

The Art and the Science of Manuscript Publication: Tips and Tricks for Health Science Students and Professionals

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Abstract

Health care professionals are bound by the duty of providing the best possible care to their clients. To abide by this, one needs to constantly learn and imbibe the advances in the field. Evidence-based practise should be built on the firm foundation of evidence synthesis. A professional may be a clinician, an academician, or a researcher per se, but contribution to the evolution of their profession is an indispensable responsibility. Conducting research is a scientific process which when combines with the art of writing the manuscript influences innumerable lives in more than one positive way. Publication of findings not only helps one in professional development but also helps others globally in upgrading their services to benefit humankind. The process of drafting and publishing a manuscript needs initial guidance that appears to be missing as a major part in the health science curriculum. In this article, we aim to outline the practical points to facilitate the process of writing a manuscript for publication. This article includes the information on types of accepted articles, the pattern of manuscripts, gold standard guidelines, tips to draft each section of the manuscript (including cover letter), and how to choose a journal for publication, which would help to reduce the time required to prepare a draft and to increase the probability of acceptance of the manuscript for publication.

Keywords: manuscript, research, scientific paper, scholarly writing, journal publication

Introduction

Researchers are known to be frontiers of knowledge. In the ever-evolving field of health science, updating knowledge and skills is utterly crucial. Publications constitute the basis of evidence-based practice, aimed at providing the most efficient patient care available and enhancing professional expertise (1). Although many professionals are keen about publishing their research, most find the process daunting as this skill set is underrated in the curriculum (2). Research plays a significant role in developing clinical practices and in implementing new health policies. A logical scientific approach is needed since it generates new claims (3).

This review strives to throw light on the process of efficient drafting and publishing manuscript for novice writers.

Types of accepted articles:

We witnessed that with the advancement in the quality of journals emerges the specificity of whether the manuscript complies with the journal's scope and aims. Furthermore, the qualitative and indexed journals are specific about considering the type of research that they would carry forward for a further editorial review. There are a few journals, which publish the original research exclusively, while some only publish case reports.

1. Systematic reviews and meta-analysis are the most gold standard articles in research, which fall into the first level of evidence in research.

2. Original research encompasses randomised trials, experimental studies, surveys etc. They form the most significant part of the level of evidence hierarchy in research. The original researches provide momentum

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to a majority of reviews and case reports.

3. Non-research publications include review papers, book reviews, opinion papers, letters to the editor, case reports, case series, editorials, film reviews, ‘unique’ categories (e.g. clinical picture in the Lancet, ten-minute consultation in the BMJ), etc. They carry unprecedented importance in publications for providing an insight into the research ecosystem.

Guidelines/Checklist:

To upgrade the quality and accessibility of the research, the research scientists have developed gold standard guidelines to ease the cumbersome process of maintaining the quality of research. These guidelines assist the researchers in designing their research protocol and polishing it into a scientific manuscript. The EQUATOR (Enhancing the Quality and Transparency Of health Research) network is the most trusted database to explore the research guidelines, which provide explanations to assist researchers worldwide in framing their studies.

Majority of journals follow guidelines published by the International Committee of Medical Journal Editors, wherein the most common reporting guidelines (by EQUATOR Network and the NLM’s Research Reporting Guidelines and Initiatives) include-

- Randomized controlled trials (RCTs) follow the Consolidated Standards of Reporting Trials (CONSORT) guideline,
- Systematic reviews and meta-analyses follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline,
- Studies of diagnostic accuracy follow the Standards for Reporting Diagnostic accuracy studies (STARD) guideline,
- Case reports follow the Consensus-based Clinical Case Reporting (CARE) guideline, etc.

In 2015, EQUATOR designed an easy flow chart to assist authors, peer reviewers and editors find the most relevant checklist and reporting guideline to carry out a study (Fig 1).

