

Review articles

How to write and publish a scientific article? Strategies to facilitate your creative process

Como escrever e publicar um artigo científico? Estratégias para facilitar seu processo criativo

Neusa Sica da Rocha^{1*} , Giulio Bertollo Alexandrino¹ , Bruno Perosa Carniel¹

¹Universidade Federal do Rio Grande do Sul (UFRGS), Programa de Pós-graduação em Psiquiatria e Ciências do Comportamento, Porto Alegre, RS, Brasil

HOW TO CITE: ROCHA, N. S.; ALEXANDRINO, G. B.; CARNIEL, B. P. How to write and publish a scientific article? Strategies to facilitate your creative process. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 20, e19480, 2025. e-ISSN: 1982-5587. DOI: <https://doi.org/10.21723/riaee.v20i00.1948002>

Abstract

Writing and publishing a scientific article is a crucial distinguishing factor for both academic and professional résumés; however, achieving this is a significant challenge. This article is a narrative literature review that seeks to identify the essential elements for writing and publishing a scientific article. The first step is to select a topic that is both interesting and relevant to the academic community. Next, writing should begin by logically structuring the ideas according to the standard sections of scientific articles. Selecting the right journal for publication is crucial, as it significantly impacts the article's visibility and influence. Analyzing the journal's scope and the types of articles it publishes helps determine its suitability. Finally, the editorial and peer-review process is essential for ensuring high-quality scientific dissemination. Moreover, it is crucial to consider the use of artificial intelligence tools in academic writing.

Keywords: writing process; writing improvement; scientific research; creativity; learning strategies.

Resumo

Escrever e publicar um artigo científico é um importante diferencial para o currículo acadêmico e profissional, porém é um desafio concretizá-lo. Este artigo é uma revisão narrativa da literatura que busca identificar os elementos essenciais para a escrita e publicação de um artigo científico. O primeiro passo é selecionar um tema de interesse e relevância para a comunidade acadêmica. Em seguida, deve-se iniciar a escrita, estruturando as ideias de forma lógica e conforme as seções de artigos científicos. A escolha da revista para publicação é vital, pois impacta a visibilidade e o impacto do artigo. Analisar o escopo e os tipos de artigos publicados na revista ajuda a determinar sua adequação. Por fim, o processo editorial e de revisão é essencial para a divulgação científica de qualidade. Ademais, é importante ponderar o uso de ferramentas de inteligência artificial na escrita acadêmica.

Palavras-chave: processo da escrita; melhoria da escrita; pesquisa científica; criatividade; estratégias didáticas.

INTRODUCTION

Scientific writing is an inherent part of academic and professional training (Picardi, 2016). For academics at any level, publications are an essential determinant in career development and reputation among faculty members (Grech, 2017). However, especially for inexperienced writers, producing an article can be a significant challenge.

Today, we live in an age of information overload, not scarcity. As a result, researchers face new challenges in getting their work discovered, read, and accepted among millions of existing texts and the proliferation of new publications (Moore, 2023). Understanding the steps to writing a scientific article and systematically executing each one helps, especially

***Corresponding author:** nrocha@hcpa.edu.br

Submitted: July 12, 2024

Reviewed: February 28, 2025

Approved: June 02, 2025

Financial support: This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001.

Conflicts of interest: There are no conflicts of interest.

Ethics committee approval: Not applicable.

Data availability: Not applicable. Study conducted at Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre (RS), Brasil.



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for inexperienced researchers, to minimize the challenges associated with the productive process (Rosenfeldt et al., 2000).

Structuring the ideas of an article is extremely useful to organize them in a logical pattern. A scientific text requires planning that ranges from selecting a feasible, interesting, innovative, ethical, and relevant topic to determining the appropriate study design, the most suitable type of study, and the sections that will structure the article as a whole (Thistlethwaite; Anderson, 2021). It is also crucial for the researcher to understand that both the formulation and writing of the project are not linear processes—many revisions, corrections, and adaptations will be necessary at each stage until the project is finally accepted (Aga; Nissar, 2022).

Throughout the development of the text, clarity and objectivity must be consistently prioritized (Arias-Carrión, 2024). Long texts are not synonymous with quality or comprehension, and excessive data and ideas may hinder readability. The work should be concise, avoiding obvious introductory sentences and unnecessary procedural details. The description of superfluous details of procedures or specific steps performed is another error that harms the quality of scientific work (Arias-Carrión, 2024). The journal's readers are experts in the field, making detailed descriptions of basic methods superfluous. Therefore, understanding the target journal is essential, as it reveals who the readers will be and whether the article aligns with the publication's usual format and standards (Phillips; Barker, 2021). Ideally, the first draft should follow the journal's guidelines.

