of editorial review and peer review is kept highly confidential and reviewers are reminded of this as well as their other responsibilities, whenever an article is sent to them. After completion of the peer review process, manuscripts are returned to authors with their valuable suggestions for corrections, if any, or rejected. Many manuscripts are accepted for publication, subject to appropriate amendment only after the final peer reviewing. Occasionally, papers are returned to authors with a request for revision that does not necessarily guarantee acceptance. Such papers are reassessed before final decision is made. It is useful for prospective authors to be aware of these steps in the publication cycle, especially those relating to reviewers comments and subsequent amendments. Adhering to the ‘Guidelines for Authors’ greatly speeds up the decision making process. This is a part of the quality assurance cycle of journal publication and usually results in a stronger, more easily read, better organized and better structured paper.

Manuscript writing can be discussed under the following ten headings:

1. Title
2. Author
3. Abstract and keywords
4. Introduction
5. Materials and methods
6. Results
7. Discussion
8. Conclusion
9. References, and
10. General considerations.

Literature on research writing in dentistry is minimal.⁵ Bayne’s article on scientific composition and review of manuscripts for publication in peer-reviewed dental journals is

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one of the few dental articles discussed in this regard.⁶ It would be prudent to discuss the above headings sequentially in the form of do's and don'ts under the guidelines of ICMJE (international committee of medical journal editors) requirements for uniform submission of manuscripts.^{7,8}

STEP ONE

Before writing decide where to submit.

Don't: Start writing your paper without a clear cut idea for where you would want to submit it.

Do: Decide early as to where you will submit your work. Failure to select the journal with the "best fit" can lead to delay and/or reformatting of your manuscript.

STEP TWO: MANUSCRIPT WRITING

Title

Don't

1. Should not be misleading.
2. Avoid abbreviations.

Do: Title should correctly represent the content and breadth of the study reported in a clear, concise, and informative manner. It should contain keywords that can turn a looker into a reader.

Author

Don't: Ignore the editor's guidelines of manuscript submission as they may be different for each journal.

Do: Authors' designation, degree, affiliation and address with additional details, like telephone number, email address is a must.

Abstract

Don't: Should not contain abbreviations.

Do: Generally, should cover each and every component of the study in about 150 words for 'unstructured' abstracts and 250 words for 'structured' abstracts.

Keywords

Do: 3 to 8 words. Use preferably the terms listed as medical subject headings (MESH) in Index Medicus (Medline).

Introduction

Don't

1. Review the literature beyond the requirement of the study.
2. Data or conclusions should not be reported.

Do

1. The goal or purpose of the study needs to be clearly stated.
2. The introduction should contain detailed information about the problem being studied, and about the specific research question/hypothesis.

3. Four or five related articles to the problem should be cited and critiqued.
4. The relevance of the study should be explained in relation to the current theories and methods associated with the problem. The existing lack of evidence, knowledge or conflicting data is to be highlighted as the basis of the study.
5. A general overview of the study should be presented to serve as an organizer for the sections to follow to the reader.

Materials and Methods

Don't: Ignore any parameter of the research design.

Do

1. The selection of the subjects for the study that includes the inclusion and exclusion criteria is to be mentioned clearly.
2. The research design requires to be described in detail. This includes the methodology, apparatus and procedures undertaken to conduct the study.
3. Give references to all the methods used in the study, including statistical methods employed.
4. Procedure involving data collection should be clearly described.
5. The setting in which the study was conducted should be described. This information helps the reader to decide whether results can be applied for their setting or not.
6. The data analysis procedures should be stated in precise terms.

Results

Don't

1. Results section should contain only actuals and no opinions.
2. Do not repeat in the text, all the data shown in the tables or illustrations.

Do

1. Results should be written following logical sequence of the text, tables and illustrations.
2. Emphasize on important findings observed.
3. All the patients included in the study should be accounted for.
4. Imperative of what the result may be, there should be no hesitation in reporting any negative or unexpected result.

Discussion

Don't

1. Discuss the introduction and review of literature unless relevant to the results.
2. Readers should not be side tracked or deviated into another topic.
3. The discussion should not be misused as a platform to state opinions.

