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Rudiments of Writing for Scientific Publication

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Opinion
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Opinion

Background

Publication in scientific journals is a burning issue in different parts of the world. In the field of medical academics, publication of research work is an important landmark [1]. Research involves carrying out scientific systematic investigation in a bid to unravel new facts or get additional information required to address specific problems [2].

The major aim of research is to advance knowledge and fill in gaps in the literature. As desirable as research is it is only useful if the findings of the research are disseminated and shared with others. Research findings can be disseminated in different forms. Communication of research findings could be through oral presentation in scientific meetings conferences or presentation in a written format known as publication. The main types of publication are thesis or dissertation, book or monograph and journal articles.

When a researcher decides to conduct a study, it is imperative to write and publish the findings of the study. Michael Faraday, a physicist declared as stated "work, finish, and publish [3]. There is no need starting any research work you do not intend to finish. You should also not finish any work that you will not publish as this would amount to waste of resources and precious time.

Publication of research work is advantageous. Some of the advantages of medical publication include the following:

a) Generation of knowledge which will promote the practice of medicine.
b) Findings of the studies will be subjected to close scrutiny by other researchers thus useful suggestions would be made along the line.
c) Findings of studies may change mode of existing medial practice
d) It also promotes networking among researchers.
e) Researchers also need publication for their promotion. Publish or perish in the field of academics has become a necessary evil. In writing for scientific publication, the author(s) should be able to answer some basic questions [1].

These questions are as stated below:-

1. Why did we start?
2. What did we find?
3. What does it mean?

The above stated facts form the rationalle for introduction, methods, results and discussion in the format "IMRAD" used in scientific publication [4]. Thus in carrying out research work for publication there is need for adequate planning. The scientific paper, editorial or review article should have a clear message [5].

The potential readers should also be considered with major emphasis on their areas of interest. It is important to plan the different sections of the article very well. Author(s) must also study the requirements of target journal very well so as to comply with the guidelines for publication. The target journal may be chosen before commencement of writing [5]. It is also pertinent to attribute information, ideas, photographs and other materials used for publication to the original sources so as to avoid plagiarism [6,7]. There must be truthful and explicit presentation of findings taking ethical issues into consideration [8].

Getting articles published in qualitative journals is not an easy task. In view of this fact, this article was designed to give the necessary hints on how research work can be published without much difficulty. The issue of authorship and the contribution of the authors should be clearly spelt out and agreed upon before commencement of the work.

Types of Scientific Publication

There are different types of scholarly literature. The ones based on original research work are grouped as primary literature while those based on published work are described as secondary literature. The types of scientific publication are as listed below:

A. **Original Research**: These are studies which report original research and are grouped as primary literature.

B. **Review Article**: Etails critical and constructive analysis of published literature on a particular subject matter. It is considered a secondary literature as new data are not generated. Recommendations are made for future research. 9 Review articles can be broadly classified into literature review, systematic review and meta-analysis.

C. **Clinical Case Study**: This presents into details patients' cases in clinical practice. It usually discusses the clinical features, diagnosis and treatment of the clinical condition. 9 Clinical case studies require a lot of practical experience and are considered as primary literature.

D. **Clinical Trial**: This describes the methodology, implementation and results of controlled studies usually done with large patients groups. High standard of ethics and reliability are usually required.

E. **Perspectives, Opinion and Commentary:** Perspectives refer to personal point of view critiquing widespread notion on subject matter [9]. Opinion articles represent view point of the author(s) on a particular study. Commentaries are short articles that draw attention or present criticism of previously published article, book or report.

F. **Book Review**: Provides opinion on recently published books.

Order of Writing

There is need for adequate planning. Author(s) should keep in view the guidelines of the journal they desire to publish so as to comply with the laid down format.

