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How to Write and Publish Your Article: Guidelines to the Young Researchers

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Summary:

Publication of article is an integral part of a research. Writing an article and publishing in an index journal is not an easy task for a young researcher, who also needs to publish for their career advancement. There is no dearth of resource materials, but the topic of scientific writing is a neglected phenomenon in the medical graduate course curriculum, nor there a hands on training. Before writing there

should be a thoughtful planning regarding content, type of article and resource materials. Originality of the content, valid study design and well constructed manuscript are the prerequisites for publication. Selection of right journals is critically based on the target audience and area of activity and strict adherence to the guidelines to the authors also prevents outright rejection. The peer review process

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is sometimes time consuming, but perseverance through the whole process is the mainstay of publication.

Key words: journal, manuscript, publishing, review process, writing

Introduction:

Publication is a need today for every researcher for sharing his research work with his peer group, and also for career advancement. Writing a research paper is not an easy task. Most of our medical graduate programs have not included the topic of scientific writing in the course curriculum or does not provide hands on training on how to write a scientific article. *How I will write the article? Which journal will publish my article?* It poses to become a challenge to the young researchers.

A scientific paper is a written report describing original research results whose format has been defined by centuries of developing tradition, editorial practice, scientific ethics and the interplay with printing and publishing services.¹ Abstracts, theses, conference reports, and many other types of literature are published, but such publications are not considered as scientific paper. From the later part of 19th century, IMRAD format (Introduction, Methods, Results and

Discussion) has come into vogue, which is now universally used in all scientific journals. Many journals publish short communication, which contains IMRAD format in abridged form.

Why do you want to publish your work? Definitely when you think that you have done anything new and interesting; if your work is related to a current hot topic or topic of controversy; if you have provided a solution to a difficult problem..... You will think to publish article. But what will be the type of your article? It might be original research article or original article as described by Medical Council of India. It might be a brief communication or letter for quick communication about some recent advances, which is shorter in size than original article. You may think about writing a review article summarizing the recent developments on a topic discussing the points which have been already published. Writing scientific paper is a skill. This skill can be taught by experience or by

training also. 'Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for

Biomedical Publication' gives the required technical and structural details of scientific papers.²

Preparation of a manuscript:

While preparing a manuscript, Berk's memo to the authors in the American Journal of Roentgenology is worth following.³ He set out 5 guiding principles for the inexperienced authors: 1.

Determine the specific focus of your article, 2. Select the right journal, 3. Decide the type of article, 4. Follow the guidelines for authors published in the selected journal, 5. Revise, revise, and revise.

