Editorial

Making the transition from thesis to published paper: A supervisor's note to her student

Navjeevan Singh

WHY PUBLISH?

There are good reasons why you should publish a paper of your thesis. Science progresses in small steps; a journey of a thousand miles begins with a single step. You have put in several months of painstaking work with your thesis and taken that first small step. Sharing your work with the larger scientific community is essential to the progress of science. Your thesis may be read only by a handful of people besides you and your supervisor; or it may languish in the oblivion of the shelves of your institutional library. If institutional policy and resources permit, it may lie unread in an online repository. On the other hand, a paper published in a PubMed indexed, peer-reviewed journal has far greater potential to be seen as credible work which can be subjected to critical review and be cited by other researchers.

Publishing your work in indexed, peer-reviewed journals is considered the acme of academic achievement; a pinnacle you scale successfully every time your research is so published. When your first paper is published, your status is elevated to that of a "peer." By reading the literature and building your research on the work of others you stood on the shoulders of giants; by publishing your work you become a giant yourself.

The best opportunity to write your paper is immediately after submission of the thesis. At this time, your mind will be brimming with ideas and if you get it right, you could carry a reprint of your published paper to the MD examination! If you fail to capitalize during this brief window period, the next chance may not come until after you have taken the examination. By then your precious work will have turned stale and you may have to redo large portions of it to account for the additions to the literature while you dallied.

Never underestimate the value of your work. If you have been meticulous and thorough with your research, the discerning reader will see it. There will be flaws, as indeed there are in most published work.[1] By publishing you generously allow other researchers to discover those flaws and enable them to design better studies; that is what progress in science is all about. It is unethical not to publish your research because by doing so you deprive the scientific community and those who benefit from its efforts, of the fruit of your labor.[2]

Even if you never pursue a career in research, your experience with the thesis and its subsequent publication will equip you with unique life skills. The process stimulates curiosity, teaches you to think logically, ask relevant questions, use appropriate designs and methodology to seek answers, handle data, write coherently, argue your case and support your defense with evidence backed by data. These skills will come handy in all walks of life. You will learn to critically evaluate others' work which will improve your own decision-making skills; most importantly, you will learn to value "critical appraisal" and distinguish it from avoidable "criticism." One more reason for publishing is to fulfill the criteria for faculty promotion in case you choose to become a teacher.

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Access this article online	
Quick Response Code:	Website: www.ijdvl.com
	DOI: 10.4103/0378-6323.163694

How to cite this article: Singh N. Making the transition from thesis to published paper: A supervisor's note to her student. Indian J Dermatol Venereol Leprol 2015;81:447-50.

Received: April, 2015. **Accepted:** July, 2015.

CHOOSING A JOURNAL

Choose a journal that publishes papers like the one you intend to write and has a readership you would like to address. This information is generally available in a section called "scope of the journal." or as in the case of this journal, in a link labeled "About" on the landing page. Read some articles in recent issues, paying attention to the writing style. Perform a critical appraisal of an article that appeals to you; take the help of one of many fine resources.[3] Doing so will help you evaluate the journal and how well its peer review process works. Ask some questions. Does your library subscribe to the journal? If it does not, then you may have difficulty accessing your own work. Is the content open access or hidden behind a pay wall? An article published in an open access journal is likely to reach a larger audience. Does the journal charge the author (article processing fee) to publish? If it does, will you be able to afford the charges? Will your institution agree to pay on your behalf? Will you have to buy reprints, or will the journal give you some for free? Do they charge for color pictures? How frequently is the journal published? The higher the frequency, the shorter the time to publication is likely to be; conversely, they may publish frequently because of high demand, and rejection rates may be high. What is the impact factor? How much does it matter to you at this stage of your career? Speak to someone who has published in that journal; what was their experience? Were the reviewers' comments exhaustive and helpful?

