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How to Write and Publish a Scientific Paper?

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Writing a paper does not take much time, but writing a paper that a scientific journal Editor will offer to publish does require a substantial amount of time. A paper that is written quickly and carelessly will simply be rejected from the journals [1]. So the first step for writing up a good scientific journal paper is to plan when and how you are going to dedicate the necessary time from your life to do all the work involved in writing a publishable paper. Several scientific studies have reported that "lack of time" is the leading explanation that researchers give for why they have not published their work as journal papers [2].

In the past, multiple copies of manuscripts had to be submitted to journals by regular mail. Now, most journals have established online submission systems which has greatly simplified the process and reduced costs [3]. Further, Assistant and Section Editors usually are glad to help with questions or problems that authors might have with submissions [4].

All journals are good but some are better than others. Thus, it is considered better by one's colleagues (and promotion committees) to be published in a peer-reviewed journal than in one without such editorial review [5]. Likewise, with in a given field, some journals are regarded as the premier publications whereas others may rank slightly lower in reputation [1]. It follows that premier journals generally but not always have more rigorous review criteria than others so that getting a manuscript accepted can be challenging with the more prestigious journals [6].

Journals generally provide on their web site a section devoted to Instructions for Authors and all authors are strongly encouraged to very carefully review these instructions before submitting a manuscript [2]. Some journals, for example, have strict limitations on the word counts for different categories of articles within that journal. Ignoring these requirements will not elicit a favorable response from reviewers and the Section Editor [3]. Another cause for rejection of a submitted manuscript is poor organization, particularly if the required format has not been followed [7].

The abstract provides an overview and summary of what the report contains, and it should be brief but must also be accurate. In fact, the one certain item of information, other than the title and author, that will be turned up in a literature search is the abstract, particularly with the internet searches [1]. Accordingly, the abstract allows the potential reader of a journal article, for example, to decide whether to read the article immediately, "back-burner" it or to ignore the article completely if it is outside an area of interest. In effect, the abstract has the same function as a movie trailer, drawing the reader into the manuscript and providing an indication of the contents [1]. A poorly written abstract will deter readers while inaccuracies in an abstract can be repeated forever, particularly with individuals who rely on abstracts rather than the entire paper for their information [7].

The purpose is to enable the reader to decide if they should read the paper in detail [3]. Most journals insist on a structured abstract for an original article. The subheadings are similar to those that appear in the main text. The abstract usually has a word limit of 250 words [1].

Following the abstract is the "introduction." This should have four themes, which can be summarized in separate paragraphs [2]. The first paragraph should establish the requirement of the study. This can be done by highlighting the public health problem or clinical challenges, if any, which the condition poses supported by relevant references [3].

The second paragraph should briefly summarize the work already done on the research question which the present study is addressing. This review should be recent and synthetic rather than pedantic and old. The reader should be able to get a quick insight into the state of the art [4].

The next paragraph should summarize the limitations or the controversies identified in the previous studies. The limitations brought out should be specific. For instance, earlier studies may have used a different study design lower in the hierarchy of EBM, smaller samples, and less precise instruments for the measurements, and so on. Often, there may be no limitations or controversies in earlier studies, but they may have been done in different populations or settings. This may be mentioned [1,5].

The last paragraph is most important in deciding the novelty of the present paper. It should bring out in what way it has overcome the limitations of earlier studies or resolved any controversies from the previous research. Often, the author may not find any limitations or controversies in previous studies. In such cases, the setting and different patient sample may provide justification for the study or at the very least an attempt at replication. The novelty

factor is missing in such papers. This can be compensated by a rigorous study design and methodology which serves the purpose of a replication study [1-5].

The next and perhaps the most important section is the "Material and Method." It should begin with the details of ethical approval of the study including the letter number with date. All clinical trials have to be registered, and the trial registration details should be included in this study [6].

This section of the report presents the experimental methods and the materials (be they chemical, metallurgical, human, or animal) used in the investigation. Brevity and clarity are essential. If a particular instrument has been used, state what it is and specify the model number and give the manufacturer and address in parentheses, for example, a Model 8937 gas chromatograph (Allied Analytical Instruments, Bethesda, MD). It is unnecessary to give also the supplier's name, the cost, the year of manufacture or similar data unless it is strictly relevant to the study [7]. It is also a valuable maxim that one picture is worth a thousand words, and a clearly labeled diagram usually is worth two thousand [3].

Pertinent information should be given on the materials or subjects/ patients used in the research work, noting the fact that any research involving human or animal subjects requires institutional review board approval:
1. for human patients: Indicate sex, general and/or oral health, family history, age (and race if pertinent).
2. for animals: Indicate sex, physical condition, history, age and living conditions.
3. for materials: Provide details of composition, manufacturer, batch number, date of manufacture, purity, pretreatments, etc.

Finally, the statistical analysis techniques used and the predetermined significance level should be stated. Typically, for parametric (or number based) data, a one-way or two-way ANOVA (analysis of variance) is performed to determine whether differences exist in the data. Thereafter, a multicomparison test such as a Scheff˝e or Tukey HSD test is performed to identify where the differences lie at a predetermined significance level, for example, $\alpha = 0.05$, 0.01, or 0.001. A similar approach should be used for nonparametric (comparative) statistical analyses of data. Statistical analysis is covered in Part II [9,10].

