



POLITEKNIK KESEHATAN KEMENKES PALANGKA RAYA: HEALTH FORUM AND INTERNATIONAL SEMINAR
THE NEW NORMAL : Creating a Pleasant Virtual Communication

How to write up and publish your scientific research

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There are many reasons to write a paper

Your reason 'why' will be personal and uniquely yours. You may well have had an innovative idea or collected novel research data, discovered new information of importance, or found a better way to do something; it maybe you are in a profession where it is an expectation that you 'publish' as part of your career path. Whatever the reason, knowledge transfer through peer reviewed publication is an integral part of academic activity and the advancement of science, so many of us find ourselves faced with the task of writing a paper and submitting it for publication.

How to start a paper

The general formula that most scientific papers follow, and the sections that make up an article, are described in literature that can be found on a Google search; a helpful example is a book by Hall (Hall, 2012). Those of you new to writing are well advised to read other authors' work, to find a style and way of writing you like. You can use these papers as a model to help you get started, but do not, of course, copy the work of others, as doing so is plagiarism and completely unacceptable. Holding on line journal cubs is a good way to explore what is being published in your field of nitres during the 'new normal' of Covid 19. Also ask your supervisor or colleagues for advice on what aspects of your work are original and suitable for publication, and for their ideas and practical help on starting to write. I recommend my practice of starting by reading papers in the journal in which I think my work could be published. Each journal has a number of different types of paper it publishes. These range from original/scientific reports, through review articles, to case reports and letters to the editor; one less typical format is the 'photo-essay.' In such essays, a series of photos are used as the principal medium for sharing information; each photo is accompanied by an explanatory caption, and linked together by short sections of text, followed by selected references (Macnab et al., 2018). Each journal also has its own requirements for formatting and content that define its style, so it is essential to read the journal's 'Guidelines for Authors' to get detailed instructions on all aspects of how to set out your paper; these are available online; for example for the Global Health Management Journal, go to: <https://publications.inschool.id/index.php/ghmj>

The anatomy of a successful scientific paper

Title: Keep the title short; it should be a simple description of the content of your paper. Make sure it is not so technical it cannot be easily understood. Do not make your title a question.

Abstract: This provides a concise overview that summarizes your paper. Stay within the journal's word limit; is a 'structured' abstract required? If not, most abstracts are still best written to include the sections a formally 'structured' abstract requires, but omit the headings: Introduction/Background, Materials/Methods, Results, and Conclusion.

Keywords: A sort list of terms is usually asked for; these keywords are used to index and drive searches that will connect others with your work. Do not repeat words included in your paper's title; these will become part of the search terms automatically.

Introduction: Briefly state what your paper is about, and introduce relevant literature to provide background (what is known/unknown). Describe what your paper is intended to add (the knowledge gap it fills). Ideally a scientific paper states a hypothesis (or specific research question) in the introduction, and at the end of the section describes how it was tested/studied.

Materials/Methods: This section is intended to enable your experiment/study to be repeated by anyone who wishes to, so it must include What you did, How you did it (including how you analysed your data), Why you did things in the way that you did, Who took part (the population), and Where and When it was done. (These are the six terms recommended by Asher (Asher, 1969), that really help to make sure all the detail required is included in the framework of a scientific paper; Asher was well known for writing very clear and interesting papers).

Results: This section is for your data (e.g. the details (demographics) and number of participating subjects), and the findings from the tests and analyses done (what you found out). Be objective and use statistics for support. Use tables with numeric data and graphs/bar charts more than words. Include here brief details of the ethical approval you received for your study. This is NOT the place to describe what your results mean. Check to make sure your math is correct (e.g. percentages add up to 100). Provide clear captions for each figure and table.

Discussion: Start with a short paragraph that summarizes your paper. (What you did and what did you found out - Did you prove your hypothesis – did you fill a gap in knowledge). Then follow with interpretation of each of your (major) findings and results. Put what you found in context with other studies or opinions (described in one or two sentences and cited carefully) and compare these with your findings. Remember that discussing unexpected results is often valuable. Include a paragraph describing the 'Limitations' of your study (what you could have done better (e.g. more study subjects) or would have done differently had it been possible (e.g. using a validated evaluation method, having longer follow up or asking additional questions); and suggest what might be done in future research.

Conclusion: This should be a few sentences that give the reader the 'take away' message of your paper (the implications of what you are writing about). If the 'Guidelines for Authors' do not ask for a separate Conclusion, it is good to include these sentences as the concluding sentences at the end of your Discussion.