You should prefer to publish in a PubMed indexed journal. There are at least 25 PubMed indexed dermatology journals to spoil you for choice. Your work may include a large element of dermatopathology; would you like to consider pathology journals as well? Study the copyright agreement, the journal will require you to sign. Your work is your intellectual property. Will you retain the right to freely disseminate and re-use your work? Researchers often do their work without monetary consideration, while the published work often becomes the exclusive copyright of the publisher. You may wish to choose a journal that publishes your work under a "creative commons license." None of the journals you examine may meet all your requirements, so you may have to find one with a balance that best fits your need. Be picky. When you have made up your mind about the journal, first read the section "instructions to authors." Editors are obsessively rigid about insisting that your manuscript not deviate from these requirements, so follow them to the letter.

MAKING THE TRANSITION

Your supervisor is your mentor. Discuss these issues with her. Her experience in publishing research will prove to be an invaluable aid to you. Helpful resources aimed at beginning, as well as advanced researchers, are easily available.[4,5] Among other useful information they will help you to avoid common errors; for example, they explain why you should include "population, intervention, controls and outcomes" (PICO elements) in the title of your paper and why you should prefer "medical subject headings" (MeSH terms) as keywords with your manuscript.

An important difference between a thesis and a published paper is that in the latter there is no place for a "review of the literature" which is often the longest section of a thesis. A brief review in the "Introduction" is all the opportunity you will get. There are strict word limits for journal articles, so you will need to pare down your thesis to a single aim leading to a conclusion that is in conformity with the aim. Retain only the relevant results; discuss all the results in the sequence in which they appear. Limit your discussion to your own results in the context of the literature. Do not discuss the literature, and avoid plagiarism. In contrast to most theses where nearly every element of the data is tabulated or charted, a published paper includes only those tables and graphs that are clearly necessary; eliminate tables and graphs that can be easily replaced by a sentence or three of text.

Limitations are issues that cropped up after the study was begun. Do mention them. Identifying limitations does not mean that your work is bad; on the contrary they indicate that you are able to critically evaluate your own work. Conclusions must be based on your own data and not on what the published literature says. Publish negative results; very useful information may be gained from results that do not support your hypothesis. Avoid making statements of economic benefit unless cost effectiveness was studied and cost-benefit ratios were calculated. Avoid claims of first publication. You will be allowed a limited number of references, choose wisely. The "References" section is the most error-prone part of a paper; use a reference manager. Use one of a wide choice of free (Mendeley, Zotero), or paid referencing software like EndNote to prevent errors.

Avoid conflict by addressing authorship issues early, when the decision to write a paper is made. Ensure that you are conversant with who qualifies to be an author and that you contribute enough to fulfill all the necessary criteria.[6] The first and corresponding authors are important and responsible positions in the author by-line: ensure that you understand the ramifications.[7] It is important that you understand research and publication ethics to avoid scientific misconduct; for example, it is unethical to indulge in "salami slicing" - an euphemism used to describe multiple publications originating from a single research project.

MIND YOUR LANGUAGE

Lest the reviewer thinks that shoddy English translates into shoddy science, your language must not distract the reader from the scientific content of your manuscript. Before you submit, get other people, preferably unrelated to your specialty, to read your manuscript and to edit it ruthlessly for linguistic errors. If they can comprehend what you are trying to say, you have probably done a good job.

DEALING WITH THE JOURNAL

After you have submitted your paper to a journal it will be screened by the editorial board who will look for major shortcomings and if they are satisfied that there are none, peer-reviewed. At this stage, patience is a necessary virtue. Staring at your mailbox for hours every day hoping for updates from the journal will not speed up the process. On the contrary, a near immediate response usually means summary rejection: in its preliminary review of your manuscript, the editorial board has decided that they do not even wish to have your paper peer-reviewed. Often this means that you have chosen a journal which does not publish articles in your area of research; else they may have detected a major design or methodological flaw in your work.