Given the importance of good scientific writing, mastering effective writing strategies is essential. This article presents a narrative literature review designed to identify the vital elements in writing and publishing a scientific article. The primary objective was to develop an educational guide that provides strategies for beginners in scientific writing, particularly for higher education students and interested professionals, by combining best practices and fundamental guidelines. We found no articles in the literature, especially in Portuguese, that presented content and format similar to those proposed here.

METHOD

The methodology adopted was a narrative literature review, which provides qualitative descriptions of the results of previous studies (Baumeister, 2013). This format was chosen for its didactic purpose and because it is beneficial for combining results from studies that use very different methods and address various questions about the same topic (Baumeister, 2013), as is the case here.

National and international articles were reviewed from major databases (PubMed/MEDLINE, Embase, Cochrane, LILACS). Studies that directly or indirectly addressed essential aspects of scientific writing, such as topic selection, manuscript structure, and editorial submission and review procedures, were included. The data from selected sources were analyzed and synthesized to provide a comprehensive and instructional overview of the academic writing process. The focus was on practical aspects and common difficulties faced by scholars. The content was organized into sections corresponding to the main steps of writing and publishing a scientific article, including reasons for writing, topic selection, manuscript structuring and drafting, journal selection, the submission and review process, and the challenges of artificial intelligence in academic writing.

RESULTS

Reasons to write a scientific article

Writing a scientific article can seem challenging for many reasons. These include the time required to write it, lack of knowledge about its structure and organization, and internal barriers such as writer's block (Silvia, 2019). This creative process can become discouraging, often humorously represented as in Figure 1. However, overcoming these barriers can be easier than expected by using available guides and, above all, focusing on the many reasons to write. These reasons can be grouped into personal, professional, institutional, and social motivations.

YOUR LIFE AMBITION - What Happened??

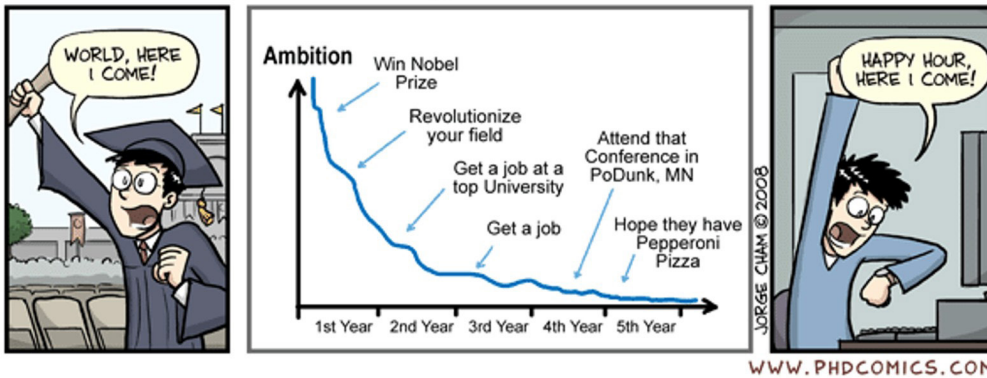


Figure 1. Illustration of Ambitions Throughout Scientific Life.

Source: Piled Higher and Deeper (2024) by Jorge Cham.

Personal reasons include cognitive stimulation—writing is a mental activity associated with a significantly lower risk of dementia. It is also a learning tool that impacts multiple aspects of life. Moreover, writing fosters critical thinking and idea expansion, generating new questions and personal satisfaction (Johnson, 2008). Thus, the process can be pleasurable due to the creativity it involves (Peh; Ng, 2008a).

Professional reasons include enhanced opportunities for career advancement and recognition. Publishing scientific articles increases exposure and can connect authors to new professional networks, such as collaborators and future clients (Grech, 2017). Becoming a researcher expands professional and, mainly, academic possibilities (Picardi, 2016).

Institutional reasons for writing a scientific article include enhancing the visibility of the university or hospital involved in the research, which in turn can attract grants for academic scholarships and financial support for future studies (Peh; Ng, 2008a).

Social reasons pertain to the dissemination of knowledge to both professionals in related fields and the broader public, especially when research is also communicated through non-academic channels (Thistlethwaite; Anderson, 2021). Scientific writing plays a crucial role in validating new treatments and diagnostics, ultimately benefiting humanity (Peh; Ng, 2008a).

How to choose a topic

Choosing a topic is the first step in writing your article (Hulley et al., 2015). To determine your topic, it is essential to consider what truly interests you, but also to reflect on findings that may be relevant to the academic community. Topic selection can be a gradual process that emerges over time. Therefore, it is worthwhile to dedicate time to reading references on subjects of interest and drafting potential topics based on this material.

