

What do Reviewers Look for in an Original Research Article?

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ABSTRACT

In this article common errors committed by authors especially those, whose first language is not English, while writing an original research article is described. Avoiding common errors and improving chances of publication has also been covered. This article may resemble instruction to the author. However, tips from reviewer's eyes has been given.

The abstract is the section of the paper most commonly read and care should be taken while writing this section. Keywords are used to retrieve articles following searches and use of words from the MeSH database is recommended. The introduction describes work already conducted in the particular area and briefly mentions how the manuscript will add to the existing knowledge. The methods section describes how the study was conducted, is written in the past tense and is often the first part of the paper to be written. The results describe what was found in the study and is usually written after the methods section. The discussion compares the study with the literature and helps to put the study findings in context. The conclusions should be based on the results of the study. The references should be written strictly according to the journal format. Language should be simple, active voice should be used and jargon avoided. Avoid directly quoting from reference articles and paraphrase these in your own words to avoid plagiarism.

Keywords: *Original research, publication, reviewer, scientific journals*

Writing and publishing an original research article is important for many reasons. Researchers want to inform others about the work they have done, they want to add to the body of scientific knowledge, and there may be personal reasons like recognition and promotion among others. It should be remembered that the authors may be motivated by one or two of these reasons.

The author of a recent article mentions there is a specific structure to a scientific paper and if authors do not follow that structure they are unlikely to get published.¹ Another author suggests that first time writers should start with an outline which is then grouped together into introduction, materials and methods, results and

discussion, the traditional IMRaD format of a scientific article.² The IMRaD structure developed in the twentieth century and by the 1980s was the only pattern adopted in scientific papers.³

This article aims to highlight what reviewers look for in an original research article, common errors committed by authors and how to avoid them.

THE TITLE OF THE PAPER

This should accurately reflect the contents of the study. In some papers the title does not give an accurate idea of what has been described in the rest of the manuscript.

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Certain journals prefer what is known as double barreled titles where what has been done and the method/s used to achieve the same are separated by a colon. A good title is short, informative and attractive and should convey accurate information to the reader.⁴ A reader who cannot extract the significance of an article from its title is not likely to read further.⁵ The title should inform about the study's design, contents of the paper and the main findings. A recent article examined article title type and its relation with the number of downloads and citations.⁶ The study showed that the articles with titles ending as a question tended to be downloaded more but were cited less. Articles with longer titles were downloaded less than those with shorter ones and titles with colons received fewer downloads and citations.

THE TITLE PAGE

The title page should be formatted exactly according to the journal requirements. Strictly following the journal requirements throughout is very essential to maximize chances of publication. Not doing so, it can be rejected by editorial board before sending for the review. Certain journals require word count of the text (excluding abstract, references, and tables), number of references and number of tables and figures. This page provides information about the manuscript title, the authors, their affiliations and the details of the corresponding author.^{4,7}

THE ABSTRACT

The abstract is the summary of the paper and is often the first section that a reader peruses while deciding whether or not to read the full paper. The abstract is written last after all other parts of the paper are complete and it is easier to summarize all aspects of the study.⁵ The abstract is a concise, factual and accurate mini version of the paper.⁸ The abstract should be prepared strictly according to the journal format. Abstracts can be structured or unstructured and vary in length from 150 to 300 words according to the journal. Abstracts obey a formal structure which is as well defined as that of metrical poetry.⁹ Abstracts are usually freely available through indexing services like PubMed (<http://www.ncbi.nlm.nih.gov>).

KEYWORDS

Keywords are used for indexing and retrieval purposes.⁸ These increase the likelihood that a published article will easily appear on searches. Use of words from the MeSH database of the National Library of Medicine (NLM) (<http://www.ncbi.nlm.nih.gov/mesh>) is recommended but many words are absent from this database. Three to six words and phrases immediately following the

abstract can be used as a subject index to help in referring to the paper.⁸ However not all journals use keywords and requirements may vary between journals.

INTRODUCTION

This section serves to introduce the reader and the reviewer to important literature about the subject area, and the existing knowledge gap which is being addressed by the study. The introduction serves to define and explain important terms and ideas relevant to the manuscript. The references cannot be exhaustive and can only be representative. It is important to cite recent work, preferably within the last 10 years, from the available literature. If available the citation should be from country or the region. Certain journals have specific word limits for the introduction section. While preparing the introduction, always follow the instructions to the author of the journal where the reader intends to submit his/her manuscript. The introduction should be well written and lead from one topic to another in an easy and well-defined sequence. The introduction is often the first section of the manuscript examined by the reviewer. A well written introduction produces a favorable impression about the manuscript. The author recommends writing the Introduction as the third section of the manuscript after the methods and the results. The same advice is provided by the author of a recent article about how to write your first research paper.² The introduction should end by stating the objectives of the study.

