

Artificial Intelligence and the Integrity of Scientific Writing

Artificial intelligence (AI) is rapidly transforming biomedical writing. Yet biomedical writing has a responsibility that extends beyond style and speed. It must communicate accurate, original, and ethically sound knowledge. As AI tools become more common in scientific publishing, the main challenge is not whether to use them, but how to use them without compromising academic integrity. The central issue is that AI may assist with writing, but it cannot replace human judgment, accountability, or scientific honesty.

AI is rapidly transforming scientific writing by improving efficiency, enhancing language quality, and supporting evidence synthesis. As the volume of biomedical literature continues to grow, researchers increasingly rely on AI tools to draft manuscripts, organize references, and summarize complex information. While these technologies offer substantial advantages, they also raise important concerns about the integrity, transparency, and accountability of scientific writing.¹

AI-powered tools such as Grammarly and Writefull help refine language by improving grammar, clarity, and academic tone. Similarly, literature discovery platforms like Elicit and Semantic Scholar enable rapid identification and synthesis of relevant research, significantly reducing the time required for literature reviews.² Advanced language models, including ChatGPT, can assist with generating outlines, drafting text, and paraphrasing content, thereby enhancing productivity and helping overcome writer's block.

Despite these benefits, integrating AI into scientific writing raises several ethical challenges. A major concern is the risk of inaccuracies and fabricated information. AI-generated content may appear credible yet contain errors, misleading statements, or non-existent references, compromising the validity of scientific publications if not carefully verified.³ Additionally, overreliance on AI tools may diminish critical thinking and reduce the originality of scientific work.

Authorship and accountability are another critical issue. According to the International Committee of Medical Journal Editors, AI tools cannot be listed as authors because they lack the capacity for responsibility and accountability.⁴ Human authors must take full responsibility for the content's accuracy, integrity, and originality, regardless of the extent of AI assistance. This underscores the importance of transparency, including disclosure of AI use in manuscript preparation.

Plagiarism and ethical misuse also pose significant risks. AI tools can paraphrase existing literature in ways that obscure proper attribution, leading to unintentional plagiarism. Furthermore, concerns about data privacy and algorithmic bias must be addressed, as AI systems are trained on large datasets that may contain inherent biases. Organizations such as the Committee on Publication Ethics and the World Association of Medical Editors emphasize the need for responsible AI use, clear disclosure policies, and adherence to established ethical standards in scientific publishing.^{5,6}

Another concern is that many AI tools are currently free, but this may not continue. Even now, higher-tier versions or full access are available only through paid plans. Introducing fees for access to these AI tools (Chatbots) could further widen disparities in scientific production between high- and low-income countries (as well as between junior

and senior professionals), resulting in unfair advantages for the former and unpredictable consequences.²

AI offers powerful tools that can significantly enhance scientific writing by improving efficiency, accessibility, and clarity. However, its use must be balanced with a strong commitment to scientific integrity. Researchers must rigorously verify AI-generated content, report AI use transparently, and uphold ethical standards in authorship and publication. By using AI as a supportive tool rather than a replacement for human expertise, the scientific community can harness its benefits while safeguarding the credibility and trustworthiness of scientific writing.

In conclusion, AI is neither inherently harmful nor inherently trustworthy. Its value depends on how it is used. In biomedical writing, integrity is preserved only when AI serves as a tool under human supervision rather than a hidden author.

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