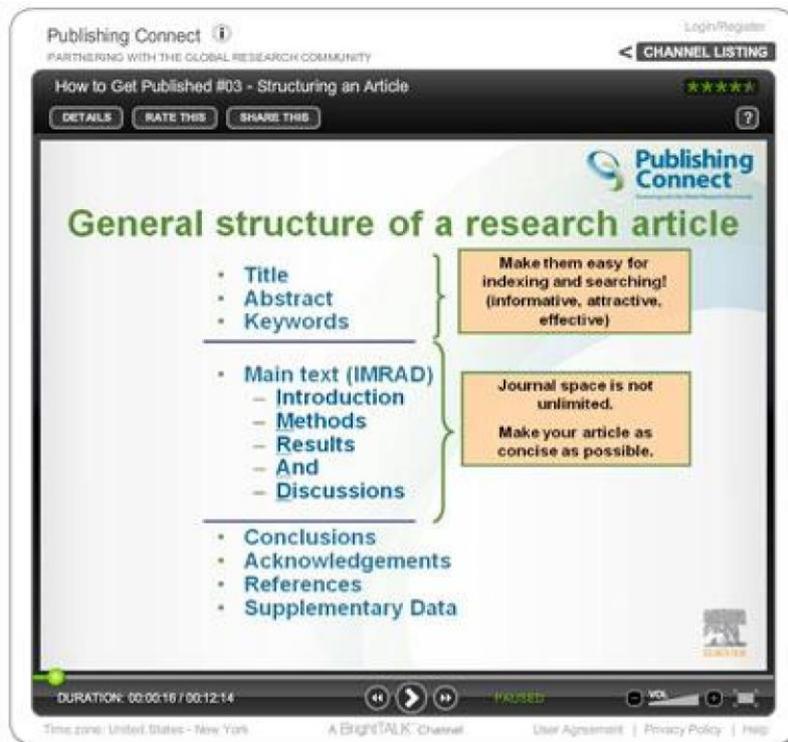


Figure 1 showing the article writing format

The scientific article usually follows the IMRAD format, which raises the following questions

- **Introduction:** What did you/others do? Why did you do it?
- **Methods:** How did you do it?
- **Results:** What did you find?
- **Discussion:** What does it all mean?

Elements of a manuscript:

Title: Abstract along with the title is the advertisement of the article. Readers have little time to read all the scientific articles, so they select the article by title. That is why it must be informative, concise, specific, not be too short or too long. All words must be chosen with great care, as it is used for indexing and abstracting services. Title is not a sentence, so it does not require containing verb, subject or object mandatorily.⁴ Title starting with a study on..... is useless, just a wastage of words. It should not contain any abbreviation.

Abstract with key words: Abstract denotes the summary of the information in a document, which helps the readers to choose whether they need to read the document entirely. Abstract should state the principal objectives, describe the methods employed, summarize the results and pinpoint the conclusion. It should not give any information or draw conclusion which is not stated in the paper. Abstract

may be structured or unstructured depending upon the type of article or the journal guidelines. Avoid using jargons of words or uncommon abbreviations. It does not contain any reference. Most of the journals recommend the word count within 250 to 300, so author must be cautious about using unnecessary words. While selecting key words, avoid words with broader meaning or words already included in the title.

Introduction: It provides sufficient background information to allow the readers to understand and also narrates the rationale of the study. Introduction speaks with clarity the nature and the scope of the problem investigated, with sufficient review of pertinent literature. It can be organized from global to the particular point of view, but always remember that it is not a history lesson, so must be restricted to the word counts. Use of tense is usually present. All abbreviations should be properly stated. If

you want to use a new method of investigation, provide reasons for choosing the same. Previous works on the same topic must be cited, but again must be cautious about using too many irrelevant references.

Materials and Methods: It should describe in detail the experiment or the study design if it is a new one, so that it can be reproducible by a competent worker. But if it is a repetition of already established methods, only citing reference is adequate. This section may have some subheadings like type of study, sampling and sample size, period of study, tools and techniques, data collection, analysis and statistical methods. Working as managing editor of a reputed public health journal, I can share my experience that many original articles are submitted to this journal with inadequate information in this section. During peer review, a good reviewer reads this section and if he/she has any doubt in this area, at once rejects the article, no matter how inspiring the result is. Again if the study period is more than five years back (it depends on journal policy), usually the article gets rejected due to loss of relevance in the present context, unless it provides some unique information or speciality of the study population as

decided by the editorial board. Common error done by the authors in this section is mixing of some information of results with methods. Ordinary statistical methods should be mentioned without comments, but advanced or unusual methods require literature citation. Don't forget to mention the name of the agency whose statistical package you are intending to use like SPSS, Epi Info etc. Institutional ethics committee clearance is now mandatory for a study to undertake and for few journals you might have to submit the clearance certificate. Same is also applied for informed consent.

Results: Like materials and methods section, past tense is used to express the results. Present the data in a logical way or according to objectives. While selecting the data, author feels compulsion to include everything, leaving nothing behind, and indicating lack of power of discrimination. *"The fool collects facts, the wise man selects them".⁴* The results should be crystal clear. Many articles show repetition of study findings in text and tables & figures. This increases unnecessarily the size of the article. Never use percentage for a very small sample, better to write one out of two in stead of 50%. For expressing numbers in tables, we always prefer to use upto 2 decimals. Subheadings can be used

for keeping same type of results together, which is easier for the reviewer also. But

