Review Article

Considerations in Medical Academic Writings

Iqbal Ratnani[1]*, Saleem A Zaidi[2], Anam Mithwani[3], Justyn Mahanger[4] and Salim Surani[5]

[1]*Houston Methodist Hospital, Houston, Texas, USA*

[2]*Stony Brook Medicine, New York, USA*

[3]*University of Toronto, Toronto, Canada*

[4]*York University, Toronto, Canada*

[5]*Texas A&M University, Texas, USA*

*Corresponding Author: Iqbal Ratnani, Houston Methodist Hospital, Houston, Texas, USA.

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Abstract

This paper provides an overview on how to write an academic writing piece with a step-by-step process for completion, as expected in academia, and is intended to support the crafting of scientific papers, written by physicians, nurses, and other allied healthcare personnel in the broader medical field. This article is written to guide new writers through the essential considerations for writing scientific manuscripts, such as identifying the targeted audience, purpose, and devising a strategy before starting a written piece, as well as incorporating organizational layout, flow, style, and presentation.

Keywords: Theoretical Frameworks; Medical Academic Writing; Research Flow; Presentation in Research

How does one go about writing an academic review paper? Where does one even begin? The process is quite arduous. Many presumptively dislike writing on a topic because it can be difficult to produce clear and concise ideas when writing a paper. Much dedication is required, such as countless drafts written, hours spent on the literature review, rewording of paragraphs, and editing tables and graphs. Nonetheless, these are a few of the many steps prior to submission, which when reviewed by academic journals, could require additional changes. Artificial intelligence has been highly appreciated by individuals worldwide, by creating writing tools, online grammar correction, checking for plagiarism, and much more to aid writers in writing simple papers. Due to the ongoing changes in rules and conventions of academic publishing, there needs to be guidance for new writers on how to structure a paper in a legitimate and persuasive manner. The aim of this article is to introduce new writers on developing a structure, strategy, format, and purpose.

When writing an academic paper there are a few components that need to be considered. The author must select a topic and construct or select an appropriate theoretical framework. Beginning with a rough draft and a literature review, the author must ensure any tables or graphs adhere to the journal or scientific community's guidelines. It all requires specific writing skills, where an author may benefit from a writing course, if applicable. Additionally, it is not an easy task to evaluate one's own written work objectively; it would be recommended to have a mentor for proper guidance, one on one conversations, and constant encouragement to cultivate writing skills. Although artificial intelligence, writing applications, online grammar correctors, plagiarism checkers, and digital organizers have become the norm in present day, the basics of academic writing are unchanged (though ChatGPT can emerge as a disruptor). Presently, artificial intelligence tools, such as ChatGPT have taken over the writing and education realm. This

new technology can interact with users and answer their questions related to various topics and even has the ability to write full essays on any subject. With the advancement of the technology sphere and new tools such as ChatGPT, limitations in such technology emerge including more opportunities for plagiarism in writing. Though artificial intelligence writing tools can create well-written papers, they may be unable to cite key authors and texts in their respective fields which undermines the legitimacy and effort of writing any academic paper.

This article is written to guide new writers on essential considerations for writing scientific manuscripts. The article describes the targeted audience, purpose, and strategy before starting a written piece, while considering organizational layout, flow, style, presentation, and the positionality of the authors.

Audience

The target audience should be diverse, and the academic paper should cater to physicians and other allied health care professionals, as well as those who do not identify with a healthcare background. With this in mind, the paper should be written in simple language with diagrams, flow charts and tables that are easy to follow and interpret. In other words, the construct of the paper should be kept as simple as possible and consider a wide range of biases, values, expectations, and limitations.

Purpose and strategy

The purpose of the paper should be clear and concise. It should undoubtedly reflect and illustrate one's ideas through a clear and methodical approach. To grab the attention of readers, the paper should have a balance of new scientific contribution(s), while still reflecting on the original ideas from the discipline or subject, as a comparison. The academic paper can highlight the shortcomings of previous findings and ideas, and still incorporate well-researched topics and arguments.