The 'FINER' question is a helpful starting point for selecting a topic. It stands for Feasible, Interesting, Novel, Ethical, and Relevant. A feasible topic can be addressed with available resources. Highly significant issues that require extensive previous studies or substantial investment may not be ideal for a first article. Instead, keep your idea and consider beginning with a preliminary step, such as a systematic review. When we emphasize the term interesting, we are referring to a topic that is of interest to both you and the scientific community, that is, a topic that will encourage the public to read your article. The term new refers to an original topic. There is no reason to research something that is already a consensus in the field, given that thousands of studies already exist under the same conditions. Therefore, strive to develop a topic that, in some way, is original.

When it comes to ethics, it is essential to consider that your topic must align with the principles of scientific ethics. Although only research on human beings and animals requires approval from a research ethics committee, ethical precepts must be present in all scientific articles from the moment the topic is chosen and must be maintained throughout the project's development. Finally, your topic must be relevant. Reflect on the practical applicability of the results obtained from your study and how this topic can positively impact your field.

This reflection will aid you in the future when developing project justifications (Hulley et al., 2008). Alongside topic selection, choosing a supervisor is a crucial decision. The supervisor should work in your field of interest and possess experience in the area. Furthermore, a good supervisor can help refine your topic and assist in transforming the initial idea into a clear and meaningful article title.

How to start writing

There is no single correct way to begin writing an article. While there are standard structures to follow, the initial focus should be on letting ideas flow freely. The writing process varies from person to person, and with time and practice, it becomes more natural (Johnson, 2008; Kallestinova, 2011).

First, define your research topic and problem. It is highly recommended to write about something you are genuinely interested in, as the process requires a substantial amount of time and commitment. Afterwards, establishing a schedule that adapts to the reality of your routine is as important as the act of writing itself (Kallestinova, 2011). Good writing requires practice; therefore, to maintain routine and consistency, be realistic when setting up your writing schedule. Set aside a time that best fits your routine and is based on your biorhythm (Johnson, 2008; Kallestinova, 2011). It is of utmost importance to be able to have exclusive time to focus on writing (Rosenfeldt et al., 2000). Once your schedule is set, begin writing—objectively and without striving for perfection. The goal is to start and avoid procrastination. Write quickly and avoid obsessing over details; refinement comes later (Johnson, 2008). This initial draft will undergo multiple revisions, during which you can identify repetitions, add relevant information, and organize your thoughts (Nahas; Ferreira, 2005). To maintain flow, it's best if one person writes the initial draft, with editing reserved for later phases. The draft can then be discussed with your supervisor and peers (Johnson, 2008). Discussion with the supervisor and colleagues is fundamental and enriching, as it allows the article to mature (Kallestinova, 2011). Regular meetings with co-authors, peers, and your supervisor can help set goals and maintain progress (Rosenfeldt et al., 2000). This process of reviews, adjustments, and corrections can be represented by the cartoon below (Figure 2), demonstrating the dedication required to prepare the stages of the article.

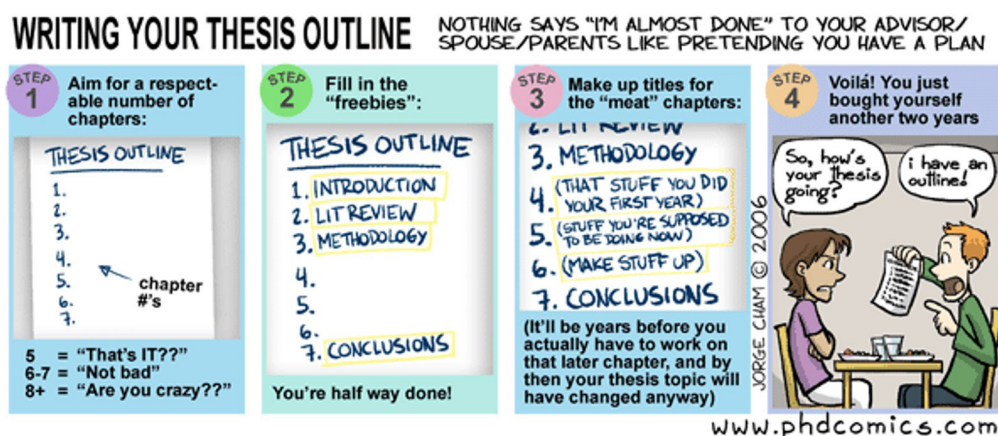


Figure 2. Illustration/Cartoon of the Steps to Writing an Article.

Source: Piled Higher and Deeper (2024) by Jorge Cham.

A helpful order for drafting article sections is to start with Materials and Methods, followed by Results, Discussion, Introduction, and finally the Abstract (Kallestinova, 2011). Furthermore, choosing a journal of interest before starting the writing process helps in the process of refining the article after the initial stage of letting the ideas flow on paper, since having the intended journal in mind, the text can later be adapted to the journal's requirements regarding formatting (Johnson, 2008; Rosenfeldt et al., 2000).

