

Clinical Oncology Letters

Using Free Artificial Intelligence Tools to Support Scientific Writing in Medical Education: A Practical Tutorial

Uso de Ferramentas Gratuitas de Inteligência Artificial para Apoiar a Escrita Científica na Educação Médica: Um Tutorial Prático

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Abstract

Scientific writing is a core competency in medical education, yet it remains a major challenge for many medical students, residents, and early-career clinicians. Common barriers include limited formal training, heavy clinical workloads, restricted access to journals and professional editing services, and difficulties writing in English as a non-native language. These challenges are particularly pronounced in low- and middle-income countries, where capable trainees may face disproportionate barriers to publication, reinforcing existing inequities in academic medicine. Artificial intelligence (AI) tools capable of supporting literature search, document analysis, language refinement, and reference management have become increasingly accessible, including through free or freemium platforms. However, most existing guidance focuses on proprietary tools or lacks practical, educationally grounded instructions. This tutorial provides a step-by-step, tool-agnostic guide to using free AI tools across the scientific writing lifecycle, covering literature exploration, reference organization, reading and summarization, drafting and language refinement, and preparation of tables and figures. Each step includes practical instructions, examples of commonly used tools, and discussion of educational benefits, risks, and mitigation strategies. Ethical considerations, data privacy issues, and limitations of free AI tools are addressed in accordance with current editorial guidance. The tutorial also outlines practical ways to incorporate AI-assisted writing into medical education settings, including writing workshops, mentorship models, and team-based scholarly activities. When used responsibly and under appropriate supervision, free AI tools may help lower barriers to scientific writing while preserving critical thinking, academic integrity, and learner development.

Keywords: Scientific Writing; Artificial Intelligence (AI); Medical Research; Free Tools; Ethical Considerations; Non-Native English Speakers; Resource-Limited Settings.

Resumo

A escrita científica é uma competência essencial na educação médica, mas continua sendo um grande desafio para muitos estudantes de medicina, residentes e clínicos em início de carreira. As barreiras comuns incluem treinamento formal limitado, carga horária clínica pesada, acesso restrito a periódicos e serviços de edição profissional, e dificuldades na redação em inglês como língua não nativa. Esses desafios são particularmente acentuados em países de baixa e média renda, onde profissionais em formação podem enfrentar barreiras desproporcionais à publicação, reforçando as desigualdades existentes na medicina acadêmica. Ferramentas de inteligência artificial (IA) capazes de apoiar a busca bibliográfica, análise de documentos, refinamento de linguagem e gerenciamento de referências tornaram-se cada vez mais acessíveis, inclusive por meio de plataformas gratuitas ou freemium. No entanto, a maioria das orientações existentes foca em ferramentas proprietárias ou carece de instruções práticas e fundamentadas na educação. Este tutorial fornece um guia passo a passo e agnóstico em relação à ferramenta para o uso de IA gratuita em todo o ciclo de

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vida da escrita científica, abrangendo exploração da literatura, organização de referências, leitura e sumarização, redação e refinamento de linguagem, e preparação de tabelas e figuras. Cada etapa inclui instruções práticas, exemplos de ferramentas comumente utilizadas e discussões sobre benefícios educacionais, riscos e estratégias de mitigação. Considerações éticas, questões de privacidade de dados e limitações das ferramentas gratuitas de IA são abordadas de acordo com as diretrizes editoriais atuais. O tutorial também descreve formas práticas de incorporar a escrita assistida por IA em ambientes de educação médica, incluindo workshops de escrita, modelos de mentoria e atividades acadêmicas baseadas em equipe. Quando utilizadas de forma responsável e sob supervisão adequada, as ferramentas gratuitas de IA podem ajudar a reduzir as barreiras à escrita científica, preservando o pensamento crítico, a integridade acadêmica e o desenvolvimento do aluno.

Palavras-chave: Escrita Científica; Inteligência Artificial (IA); Pesquisa Médica; Ferramentas Gratuitas; Considerações Éticas; Falantes Não Nativos de Inglês; Ambientes com Recursos Limitados.

INTRODUCTION: WHY THIS TUTORIAL IS NEEDED

Scientific writing plays a central role in medical education and academic medicine, enabling the dissemination of research findings, critical appraisal of evidence, and professional development.^{1,2} Despite its importance, many trainees struggle to acquire scientific writing skills. Limited exposure to formal instruction, competing clinical responsibilities, lack of mentorship, and language barriers, particularly among non-native English speakers, contribute to this difficulty.^{1,3} These challenges are more pronounced in low- and middle-income countries, where access to professional editing services and subscription-based software is often limited. As a result, capable trainees may face disproportionate barriers to publication, reinforcing inequities in academic medicine.⁴

AI tools have been proposed as a potential means of supporting scientific writing.⁵⁻⁷ While enthusiasm for AI has grown rapidly, guidance tailored to medical education remains limited. Existing discussions often emphasize advanced or paid platforms, provide abstract recommendations, or fail to address ethical and pedagogical considerations. This tutorial aims to fill that gap by offering clear, practical instructions for using free AI tools to support scientific writing in educational contexts.

