ABC’s of Publishing a Scientific Paper in a Journal for the Novice Researchers

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Authors’ contributions

This work was carried out in collaboration between both authors. Author SCR designed the study, performed the literature search and wrote the first draft of the manuscript. Author KA managed the literature search and corrected the first draft. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMMR/2020/v32i130353

Received 15 November 2019
Accepted 18 January 2020
Published 11 February 2020

ABSTRACT

Writing a scientific paper, choosing a journal, submitting/uploading the paper in the journal website, the peer review process, revising the paper based on the reviewer’s comments, and galley proofreading after the acceptance of the paper are the essential components of publishing a paper. Publishing is the ultimate goal of all researchers. Writing a scientific paper requires an extensive literature search, collection of reference articles, acquisition of data of research work, analysis of data and discussing the results comparing with other findings published in similar papers. The final version of the paper should be read by all authors and approved before the submission of the manuscript. One has to select the journal and edit the paper as per the author's instructions of that journal before submission. The article will be reviewed by two experts in that field and they will...
send their comments about the contents of the paper. The comments should be answered point by point, and the revised paper should be sent again to the editor. If required one has to be prepared to do more than one revision of the paper. If the paper is rejected, one should not be disappointed. You can further improve the quality of the paper by including the answers for the deficiencies and send the revised paper to another suitable journal. Finally, when it is accepted, the galley proof of the article should be read carefully and send the corrected proof to the editor in-time. The ‘pdf’ copy of the published paper should be kept for sending a copy to the people who request a reprint of your article.

Keywords: Writing a paper; publishing a paper; journal; case report; structure of a paper; review process; reasons for rejection; rebuttal letter.

1. INTRODUCTION

Publishing a paper in a journal includes writing a scientific paper, choosing a journal, submitting/uploading the paper in the journal website, the peer review process, revising the paper based on the reviewer's comments, and galley proofreading after the acceptance of the paper for publication. Any scientific work is not complete until its results are conveyed to others by publication in the journal. The golden proverb “Publish or Perish” holds good in the present day also for survival and progression of academicians in their field.

The writing of a research paper is a tedious process; needs concentration, good mood and spare time to write. The purpose why one wants to write a paper could be to communicate the research results with others in the same speciality/medical field, or to disseminate the rare occurrence of cases/association of diseases seen in speciality practice, or to meet the requirements of any research funded by a research grant, or to fulfil the requirements for promotion, or to get points in annual assessment of performance, or to provide more knowledge and references to others about a particular topic (review articles). Publication of the work in a reputed journal may help in getting “patent” of the invention produced by the researcher.

The first choice for motivation to publish was reported as dissemination of the knowledge (54%) followed by career prospects (20%), improve funding (11%), ego satisfaction (8%), patent protection (4%) and others (3%) [1].

In majority of the journals, the articles published are categorized under the sections of editorial written by the editor or one of the editorial board members, review article by the experts in that field, original articles (clinical research/laboratory or experimental research by research investigators, case series (more than one case) or case reports (single case), photo essay/images where diagnosis can be made by looking at the photos, letters to the editor (any correspondence by the readers to the author regarding some point in the published article).

The key elements in publishing a paper in a journal include ethical issues, style and language, structure/components of a paper, journal selection and paper submission, and peer review process/publishing in a journal. Disclosure of conflict of interest, acknowledgement of funding sources, consent taken from the patient for publishing the photos in the article and approval of Institutional Review Board (Ethics Committee) of the institution for health sciences research work are the important issues to be remembered while writing a paper. Maintaining the ethics, science of research and understanding the norms of preparing a manuscript are very important in improving the quality and relevance of clinical research in each country [2]. The lack of technical and writing skills, institutional hurdles, and time constraints are considered as major hurdles for any scientific publication [3].

Proper presentation of one’s manuscript is important and hence author needs to adhere to the journal’s guidelines for all details of the manuscript writing which include journal style, correct grammar, word count, number of tables, figures, references and details of the artwork [4-6].

The dissemination of research is an important first step on the path toward knowledge translation and practice change. Presenting research at professional meetings allows for more rapid dissemination of research findings, but the audience and the depth of information...
that can be provided in this format are limited. Where appropriate, researchers are also encouraged to develop targeted messages for key stakeholders regarding their research [7].