One example of this can be seen with the tension between Evidence-Based Medicine (EBM) and Personalized Medicine (PM). One strategy the author may utilize is beginning their article with a research question to frame the paper. For example: "How should healthcare providers respond when they become patients and are in conflict with their healthcare givers?" The rule of thumb is to move from general to specific texts, marked in between by examples,

graphics, and tables. As more journals move exclusively towards a digital format, the color-coding of important concepts inside the diagrams should be used. Color-coding brings an aesthetic sense to the article. We advise authors to keep the mode of writing as expository, as it may require eloquent descriptions to ensure clarity with complex terminologies or concepts. For example, concepts such as High Reliable Organizations (HROs), Weak Signals (WS), and Systems Thinking (ST), require the unpacking of key themes, debates, and ideas to ensure readers who have a limited knowledge in this area, are able to grasp these concepts clearly.

Organization

Although authors usually have a lot of freedom in organizing an article, they frequently must follow specific guidelines from the journal they intend to submit their paper to if they would like to pursue publication. A good writer tries to guide the audience through their paper, beginning with discussing existing literature in regards to the thesis question or thesis statement, and finally to an evaluation, which can be new research or the synthesis of the literature review [4]. Before introducing the audience to a "statement of the problem" and/or a "research question," an attempt should be made to familiarize the audience with both sides of the argument, (i.e., pros and cons).

The first part of the paper should describe the existing literature on:
- An established paradigm,
- An emerging paradigm,
- The tenets supporting these paradigms, and finally;
- The convergence of all arguments.

Beginning with a discussion of the existing literature, authors should move to construct a theoretical framework, the statement and significance of the problem, followed by posing the primary and preferably, a couple of related secondary questions. Some themes to consider covering to provide context for the reader can include philosophical arguments, sociological impact [2] and prevalent worldviews [3]. Diagrams should accompany these, ideally based on the "Components of a Theory" [1]. Creating a flowchart from a literature search to constructing a statement or research question(s) will make it easy for the audience to understand the

author's flow of mind. In flow charts, inserting terminologies is preferred to enhance the audience's interest in a particular concept. A liberal use of footnotes for these terminologies may keep readers' attention intact, building a logical flow in the article. Again, color-coding the related topics may help the audience to put similar or contrasting concepts in different compartments, while reading. Authors should use the appendixes, as they provide supplemental reading for the audience. For advanced readers, having the appendixes provides an opportunity to share a deeper knowledge of the main arguments, the falsifiability, and the utility of variables, constructs, and relations of theoretical frameworks [1].

Style

Each author, over time, develops their style mainly in an academic environment. One of the biggest challenges many face is choosing the tone of the article by picking between either an active or a passive voice, while writing. Although most authors use the active voice (as recommended) there may be places where the author must use the passive voice. For example, "Recently, six pillars of Precision medicine have been described" is preferred over "There are six pillars of Precision medicine." It ensures the flow of writing (see below). Using "boosters" is a great way to create confidence in the style and to assure that the author can discuss an established concept i.e., "The last two decades in medicine has seen an enormous accumulation of....".

In contrast, it would be wise to use hedges when stating a personal opinion . For example, "Patient-generated digital data can help to create a more precise clinical response." In this previous sentence, This sentence is an example of utilizing a hedge with the word can. The audience will perceive that the author is not trying to force their opinion on the readers. Also, the author may use single verbs as needed [4], like "Precision Medicine soon revolutionized into".. "Initially described by"..".

Using three moves, as described by Swales and Feak is another great way to create a desirable flow [4]. Below is an example of how the "three moves" are used as shown in table 1.

In regards to verbiage and terminology, avoiding complicated terms are advisable unless required from the scientific perspective. Again, using footnotes is a great way to explain important concepts. Many authors fall prey to tautology. Reading once, writing again and again, and revising drafts may help to overcome this.