Discussion: This is the hardest section to write. Here the author has to present the principles, relationships and generalization of his result. He has the scope to show how his results and interpretation agree or contrast with the previously published reports. Many papers are being rejected only for faulty discussion, even though the data is valid and interesting. In such type of situation, the author will have to find another way to interpret the results. In a good discussion, you only discuss the significance of the results, don't recapitulate the results. Point out any exception or any lack of correlation and try to explain the possible reasons. On many occasions, we find that the author has made statements that go beyond the result or sometimes introduced new terminology or ideas. The author must be cautious about it. *"Finally good writing, like good music, has a fitting climax".*⁴ So discussion should end with a short conclusion regarding the significance of the work and also recommend whether further research is necessary to answer the research question.

always follow the instructions to authors of the journal.

Acknowledgement: principle element of this section is only courtesy. The author can mention here those names who have contributed to the study in the form of technical help or contributed to the manuscript, but not to the extent that justify authorship. The author can also mention about financial assistance and sponsorship.

References: Style of referencing varies from journal to journal. Most of the biomedical journals now follow referencing pattern as per citation order as recommended by ICMJE.² While preparing the manuscript, a smart author writes out full reference. This is a good practice because the journal you select may reject manuscript and you might have to submit to another journal whose style is different. Moreover you may need the same reference in later research papers. While submitting the paper, make sure that the references are according to the instructions to authors. In our journal we regularly face this problem where references are not in Vancouver style. William C Roberts stated that *manuscripts*

*containing innumerable references are more likely a sign of insecurity than a mark of scholarship.*⁴ So list only significant published references and avoid excessive self citation or citation from same region. We also encounter this sort of problem where author submits the article with 60-70 references. Try to avoid unpublished observation, personal communication, manuscript submitted but not yet accepted, publications not in peer reviewed journals or not published in English.^{2,4} Before submitting the article check all parts of the reference especially year and city of publication, usage of et al, punctuation mark, page numbers, short name of the journal and also ensure proper citation of the reference in the text. Different software for reference citation, marking and checking are now available in the market, which made the work easy.

Tables and figures: Tables, figures, graphs and charts have a visual impact in the

Where to submit your manuscript:

After preparation of the manuscript, it is a great challenge to the young researcher where to submit the article. Identify those journals which publish in your study area.

article, moreover decrease word count. “A figure is worth a thousand words”.⁴ Do not construct table unless repetitive data is presented. If you need to present only few determinants give it to text. Title of the table/ figure should be concise and self explanatory. Never include a long boring table and vertical lines in a table. For graphs, try to avoid crowded plots and lines joining data can only be used while presenting a time series data or consecutive sample data. The author must be cautious in using colour in the figure that might be charged with expensive fees in printed version. Sometimes we get figures with very small fonts illegible for the readers or directly copy pasted from web or power point presentation, posing difficulty to edit during publication. The author can identify the location of the table/ figure within the article citing them in the text in numerical order. During printing it will be easy for the copy editor to break the text to insert the table.

You can find it out by journal title, table of contents in recent issues or read the scope in instructions to authors of the journal. You can consult your colleagues for their

experience. If you submit to a wrong journal, what can happen?⁴ First, manuscript is returned to you stating that it is not suitable or out of scope for the journal. It happens in our journal when many articles are rejected at the outset as these are not important from public health point of view. Secondly, you may receive poor or unfair comments from the reviewers or editor, as they might not be familiar with your speciality area. You have to undertake hassle for suggested revisions and also simultaneously will be deprived of the sound criticism of a right journal to revise your article. Thirdly, even it is accepted or published your article will be missed or unknown to your peers.