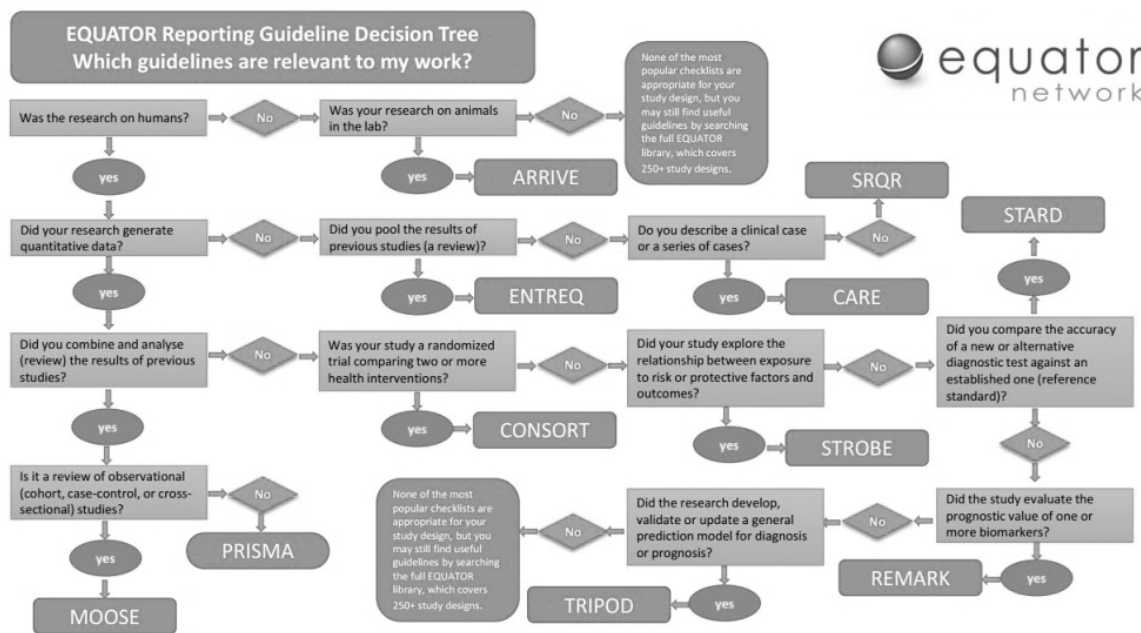


Figure 1. EQUATOR reporting Guideline Decision Tree.

Journal Indexing

Journal Indexing, also known as bibliographic indexes or bibliographic databases, refer to the collection of the scientific journals, which is arranged systematically

according to streams, speciality, subjects, topics or area of interest (4). Some journals are indexed in multiple databases, whereas some adhere to a single indexing database. Often, the databases include journals after checking their brief criteria or quality. The researchers

extensively use the journals indexed in PubMed, Scopus, Web of Science, and Science direct databases to learn and cite the knowledge for their researches. The quote “Standing on the shoulder of the giants” perfectly fits this context. Furthermore, the journals are classified based on impact factor, quartiles (Q-ranking), h-index, cite index, and so forth. Nonetheless, there are some databases, which are commercially available and include journals without undergoing any qualitative check.

Globally, researchers recommend the journals indexed in Journal Citation Reports, which are acknowledged by the United States National Library of Medicine and National Institutes of Health shared website, PubMed (5). These journals comprehend the peer-review process, thereby ensuring the commencement of better studies for other researchers. Besides, if a medical, surgical, or scientific society supports a journal, or if it belongs to a well-known publisher, such as Springer, Elsevier, Wiley, and Taylor and Francis, it is suggestive of good quality (1). The ethical principle of most indexed journals implies, to prevent simultaneous submissions, a manuscript submitted to one journal should not be submitted to another simultaneously but can be submitted to the latter after rejection from the former.