The tutorial is intended for medical students, residents, fellows, early-career researchers, and educators involved in teaching or supervising scientific writing. It assumes basic familiarity with academic writing but does not require prior experience with AI tools. Specifically, it can be used: (a) individually, by trainees preparing manuscripts; (b) in supervised mentorship settings; and (c) as part of writing workshops or longitudinal writing programs. Throughout, the approach is intentionally tool-agnostic, specific tools are mentioned as examples of functional categories rather than endorsements, allowing adaptation as technologies evolve.

AI TOOLS: IDENTIFICATION AND SELECTION PROCESS

Tool identification followed a pragmatic, purpose-driven approach rather than a systematic review methodology. Searches were conducted between January 2024 and January 2026 using Google Scholar, PubMed, Google Search, and YouTube to identify freely accessible AI tools relevant to core scientific writing tasks, using the following search terms: "free AI scientific writing," "AI literature review," "free citation manager," and "AI for PDF summarization." The inclusion of non-academic platforms such as Google and YouTube reflects the rapidly evolving nature of AI technologies, which are not yet fully represented in peer-reviewed literature. Inclusion criteria were:¹ free or freemium access without mandatory payment;² functionality relevant to literature search, summarization, drafting, or referencing; and³ availability in English. Tools requiring paid subscriptions for core functions, tools focused primarily on coding or statistical analysis, and proprietary institutional platforms were excluded.

The initial search identified approximately 40 tools. Of these, nine met inclusion criteria and were retained for illustrative purposes (Appendix Table 1 lists popular YouTube videos on AI use and scientific writing). The final selection reflects tools used iteratively during the preparation of this manuscript, for literature search, article summarization, writing assistance, and referencing, and is intended to illustrate functional categories rather than endorse specific products. The authors utilized the AI tools described in this manuscript (including, but not limited to, Google Docs, NotebookLM, DeepSeek, and Perplexity AI) for drafting, editing, and summarizing during manuscript preparation. All outputs were verified and critically reviewed by the authors, who take full responsibility for the final content.

OVERVIEW OF AI IN SCIENTIFIC WRITING

AI tools relevant to academic writing encompass a broad spectrum, from natural language processing (NLP) models that assist with grammar and style to sophisticated algorithms designed for data analysis and literature review. These tools can be broadly categorized by their primary function: language enhancement (e.g., grammar checkers, paraphrasers), PDF readers for summarizing and interacting with scientific articles, content generation assistants, and reference management aids (e.g., literature search engines and citation managers).

Integrating AI into scientific writing offers clear benefits. First, it contributes to significant time savings by automating tedious tasks such as proofreading, formatting, citing references, and summarizing large volumes of text. Second, it leads to enhanced linguistic and grammatical accuracy, providing real-time suggestions for clarity, conciseness, and adherence to academic writing standards, this is especially beneficial for non-native English speakers.⁶ Third, AI can support organization and idea generation by helping researchers structure their thoughts, overcome writer's block, and identify key themes and gaps in existing literature.^{5,8-10} These advantages are most meaningful, however, when the tools are applied within a well-designed workflow, the focus of the following section.

KEY FUNCTIONALITIES OF FREE AI TOOLS FOR SCIENTIFIC WRITING

Creating a manuscript is an iterative process. Once a research idea takes shape, the writer searches the literature for relevant papers, stores references for future retrieval, reads and annotates selected articles, drafts and refines the manuscript, and finally compiles the bibliography. Free AI tools can meaningfully support each of these steps. Before commencing the writing process itself, it is highly beneficial to develop a general outline, guiding the sequence of topics and the intended content of each section. Such outlines can be generated using AI tools that integrate PDF reading capabilities with large language models (LLMs), or through tools that automatically search and summarize scientific literature.

As writing commences, a cyclical process naturally unfolds: new questions, the need for definitions, and fact-checking prompt renewed searches for information. New sources are then stored and integrated as described above. This iterative dynamic, revisiting sources, refining content, and adjusting structure, mirrors the real-world process of scientific writing and ensures depth and coherence. The recommended workflow is illustrated in Figure 1, and Table 1 lists the free AI tools that can assist at each stage. The use of AI agents (such as SciSpace Agent) is beyond the scope of this tutorial, as their functionalities are generally not freely available.

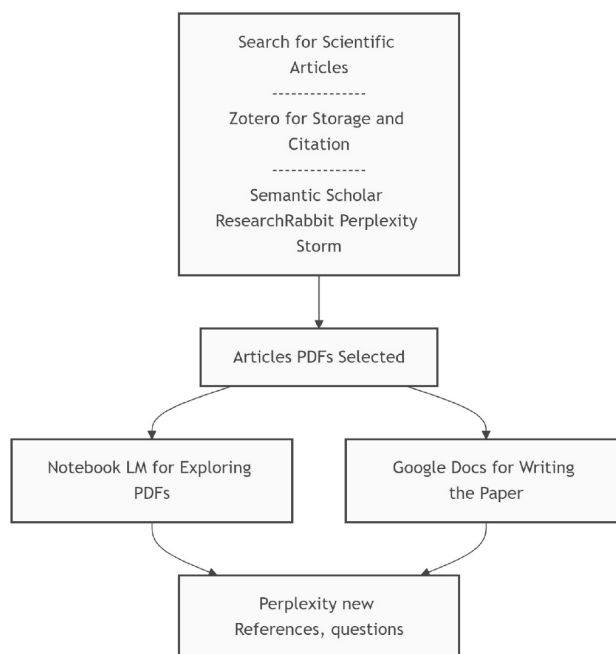


Figure 1. Recommended Workflow Using Free AI Tools for Scientific Writing.