Publication of the findings of papers presented in various scientific conferences in the peer-reviewed journals is essential to disseminate relevant information to all the academia including those who have not attended the conference [8]. The papers presented in the conferences can be published as “proceedings of the conference” in the format of journal articles or the relevant journals at a later date [9]. However, the conference proceedings should be made available to all readers through the websites of the professional societies by the conference organizers.

Since the majority of the journals are published in the English language all over the world it is very important to be proficient in English writing without any grammatical errors. The paper should be written clearly and concisely in a simple grammatically correct, easily understandable by the target readers. Since the paper reflects the work that has been completed it should be written in the past tense. Words like don't and isn't should be avoided and be written as 'do not' and 'is not' respectively. One must have some computer skills to type the paper and save it in a file format because the paper may require corrections many times before sending it for publication.

Plagiarism is a serious threat to scientific publications and is described by the Office of Research Integrity as “theft or misappropriation of intellectual property and the substantial unattributed textual copying of another's work and representation of them as one's original work” [10,11]. Avoid plagiarism in your paper. It is a form of cheating and academic dishonesty. It refers to taking someone else's work or idea and passing it off as your own. The original work is hidden from the assessor, whether by not citing it properly or by not mentioning it at all. Plagiarism also includes extracting ideas from another person's writing or creation and making certain modifications without due reference to the source, and rearranging them in a way that the ideas appear as your own.

This article is written mainly for those young academic staff/postgraduate students/ interns/ house officers/specialists working in non-teaching hospitals who will be enthusiastic to write a paper from their research work/thesis or rare cases seen in their daily practice and publish it in a journal. This paper provides a basic understanding of how to write a scientific paper and the process of publishing it in a journal.

2. WRITING A SCIENTIFIC PAPER

2.1 Structure/Components of a Paper

Title page, abstract, keywords, introduction, material and methods, results, discussion, conclusion, acknowledgements and references constitute the structure of a scientific paper. Instructions/guidelines to the author of the chosen journal should be read thoroughly and followed strictly while writing all the sections of the paper.

2.2 Title Page

It usually includes the title of the paper, authors' names with affiliated institutions, corresponding author's address and email, short running title, conflict of interest of all authors, funding agency details. The title of the paper should be simple, brief, attractive, contain few keywords and reflect the content of the article. Abbreviations and jargons should be avoided in the title [12]. By looking at the title, the readers will decide whether to proceed reading the article or not. The short running title is printed on the top of every page of the article in the journal.

Authors can be one or more in any paper, from the same institution or other institutions also who have contributed to the concept and design, or acquisition of data, or analysis and interpretation of data, or involved in drafting the manuscript or revising it for intellectual content. The first author is usually the person who writes the paper and he/she has to take consent from the other authors when more names are written as authors. This is important because all authors have to sign the authors' contribution form indicating their contribution to the article. The paper must be read and approved by all authors before submitting to the journal.

The affiliation of authors should be the institution where the work was done and not the place from where the article is submitted. If any author has changed the place of working, it is written by adding post-nominal letters *,#,@,$, or numbers in superscript form 1,2 after his/her name and then write the additional institution by adding it to the affiliation list.
Corresponding author address with email ID and telephone number should be written on the title page. Any person can be the corresponding author. However, when more authors’ names are present, the corresponding author is usually a senior reputed person who has published papers earlier and has the experience to defend all issues related to submission i.e. proper compilation of names of co-authors, rebuttal/response to the reviewer's comments and possible legal matters if any arise in future.

2.3 Abstract

It gives a summary of the work done. The structured abstract is written usually for clinical science and laboratory science research with sub-headings of aim/purpose (why did you do the study?), methods (what did you do?), results (what did you find?), and conclusion (what does it mean?). The unstructured abstract is written for a brief report, case report, and review articles as a continuous paragraph giving the summary of the case or review article [13].

The title and abstract should make the reader interested in reading the full article. The phrases such as "this will be discussed" or "further details will follow" should not be written in the abstract because the majority of the abstracts of papers are available in the search engines, and not the full papers.