Finding reviewers is often difficult. Some journals will attempt to identify reviewers who have published in the same area of research as you. This is a commendable but tedious process; contact addresses change, or may not work; or the potential reviewers may not respond, or refuse to review for various reasons. Many journals have lists of committed reviewers; however, none of them may have worked in your area of research. Both approaches have their proponents and detractors; the first set will have intellectual insights into many aspects of your work, but may be prone to trashing it too soon, the second may be unfamiliar with your area of work and be unduly harsh on the technical aspects.

Whichever way it goes, it is rare for the first draft of a paper to be accepted without changes; and therein lies the beauty of the peer review. Reading your manuscript triggers off many responses in the reviewers' minds. Each will respond to your work in the context of their own experiences, knowledge of the subject, understanding of the processes of research, biases and attitudes. A good reviewer will respond systematically to each component of your manuscript; indeed, many journals encourage their reviewers to use a check-list to write out a review. A good reviewer will instinctively recognize the worth of your paper and work on the premise that, using her inputs, the result will be a paper worth publishing. This reviewer is actually on your side.

Most journals will have a documented time estimate, say 6 or 12 weeks, to complete the review process and will make all efforts to abide by that timeline. If you have not heard from the journal at the end of that time, but not before, you are justified in making an enquiry. In a welcome show of transparency and concern for authors, most journals will allow you to track the progress of your paper through the editorial process online.

With few exceptions, unless the editorial board has been shirking their work and have sent your manuscript directly to the reviewer without having screened it first, your article will not be summarily rejected. After the review you could receive one of the following advices: (1) accept with minor revision, (2) accept with major revision, (3) revise and resubmit, (4) major revision and resubmission required, or (5) reject. Whatever the decision you will also be sent lists of numbered comments by the reviewers.

You will notice the clear hierarchy in these five decisions. Number five is unambiguous rejection. If this is the decision, do not attempt to get into an argument with the editor. Find another journal, however, before you submit to another journal be grateful to the reviewers of the current journal for having listed out the shortcomings of your manuscript. Unless there are flaws in the design or methodology,

revising your paper to address the issues raised by them will improve the chances of acceptance by the second journal.

Most potentially publishable manuscripts will be returned with option two: accept with major revisions. Your first response to the review will probably be emotional: hostility to the reviewer. This is understandable; having put in so much effort it is often hard to accept that there can be anything wrong with your work. My advice is to read the reviewers' comments when you first get them, then put them away. Read them again the next day, and then perhaps also the day after, before you react. You will find that your emotions have mellowed and that the comments actually make a lot of sense and are genuinely aimed at improving your paper.

Prepare your responses to reviewers' comments item-wise in the same sequence as they were transmitted to you. Respond to each comment indicating what changes you have made to the manuscript and where. If a reviewer demands additional data that you did not collect and are in no position to do so now, do not hesitate to say so. It is perfectly legitimate to put that in as one of the limitations of your study. If all your responses are logical and supported by data or references, consider your job well done. If all goes well, your manuscript stands a good chance of acceptance; however, some further questions and comments by the reviewer(s) are not uncommon.

Just before your article is published, you will receive page proofs. This is often a rushed affair in order to meet publication deadlines. You may be required to return the proofs within 24 hours. This will be your last chance to weed out minor errors, but you cannot make major changes that might alter the focus or outcome of your research. Restrict yourself to correcting errors of grammar, syntax and spelling, so that your paper reads as well as it possibly can.

In summary, to derive the greatest benefit from your research effort you must publish a paper from your thesis, preferably in a carefully selected PubMed indexed specialty journal. Be aware of what to do and very importantly, of what not to do. This article cannot be a "complete" guide to transforming a thesis into a published paper. Consult other resources on paper writing and publication.[8,9] Beyond submission of a manuscript there are other issues such as the peer review process, articles returned for revision and resubmission and editorial decisions that you must understand and deal with.

A clear understanding of the peer review can help you cope with what might appear to be an obscure and sometimes frustrating process. It will also ensure that you do a good job with the early versions of your manuscript. After all, your published article will stand testimony to your research and writing skill for a long time into the future.

Enjoy the process; the pleasure is in the journey.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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