References: Pay attention to the format required by the journal (e.g. Vancouver style, APA or Chicago) and any limit to the number of references allowed. Use up to date citations. Accurately cite the source of all key statements/research you discuss (including contradictory studies).

Before you submit: Spell check what you have written. Have someone read your paper as if they were a reviewer so you can make appropriate additions/deletions. Read through a printed copy (several times); this avoids errors missed when editing 'on screen.' Make sure all co-authors read and approve the final version.

If you possibly can have an English editor read through your paper to improve, grammar, spelling, meaning and punctuation. Check you have included details of the financial/practical support you received for your research in the Acknowledgements section; and the Affiliations and contact information required for you and your co-authors is correct.

Submission: Follow the online submission instructions (each journal is different) Give yourself time to complete all the required sections carefully. Are Tables, Figures, Captions required as separate files? Is the submission to be ‘blinded’? Is a Cover letter’ required? Are you asked to suggest possible reviewers for your paper?

Rejection: Some articles are returned by journal staff without peer review. Common reasons for this happening, and how you can do your best to avoid rejection at this stage are shown in Table 1.

Reviews: Following peer review, the editor will send you a decision with the reviewer’s comments – it often takes many weeks for this to occur. The editorial decision may be acceptance for publication, or rejection, or the offer to resubmit. Resubmission usually involves either a major or minor revision. Look at the decision and reviewer’s feedback with your co-authors/supervisor. Try and view the changes suggested as a way to improve your paper, and work to respond to them as soon as you can – delay risks your paper going unpublished. If the journal editors say they will consider a revised version of your paper, write a response letter outlining the changes/additions/deletions/edits you have made; explain any of the comments/suggestions that you cannot respond to, OR feel are not appropriate. The editor’s invitation to resubmit is not a promise of publication, but there is a good chance it will happen if you work to improve your paper. What ever happens, re-submit your revised manuscript promptly (hopefully to the same journal you submitted to originally), but if you do not have that option as your submission was rejected, do not be discouraged, identify another suitable journal and send your revised and improved paper there.

Table 1. Why your paper may not be sent for peer review, and what to do about it

REASONS	ACTIONS TO TAKE
Article type is not within the scope of journal	Always check the websites of journals you are considering for a description of the kind of submissions accepted, and select accordingly
Article content is outside what is usually included	Read examples of papers previously published in the journal – especially ones related to your topic
Required information is missing	Provide all requested information - especially on author affiliations, addresses and emails
Article does not follow submission guidelines	Follow ALL the requirement listed in the journal’s instructions for authors; especially on length, sections/headings required, and where figures and tables are placed in the text
Article writing or structure makes it difficult to read	Focus on language, spelling and grammar – ALWAYS spell check. If possible, have your paper read by a professional editor
Reference section	Format your citations in the text, and in the reference section, using the journal’s required style
Overlap with prior publications	Avoid cutting and pasting sections from your own or other papers – always rewrite or paraphrase them and add a reference to all prior work (text, tables or figures) you use

Key points: Writing a paper is never easy, but it can be straightforward if you follow the established guidelines; remember Asher’s six words for framing your manuscript, and, include the elements required in each section of the paper.

Whatever paper you write, the Abstract and Conclusion are the sections that will be read most; we all hope any paper we write will be read from beginning to end, but in today's world that rarely happens. But never the less your abstract will ensure your 'message' can be shared with a wide audience, as, once your paper is published, the abstract will be available on multiple platforms such as Google Scholar. Then those who want to know more about your work can access your full paper.

Remember, that it is the Methods section that contains the most important information in a scientific paper, as it makes it possible for others to interpret what was done, and also enables your study to be repeated by others in the future, if new knowledge or techniques make doing so relevant. We all like to think that our results and how we interpret them are the most valuable part of any paper we write; however, as science and knowledge advance, what we have written and concluded today may well prove to be limited or wrong in the future, but the method you chose to follow can be used again if it is fully and clearly described.

Writing a paper is best not done alone. Gather ideas, thoughts and encouragement from your co-authors and supervisor/colleagues; have someone not connected with the work you have done read what you have written to make sure it is easy to understand (and interesting). We all learn from reading papers other authors have written in good journals, and from the feedback we receive through reviewer's comments/suggestions on what we have written.

When your paper is published, remember to pause and celebrate your success, as being published is an achievement, and only happens after a lot of hard work. Then, once you are an author, keep writing! Also, act as a mentor to the friend or colleague who asks you, "How do I write up and publish my scientific research?"

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