The words limit is given in the author's instructions in the journal (usually 150-250 words). When each section of the paper is started on a separate page, it is good to write the title of the paper above the abstract because the title page is usually taken out when the paper is sent to the reviewer in a blind review process.

2.4 Keywords

These are written for searching the articles related to your work by the readers from the search engines (PubMed, google scholar, science direct). Usually, 4-6 words that will assist indexers in cross-indexing your article. It is better to use the terms from the medical subject headings (MeSH) list from Index Medicus where possible.

2.5 Introduction

A brief background of the title subject along with recent data (key references) published in the literature on that subject from the same country and other countries in the world should be written. Clearly state the purpose of the article. Summarise the rationale of conducting this research in this section. Write the hypothesis/aims/objectives of your research in the last paragraph in this section. It is good to limit this section to be within 25% of the total length of the paper.

The literature search can be done manually by using the keywords through search engines like Medline Pubmed, Google Scholar, Science Direct and Cochrane search. One can get the abstract of the papers published in the Pubmed search which can be saved as a separate file. One can get some help from the supervisor who might have collected some references already on this topic. It can also be done with the help of available software such as "Endnote" or "Reference manager" which will save a lot of time in the search of the references. The references should be cited in the text of the paper as per the guidelines given in the instructions to the author of the journal to which you are submitting the paper.

Articulating a clear and concise research question is fundamental to conducting a robust and useful research study. Clear and concise research questions are needed to enable you to search the literature effectively; to write clear aims and generate hypotheses, and to select the most appropriate research design for your study [14].

2.6 Materials and Methods

This provides the reader with enough details so that he/she can understand the manner the work was done and replicate it in future work if required. The methodology is explained in detail including the special investigation tests performed, any procedure done in the chronological order.

2.7 Clinical Studies

The design of the study (prospective/retrospective, observational/interventional, case-controlled study etc.), patients’ selection (inclusion/exclusion criteria), nature of the institution where the study was done, and duration of study should be written. The methodology of special investigations done and equipment used with the manufacturer’s name and address should be written. Principles of surgical procedure should be written in detail stepwise until the end. If these are already
described in another paper or textbook, then the reference of the source should be cited after writing the test or procedure name.

### 2.8 Experimental Studies (Animals)

Age, gender, species, the average weight of the animal used in the study should be written. Details of the experiment/technique including the name of special equipment/chemical used, with manufacturer name and address should be written so that any person can get those things if required for their future work. A flow chart of the experiment is essential for the reviewers and readers to understand the experiment flow and results easily.

### 2.9 Case Report

This includes a previously unreported clinical condition/treatment of a recognized disease, unreported complication of a procedure, unique use of imaging or diagnostic test to reveal a disease. The case report should be unique, short and succinct. It should have a clear learning point that adds value to the current understanding of a known disease [15]. The details of clinical features, important relevant investigations, differential diagnosis wherever applicable, confirmatory tests for final diagnosis, type of treatment given, any complications, duration of follow up, any new findings during follow up and the status of health condition in the last follow up should be written in the chronological order. In the discussion, the special features of the case under-report and how it is different from the previously reported cases should be mentioned. The structure of the case report, the limit of words, figures and references should be followed as per the author's instructions.

In the last paragraph of this section, it is also essential to write a sentence stating the Institutional Review Board (Ethics Committee) approval (if required the number of the letter) in clinical and experimental animal studies. State the software (SPSS including its version, Microsoft Excel etc.) used for the analysis of the results. State also the statistical tests used (chi-square test, t-test, ANOVA test etc.) in the analysis of results. The figure of the significance of ‘p-value’ should be written.

### 2.10 Results

The presentation of data results is the key success of the article. The results should be presented in a logical sequence to answer the questions in the hypothesis or objectives. Presentation of facts can be conveyed in the form of text, tables, figures/photos, charts/graphs in an organized manner so that it is easier for the readers to understand the results. Simple sentences are advisable. If the data can be written in a few sentences in running text, do not use tables or any graphs. Tables are useful in summarizing the findings. Label the tables and figures or illustrations correctly. Duplication of presentation of the same results in the form of tables and text or graphs and text is discouraged [16].