MiSeRY

The prevalence of manuscript rejection syndrome (MiSeRY) is growing in the health care community. An increasing number of medical professionals attempting for manuscript publication and low acceptance rates by indexed journals are the key contributing factors to MiSeRY (6). The symptoms in this condition closely resemble those with the Kübler-Ross stages of grief but the time duration between the denial phase and the acceptance phase is markedly variable. It is more likely to be experienced by first authors and by authors who have high expectations of acceptance before the submission. Mastering the Coping and reLaxing Mechanisms (CaLM) and tempering the expectations taking in view the journal acceptance rates can help to alleviate MiSeRY. Senior authors, who have experienced MiSeRY in their developmental research years, develop strengthened Coping and reLaxing Mechanisms (CaLM), which protect against a probable state of enduring MiSeRY (7). However, some journals strive to minimize author expectations by publishing their low acceptance rates, and wise selection of manuscripts directed for external review enhances this effect (7).

Predatory journals

New researchers sometimes get confused in selecting the journal, understanding their format, open access policy, scope. Hastiness and eagerness to submit a manuscript can sometimes be indecisive, as according to the researchers, it can lead to manuscript submission in predatory journals, hijack journals, or cloned journals. Pseudo or predatory journals are those that accept and publish nearly all the submissions. They charge fees for the processing of the article (or publishing), inform about the unethical aspect after acceptance or do not notify at all, and falsely claim peer review. Authors must avoid submitting research manuscript in these journals and avoid citing articles from these journals. It is necessary to encourage researchers to crosscheck both the journal and the database to inspect a journal’s current indexing.

Open-access journal

Publishing a manuscript in an open-access journal increases the size of the audience significantly since your article is freely accessible to the readers. However, researchers from low-income countries find it difficult to publish their work due to the high cost. Nonetheless, some qualitative journals allow free submission and publication of original researches. Besides, there are journals called hybrids in which some of the articles are open access.

Manuscript format

The basic formations or templates of the manuscript and word limits are available in the section ‘instruction to authors’ of each journal.

Most of the published articles follow ‘IMRaD’ pattern (7).

- **An introduction usually constitutes about 10 % of the manuscript. It must include a maximum of three paragraphs, which reveal what is known, what is unknown, and how does the study fill the gap or serve its purpose.**

TIP: The introduction section must not include ‘Literature Review.’ Furthermore, cite reviews to allow readers to find out more information.

- **Materials and Methods commonly include 6-9 paragraphs, constituting about 20 - 30 % of the manuscript depending upon the type and complexity of the study. This section should mention the steps**

followed in the study, which one can replicate later.

A trick for drafting a comprehensive section is incorporating ‘STUD’:

- Subheadings to describe different sections
- Tests and statistical parameters
- Use of past tense to describe the procedure
- Description of methods in brief, and citation(s) to find more information.

TIP: To present this section, researchers should go through ‘Instructions for Authors’ in the target journal to see the layout. Besides, go through previously published articles or sample reports on the journal website.

- Results usually comprise of 6-9 paragraphs, constituting 20-30% of the manuscript. The findings obtained after putting the methodology in practice belongs to results. Use subheadings and logical order. Demonstrate the data, but do not discuss. Initial results characterize the environment or study representativeness before presenting the findings (e.g. table showing demographic data of the participants). The final data can be displayed in numbers, tables, graphics, and/or p values.

TIP: Image can explain the findings better than the text as goes the quote “a picture is worth a thousand words.”

Discussion and Conclusion

Discussion constitutes 20 – 30 % of the word count, and includes the description and interpretation of the findings. The importance of the study in changing the status quo is made comprehensive. The results of the study are compared with those of the previous studies (whether the study conforms or confronts or adds to what is already known?) and are seen in the view of related literature which also includes the limitations of the study (8) Besides, discussion recognizes clinical implications and future perspectives. The conclusion includes a paragraph about the takeaway message of the study. It may be included in the last paragraph of the discussion.

This standard structure:

- Gives a logical flow to the content,

- Makes the manuscripts consistent and easy to read,

- Provides a “map” so that readers can quickly find the content of interest, and

- Reminds authors what content to include.