It is also preferred to select the journal published by society due to wide circulation; less cost and possible impact on the scholars on your area.⁴ Commercial journals are costly and not widely circulated. During selection it is wiser to

How to submit the article:

Most of the articles are now submitted online or by mail attachment. Always consult the instructions to authors for the journal and prepare a checklist. If you have to submit a hard copy, always keep a spare

see the frequency of the journal- monthly, quarterly or bi annually. Usual publication lag including time for editorial review may be 10 months to 1 year. You can also assess the time lag by seeing the date of receipt of the article. You can also select journal by viewing the impact factor or citation index. But always remember for promotion or credit, candidate with one or two solid publications in a prestigious journal is more worth than ten publications in second grade journals.⁴

Another thing to remember that do not gamble by sending same manuscript to many journals simultaneously. During submission, the author has to make a statement regarding submission to other journals in the copyright form. This violation has a serious consequence of being convicted with the offence of scientific misconduct, hence published article may be rejected or retracted or author may be blacklisted for those journals.

copy with you for future help. The title or first page should contain much vital information which is absolutely essential for an editor like full name of authors, address & mobile number of

corresponding author, declaration of contributions of all the authors in making the manuscript or study, declaration of conflict of interest, signed copyright form, informed consent, and ethical clearance and so on. In our journal almost ninety percent of the articles are submitted with incomplete first page file, for which article is sent back to the author for technical modification more than once, increasing the time lag between submission and final comment. We also encounter the improper submission in the main text file, which is either lacking IMRAD format or having huge word count or innumerable tables and figures.

Young researcher always feels the problem of authorship, especially after the recent MCI guidelines. Now in the publish or perish syndrome, the authors are subjected to ghost or gift authorship. But a

Review process:

After submission of the article, the editor or managing editor has to make several preliminary decisions. The article gets outright rejected if the manuscript is out of scope of the journal or deficient in the study design. Other common causes of

good scientist does not want to dilute his own work by adding peoples' name with minimum contribution nor does he want to add his name to such type of article. Now who will be the authors? As per ICMJE recommendation, authorship credit should be based on 1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3.² Now mere collection of data or funding the project cannot be the criteria for authorship. Their contribution can be expressed in the acknowledgement section. Some journals now also want that one or more authors will be referred to as "guarantors," who will take the responsibility for the integrity of the work.²

rejection are incomplete materials and methods section, insufficient problem statement, incomplete, inaccurate, or outdated review of literature, suboptimal reporting of results, getting carried away in the discussion, and poor writing.⁵ If the

article is technically incomplete, then it is send to the author for technical modification. Peer review is considered the virtue of science communication.⁶ Usually the editor sends the manuscript to at least two reviewers who are subject expert. But in our journal we have to send it to four or more for non response from the reviewers. The article gets rejected again if the reviewers' comments are not favourable. Otherwise it is sent to the author for revision with the comments of the

reviewers. Here the author has to respond to the reviewers' comments in a reply template mentioning the reviewer number, reviewer comments, author's answer and the corrections made in the manuscript. The editor rejects the article if the reviewers and the editor are not satisfied with the revision. Good scientific content of a paper alone does not guarantee its publication in a good journal.⁷