Table 1. Free AI tools' basic toolkit used for scientific writing in this paper.

Category	Tool	Key Characteristics	Example Prompts	Strengths & Limitations
Literature Search	Semantic Scholar [semanticscholar.org]	AI-powered academic search with citation analysis	"AI for writing scientific papers"	✓ Strong citation metrics ✓ Semantic search ✗ Few humanities sources
	Research Rabbit [researchrabbit.AI]	Visual literature mapping tool	"Free AI tools for scientific writing"	✓ Great visualization of relationships among papers ✗ Small database
	Perplexity AI [perplexity.AI]	AI-powered search with source citations	"What is the evidence for AI improving scientific writing?"	✓ Web/PDF search ✓ Source citations ✗ 5-day search history limit
Idea Generation	Storm.AI [storm.AI]	Research assistant for paper structuring	"Outline a review on AI tools for scientific writing"	✓ Concept extraction/outline creation ✗ English only
	DeepSeek [deepseek.com]	Long-context writing assistant	"Based on this text, please create a table summarizing its most important points"	✓ 128K tokens ✗ No citations ✗ Can hallucinate
Summarization	Notebook LM [notebooklm.google]	Document Q&A for uploaded papers	"What are the most important findings of this paper?"	✓ Personal docs ✗ 20 notebook limit ✗ 50 sources per notebook limit
References	Zotero [zotero.org]	Citation manager	N/A	✓ Open source ✗ Learning curve
Writing	Google Docs [docs.google.com]	Collaborative writing	"Improve this results paragraph"	✓ Real-time collaboration ✓ Compatible with Zotero ✗ Basic grammar

TASKS AI TOOLS CAN HELP WITH IN SCIENTIFIC WRITING

The following section outlines how the selected free AI tools shown in Table 1 can be applied to each stage of the writing process.

SEARCHING THE LITERATURE

For initial literature discovery, Semantic Scholar can be used effectively when coupled with ResearchRabbit. The most relevant PDFs retrieved via Semantic Scholar are uploaded to ResearchRabbit, which identifies additional related papers through semantic search technology. Unlike simple keyword matching, semantic search focuses on understanding the meaning and context of both the user's query and the content itself, providing more relevant results by considering word relationships, user intent, and search context. Storm, a tool sponsored by Stanford University, is also highly beneficial at this stage: it generates a well-structured review with new references and a useful outline for the paper (Figures 2 and 3).

STORING REFERENCES FOR FUTURE RETRIEVAL AND CITATION

Once relevant papers have been identified, they need to be organized for efficient retrieval and citation. For this functionality, we recommend Zotero, which integrates seamlessly with Google Docs, our suggested free word processing tool. As illustrated in Figure 4, Zotero facilitates the direct import of bibliographic references from a web browser into organized libraries, and its word processor plugin allows users to cite any stored reference within the text and automatically generate a bibliography at the end of the article.

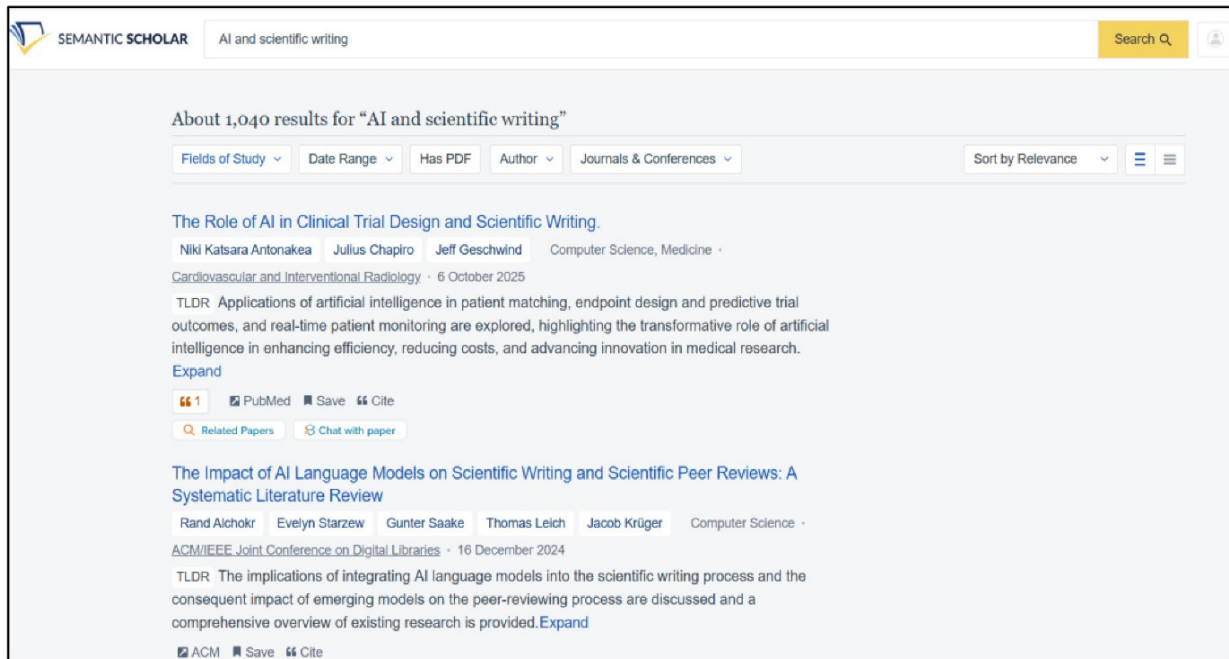


Figure 2. Semantic Scholar screen showing first references retrieved for the search "AI and scientific writing."