Writing the article

The classical structure of a scientific article is divided into the following sections: abstract, introduction, methods, results, discussion, and conclusion. Some authors write in the order in which the sections appear in the published text, but a more strategic order often makes writing more efficient, coherent, and scientifically sound. When beginning to write, it's helpful to outline some key questions at a basic level (Chart 1) and later refine them at a more advanced level (Chart 2). Once these questions are mapped, follow a writing sequence that helps connect your ideas. It is recommended to write in this order: methods, results, discussion, conclusion, introduction, and abstract.

Chart 1. Initial Outline Questions.

1. What is the topic of my article?
2. Why is this topic important?
3. How could I formulate my hypothesis?
4. What are my results (including visual aids)?
5. What is my main finding?

Source: Kallestinova (2011).

Chart 2. Advanced Outline Questions.

Introduction	<ul style="list-style-type: none">• Why is your research necessary?• What is known about the topic?• What are your hypotheses?• What are your objectives?
Materials and Methods	<ul style="list-style-type: none">• What materials did you use?• Who were the subjects of your study?• What was your research design?• What procedure did you follow?
Results	<ul style="list-style-type: none">• What are your most significant results?• What are your supporting results?
Discussion and Conclusions	<ul style="list-style-type: none">• What are the main conclusions of the study?• What is the meaning/implication of the results?

Source: Kallestinova (2011).

The 'Methods' section describes the research methodology and its organization. It should be detailed enough for other researchers to replicate the study and validate the results (Kallestinova, 2011). The writing should use past-tense verbs. Typical elements include: statistical methods used, inclusion and exclusion criteria, instruments employed, type of sampling, whether the perspective was retrospective or prospective, and ethical aspects such as ethics committee approval and informed consent (Johnson, 2008; Rosenfeldt et al., 2000). The 'Results' section presents the primary data collected in the study. These include essential experimental details necessary for readers to understand your findings. Data can be shown using numbers, percentages, p-values, and confidence intervals. Organize the information using tables, figures, graphs, and diagrams, avoiding duplication with the text (Kallestinova, 2011; Rosenfeldt et al., 2000). The written language must contain verbs conjugated in the past tense. Suggestions include verifying the accuracy of data multiple times, avoiding interpretation in this section, and including concise titles in tables and

figures (Johnson, 2008). If any results contradict the central hypothesis, they must be included along with a plausible explanation during the discussion (Kallestinova, 2011).

The 'Discussion' section interprets the results that have already been presented. It places them in context and explains their significance and importance (Kallestinova, 2011). A crucial point for the writing process in this section is the elimination of ambiguity in the text (Rosenfeldt et al., 2000). Begin by addressing the central research question, outlining 2–5 key findings, and developing 1–2 paragraphs per point. Furthermore, compare and contrast your results with existing literature. Highlight what is novel in your findings and consider: 'How can my results influence clinical practice?' (Johnson, 2008). Also discuss the strengths, limitations, and assumptions of the study, and propose future research directions. Note that some journals combine the Results and Discussion sections into one (Kallestinova, 2011).

The 'Conclusion' should summarize the study, reaffirm the research question and objectives, and mention scientific implications, limitations, clinical applications, and future directions (Kallestinova, 2011; Rosenfeldt et al., 2000).

The 'Introduction' highlights the importance of the topic, summarizes existing knowledge, and justifies the need for further investigation. It should preferably be short—about three paragraphs on one page. The first paragraph outlines the known information and relevance of the topic. In the second paragraph, it is recommended to outline what is currently unknown about the subject, including its significance and any unresolved issues. The final section explains the rationale behind the study, presenting the hypotheses and primary objective. Writing the introduction last helps prevent writer's block and facilitates article development (Kallestinova, 2011; Rosenfeldt et al., 2000).

The 'Abstract' gives readers a preview of the research, often determining whether they will read the full article. It should be written last and structured concisely, following the specific requirements of the target journal. In this section, avoid using acronyms and abbreviations.

The 'Title' and references can be drafted alongside the writing process, being modifiable during the study construction process. The "Title" is the first sentence to be read in the article, so it should be attractive to the reader. It is recommended that the article objectively describe and identify its core, as this determines how it will be indexed and categorized. The title should provide a brief overview of the study by presenting the factor under investigation, the outcome, the study population, the research design and context, and, if possible, the main result. For example, in the title: "negative association between quality of life and depression in adult patients in outpatient psychotherapy": The factor under study is depression; the outcome is quality of life; the study population is adults; the design is cross-sectional, the context is outpatient, and the result is a negative association. References must follow the journal's required style, and journals limit word count. Therefore, it is necessary to selectively choose the articles cited during the research, as they are essential and relevant to the topic. Additionally, these references must be reviewed to verify the accuracy of the information used as the basis for constructing the scientific work. There are several programs that manage bibliographic references, including EndNote, Zotero, and Mendeley.