Do

1. The discussion should cover all the debatable aspects of the study.

2. The discussion can go beyond the results obtained and can cover methodological and the critical issues.
3. Relate the observations to the other relevant studies in terms of their similarities and conflicts.
4. The new and important aspects of the study and the conclusions drawn need to be emphasized.
5. The implications of the findings and their limitations, if any, are to be discussed.
6. Scope and need for future additional research is to be discussed.
8. **Manuscripts** are submitted in Microsoft word document or RTF (Rich text format).
9. Follow the **ethical guidelines** strictly as specified by **ICMJE**.
10. All the direct and indirect help in the study must be **acknowledged** without fail.

STEP THREE

Covering Letter

1. It is important to keep the covering letter as short as possible. The editor who reads it probably receives many papers and will find it easier to assess yours if succinct.
2. The name, address and telephone number of the corresponding author who is responsible for communicating should be included.

POINTS TO REMEMBER

1. The choice of selecting a journal for publication should be related to its impact factor and article content (desired audience).
2. It is advisable to submit to journals that have more issues in a year (publication lag).
3. Prefer submitting to journals whose articles have been cited most in your references (Probability of acceptance is higher).
4. Editor's top priorities are quality of the article and the impact factor of their journal.
5. Time frame for peer review should be kept in mind as some journals may take longer than others.
6. Avoid using unnecessary meaningless words, like "basically", "such as", etc.
7. Do not frame long sentences. Generally recommended words in a sentence is not more than 17 to 20 words. It is advisable to break long sentences into two or three for easy reading.
8. Preferably cite references with URLs (universal resource locator). Examples of various types of references in Vancouver style and others with their URL's are given under the references column of this article in order to directly open the links to their respective sites.
9. Submit the article as per author guidelines, e.g. different files and folders for manuscript, tables, graphs, photographs, legends, etc. in different formats are requested to be followed.
10. Before deciding to submit the article, wait for a day and read again. You almost always will find errors.
11. Although the guidelines given by ICMJE (as uniform requirements for manuscript submission to biomedical journal) have to be followed, it should be remembered that at the time of submission, it is finally the authors' guidelines given by that specific journal that is the most important to follow.

Conclusion/Summary

Don't: Avoid drawing conclusions beyond the limits of the study which cannot be supported by your data (results).

Do

1. Conclusion should be linked with the goals of the study.
2. Scope for future studies may be mentioned.

References

Don't

1. Cite references without in-body superscripting.
2. Abstracts cannot be cited as references.
3. Avoid quoting too many references than required. A common misconception among authors.

Do

1. References are mostly written in Vancouver style. However, follow the rules of publication as specified by a particular journal.
3. Citing references with URLs is recommended.

General Considerations

1. The **terminology** used throughout the paper needs to be uniform, such as abbreviations, and units of measurements used in the text as in tables, etc.
2. The **writing style** has to be clear and pleasant with no spelling mistakes. Special care should be taken in following British vs American spellings. Text is generally written in passive voice using uniform 'tense'.
3. Follow the **instructions of the journal** you are writing to, regarding tables, graphs illustrations, text matter, type of manuscripts, etc.
4. **Photos and pictures** are generally submitted in TIFF, JPEG or EPS format with a 300 dpi resolution. *Do not send as PowerPoint files or in GIF format.*
5. **Graphs and tables** are generally presented in EPS format.
6. Authors should place explanatory matter in **footnotes** and not in the heading. Explain all nonstandard abbreviations in footnotes using the following symbols in sequence: *, †, ‡, §, ||, ¶, **, ††, ‡‡, §§, ||||, ¶¶, etc.
7. **Radiographs (X-ray films)** and other scans, such as MRIs, are generally sent in TIFF format.

CONCLUSION

Good writing is difficult to define. It is easier to say what *it is not* than say what *it is*. However, following authors guidelines would minimize the chances of gross errors. Keeping in mind the various points discussed and selecting the right journal for submission would maximize the chances of acceptance.

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