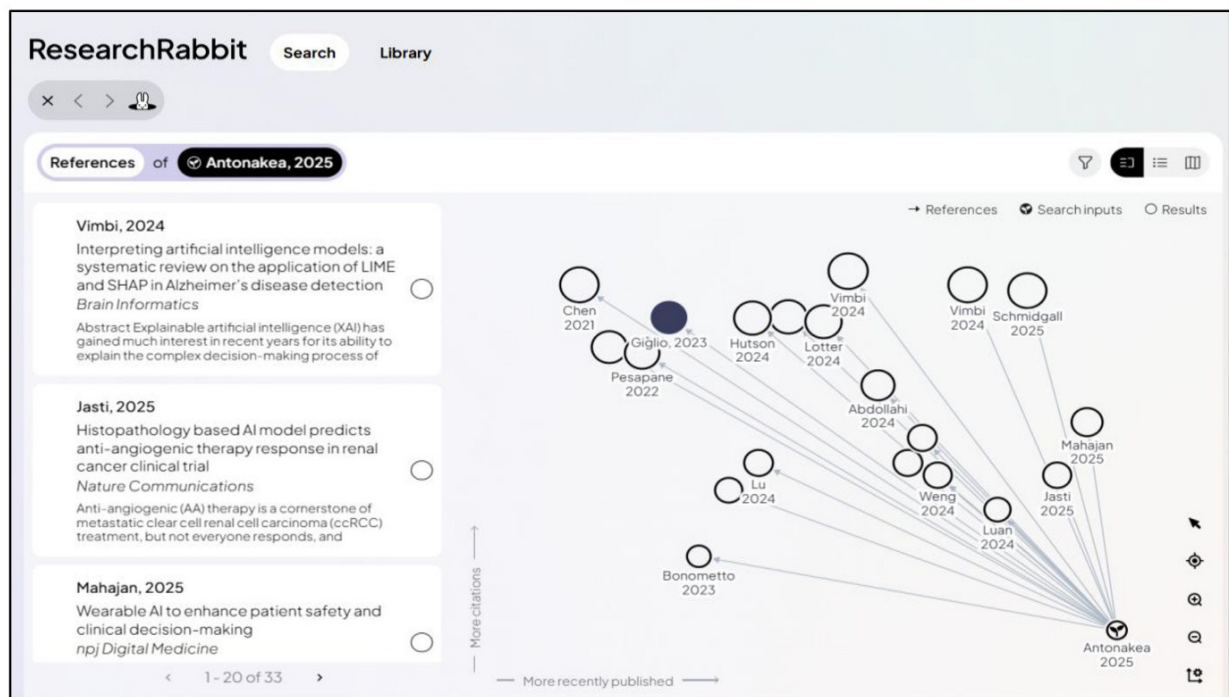


Figure 3. Research Rabbit screen showing related articles to the first paper obtained in the bibliographic search shown in Figure 2. By clicking on related articles, additional previously unknown papers can be discovered.