Although there are recommendations for writing a scientific article, each author will have a unique writing style. The ideal style strikes a balance between precision, clarity, and conciseness, eliminating unnecessary words and sentences to achieve brevity. That is, a sentence should not contain unnecessary words, and a paragraph should not contain unnecessary sentences. Thus, it is said that appropriate words in appropriate places make the true definition of style.

Some style tips can be recommended to achieve precise, clear and concise writing; among them are: preferring concrete language over abstract language; using the active voice; avoiding repetition of words, long sentences, and excessive adverbs and adjectives; rewriting whenever necessary and shortening the article as much as possible, as long as it maintains clarity. In addition, the author needs to write regularly, choosing 1 to 2 hours of their routine for "writing sessions", considering that they cannot be canceled to ensure reasonable regularity. This ideal time for writing can be comically represented in the cartoon shown

below (Figure 3). For many people, mornings are more productive, but the time of day can vary depending on the writer's routine. Ultimately, serving as a proofreader for other works can enhance an author's writing. Therefore, it can be said that good proofreaders are good writers and vice versa.

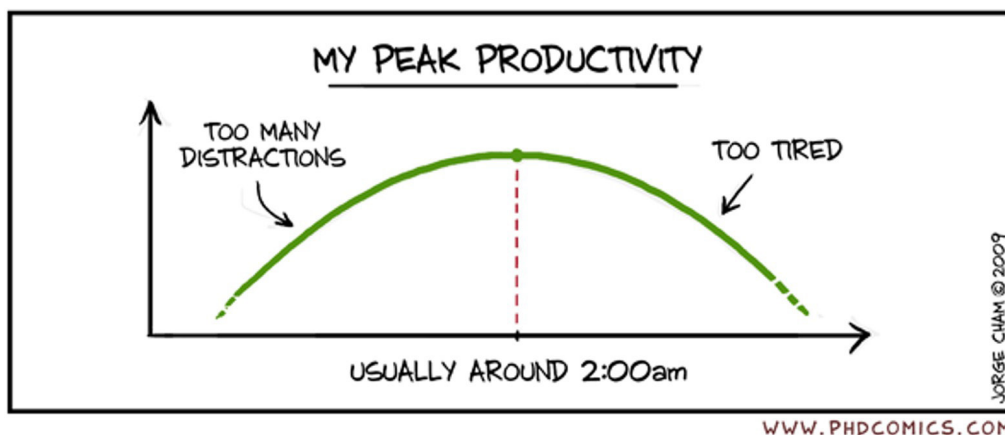


Figure 3. Cartoon of Academic Productivity Throughout the Day.
Source: Piled Higher and Deeper (2024) by Jorge Cham.

How to choose a journal

Choosing the right journal for publishing a scientific article is a crucial step in the scientific publication process, as it directly impacts the article's visibility, impact, and likelihood of publication. Several key strategies and considerations should be taken into account when deciding where to submit your article.

The first step is to understand the scope of your research based on your article's central theme and field of study. Ensure the journal's scope aligns with your research. To determine this, analyze the scope and types of articles it publishes and review recent content to assess how interested the journal may be in your topic.

Before choosing a journal, read its 'Instructions for Authors' carefully. These guidelines specify formatting and structural requirements, including writing style, references, and required components. Following these instructions in alignment with the journal's scope is essential to ensure your article is considered for review. If possible, draft your manuscript in accordance with the target journal's formatting standards. Additionally, the journal's recent content helps determine the journal's level of interest in the chosen topic.

Check whether the journal is cited in other articles related to your research field—this can help determine its relevance. Submitting to frequently cited journals can increase the visibility of your article and enhance its impact.

Ensure the journal is indexed in key academic databases and review its QUALIS classification (a Brazilian system for evaluating scientific journals, maintained by CAPES, which categorizes journals into strata based on quality criteria) and impact factor (the primary metric for qualifying scientific journals, based on the number of citations). These metrics influence your research's reach and the article's likelihood of being published. In some cases, it is also helpful to write a cover letter when submitting your manuscript—this shows professionalism and familiarity with the journal.

A valuable online tool for selecting journals is the Journal/Author Name Estimator (JANE), launched in 2007 (Journal/Author Name Estimator, 2024). JANE works directly with PubMed/MEDLINE datasets, allowing users to input an article title, keywords, abstracts, or author names to obtain a list of related articles and suitable journals (Curry, 2019). Ultimately, choosing the right journal is crucial for how your research will be received. Ensure the article is relevant to the journal's readership, original, important, poses clear questions, uses proper methods, and adheres to the journal's style. Critically ask yourself why the article is a good fit

for the selected journal. A well-chosen journal increases your research's visibility, maximizes publication chances, and contributes to advancing knowledge in your field (Abbott, 2017).