Content/Structure of a Manuscript

Title and Abstract: Pay attention to the title of the work. The title should be concise, captivating and convey clear message to the readers. It should also include key words in the manuscript. The abstract is an overview of the manuscript and it highlights the major findings and conclusion of the work. The abstract section is very important in view of the fact that it may be the only section available to the readers. Thus it must pass a clear message about the paper to the readers. Poorly written abstract could tune off readers. Abstract may be structured or unstructured. Do not exceed the required number of words. Some journals required authors to include key words and a short title (running head). The keywords must be carefully selected in view of the fact that electronic database keyword searches are one of the primary ways through which researchers search the literature for information [10].

The Introduction: The introduction of a scientific paper is designed to explain in brief why the research was carried out. The importance of the problem highlighted must be brought to fore. The study question or hypothesis should be clearly stated. It is also important to quote relevant literature which should be properly referenced.

The Methods: Clear details of how the study was carried out must be clearly stated so that the study could be replicated. Details of the type of patients studied must be provided e.g. inclusion/exclusion criteria. Assessments that were made must also be explained. However, if previously published rating scales (instruments) were used they must be referenced [5]. Ethical issues like how consent was obtained and approval by the Ethical Review Board of the institution should be explained in details. Under the section of methods, details of data management should be explained.

The Results: This section must be carefully planned. There is need to present the findings of the work in a clear and logical way. The results can be presented in form of texts, tables and figures. For case studies and some types of clinical trials, images like CT scan and photographs may be used. However, in such cases, all identifying features of individuals must be excluded [5]. It is also important to obtain express permission of the clients/subjects before such images are published. The identity of the subjects should be concealed especially in cases where the pathology of interest is on the face.

The Discussion: It is desirable to start the discussion with one or two sentences of the key findings of the study. The repetition of the findings of the result under this section should be avoided. After highlighting the key findings in brief, the results should be compared with the results of previous similar studies with the relevant literature appropriately referenced [5]. In cases where there are differences in the findings of the study compared with previous studies, adequate explanation and interpretation should be provided. Notable limitations of the study should also be stated.

Other Sections: Other sections like acknowledgement, statements on sources of funding and competing interests or potential bias should also be adequately addressed.

Conclusion: Major conclusion of the study should be stated. A concise clear take home message should be provided and recommendation made.

References: It may be difficult to prepare references. However, adequate attention should be paid to reference

accuracy software like End Note or Reference Manager can be utilized [11].

Illustration

This can be included as appendix.

Editing and Collaboration

Most publications involve more than one author. There is need to carry along all the authors in the process of publication. It is important to secure the consent of all the authors prior to submission of the journal the author for correspondence is usually saddled with the responsibility of submission of the article and following up the review process by the journal. Editing must be thoroughly carried out. Errors in the manuscript should be corrected. An English expert may be approached to help in the editing process. Statisticians and senior colleagues who serve as mentors can also be approached for inputs as needed.

Submission

Steps to be taken in this respect are in keeping with the guidelines for authors. There must be compliance with the guidelines of the chosen journal to avoid undue delay in the review process. Some journals request for covering letter, statements of authorship and copy right transfer forms.

Review Process

Upon submission, it is important to monitor the review process by the journals. Most journals upon acknowledgement of submission usually give progress report on the manuscript. The likely outcome of the manuscript after the review process includes the following:

- Acceptance without correction is usually rare
- Acceptance upon minor revision
- Acceptance upon major revision

Outright Rejection

In cases where revision is required, it may be required to explain how the concern(s)/suggestions of the reviewers were addressed. Upon acceptance of manuscript, further instructions would be given by the journal. There may be need to effect payment of publication fees. Author(s) may be given a complimentary copy of the journal or request for some hard copies of the published article (reprints).

Conclusion

Writing and publication of research work should not be a difficult process. Practice makes perfect. Ensure that you are scientific in your approach and aim for simplicity in your style.

Recommendations

a) Be more computers friendly
b) Update your knowledge of bioethics and bio-medical research
c) Form journal clubs
d) Interact with statisticians
e) Have a mentor/supervisor
f) Encourage collaboration/multiple authorship
g) Obtain guidelines of institutional health research committee
h) Obtain a copy of national code for health research in Nigeria
i) Keep a record of your manuscripts under review
j) Keep a record of your published work
k) Have a backup for your data
l) Time to start is now

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