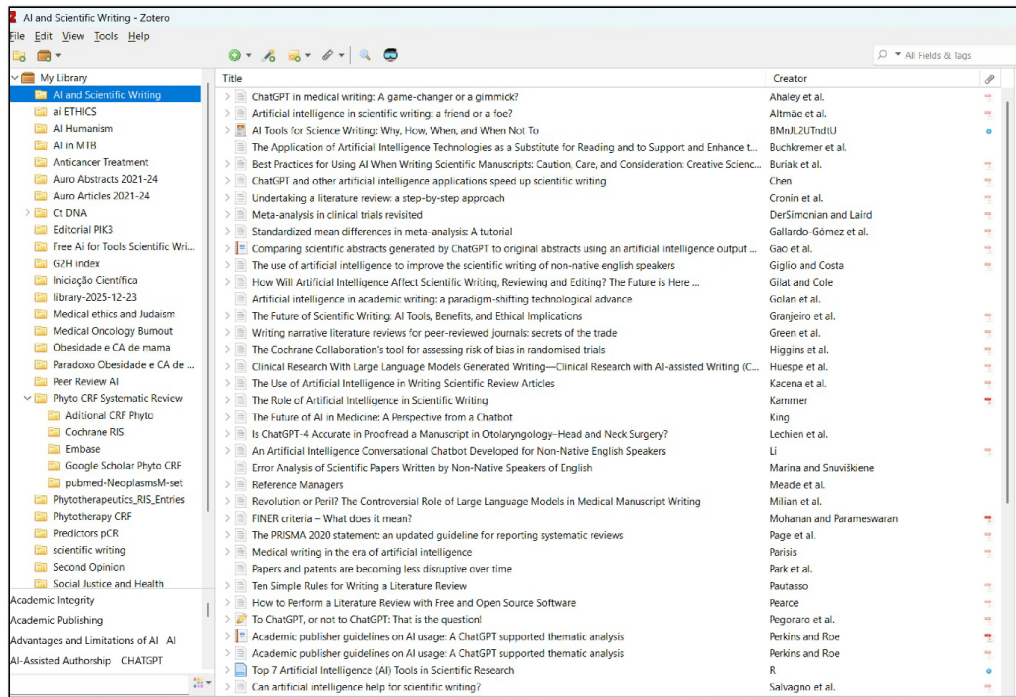


Figure 4. Zotero screen illustrating articles stored in libraries. The software facilitates direct retrieval of bibliographic references from a web browser into one of its libraries and, via its integration with word processors such as Google Docs or Microsoft Word, allows users to directly cite stored references and automatically generate a bibliography.

READING, SUMMARIZING, AND TAKING NOTES

For tasks involving multiple PDFs, such as interactive reading, creating summaries, and taking notes, Google's free NotebookLM is highly recommended. It allows users to store up to 50 PDFs, videos, or websites per notebook, facilitates summarization of all stored material, and enables interaction through a chatbox interface. Notes can be saved for later use. Crucially, by restricting information to user-uploaded sources, NotebookLM prevents hallucinations and ensures the reliability of outputs (Figure 5).

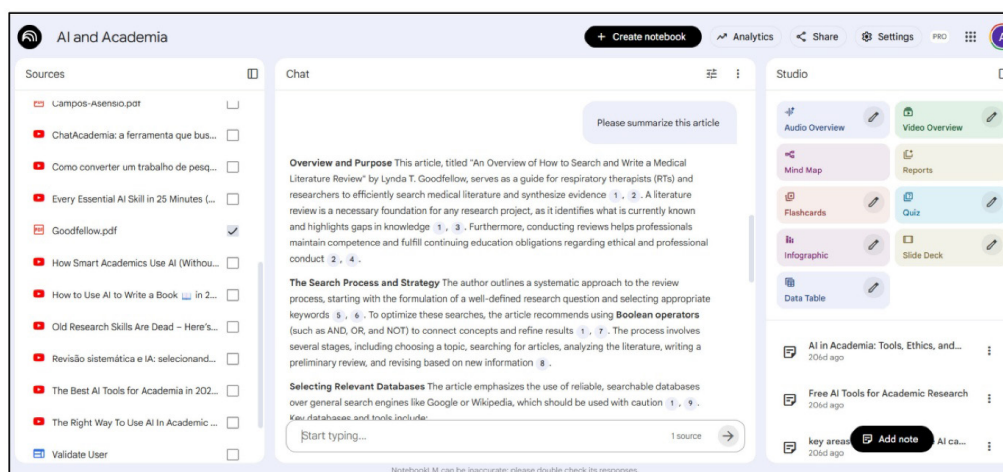


Figure 5. NotebookLM screen. The central section shows a summary of a selected PDF chosen from the list on the left. NotebookLM allows users to select one or multiple sources, including PDFs, YouTube videos, websites, or copied text, to extract information. By restricting the information sources, the tool prevents hallucinations and ensures the reliability of the output.

DRAFTING THE PAPER

Google Docs is an invaluable and free tool for text writing, offering features for rephrasing, refining, and correcting grammar and spelling (Figure 6). During the drafting phase, NotebookLM can address specific questions that arise if the answer lies within stored materials, while Perplexity AI allows real-time searches for additional information and new papers. For the creation of tables and simple figures, DeepSeek's free tier is a practical option, as exemplified by Tables 1 and 3 in this article; the non-paid version of Perplexity can similarly generate simple publication-ready figures.

