

**INTRODUCTION**

Publishing scientific papers are essential to disseminate research findings. They are also a measure of academic productivity and often assessed for promotion and grant application. However, there are more important reasons to publish. In the words of M. J. Mahoney, “I would urge you to write not because it is a good thing, not because it is nice to see your name in print, but rather because you will really get to know a field only if you contribute to it.”<sup>1</sup>

For most people, writing does not come naturally and one needs to be aware of some basic rules in addition to continuous practice. Needless to say, publishing in a good scientific journal requires robust science and an efficient strategy that encompasses generation of ideas to submission of manuscript.<sup>2</sup>

In this article, I shall be covering on some generic aspects of medical writing before identifying the specific challenges facing the Indian medical writer.

**SOME TECHNICAL ASPECTS OF WRITING A MANUSCRIPT**

It is not necessarily the best thing to write in the conventional format of Introduction, methods, results and discussion. One effective and nonlinear way is to assemble all vital study materials, including protocols, final analyses, and references. The following reverse technique might actually be helpful (Table 1).

**Table 1: Suggested steps to writing a manuscript**

Write Methodology section first (Easiest part, standardized, highest satisfaction for effort)
Write the results section next
Construct tables and figures based on the final analyses
Develop an outline with major and minor points in each section
Introduction and discussion next
Abstract should be attempted after article is complete
Title is reserved for the very end and should be catchy and informative
First draft
Share it with the main co-authors
Revise, read again; first for content, then for fluency, clarity, accuracy
Authorship should be clearly stated in first draft (number and order of authors) <sup>3</sup>

**SECTIONS OF THE PAPER**

Most readers will just read the title and skip ahead. If the title appears interesting, some would read the abstract. If a reader cannot extract the significance of an article from its title, they are unlikely to read further. The title should be specific to the study and should inform about the paper’s contents or main findings. Declarative titles are preferred over non specific ones like “A Study of . . .”

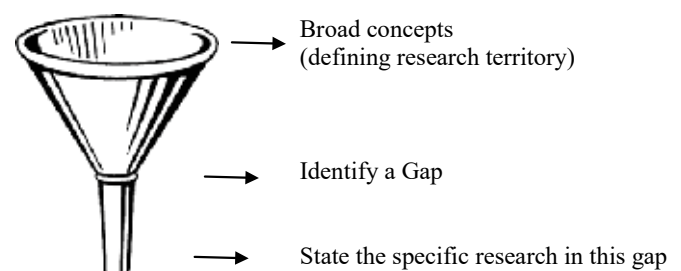
As mentioned in Table 1 above, the Abstract section is ideally written towards the end when it is easiest to summarize all aspects of the study. After the title, the abstract is often the only part of the manuscript read by most readers.

Only if the abstract incites curiosity in the reader will they venture to read the full article. Even here, most start with conclusions, then discussion, then results and lastly the most discerning ones will scrutinize the methods section. It is therefore imperative that a lot of effort is devoted to a good title and a concise abstract.

The background aims to answer the question: Why was this study done? The research funnel in Figure 1 shows the three broad parts of the background. The initial part covers the magnitude and importance of the problem. The next part identifies the gap highlighting the novelty. The third part leads to the research question that the study attempts to answer and leads naturally to the methods section. The background should be brief and not read like an extensive review of literature.

The Methods section is the most important part from the viewpoint of the reviewer and the editor. This part contains details of the study design, study population, data collection, laboratory methods, and statistical analysis. In some ways, this is the easiest part to write as guidelines exist for each type of study (Table 2) that describe in detail about how to write this section.

The Results section is probably the most important part

**Fig. 1: The Research funnel**

**Table 2: Guidelines on Writing Specific Types of Studies**

Initiative	Type of study	Source
CONSORT	Randomized, controlled trials	<a href="http://www.consort-statement.org">http://www.consort-statement.org</a>
STARD	Studies of diagnostic accuracy	<a href="http://www.consort-statement.org/stardstatement.htm">http://www.consort-statement.org/stardstatement.htm</a>
QUOROM	Systematic reviews and meta-analyses	<a href="http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf">http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf</a>
STROBE	Observational studies in epidemiology	<a href="http://www.strobe-statement.org">http://www.strobe-statement.org</a>
MOOSE	Meta-analyses of observational studies in epidemiology	<a href="http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf">http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf</a>

of the paper. It usually has two parts. The first part is descriptive of the study populations involved while the second part deals with analysis and statistics. The analysis should be in congruence with the primary study question. Each table or figure should be referred to in sequence and indicate the key findings. Data in tables and figures should not be replicated in text.