Absolute numbers, as well as percentages in the tables, will help the reviewers to judge the significance of observations. No interpretation of the findings should be written in the results. It is better to write confidence intervals whenever possible instead of just p values to indicate precision. Some journals expect the exact figure to be quoted in three decimals while others accept the figures such as p<0.05 or p<0.01.

If the charts are in different colours, it is better. If they are in black and white, different designs should be used to identify the findings. Two or more figures can be put into one figure to accommodate the restriction of the number of figures allowed in original articles or case reports. The specifications of figures should be followed as per the instructions to authors. One has to use visible arrows to indicate the area of interest, especially in microphotographs, CT / MRI scans and X-ray pictures. Patient's name should not be visible in any of the radiology images or ultrasound scans. Identification of the person should be covered by black tape on both eyes when the photo of the face is shown. Regarding microphotographs, crop the unnecessary part, use an inset for highlighting a certain area. Name of the stain & magnification should be written in the legend for figures. Legend for figures should clearly describe what is shown in the picture without reference to the text.

### 2.11 Discussion

Explain the data as per your results in the same sequence and compare with the available findings in the published literature. Do not repeat the sentences written already in the results. Discussion in the paper should be focused on the positive results only. Supporting data (findings which agree with your results) from the literature
should be presented first, followed by the contradicting data (findings which do not agree with your results). Explain the exceptions and clarify unsettled points. State the strengths and limitations of your study and implications for future research to find possible answers for unsettled points [17].

Do not write about any finding, which has not been shown in the results. Help may be taken from the discussion of other papers related to the present work while writing a discussion of your paper. Do not write that results are inconclusive. If the data is inconclusive, the study should be modified to enable clear conclusions either confirming or rejecting your hypothesis and literature reports.

The limitations of a study are usually written in the last paragraph of discussion viz. its flaws or shortcomings which could be the unavailability of resources, small sample size etc. No study is completely flawless of all possible aspects. Therefore, listing the limitations of your study reflects honesty and transparency and also shows that you have a complete understanding of the topic. Recommendations, when appropriate, may be included.

2.12 Conclusion

The conclusion should be in clear words and simple sentences. It should give a take-home message. Avoid undue speculation i.e. do not extend your conclusions beyond what is directly supported by your results. Do not write any conclusion which is not supported by your research results.

2.13 Acknowledgements

It is an attribution/recognition to all the people who have helped (technical, financial, material support) in carrying out your research. Do not forget to acknowledge the research grant (grant number should be written) providers.

2.14 References

For biomedical sciences journals, two common referencing methods are used to cite the references in the text viz. Harvard System (Name of author and year in parenthesis while citing in the text) or Vancouver system (serial number of reference as they are cited in the text) [18]. Usually, the references are written as per the uniform requirements for manuscripts submitted to biomedical journals [19]. However, one has to follow the instructions to authors of the chosen journal where it is written the style of writing the references, giving examples.

Preferably the related references in the last 10 years are cited unless there are no recent references. Avoid very old references, that are difficult to find. When such articles are quoted in the text; after writing that reference, one should mention quoted by and the details of the textbook or journal from which it was taken should be written. Occasionally foreign-language article taken from the abstract which is in English in the Pub med is cited in the text. For such references, after writing the full reference as given in the Pub med, (article in the appropriate country language which is given in the reference) should be written.

3. PUBLISHING A PAPER IN A JOURNAL

3.1 Choosing a Good Journal

Select a good journal to be submitted carefully, based on impact factor, indexing of the journal, multidisciplinary/subject-specific journal, access to the target audience, overall editorial standard/review process, number of issues published/publication speed, national/international coverage, and any open Access journal. Usually, the paper will be published faster in open access journals, but one has to pay article processing/publication fees for these journals. Authors can also use the journal finder operated by Elsevier publishers (http://journal finder. elsevier.com/) and by Springer nature publishers(http://journalsuggester.springer.com/) to choose their journal.

Selecting an appropriate journal for each manuscript is important. This can be done by following the guidelines given in the instructions for authors and include everything they ask, which makes the editor satisfied to send the manuscript to the reviewer. Many research institutions give credit to research articles published in well established and renowned databases which include International Science Index (ISI), Pubmed, Medline, Scopus, Clarivate Analytics/ Web of Science (WoS) [12]. Other databases include Science Citation Index (SCI), Embase, Excerpta Medica, Directory of Open Access Journals (DOAJ).