Research Question

A good research question (RQ) provides detailed focus to the problem statement, details and refines the issue under study, directs data collection and analysis, and lays the context of research. Acronym ‘FINERMAPS’ represents a good research question (Figure 2) (3,9)

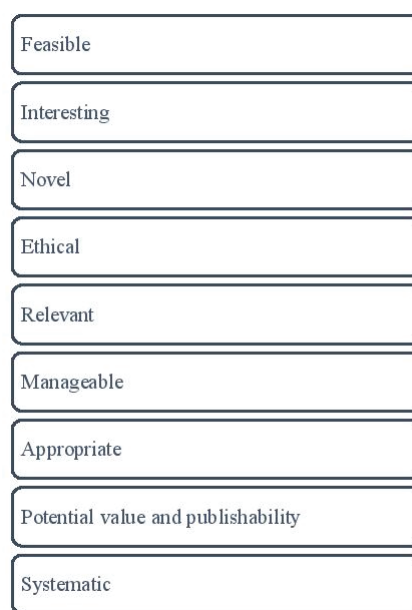


Figure 2 – FINERMAPS acronym.

Formulating the RQ involves:

1. Express the RQ in your own words.
2. Write down the RQ as thoroughly as possible.
3. Divide your question into concepts.
4. Specify the study population.
5. Refer to the intervention or exposure under investigation, if any.
6. Reflect the outcome of interest.

Writing sequence

The standard journal manuscript section usually follows the order ‘Title, Abstract, Introduction, Materials

and Methods, Results, Discussion, and Conclusion,’ this is not the finest order to compose the manuscript sections. Table 1 demonstrates a recommended strategy universally accepted to write a manuscript(10). This order, when followed, will assist in writing a logical and efficient manuscript.

Table 1: Strategy to write a manuscript (10)

1. Materials and Methods	Start with writing these two first, while planning and execution of the experiment and while collecting the results.
2. Results	
3. Introduction	Write these three sections next, after the analysis of results and after deciding which journal to submit for publication.
4. Discussion	
5. Conclusion	
6. Title	Write these at last since they depend upon other sections.
7. Abstract	

Title

The title is the first introduction of the work to the readers. Therefore, an effective title must be ‘SECULAR’:

- **Simple** to understand
- **Efficient** to provide a content overview
- **Concise** and in common terms
- **Unique** to grab attention and attract readers
- **Limiting word count** between 12 to 15
- **Avoiding jargon**, non-standard abbreviations and Roman numerals
- **Reader-friendly** and conforming to the journal requirement

The following parameters help to formulate a suitable title:

1. The aim of the research
2. The scope of the research
3. The narrative tone described by the type of research
4. The methodology and the results of the study

Three types of titles commonly used in journal articles are:

1. **Declarative:** It makes a declaration while summarizing the study and its results. This type provides the most insight into the contents of the paper.
2. **Descriptive:** It describes the study but falls short of revealing the results, and often includes details about the method.
3. **Interrogative:** It represents the research or restates the problem in the form of a question, commonly excluding the details of the study (11).

Tips: Some journals have specific guidelines for titles too!

Tricks:

- Form a sentence using the identified keywords liberally. Then, trim and reword the sentence.
- For longer titles, use a subtitle separated from the main title with a colon or a dash.
- A formula to structure:

[Result]: A [method] study of [topic] among [sample]

Example: Exercises enhance the quality of life: An

experimental study of tai chi in Osteoarthritis patients.

Abstract

An abstract should encompass '3S':

- Summary of the content
- Shortcut for saving time of busy researchers
- A stand-alone section that is complete in itself

Types of abstract-

Unstructured abstract: It is in paragraph form. The authors are free to present the summary within the prescribed word limit.

Structured abstract: It has predefined subheadings like IMRaD pattern. This makes it more informative and easier to read than the unstructured ones (12).

It is the most accessed part; it encourages researchers to read the entire paper further. However, most readers prefer to read only the abstract (11). An interesting and well-written abstract helps to accelerate the peer-review process. Usually, only the abstract of an article shows up in the indexing databases such as Web of Science or PubMed.