METHODS

The methods (also termed materials and methods in some journals) section describes what was done and how the study was carried out. The exact duration of the study, the materials used and the methods applied should be described in sufficient detail to enable other interested researchers to carry out the study independently.^{10,11} This section should be written as one would carry out the study. Experiments should be arranged chronologically and in the proper logical sequence.¹⁰ If the journal allows use of subheadings authors can use these to make this section more easily understood. This section is written in the past tense as it describes work which has already been conducted and the author recommends this as the first section of the paper to be written. Writing this section first may be easier as the researchers will have all their notes and describing the experimental design and procedure may not be difficult.² Ethical issues, informed consent and the name of the body which provided ethical approval should be clearly mentioned. This section should always be written in the third person and in the past tense.

If the reader plans to use a questionnaire developed by

other researchers obtain written permission to use the questionnaire and cite the work of the other researchers in the methods. The authors of the questionnaire should also be mentioned in the acknowledgements section if there is no citation. The method of collecting the data and data analysis should also be described. The questionnaire can be included in the appendix section. How the questionnaire was developed and validated should be described especially if a newly developed questionnaire is used in the study. The use of correct statistical tests should be described in the methods section. The methods is an important section which the reviewer/s will go through minutely as the validity of the data obtained and conclusions of the study will depend on the strength of the methods used. Many readers read a particular article to either replicate a similar or a modified study in their setting or to decide whether the findings from the study can be applied in their practice. Use of improper methods can limit the generalizability of the study.

RESULTS

Writing the results is more difficult than writing the materials and methods.² Results section is written in the past tense as it describes the main data collected and observations made during the research.¹² The description usually starts with details of the study population. However, this could sometimes appear in the methods section when applicable. The data can be either described in the text or presented using tables and figures. Result should never start from the table or figure itself. Most journals restrict the number of tables to four. Data described in the text should not be replicated in the tables and vice versa. Subheadings could be used to describe the results. Certain journals combine the results and discussion into a single section. The results should be written in a logical and temporal sequence. Data obtained first is often described first. Exact P-values should be described and confidence intervals provided.

Results should be described using both numbers and percentages. Interpretation of findings and their significance is usually a part of the discussion. Numbers should be spelt out in full if they are at the beginning of a sentence. A common rule of writing is to spell out numbers from one to nine and use numerals for numbers above 10 if they are used within a sentence. For the number 10 either of the options can be considered. Deciding which results to present in the results section can be sometimes difficult. The results to be presented should be based on which results are relevant to the questions presented in the Introduction.¹² Wordiness should be avoided like in other sections of the manuscript and use of adverbial intensifiers like

'clearly', 'essential', 'basically', 'fairly' among others should be avoided.²

DISCUSSION

In this section the findings (results) are interpreted and compared with the literature and the generalizability of the findings to other settings is mentioned. The discussion often starts with a brief (four or five sentence) summary of the results. This section usually ends with the limitation/s of the study which can affect the quality of data obtained and its generalizability. The discussion section is usually the last section of the main manuscript to be written.² Findings not mentioned in the results section is usually not discussed in this section. Discussion section interprets the results obtained, explains the implications of the findings, states study limitations and makes suggestions for further research.¹³ This section should address the most important points which the researcher wants to be highlighted in the manuscript.¹⁴ Data not presented in the results section cannot be discussed in the discussion section unless already published elsewhere and cited in the text.

CONCLUSIONS

In this section conclusions based on the results and the discussion are stated. Often it is written as the part of the discussion section. The conclusion section should be based on the results of the study and should answer the study aims and objectives. A common error is to draw conclusions beyond the results. This section should also provide directions for future research.

There should always be coherence between study objectives, methods, results and discussion. The study objectives are described towards the end of the introduction, while the methods describe how these will be achieved. The results are described in consonance with the objectives and the relationship of these objectives with previously conducted studies and possible applications of the findings are highlighted in the discussion. The conclusions of the study should answer the aims and objectives. Lack of coherence between different sections as regards the objectives weakens the study and results rejection of the manuscript. Do not exceed the word limits for different sections and for the overall article. Word limits for original articles vary according to the type of journal. General medical journals like the British Medical Journal have shorter word limits. Word limits are often greater for qualitative research articles. Journals published only online may be more liberal about word limits.