Understanding the journal

Access and publishing fees are also essential factors. Many journals, especially open-access ones, charge publication fees, which can result in unexpected costs. These fees often vary by region, with some offering discounts for developing countries; however, prices can still be high, limiting access to prestigious publications. Once the fees are paid, open-access publishing facilitates the dissemination of information across the scientific community. However, due to high costs, research from underdeveloped and developing countries is sometimes underrepresented in high-impact open-access journals, with the science from these countries sometimes considered second-rate because of their inability to publish in these journals (Ciocca; Delgado, 2017).

It is also essential to pay attention to copyright issues related to the publication, as it is common for the copyright to pass to the journal upon publication. In some journals, the transfer of copyright allows the journal to edit, make the content available on its platforms, charge for access, and index it in databases. However, the intellectual property still belongs to the authors of the article (Mello Rode et al., 2019). It is also necessary to check whether the journal requires statements regarding approval by an ethics committee. Some journals request a "Cover Letter", which consists of a text explaining the main points of the manuscript, such as its format.

To write an article, it is necessary to be aware of the various formats of scientific publication, and prior knowledge is required to adapt the format to the topic being studied properly. Among the types of scientific articles, they are (Peh; Ng, 2008b):

1. **Original articles:** These are publications of unpublished results, including both quantitative and qualitative research, and are the primary type of article. They must contain information that contemplates the possibility of reproducing, evaluating, and reaching the same conclusion presented by the authors. Each journal has its own instructions regarding the structure of the article. Still, it is common to include the following topics: introduction, method, results, discussion, and conclusion, in addition to a summary following the same structuring order (Peh; Ng, 2008b).
2. **Case reports:** This is one of the most essential forms of publication in medicine. It is the article that reports one or more clinical cases of an exceptional nature, such as, for example, an unexpected clinical presentation of a specific condition. It must contain information relevant to the proposed discussion, which includes a review of the literature that corroborates the aspects presented, as well as the author's contribution to the understanding of the case. The content is divided into a summary, a brief introduction, a case presentation, and a discussion (Peh; Ng, 2008b; Rison; Shepphird; Kidd, 2017).
3. **Review articles:** can be a structured review, such as a systematic review or meta-analysis, or unstructured, such as a narrative review. This is not a type of work that brings something new to the academic environment. Still, it summarizes old findings that may raise some gaps in the literature, potentially generating new research questions. It is necessary to clearly outline the steps taken during the review in the methodology, so that the study can be replicated. The structure of the text is similar to that of the original articles, comprising an introduction, method, results, discussion, conclusion, and other relevant topics (Peh; Ng, 2008b).
4. **Editorials:** These are publications that aim to contain relevant, critical, and in-depth comments on the topic addressed. It is usually written by the journal's editor or by a guest author with extensive experience in the issue addressed (Peh; Ng, 2008b).
5. **Letter to the editor:** a comment or opinion on material previously published by the journal, or on a pertinent and current topic. These are usually short texts, written at the editor's invitation or based on the interested author's demonstration of interest to the journal's editor. This type of publication can also generate discussion for future scientific work (Peh; Ng, 2008b).

6. **Brief communication:** an article with original data, but more concise, with the aim of demonstrating preliminary data and containing immediate relevance (Joaquin; Tan, 2021).
7. **Review:** publication of a critical review of material (book, film or artistic expression of interest within the scope of the journal). The text is usually brief.
- Furthermore, each empirical study can have a design that has a specific guideline (Quintão et al., 2019), with guidelines on the most appropriately suggested methodology that can be found in the EQUATOR (2024) library (Chart 3).

Chart 3. Guidelines for Main Study Designs.

Study Design	Main Study Guidelines
Randomized Clinical Trial	CONSORT (Consolidated Standards of Reporting Trials)
Observational Studies	STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)
Systematic Review	PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)
Study Protocols	SPIRIT (Standard Protocol Items: Recommendations for Interventional Trials)
Diagnostic/Prognostic Studies	PRISMA-P (Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols)
	STARD (Standards for Reporting of Diagnostic Accuracy)
	TRIPOD (Transparent Reporting of a Multivariable Prediction Model for Individual Prognosis or Diagnosis)
Case Reports	CARE (Case Report)
Clinical Practice Guidelines	AGREE (Appraisal of Guidelines for Research and Evaluation)
	RIGHT (Reporting Items for Practice Guidelines in Healthcare)
Qualitative Research	SRQR (Standards for Reporting Qualitative Research)
	COREQ (Consolidated Criteria for Reporting Qualitative Research)
Preclinical Animal Studies	ARRIVE (Animal Research: Reporting of In Vivo Experiments)
Quality Improvement Studies	SQUIRE (Standards for Quality Improvement Reporting Excellence)
Economic Evaluation	CHEERS (Consolidated Health Economic Evaluation Reporting Standards)
Qualitative Evidence Synthesis	ENTREQ (Enhancing Transparency in Reporting the Synthesis of Qualitative Research)
Health Measurement Instrument Evaluation	COSMIN (Consensus-based Standards for the Selection of Health Status Measurement Instruments)

Source: Authors’ elaboration.