Move 1	Establishing a Research Territory, while synthesizing an argument from the literature review: "Researchers start looking into the dual nature of clinical approaches, trying to find answers to the duality of clinical practice".
Move 2	Establishing a Niche: "...Health care systems are struggling"
Move 3	Occupying the Niche: "How should healthcare systems respond to different paradigms of clinical practices?"

Table 1: Establishing Research Style.

For the referencing and bibliography, authors must follow the current guidelines. Using an online reference manager may make the task easier for authors, however, the author must review that the citations are completed correctly, as required by the type of citation being used. In addition, when the author is describing a well-known figure in the discipline, that has added to the existing body of literature, referencing the figure in the article itself is best practice, rather than in a footnote or intext citation. For example, as "Initially described by John Smith., *et al*.

Flow

When examining the various components of writing, many authors struggle with the flow of the article. A few strategies that may help are described below in table 2.

Old to new information should flow from sentence to sentence, paragraph to paragraph, and section to section.
Keeping the theme of "Higher Order Concerns" alive. This means that the audience should be reminded subconsciously of the basic core concept/question/argument throughout the paper as the paper advances.
Give equal importance to "Lower Order Concerns" (i.e., grammar, punctuation, and linking sentences/phrases). In this regard, an online grammar reviewer may be useful.
Utilize meta-discourse, particularly at the beginning of the article.
One rarely used strategy is to record the writing in audio for-mat and listen to it for the flow and structure.

Table 2: Establishing Research Flow.

One of the primary focuses is to make sure that the paper progresses in an organized and logical way. During the editing phase, the authors must keep a sense of flow with the table and

diagrams, while balancing the writing. If an illustration or table is not immediately required in the paper, but should be included with the overall publication, it can be included in the appendixes. Authors must ensure they are revising and editing multiple drafts prior to submission.

Presentation

Below are strategies to keep in mind to make the final presentation of a paper engaging as shown in table 3.

Make sure there is a 'content bridge' at the sentences' beginning and end. (Swales and Feak, 2012, page 49).
An appropriate length of paragraphs depending on the content.
The interjection of graphs, diagrams, and tables at proper places.
Use bullet points at places where the author wants the audience to understand the points precisely.
Uniform style (like APA) of citations and bibliography.
Using colors where needed to keep the presentation lively and help the audience group the context appropriately.
Use the same font, size, and spacing throughout the paper.

Table 3: Presentation in Research.

Positioning

Conceptually, writing a medical academic paper is a challenging task. The author's goal should be to ensure their main position on the topic is conveyed to the audience by the conclusion of the paper. Although authors may be subtly allowed to show their influence from a particular group of thinkers, and to share their stance favoring a specific concept, medical science papers require being logical and objective in their writing. Objectivity should be used in the article from the beginning, while describing the literature and the convergence of different authors' positions. Using an expository strategy and supporting the literature-review area as factual is extremely important. Although authors deliberately strategize the organization of the paper, as well as the flow and the presentation, their aim must be to gradually develop their arguments with evidence, while also allowing the readers to create their own position on the topic. The open discussion brings granulation and crystallization to the science. Although the authors' intention with their writing style may convey their enthusiasm in the matter of an argument [4], it is necessary to use academic writing, so the author's position is communicated fairly. Additionally, it is not necessary to provide an extensive bibliography depending on the topic, but it requires mentioning the key scholars in the field, bringing weight to the awareness, conviction, and positioning in the paper. Moreover, this allows the audience to further explore resources on the subject matter. Ultimately, all medical academic writing should aim to make contributions to the medical science field. The intention in scientific literature, such as learning to conceptualize a theoretical framework (argument or review) and to write it academically, can be enhanced by taking formal instructions or classes. It may be beneficial in providing a solid foundation for learning all the essential considerations described in this article.

Conclusion

Ultimately, all medical academic writing should aim to make contributions to the medical science field. The intention in scientific literature, such as learning to conceptualize a theoretical framework (argument or review) and to write it academically, can be enhanced by taking formal instructions or classes. It may be beneficial in providing a solid foundation for learning all the essential considerations described in this article.

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