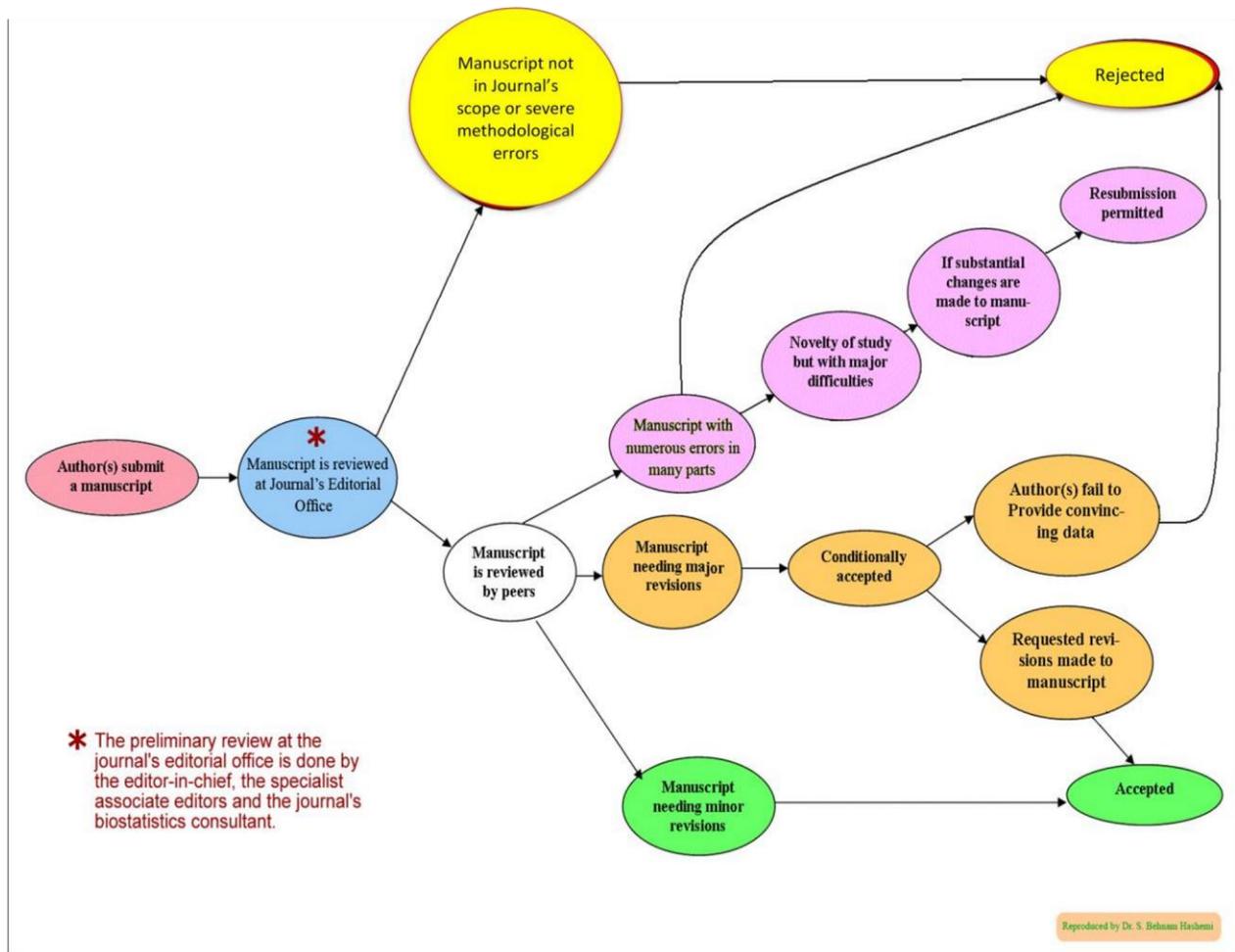


Figure 2 showing the peer review process

This process revision and review continues till the article gets suitable to be accepted. The time span for this editorial process depends upon how early the reviewers respond effectively.

Now I think you are ready for writing your manuscript from research project. A scientific experiment is never complete unless the results are published and understood. So it needs clarity, should be well organized and well ordered. Again it has to be remembered that it is not a literature. As depicted by *R. B. McKerrow* "State your facts as simply as possible, even boldly. No one wants flowers of eloquence or literary ornaments in a research article".⁴ But in addition to organization the principle ingredient of a scientific article is also its appropriate

language. But to improve the language, the author must be cautious not to be subjected to the offence of plagiarism. Also check grammar and spelling.

It is neither desirable nor practical to actually write the article sections in sequential order.⁸ You can jot down the key points of each section. Borja A, editor of several journals recommended different order of following 11 steps for preparing a manuscript starting with preparation of figures and tables, followed by writing methods, results, discussion and introduction.⁹ There is difference of opinion of using first person or third person.⁸ In our journal we prefer to use third person. Reserve the use of first person for things that you want to emphasize that "you" uniquely did.¹⁰

Conclusion:

Writing and publishing are integral to research. Before writing a word, the writer should proceed for a thoughtful planning to identify the main content of the article, audience, target journal, resource

materials, type of manuscript, and authorship. Originality of content, valid study design, good manuscript is the prerequisite for a successful publication.

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