The Discussion section should cover a bit of background (why was the study done?), methods (what was done and how?) and results (what did you find). One starts with the key findings of the study. One should be careful not to replicate the results here but rather to interpret the same. This is the place the results in context of other similar studies. If similar results exist the same can be displayed in a tabular form while if significantly different results have been found, one tries to explain the reason for the same. The findings are then extrapolated towards greater body of literature and the broader implications and generalizability of the findings. One must highlight the strengths and limitations of the study. Finally one brings it all together succinctly to state how this study has added to medical literature and what more needs to be done.

The Reference list should be up to date and relevant. One must read carefully the instructions to authors about references and should try to use specialized reference software, such as Zotero and Mendeley (both are available for free) or End Note (paid) to avoid making mistakes.

### WHICH JOURNAL TO SEND THE ARTICLE?

The choice of the journal is decided by knowing the paper's focus and strengths, correctly defining the target audience (general, specialist audience or highly targeted sub specialty audience) and knowing the journal's impact factor and readership. With thousands of journals to choose from, the decision is best taken jointly between the authors as one must also keep in mind the time wasted

**Table 3: Challenges facing the Indian Physician**

External challenges
1. Clinical work: heavy OPD load with no time in hands for anything else
2. Teaching responsibilities
3. Administrative work: committee assignments
4. Personal time: Need to balance time between work and home
Intrinsic challenges
1. Inability to begin, sustain and complete a manuscript:
a. Only 15-20% abstracts become full texts
b. Having multiple revisions, repeated analyses, and changes in the focus
c. Procrastination
2. Not having basic knowledge about
a. How to choose a topic and identify study question
b. Poor access to specialists to design correct study
c. Poor access to research methodology and Biostatistics
3. Barriers to medical writing skills
a. English language and grammar
b. Poor knowledge on literature search
c. Journal access limited

in resubmission if one submits the article to a very high impact factor journal, overestimating the value of one's work. Once a journal is selected, follow the requirements for submission meticulously and proceed with electronic submission.

### SUBMISSION AND REVIEW

The reviewers form the backbone of any journal and are usually experts in the field in which your article is written. Some journals ask for reviewer suggestion from authors. It is a good idea to suggest reviewers who are likely to be fair and likely to give a favourable review. Do not choose reviewers from your known circle including family or institution. Handling reviewer comments is as much science as it is art. One must make it a point to answer every query point wise. Be polite throughout. If you disagree with reviewer; ask if the change asked for affects the science in any way. If it does not, then accept and incorporate the change. If you tend to disagree with a reviewer on a point, politely point out your contrarian view with evidence and logic. Rejections are so common that authors need to get accustomed to them. Remember, with each passing rejection, your manuscript becomes richer with corrections and almost always it will get accepted in the end.

### CHALLENGES TO MEDICAL WRITING

In the typical academic setting, the challenges facing the Indian Physician are manifold (Table 3).

**Table 4: Strategies to overcome barriers**

1. Consistently devote 1 hour daily to write (without feeling ready or fully in control or awaiting inspiration)
2. Set target dates and complete parts of manuscripts
3. Ping pong ball approach: always write manuscript with a co-author. The manuscript should move frequently between both of you with every movement improving upon the previous.

**STRATEGIES TO OVERCOME CHALLENGES**

Many strategies have been proposed for overcoming barriers to writing (Table 4). One should not focus too much on structure, grammar, and spelling. Get the content on paper. Rest can follow. Table 1 suggests a non linear way that can be very helpful.

To conclude, writing and getting published can be an interesting and fulfilling process of continuing learning and improvement. Both the process and products of writing tend to correlate with the amount of effort invested.

**REFERENCES**

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