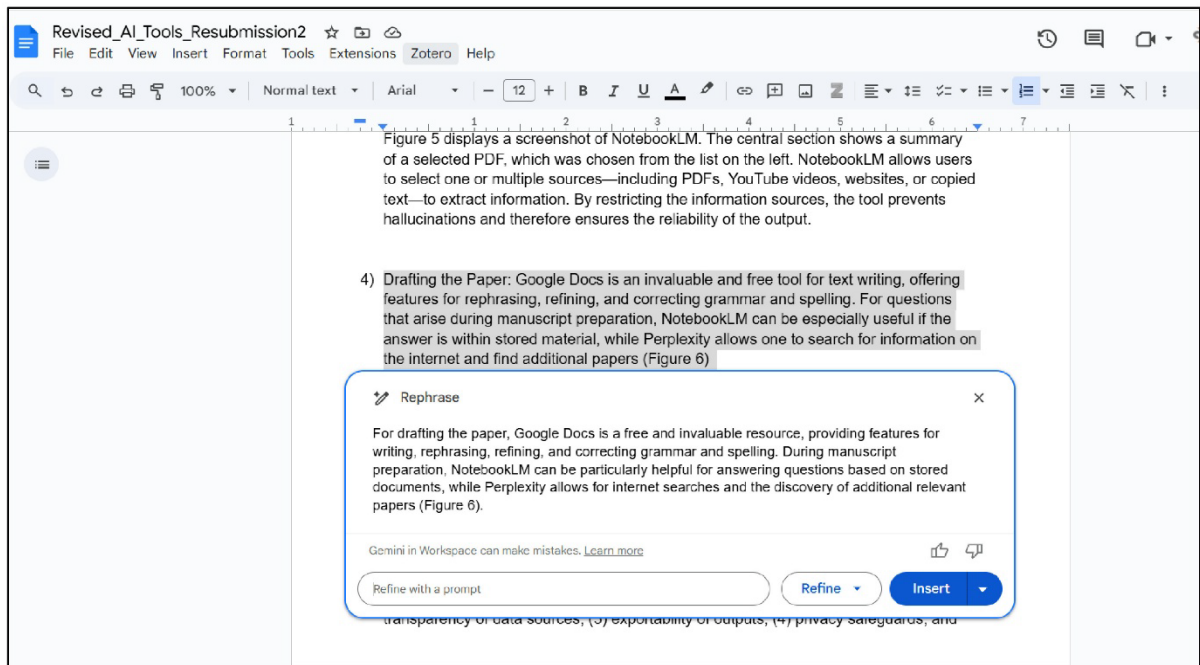


Figure 6. Google Docs screen featuring the Zotero extension. A text segment is highlighted in the center, accompanied by an AI-generated suggestion for rephrasing the selected passage.

Given the dynamic nature of AI development, individual tools may change pricing models or functionality over time. Researchers evaluating new tools should therefore consider:¹ sustainability of free access;² transparency of data sources;³ exportability of outputs;⁴ privacy safeguards; and⁵ learning curve. Applying these criteria allows the proposed workflow to remain relevant despite ongoing technological change. Table 2 compares the free AI tools described above with standard industry paid alternatives.

LIMITATIONS AND ETHICAL CONSIDERATIONS

- a. While free AI tools offer meaningful support for scientific writing, their adoption raises important ethical and practical concerns that must be carefully considered. The following subsections address the primary risks, together with recommendations for responsible use.
- b. Risks of Over-Reliance on AI-Generated Content

Over-reliance on AI tools presents substantial risks to learner development and research integrity. While AI can boost short-term performance, as seen in a large-scale randomized controlled trial in Turkey, where AI improved practice problem-solving by 127%,¹⁰ it may simultaneously hinder long-term learning and critical thinking. Excessive use of AI for tasks such as hypothesis generation or experimental design may erode fundamental scientific competencies, much as constant GPS use diminishes navigation skills. This dependence raises concerns about

researchers' capacity for independent validation and innovation, potentially jeopardizing the integrity of scientific inquiry.¹¹

Table 2. Comparison of free or freemium artificial intelligence tools used in this tutorial with commonly used industry-standard alternatives for scientific writing.

Writing Function	Free/Freemium Tools Used in This Tutorial	Common Industry-Standard Paid Alternatives	Key Differences Relevant to Medical Education
Literature search and discovery	Semantic Scholar, ResearchRabbit	Scopus, Web of Science	Free tools provide broad access and semantic search but may have less comprehensive journal coverage; paid platforms offer deeper indexing and advanced analytics, often restricted to institutions.
Evidence-focused search	Perplexity AI (free tier)	Scopus AI, Web of Science AI tools	Free tools allow natural-language queries and rapid exploration; paid tools offer more controlled filtering and database transparency.
Reference management	Zotero	EndNote, RefWorks, PaperPile	Zotero is free and open-source but may have a steeper learning curve; paid tools often provide smoother institutional integration and technical support.
Reading and summarization of PDFs	NotebookLM	ReadCube Papers, SciSpace (paid tiers)	Free tools support interactive reading and summarization with limits on document numbers; paid tools offer expanded storage and advanced annotation features.
Drafting and language refinement	Google Docs (built-in AI features), free large language model interfaces	Grammarly Premium, Writefull, professional language editing services	Free tools support basic grammar and clarity; paid services may provide more nuanced academic language feedback and domain-specific editing.
Table and content structuring	Free large language models (e.g., DeepSeek free tier)	Commercial AI writing suites	Free tools assist with structural organization but require careful verification; paid tools may offer integrated workflows and support.
Collaboration and version control	Google Docs	Microsoft Word with enterprise collaboration, Overleaf premium	Free tools enable real-time collaboration; paid platforms may offer stronger institutional controls and long-term archiving.
Cost and accessibility	No direct cost to users	Subscription or institutional license required	Free tools lower barriers for trainees and low-resource settings; paid tools may be inaccessible outside funded institutions.

POTENTIAL INACCURACIES AND BIASES IN AI OUTPUTS

Generative AI models are susceptible to "hallucinations" (fabrications) and inherent biases.^{12,13} They synthesize existing data without validating its accuracy, potentially disseminating errors or plagiarized material. AI-generated text may contain unsubstantiated claims or reflect biases embedded in training data, which could misinform readers or skew research findings. The opacity of AI algorithms exacerbates these issues, complicating the identification of accuracy problems or ethical breaches such as copyright infringement. Moreover, AI tools can sometimes generate inaccuracies or perpetuate biases present in their training data,¹² underscoring the critical importance of human oversight at every stage of the writing process.