REFERENCES

Reference is a difficult section of the paper to write as journals have very specific requirements for this section. References should be cited and numbered correctly and should be in the format recommended by the journal. The two commonly used reference systems are the Vancouver and Harvard systems and there is increasing preference for the Vancouver system.¹⁵ The style recommended by the journal should be followed. Bibliographic management software like End Note makes reference writing easier. This is especially useful when inserting new references in the middle of a manuscript while using the Vancouver style as the software automatically makes the required changes in citation. Tips for citing references has been given in a recent publication by Riordan.¹⁶ Among these are to cite original sources as far as possible, check the PubMed site a few days before submission to check whether any related research has been published recently and ensure all references are also cited in the text.

TABLES

There are very specific requirements for tables. Most journals do not allow more than four tables in a manuscript while a few allow up to six tables. The format of the tables is often specified and some journals do not allow inside horizontal, vertical or both rules in tables. Tables are commonly cited using Arabic numerals in the text. All tables should be cited and certain journals want authors to indicate the approximate position of each table in the text. Ensure the numbers in the results section and in the tables are the same and there are no calculation mistakes in the tables. Presenting data in tables rather than as a part of the text may reduce the length of the manuscript.¹⁷ Tables should be organized in a manner that they tell a story. A table consists of a title, column heading and row headings, the field (rows and columns containing the data) and explanatory notes.

PRESENTATION OF DATA IN GRAPHS

Graphs represent visually the information obtained from the research.¹⁸ They present information clearly and concisely and represent relationships between the variables in the data. Various types of graphs are available and deciding which type to use depends on the data. A recent article in the Singapore Medical Journal describes various graph types like scattergram, line graph, bar graph, histogram, box plot and pie chart and when to use them.¹⁸

PREPARING PHOTOGRAPHS, IMAGES AND DIAGRAMS

Photographs need to be of high quality for proper reproduction in the journal.¹⁹ For photomicrographs an internal scale marker can be inserted directly into the photograph. Also it should be remembered that many journals charge for color photographs. Patient confidentiality should be maintained while using patient photographs and written permission from the patient should be obtained. Diagrams and illustrations should be submitted in either the TIFF or EPS formats and should be saved at the recommended resolution. They should be submitted as separate files.¹⁹ Other journals may request different file formats and it is recommended to follow the journal instructions.

SENTENCE STRUCTURE

A good suggestion for writers whose native language is not English is to address only one idea or thought process in a paragraph. There should be a transition sentence to the next paragraph either at the end of the paragraph or as the first sentence of the new paragraph.¹⁴ Each sentence should be short and written using active voice wherever possible. Use of active voice makes sentence construction easier and ensures easy understanding.²⁰ The active voice is more powerful and direct and also is shorter compared to the passive voice.

The language used should be simple and clear yet remain formal and not colloquial. The paper should logically proceed from one section to the other. English is not the first language of many writers in developing countries and it is important to ensure that the manuscript conveys the intended message. The author has seen papers written using difficult and complex language, which conveyed a meaning quite different from the intended one. Scientific literature should be written in the third person, past tense. Poor language makes the paper difficult to read for the reviewer and may be returned for language corrections or even rejected. If the researcher can afford then a professional copy editing service can be approached or the help of authors whose first language is English can be solicited.¹⁴

Use of highly technical words should be minimized and if used should be explained using simple language in the text. However, appropriate scientific terms should be used and formal language should be maintained throughout the paper. The readership of the journal should be considered and most readers may have only a general knowledge of specialized subject areas. Certain journals may have a very specific reader base

with specific knowledge and therefore language should be appropriate to the journal. As a reviewer the author considers the 'average' reader of the journal as the target audience while reviewing the paper.

Always keep the international readership in mind. The target of all journals today is to have an international readership to gain more impact factor. Many journals can be read online and full text is either freely available or can be accessed on payment. Authors should ensure that all terms and descriptions used are easily understandable and in case of doubt terms should be explained. Terms more commonly used in the literature should be preferred to rare or regional versions. Journals often send manuscripts for review to reviewers from other countries to ensure it is easily understood by international readers.

AUTHORSHIP

Most journals insist authorship should be based on contribution to the conceptualization of the study, involvement in conducting the study and writing the manuscript. All authors should have read and understood the final submitted version of the manuscript and should be ready to accept public responsibility for its contents.²¹ The order of authorship should be a joint decision of all persons involved in the study. All other persons involved in the project should be mentioned in the acknowledgements. Many journals have a contributorship section where the contributions made by each author to the study should be described.

Authorship should be decided early according to a recent and manuscript keep discussing authorship issues as the study progresses.²² Choose collaborators with whom the researcher has an amicable relationship and be prepared to share credit if necessary. It is recommended to be familiar with the journal's authorship guidelines.