The abstract must answer the following questions about the manuscript:

- What was performed in the study?
- Why did you do it?
- What were the findings?
- What is the usefulness and importance of the findings?

TIP:

- For the abstracts, journals often lay a maximum word limit, which is roughly 250 to 300 words. It does not allow citations.
- These ensure the appearance of the entire abstract in the indexing services.
- Besides, the journals prescribe the type of abstract as per the article type to be submitted.

Keywords

Keywords are the tool, which assists the search

engines to find relevant papers and provide more searchability of the research. Furthermore, the database search engines allow readers to find them. This enhances the number of people who will read and cite the article.

The 'ABC' rule to choose the keywords wisely:

- Assure coverage of relevant terms
- **Be** specific to the field or sub-field of the research
- Conform to the manuscript content representation

A means to identify the keywords is to write a sentence describing the study and remove conjunctions and prepositions. This provides a list of terms, which one can use while searching the Medical Subject Headings (MeSH) terms in PubMed database (13) writing, and submitting a research manuscript to a peer-reviewed journal is described.
SUMMARY: The research project and writing-related activities should be conducted concurrently along a clear timeline developed with input from all members of the writing team. Issues of conformance to standards of scholarly publishing (e.g., ordering of the author list, contributor acknowledgments, disclosure statements).

Tip: MeSH terms form effective keywords.

Tables and figures

The pictorial representations communicate with the findings clearly and quickly. This provides the work with a professional appearance and attracts readers.

A well-designed table has 'CDEF'.

- Clear and concise legend or caption to describe the table.
- Data divided into categories.
- Enough spacing between the columns and rows.
- Font legible and as per journal requirement.

Figures can be:

- images, which include scale bar and label important items,
- data plots, which label axes and specify units, or
- Schematics, which highlight only key elements.

TIPS:

- Figures with legends must supplement the reported data instead of simply repeating the already mentioned.
- A resolution of 72 PPI is usually sufficient for online publication, and 100 PPI in print. However, some journals recommend even higher resolution.
- Avoid manipulation of the images.
- While using any processing software, e.g. Inkscape, state its use.
- Keep copies of the original images if the reviewer requests for them during the review process.

References

The instruction for authors' column specifies the citation of the maximum number of references. The 'CLEAR' trick for reference citation includes:

- **Citation style** recommendation should be checked. The commonly used citation styles include the Vancouver style, American Psychological Association (APA) style, Harvard style, Chicago style, Modern Language Association (MLA) style, Oxford style, etc. However, most journals recommend Vancouver style (14).
- **Latest** references, not more than 10 years old, should be cited (exception is the first discovery or first mention of something in the literature).
- **Ease** the work using referencing software like Zotero, Mendeley etc.
- **Aim** to read the best evidence available.
- **Relevant** studies should be cited.

Formatting

Most journals recommend the following:

- Text is usually 12-point sized, double-spaced, left-aligned, and Times New Roman font (15).
- Use the same heading styles across the paper for up to three heading levels.
- Use three font sizes and three typefaces at the most.

- Mention the number the pages.
- Usually, the Figures and Tables altogether follow the references.

Quality of paper

The quality of the paper follows 'SUGAR':

- **Spellings:** They are as per the journal requirement for the type of English (American or British) and without errors.
- **Use of tense:** Follow the past tense for the methods and results, and present tense for general facts and conclusion. Most researchers recommend the use of an active voice.
- **Grammar:** Use determiners, articles, and verbs carefully.
- **Authors' ideas and presentation:** Maintain originality and correctness.
- **Reading fluidity-** Follow a logical flow throughout the article, like a story.

Plagiarism

Plagiarism refers to representing the work of another author or previous self-work without proper acknowledgement or citations. Plagiarism may contribute to a prompt rejection of the manuscript (16,17). There is ample software available for checking plagiarism, e.g. Turnitin and iThenticate, which are subscription-based. Before submitting the manuscript to the journal, it is preferable to keep a pre-check on manuscript plagiarism and keep it below 10 per cent.