IMPORTANCE OF HUMAN VALIDATION AND CRITICAL REVIEW

Human oversight ensures factual accuracy, guards against AI hallucinations, and supports ethical authorship practices, particularly in nuanced fields such as medical research. A balance must be struck between AI assistance and unassisted effort in order to cultivate core research skills such as hypothesis formulation and experimental design. Authors bear the ultimate responsibility for verifying AI outputs, ensuring accuracy, originality, and ethical compliance. For instance, while AI-assisted grammar checks may be acceptable with minimal review, AI-generated conclusions demand meticulous scrutiny to ensure alignment with empirical evidence.¹³ As a practical rule, one should always validate AI-suggested references, disclose AI use following COPE guidelines, and maintain human intellectual ownership of hypothesis formulation and conclusion drafting.

DATA PRIVACY AND SECURITY

A further concern is the potential exposure of sensitive or confidential information when uploading manuscripts or unpublished data into online AI platforms. This risk is particularly relevant for researchers using cloud-based LLMs with data retention policies. It can be mitigated by using locally installed LLMs downloaded onto the researcher's own computer, or by ensuring that any cloud-based platform used complies with institutional data governance requirements.

TRANSPARENCY AND DISCLOSURE OF AI USE

Ethical guidelines from the Committee on Publication Ethics (COPE)¹⁴ and publishers such as Sage¹¹ recommend the following practices:

1. a) Disclosure of AI use: Routine AI assistance (e.g., grammar checks) typically does not require disclosure. However, substantive AI-generated text must be explicitly cited, including the tool name, date, and prompts used.
2. b) Intellectual property protection: To prevent data leaks, institutions may mandate the use of secure, approved platforms when AI is employed for unpublished work.
3. c) Transparency of AI contributions: Sample policies suggest appending statements such as "Used DeepSeek for correcting grammar and spelling errors" to ensure clear documentation of AI's role.

In summary, while AI tools offer genuine efficiency gains, their ethical use demands vigilance against over-reliance, rigorous validation of outputs, and full transparency. Table 3 summarizes practical recommendations for young physicians using AI in scientific writing.

Table 3. Advice for young doctors using AI for scientific writing.

Recommendation Category	Key Actions	Examples & Rationale
1. Integrate AI as Complementary Aid	- Use AI for routine tasks only (grammar, formatting, literature searches). - Avoid AI for core clinical/research tasks (diagnosis, hypotheses).	Example: Permit AI for proofreading but avoid it for generating conclusions. AI assists but does not replace intellectual effort.
2. Critically Appraise AI Outputs	- Verify accuracy, bias, and relevance of AI-generated content. - Cross-check references/data against trusted sources.	Example: Fact-check AI-suggested drug interactions with UpToDate. Rationale: AI may "hallucinate" false data.
3. Combine AI with Personal Expertise	- Use AI for draft refinement (clarity, flow) but retain control. - Employ AI for structural analysis, not for creating original content. - Balance efficiency with skill development.	Example: Ask AI, "Does my discussion align with results?" but write it yourself.
4. Stay Updated on AI Ethics	- Follow institutional/journal policies (e.g., COPE/Sage). - Disclose AI use transparently (tool, version, prompt). - Pursue ongoing education on AI risks.	Example: Cite: "GPT-4 (2025) was used for grammar checks; outputs were verified." Rationale: Ensures compliance and accountability (COPE/Sage).

USING THIS TUTORIAL IN MEDICAL EDUCATION PRACTICE

This tutorial can be implemented across different levels of medical training through structured and supervised formats tailored to each learner's context. For undergraduate medical students, it is best applied through stepwise writing workshops embedded in research methodology or evidence-based medicine courses. Each stage of the AI-assisted writing lifecycle, literature search, reference management, reading and summarization, and language refinement, can be addressed sequentially, with AI tools introduced as aids to support comprehension, organization, and clarity rather than content generation. This approach reinforces foundational academic skills while lowering technical and linguistic barriers during early training.^{7,8}

For residents and fellows, the tutorial is particularly suited to longitudinal writing teams and mentored scholarly projects. In this context, AI tools may support collaborative literature exploration, shared annotation of articles, and iterative manuscript drafting, while senior clinicians provide scientific oversight and critical appraisal. Mentorship plays a central role in guiding appropriate AI use, emphasizing verification of outputs, preservation of the author's voice, and responsibility for interpretation and conclusions. Such supervised use aligns with recommendations that AI should complement, rather than replace, higher-order scholarly skills.⁸

Across both undergraduate and postgraduate settings, educators should explicitly define which tasks may be supported by AI (e.g., language refinement or organizational assistance) and which must remain primarily human-driven (e.g., hypothesis formulation and interpretation of results). This structured approach helps prevent over-reliance on automation and addresses concerns that uncritical AI use may impair skill development if not carefully supervised.¹¹

CONCLUSIONS

Researchers from underserved countries face two primary obstacles in scientific writing. First, they often lack expertise in English academic writing, and reviewers who are native English speakers may be more inclined to reject manuscripts written by non-native speakers. A previous survey found that Brazilian oncologists were less likely to publish in higher-impact journals than peers with the same number of citations.¹⁵ AI tools could help overcome this limitation by offering an affordable alternative to professional human editors, improving manuscript grammar, spelling, writing style, and overall flow.⁶ Second, the cost of AI tool subscriptions can be substantial relative to doctoral or postdoctoral stipends in lower-income countries. This tutorial specifically sought to investigate the utility of free AI tools in addressing both barriers for non-native English speakers working in resource-limited settings.