Next is the results section which is the major scientific contribution. It should bring out the findings related to the research question, as stated in the introduction and how to address it as described under material and methods. The main results should be easy to locate complemented by tables and figures. Results may be descriptive, quantified by summary statistics or analytic conveyed by P values and confidence intervals. Giving only P values with significance levels is not sufficient. The effect size, i.e., the mean difference between the groups or the magnitude of the relative risk or odds ration along with their 95% confidence intervals should be mentioned [1-7].

The statistical analyses should be presented in this section and the data can be tabulated with a brief commentary in the text. The table in Figure xx.x shows an example of data comparisons with the significance levels identified beneath the table [1].

If the research involved a number of different studies, particularly if the studies were independent of each other, it is useful to put the results of each separate study in a subsection. This aids clarity and allows one to discuss the findings of each sub study separately before combining all the data in the final summary of the discussion [5].

Correlation of all the results, particularly those presented in separate subsections, should be performed in this section. In particular, the author needs to indicate where the findings from different aspects of the overall study support each other and lead to the same conclusion. However, if differences exist among the findings in different parts of the same study, they must be accounted for in this section. Likewise, differences between the results of the present study and those presented in the literature must also be explained [6,9,10].

Discussion should stress on the following. What exactly did the study show? What is the relevance of the results? Could the results be interpreted in a different way? Have other studies come to the same conclusions or there is disagreement? If so, what can be the likely reasons? What are the strengths and limitations of the study? How well could it eliminate or control for selection, measurement, and confounding biases? In what direction the limitations of the study are likely to skew the results? A closing paragraph should bring out the conclusions and recommendations based on the study results [1].

The conclusions section of a report serves several purposes, namely to:
1. Review, summarize, and draw conclusions from the discussion
2. Indicate the significance of the findings
3. Provide recommendations for further work
4. Indicate, in the case of biomedical research, the clinical significance and applications of the research. The significance and applications of the research obviously also apply for non biomedical research work.

So how do you find relevant papers to read and cite? There are three main ways, which should be sufficient, unless you are writing a literature review or cannot find references on some specific point. First, choose half a dozen or more journals in your field and flip through the table of contents every time a new issue comes out. This will help ensure that you are familiar with the latest research findings, as well as the topics that currently interest journal Editors [1-8].

There are two rules to follow in the references section, just as in the acknowledgments section. First, list only significant published references. References to unpublished data, abstracts, theses, and other secondary materials should not clutter up the references or literature- cited section. If such a reference seems essential, you may add it parenthetically or, in some journals, as a footnote in the text. A paper that has been accepted for publication can be listed in the literature cited, citing the name of the journal followed by "in press" or "forthcoming." Second, ensure that all parts of every reference are accurate [9]. Doing so may entail checking every reference against the original publication before the manuscript is submitted and perhaps again at the proof stage. Take it from an erstwhile librarian: There are far more mistakes in the references section of a paper than anywhere else [8-10].

By searching, reading, and citing the scientific literature, you will embed your research and thinking within the investigations and debates of the broader scientific community. Science is scientific because it is based upon the conversation that the scientific community is publishing in the scientific literature.

References

1. Azzaldeen, AbdulganiAbu-Hussein, Muhamad Nizar Watted (2014) DENTAL CASE REPORT FOR PUBLICATION; STEP BY STEP, Indian Journal of Medical Case Reports 3: 94-100.
2. Taylor RB (2011) Medical writing: a guide for clinicians, educators, and researchers. 2nd ed. New York: Springer.
3. Bishop CT (1984) How to edit a scientific journal. Baltimore: Williams and Wilkins.
4. Zeiger M (2000) Essentials of writing biomedical research papers. 2nd ed. New York: McGraw- Hill.
5. Morgan P (1986) An insider's guide for medical authors and editors. Philadelphia: ISI Press.
6. Peat J, Elliott E, Baur L, Keena V (2002) Scientific writing: easy when you know how. London: BMJ Books
7. Task Force of Academic Medicine and the GEA- RIME Committee (2001) Checklist of review criteria. Acad. Med. 76: 958-959. Available at journals.lww.com /academicmedicine/ Fulltext/2001/09000/APPENDIX_1__CHECKLIST_OF_ REVIEW_CRITERIA.37.aspx. Accessed January 17, 2016.
8. Banerjee A (2021) Editor's Role: Etiquettes and Ethics of Editing. Available from: https://www.youtube.com/ watch?v=R1SJhvP1N18. [Last accessed on 2021 Aug 19].
9. Banerjee A (2021) Critical Appraisal of a Paper. Available from: https:// www.youtube.com/watch?v=hPiS0FGmIJg. [Last accessed on 2021 Aug 19].
10. Aaronson S (1977) Style in scientific writing. In E Garfield (ed.), Essays of an information scientist 3: 4-13.