The review process

From the moment an article is submitted to a journal until it is published, it undergoes editorial management and peer review. In this context, the review process must be understood as an integral part of the academic journey, essential for the dissemination of quality scientific

research. Three key roles make up this process: reviewer, editor, and author. Each of these actors has responsibilities and rights that, when exercised properly, contribute to a fair and adequate review system. As Cabral (2018) metaphorically describes, it's like a three-legged stool—any imbalance affects the entire structure. Positive outcomes depend on a non-trivial alignment of the interests of all parties. Although this operation may seem demanding and exhausting, as, for example, comically represented in the cartoon below (Figure 4), it is assumed that, by achieving an effective harmony between understanding the expectations of each component of the triad, it is possible to ensure that what is published is characterized by its quality and importance, adding value both to the scientific community and to society in general.

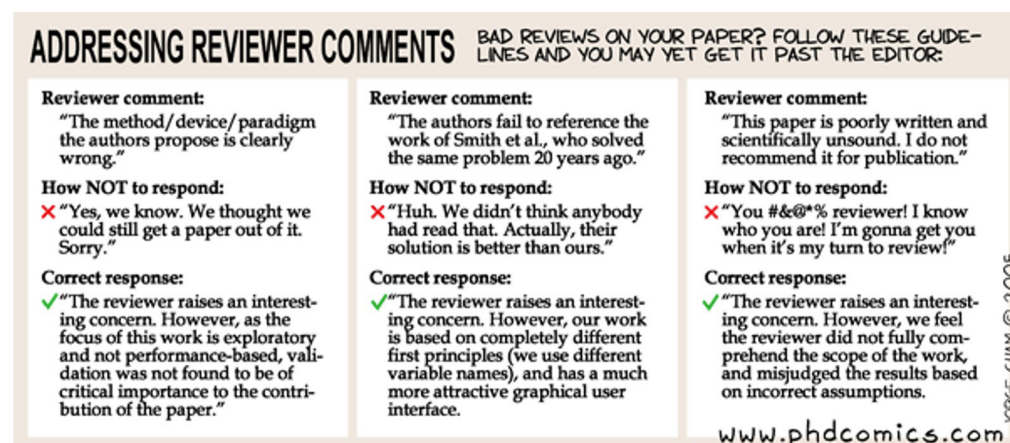


Figure 4. Illustration/Cartoon of How to Respond to the Reviewer.
Source: Piled Higher and Deeper (2024) by Jorge Cham.

Reviewer (or more than one person, in the context and journals that use the peer review method) who must perform an experienced, critical, and impartial assessment, from both a scientific and literary point of view, of scientific reports in their area of knowledge and expertise. Initially, it is necessary to demystify the role of the reviewer by understanding that this is another researcher, like the author, who is building their academic career and is temporarily in this role, which places them under the lens of the other side of the process. Many members of the scientific world recognize that being available to review articles is an essential part of the researcher's profession, viewing it as a way of giving back to society, which seeks to validate the findings published. Another relevant point is the feedback relationship between a good reviewer and a good writer, since one role contributes to the improvement of the other and vice versa.

Unlike authors, reviewers may have a variety of motivations when evaluating scientific papers, in addition to contributing to the advancement of science in an altruistic way. By successfully fulfilling their responsibilities, reviewers strengthen their reputation with editors. However, there is a downside to inexperienced reviewers (or experienced reviewers who are resentful after accumulating multiple rejections throughout their publication attempts), which is that they may be overly critical due to a lack of experience or a desire to impress. This can lead to suggesting minor changes or even recommending rejection of papers that could be improved through subsequent iterations in the review process.

Editors play a key role in mediating between reviewers and authors. They compare reviewer feedback with the manuscript, aiming to reduce asymmetry and prevent biased decisions. Managing a widely read scientific journal means allocating scarce resources—qualified, available reviewers are invaluable assets (Barney, 1991). To optimize this process, editors must ensure that only suitable articles are forwarded for review, excluding those with evident flaws or little relevance.

In both scenarios, the time invested (or wasted, in cases of an inaccurate desk review) by reviewers on such articles not only represents an inefficient allocation of resources but may also result in the unavailability of these reviewers to evaluate other articles. Considering

that the number of articles submitted to high-impact journals often exceeds the publishing capacity by up to 10 times and that qualified reviewers do not emerge spontaneously, it is imperative to avoid unnecessarily overloading this scarce resource (Cabral, 2018).

Finally, there is the figure of the author, possibly the character who has the greatest expectations at the end of the entire review process. After the meticulous process of elaboration, execution, scientific writing, and selection of the journal to which the article will be submitted, a wait begins in the author's life that can sometimes result in frustratingly immediate responses.