Ethical clearance / Helsinki declaration

It is significant to take the Institutional Review Board (IRB) approval for the study before its implementation. Most peer-reviewed journals request a declaration that local IRB approved the study (14). Besides, the statement of IRB approval should include informed consent. While reporting *research involving human data*, the authors should indicate in the Methods section whether a legally qualified Ethics Review Committee (institutional or national) has evaluated and approved the followed procedures. Should there be no formal ethics committee available, then the study must follow the 2013 Helsinki Declaration.

Conflict of interest

Conflict of interest and bias is possible when a secondary interest (such as financial gain) affects a primary interest-related professional judgment (such as the validity of the research). Conflicts may emerge from financial relations, personal relations or rivalries, academic rivalry and intellectual convictions. Nonetheless, the readers must be able to judge whether the relationships and activities of an author are relevant to the content of a paper, which requires transparent disclosures. Complete disclosure by an author indicates a commitment to transparency and helps preserve trust in the scientific process. An intentional failure to disclose the relationships or activities set out in the journal's disclosure form is a form of misconduct. Many journals require that authors fill out a form for the disclosure of conflicting interests, apart from mentioning the manuscript.

Authors

The principal investigator is the first author who does the majority of work, and the sequence of co-authors follows the order of the magnitude of their contributions (13) writing, and submitting a research manuscript to a peer-reviewed journal is described. SUMMARY: The research project and writing-related activities should be conducted concurrently along a clear timeline developed with input from all members of the writing team. Issues of conformance to standards of scholarly publishing (e.g., ordering of the author list, contributor acknowledgments, disclosure statements. The corresponding author is the one responsible for communicating with the journal during the publication process (14). International Committee of Journals Medical Editors (ICJME) has devised the authorship criteria in four sections, which encompass the substantial contribution, drafting of the content, approval of the manuscript, and the common agreement between the authors on carrying out of research and preserving the integrity of the entire study (18).

All those designated as authors must satisfy all four criteria. Besides, acknowledge those who do not meet these criteria. Non-author contributions include general supervision of a research group or general administrative support, writing assistance, technical editing, language editing, and proofreading. Author's contribution needs to be stated for many journals (13) writing, and submitting a research manuscript to a peer-reviewed journal is described. SUMMARY: The research project and writing-related activities should

be conducted concurrently along a clear timeline developed with input from all members of the writing team. Issues of conformance to standards of scholarly publishing (e.g., ordering of the author list, contributor acknowledgments, disclosure statements.

Title page

The title page showcases the title of the article, details and affiliation of the authors with disclaimers, funding support, total word count, and sometimes the number of tables and figures.

Covering letter

This letter to the journal's editor represents an opportunity to sell the idea in the manuscript. It emphasizes on the submitted manuscript's relevance with the aims and scope of the journal and its efficacy to fill the gap in current knowledge. It is paramount to mention that the submitted manuscript neither has been published before nor is under consideration in any other journal.

Conclusion

It is paramount to comprehend the art of writing a manuscript while framing and writing one. The writing style of the manuscript must be simple yet powerful. To ensure the readers' engagement, the content of the manuscript should have fluidity. It is advisable to check the recommended templates on the journal website, meanwhile, maintain the manuscript quality. Nonetheless, ensure that the manuscript fulfils the aims and scope of the target journal. Beyond all considerations, one must check the plagiarism before submission to decrease the rate of manuscript rejection.

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Data curation: WMN and AIS.

Formal analysis: AIS.

Funding acquisition:

Methodology: WMN CVG AIS.

Project administration: WMN.

Visualization: WMN.

Writing – original draft: WMN.

Writing – review & editing: WMN CVG AIS.

Conflict of Interest – The authors reports no conflict of interest.

Funding support – None.

Acknowledgement - I would like to thank Pratik Phansopkar, Kiran Kumar and Kumar Gaurav Chhabra for all assistance during this manuscript preparation.

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