PLAGIARISM

Plagiarism can be regarded as passing off someone else's ideas as one's own. Many cases are committed because the authors do not have a clear understanding on what constitutes plagiarism.²³ Verbatim or near verbatim reproduction of information from the work of other authors or very close paraphrasing should be avoided and constitutes plagiarism. Self-plagiarism which has been mentioned as unacceptably close replication of the authors' previous work without citing or acknowledging the source should also be avoided. Most journals have a zero tolerance policy with regard to plagiarism. All references cited in the text should be cited in the author's own language and proper credit

should be given to the original source in the citation and references. If sentences are cited verbatim from another source it should be clearly mentioned in the text and the quoted sentences should be distinguished by indenting, using italics, putting within inverted commas from the rest of the text. Many journals use plagiarism detection software to check for plagiarism.

CONFLICT OF INTEREST

Many journals especially in the developed countries require authors to declare all conflicts of interest. If the author/s of an article obtains personal financial benefit from the reported results then a conflict of interest may exist. This is important especially for clinical trials and studies about effectiveness of drugs. A conflict of interest can be said to occur if the investigator in a clinical trial has substantial financial interests in the company whose product s/he is testing. Conflicts of interest if they exist should be clearly mentioned in the text. Conflicts suggest caution in interpreting and generalizing the results of the study on the part of the reader.

LASTLY

Obtaining feedback on the manuscript from colleagues and peers will help to identify errors in the manuscript and obtain suggestions for improvement. If feasible and relevant, opinion from lay persons about the readability of the article and ease of understanding can be obtained. Matching the manuscript to the journal is a very important part of submission. Sending a manuscript to a 'wrong' journal is a common reason for rejection of manuscripts and before deciding to submit a manuscript, examine the recent issues of the journal to determine the type of articles they publish. A recent article mentions that authors should decide early on a target journal.²⁴ The aims and scope of the journal, the type of articles published and the requirements for different sections are available from the journal website. The intended journal will depend on the subject matter and the intended audience as explained in a recent paper.²⁵ Two important measures of a journal's quality are the impact factor and the caliber of experts on the editorial board.

The suitability or otherwise of an article for publication is mainly decided by the reviewer. The reviewer examines the abstract to see that it is according to journal requirements and reads coherently. Making it easier for reviewers to read and understand your manuscript will improve chances for publication. The author will end the manuscript with a recent paper which mentioned common reasons why articles are rejected.²⁶ Among the reasons mentioned were the authors did not follow

the journal's instructions to authors, there is a major and undisclosed conflict of interest, the manuscript was not checked for typographical errors, spellings and grammar, the manuscript has been rejected by a journal and is submitted to another journal without significant modifications, the authors plagiarize other authors, there is incorrect use of statistics and the paper is written in a rambling and unfocussed manner. This summarizes the various guidelines which have been mentioned throughout the manuscript. Avoiding these common errors will improve your chances of publication.

Researchers write and publish scientific articles for a number of reasons. The title of the paper should accurately convey the study contents and should be short and informative. The title page provides information about the title of the manuscript, the authors and details of the corresponding author. Abstracts can be structured or unstructured, is usually written last and is often available freely through indexing services. Keywords help in indexing and retrieval and using proper keywords improves chances of citation. Manuscripts follow the IMRaD format. The introduction section provides a brief background to the study. The methods section describes what has been done and is usually the first paper of the paper to be written. In the discussion the findings of the study are interpreted and conclusions drawn and the generalizability to other settings are mentioned. References should be written strictly according to the journal guidelines and all references should be cited in the text. Tables, graphs, figures and

photographs can be used to present information. Use of active voice makes sentences shorter, crisper and clearer. Be aware about plagiarism, ethical issues and conflict of interest. Always match the manuscript to the journal and send the manuscript to the 'correct' journal to improve chances of publication.

CONCLUSION

A scientific paper has a specific structure and IMRaD format is commonly followed. An abstract is a mini summary of the paper and can be either structured or unstructured depending on the journal. The abstract is often freely available through different services and is the first part of the manuscript read by the reader. The introduction section provides a brief background to the study, the methods section describes what was done, the results section what was found and the discussion compares the findings of the study with other studies in the literature. References should be written exactly according to the journal format. The language should be simple and plagiarism avoided. Obtaining feedback from colleagues can improve publication chances. Sentences should be simple in construction and written using the active voice wherever possible. A paragraph should deal with one idea and there should be a transition sentence to the next paragraph. Sending the manuscript to a proper journal according to the subject area and other criteria improves chances of publication.

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