Artificial intelligence is set to transform medical academic writing and research, fundamentally changing how medical professionals conduct, write, and disseminate their findings.^{9,10} As AI tools become more intuitive and accessible, they have the potential to democratize research, empowering scholars in resource-limited environments to produce and publish high-quality work, thereby broadening access to scientific inquiry and knowledge dissemination.¹⁶

This tutorial acknowledges several limitations. Free AI tools for scientific writing are scarce, and the selection of tools was based on personal testing for functional adequacy during the preparation of this paper, as well as a non-systematic search of internet sites, YouTube videos, and peer-reviewed papers. The rapid emergence of new AI tools makes it challenging to rely solely on peer-reviewed publications¹⁷ or systematic evidence-gathering. Notwithstanding, while specific tools will inevitably evolve, the proposed workflow model is designed to be tool-agnostic and thus applicable over time. Researchers are encouraged to apply this framework to evaluate new tools as they emerge.

Practical implementation may also be constrained by unreliable internet connectivity, institutional firewalls, or data governance policies, particularly in public hospitals or low-resource settings. The learning curve associated with reference managers and LLM-based tools may require several weeks of use before productivity gains are realized. Additionally, while the proposed workflow is applicable to narrative reviews and educational manuscripts, additional methodological rigor is required for clinical trials, systematic reviews, and regulatory submissions.

The growing capacity of AI to enhance text quality¹⁸ and streamline scientific writing means that increasing reliance on AI is inevitable in the near future, requiring robust ethical guidelines¹⁴ and governance structures. Continuous dialogue and collaboration among researchers, ethicists, policymakers, and AI developers will be

essential for the development of these frameworks. Responsible and strategic adoption of AI will therefore be key for medical professionals to excel in the evolving landscape of academic writing and research. We advocate for equitable access to AI tools for all academic physicians, irrespective of their economic circumstances.

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Appendix

Appendix Table 1. Popular Online Video Resources on the Use of AI for Scientific Writing. This table lists selected publicly available online video resources demonstrating practical applications of AI tools across the scientific writing lifecycle, including literature exploration, reading and summarization, drafting, language refinement, and manuscript preparation, as well as responsible and ethical use of AI in academic contexts. Resources were identified through non-systematic YouTube searches conducted between January 2024 and January 2026. Some videos feature freemium or paid tools; their inclusion is intended solely to illustrate practical workflows and does not imply endorsement of specific products or subscription services. These resources are intended as supplementary educational material and do not represent peer-reviewed evidence.

#	Video Title	URL	Short Description
1	This AI Makes Winning Research Grants Stupidly Easy	https://www.youtube.com/watch?v=P6gWENenXg8	Demonstrates how AI tools (e.g., Thesify) can be used to improve structure, clarity, and logic in research proposals and academic manuscripts.
2	How to Write an Academic Paper Using AI: The Ultimate Guide for Researchers!	https://www.youtube.com/watch?v=ipMVbWewJrk	Step-by-step walkthrough of using multiple AI tools for drafting academic papers, selecting sources, structuring sections, and preparing manuscripts for submission.
3	The Ultimate AI Toolkit Every Researcher Should Be Using in 2025	https://www.youtube.com/watch?v=pDOPL53tcwQ	Overview of widely used AI tools for research workflows, including literature mapping, summarization, drafting support, and reference management.
4	Write a Research Paper With AI Tool — PaperPal	https://www.youtube.com/watch?v=TXLVarJqZQs	Practical demonstration of writing a research paper using an AI-assisted academic writing tool, covering literature review, drafting, and language refinement.
5	How Smart Academics Use AI (Without Breaking the Rules)	https://www.youtube.com/watch?v=no0Tt-lp9AI	Discusses responsible and ethical use of AI in academic writing, emphasizing transparency, academic integrity, and appropriate boundaries.
6	The New Free AI Toolkit Every PhD Student Should Use	https://www.youtube.com/watch?v=a11V1rI0_FY	Reviews freely accessible AI tools useful for PhD students and early-career researchers, focusing on literature review, note-taking, and writing workflows.

#	Video Title	URL	Short Description
7	Write Better Research Papers 10x Faster (Best AI Tool for...)	https://www.youtube.com/watch?v=WkEfz5wck0g	Demonstrates AI-assisted writing inside common word processors, including outlining, drafting, and revising academic manuscripts.
8	How To Use AI for Academic Writing: Here's a Professor's Perspective	https://www.youtube.com/watch?v=iu62WgwPewI	Provides an academic perspective on integrating AI into scholarly writing, discussing benefits, limitations, and educational implications.
9	Best AI Tool for Writing Research Papers for Q1 Journals in 2025	https://www.youtube.com/watch?v=ETFcINXH00k	Reviews AI tools aimed at supporting the preparation of high-quality manuscripts for submission to top-tier academic journals.
10	How To Write a Full Research Paper Using AI? Best AI Tool for Researchers	https://www.youtube.com/watch?v=6hOs6iUw3XQ	End-to-end demonstration of using an AI tool to assist with drafting a full research paper, including literature review and discussion sections, with commentary on limitations.