However, it is essential to recognize that the current scientific review system, like all other human endeavors, is not without flaws. In this context, good articles are often rejected, and many of these rejected articles are subsequently accepted by other journals. Regardless of the reasons behind the reviewers' refusal, the refusal to publish brings with it the author's commitment to address all the points raised by the reviewer, to qualify the scientific production, and even to improve personally in this process within the scientific academic world.

Therefore, it is up to the author to listen objectively to the reviewer's criticisms and understand that the criticism can be an opportunity to explain the study's findings more clearly. It is suggested that the response to the reviewers be made in moments of calm, avoiding defensive attitudes that only further erode the process. Some of the key premises for obtaining positive results before the reviewers are that the article is interesting to the journal's readers, demonstrates originality and relevance, has clear research questions, rigorously outlined methods, and a good writing style. Furthermore, one should try to avoid writing long, wordy articles, as well as submitting manuscripts with careless spelling errors and conclusions that are not related to the data obtained.

Based on the words of writer Truman Capote, it is understood that "good writing is rewriting". In this logic, an integral part of the process of becoming a good writer (and reviewer) is the activity of reading and rereading finished manuscripts in order to identify flaws in the writing and content of the text that could be pointed out by new readers of that production. The attentive author who performs these "multiple checks" of their text facilitates the review process and invariably increases its chances of acceptance invariably.

Challenges of writing a scientific article in the age of artificial intelligence

ChatGPT is an artificial intelligence (AI) tool that can follow commands and provide detailed explanations on a wide range of topics (OpenAI, 2022). In scientific writing, it can play both a supportive and a problematic role (Salvagno; Taccone; Gerli, 2023).

Positive aspects of using ChatGPT include the ability to summarize information, edit and format text, and identify grammatical errors or overly complex sentences. In the future, these tools may also help generate visual elements such as graphs and tables. These features contribute to time-saving benefits (Salvagno; Taccone; Gerli, 2023).

However, its use raises ethical concerns. AI cannot guarantee the reliability of information, and its automated actions contradict the essence of scientific writing, which involves temporal organization and continuous development (Annals of Family Medicine, Inc., 2023).

Moreover, the indiscriminate use of ChatGPT may create unfair advantages, especially if such tools become exclusively paid for in the future, thereby widening the gap between resource-rich and under-resourced countries. It could also inflate publication counts without necessarily reflecting greater scientific expertise, affecting professional recruitment decisions based on quantity rather than quality (Salvagno; Taccone; Gerli, 2023).

Thus, the use of chatbots, such as ChatGPT, can be carried out both irresponsibly and responsibly, serving as just another tool to assist researchers. However, it can in no way replace human creation. Therefore, given the growth of these technologies, specific regulations must be established for their use in scientific writing to guide and encourage ethical practice (Salvagno; Taccone; Gerli, 2023). If AI tools are used, authors should transparently report how these technologies contributed to the end of the manuscript.

CONCLUSION

Guiding scientific writing from the beginning of a researcher's career is fundamental. This article is not a formal guideline, such as PRISMA or CONSORT, but rather a didactic tool intended to help readers structure their ideas into a draft that may become a complete article.

Encouraging students to put their ideas on paper is challenging, especially since academic writing must adhere to specific formats—introduction, materials and methods, results, discussion, and conclusion—to ensure reproducibility. Initially, readers may follow these suggested steps, but over time, they will likely develop their scientific writing style.

By preparing students and professionals to produce and disseminate high-quality research, we contribute to society through the spread of relevant scientific knowledge. This article aims to motivate and equip individuals to tackle the challenge of writing high-quality articles, thereby advancing scientific production and dissemination, particularly for researchers in the Portuguese-speaking community.

ACKNOWLEDGMENTS

We thank the undergraduate research students of the I-QOL Group: Innovations and Interventions in Quality of Life, Felipe Rodrigo de Castro Meira, Pedro Henrico Grazziotin Portal, Karina Castilhos Bastos, Graziella Nunes Peixoto, Marina Ribeiro de Matos, and Luiz Carlos Nascimento da Silva. Their contribution was essential to the development of this article. They played key roles in conceptualization, initial idea generation, refinement of scope and objectives, as well as in drafting and editing the manuscript after revisions.

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Authors contribution

NSR: Played a key role in all phases of the article, including study conceptualization, research supervision, project organization, original manuscript writing, text editing, and final review. GBA: Played a key role in organizing the article, including conceptualization of the study, writing of the original manuscript, text editing, and revisions. BPC: Played a key role in organizing the article, including conceptualizing the study, writing the original manuscript, editing the text, and making revisions.

Editor: Prof. Dr. José Luís Bizelli

Deputy Executive Editor: Profa. Dra. Flavia Maria Uehara