3.2 Submitting the Paper to a Journal

When you are completely satisfied and the grammar check has been done with the help of
the computer, the research article has to be submitted online through SchlorOne manuscript or Editorial manager facility available in the website of the journal by following the given instructions. This helps in the quick online review process and saves time. The author can also track the progress of the review process on the website of the journal.

The research article should not be submitted to more than one journal at a time because one has to declare in the cover letter that this article has not been submitted for publication to another journal, is not in the review process in some other journal, and is not accepted by any other journal.

3.3 Review Process

The review process can be a blind review where the reviewer does not know the names of authors/place from where the article is submitted or open review where the reviewer knows the authors’ names and the institution from where the paper is submitted. In the majority of the journals, the blind review is practised and the title and authors’ page is not sent to the reviewer.

The flow chart of the review process is shown below [20].

Fig. 1. Showing the overview of the review process

3.4 Recommendation of the Reviewer

After reviewing the whole manuscript, the reviewer will send the comments to the author in the editor’s report which will be sent to the author for corrections in the revised paper. The reviewer’s recommendation about the manuscript's acceptance can be accepted as it is, or accept with minor corrections, but further review is not required, or accept with revision, but further review is required; major review by the author and second review is required by the referee; or rejected (not acceptable).

3.5 Reasons for Rejection of a Paper

The common reasons for rejection of a manuscript are the manuscript does not fit into the scope of the journal, poor style of writing and too many grammatical errors, failure to comply with journal’s instructions, problematic study design (sample too small, inadequately controlled study), statistical analysis is incorrect or not appropriate, faulty tables or figures/improper labelling of figures, unjustified conclusions from the data, significant conflict of interest to author/sponsor, and no new scientific facts with all findings being argued similar to past studies [12]. If the article is rejected, one need not be disappointed. Revise the paper by incorporating answers for all the deficiencies pointed out by the reviewers and submit to another journal for publication.

3.6 Rebuttal Letter/ Response for the Comments of the Reviewer

The reviewers recommend usually minor revision or sometimes major revision. Rarely, the article is accepted in its original form. In the case of major revision, the authors may have to change the methodology or extend the study to look into fresh parameters. If the reviewer comments cannot be answered satisfactorily, one can write the same to the editor and request him/her for withdrawal of the submitted manuscript from the review process. After revising that paper (correcting all deficiencies pointed by reviewers), it can be submitted to another journal for publication.

It is essential to study all the comments of the reviewer carefully before revising the article. Each comment has to be answered point by point. A separate file should be sent to the editor writing the reviewer comment, page number and line number where the changes were done in the text. Highlight the changes in the text in yellow colour so that it becomes easy for the reviewer/editor to check the revisions made and decide about the acceptance of the article. Send the revised manuscript to the editor before the deadline; otherwise, it will be considered as new paper submission. Thank the reviewer and editor for giving you a chance for revising the manuscript.
3.7 Galley Proofreading

Finally, when the paper is accepted, the galley proof of the manuscript will be sent for corrections. Try to read carefully the galley proof and correct the type errors, and send it back to the editor within the specified time. If not sent, the type errors will not be corrected in the published paper. The type errors are the same in the galley proof which is already present in the revised manuscript. Keep a copy of the printed paper for record purpose, and a pdf soft for sending the reprint of your article to people who request for it in future.

3.8 Points are to be Remembered in Publishing a Manuscript

1. Never allow your research work to go wasted.
2. Always plan and finish writing the paper.
3. Never give up; publishing a paper can be accomplished with hard work, determination and proper time management.
4. Keep sending the improved manuscript to different journals until it is published.
5. Becoming a good, efficient scientific writer is directly proportional to the manuscripts you publish in the journals.
6. Juniors and other colleagues will be motivated and see you as a role model.
7. The successful large number of publications in high impact journals lead to satisfaction and career advancement.
8. The only way to make oneself or institution famous in or outside the country is by publishing more articles in good journals so that they are cited more often.

CONSENT AND ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES