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Special Editorial

Dos and Don'ts of Artificial Intelligence in Scientific Writing

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COMMUNICATION

Artificial intelligence (AI) is increasingly permeating various aspects of modern life, including scientific research and writing. While AI applications in this domain are not novel, the release of ChatGPT in November 2022 marked a pivotal moment [1], catalyzing a significant shift from traditional search tools to AI-driven platforms. However, as with any emerging technology, integrating AI into scientific writing introduces both opportunities and challenges, including potential risks and benefits [2,3]. One of the most contentious issues in recent years has been the question of scientific authorship. Journals, editors, and peer reviewers are actively grappling with how to effectively regulate the use of AI tools in the preparation of scientific manuscripts. Although AI-detection tools have been developed to assess the likelihood of AI-generated content, their accuracy and reliability remain suboptimal [4].

AI-generated text is inherently derivative, relying on pre-existing data and previously published works [1]. Despite extensive training on large datasets, these tools lack the capacity for genuine creativity and originality, which are hallmarks of human intellectual contribution [5]. Since AI-generated content is inherently constrained by the quality and diversity of its training data, this often results in superficial and mediocre outputs that frequently fail to meet the rigorous standards required for publication in scientific journals. These outputs also carry risks of imprecision, lack of critical analysis, and ethical concerns, including plagiarism[6]. Additionally, AI tools exhibit limitations in generating accurate visual representations and processing complex datasets.

Despite these challenges, AI offers several potential benefits for scientific writing. An evaluation of four prominent AI platforms (ChatGPT, DeepSeek, Gemini, and Claude) revealed a consensus regarding the advantages and disadvantages of AI in this context. However, it is important to note that AI-generated content often suffers from issues such as hallucinations (the fabrication of non-existent information to fulfill a query), mediocrity, and a lack of originality (Figure 1). Furthermore, while a wide array of generative AI tools exists, some tailored to specific tasks, their effectiveness in generating abstracts, references, and novel ideas remains questionable.

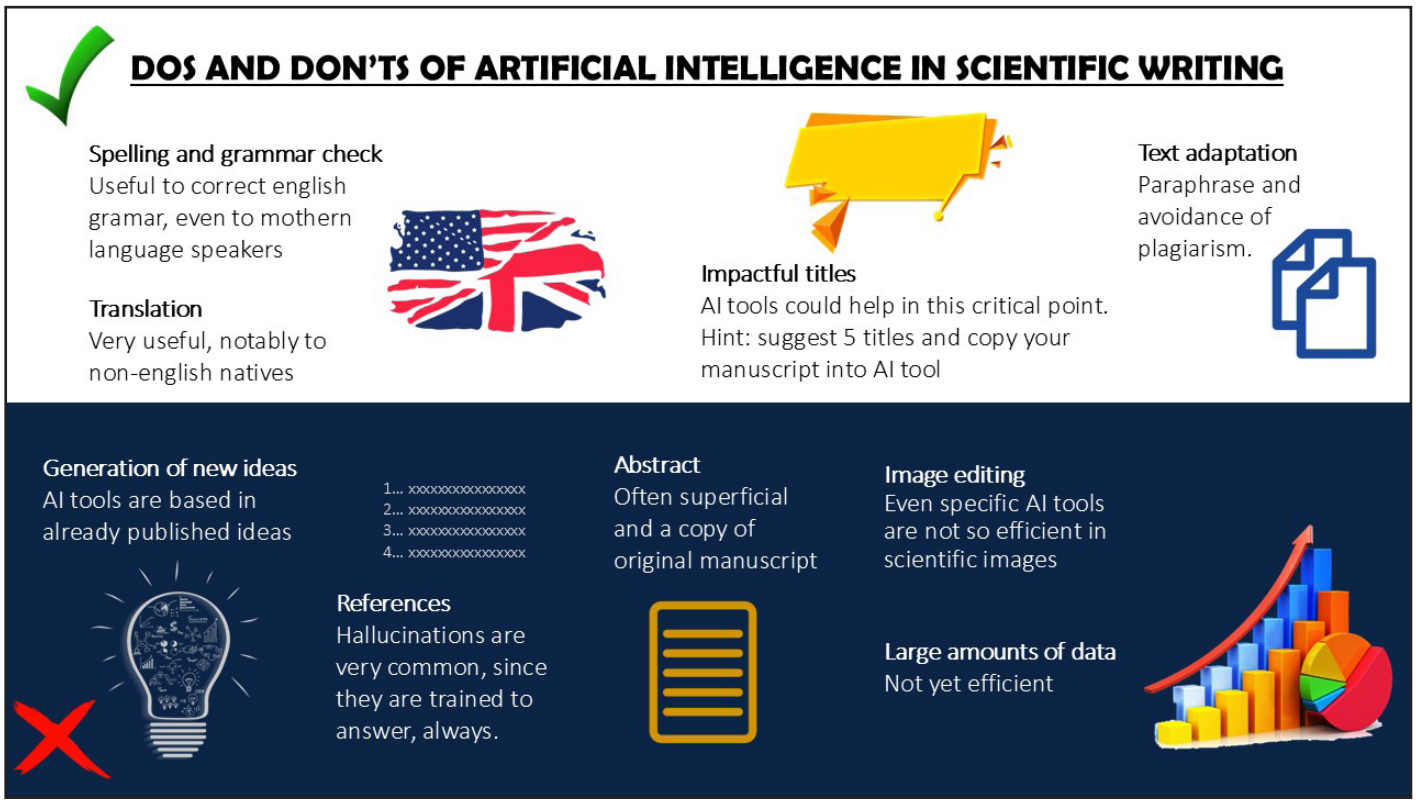

Figure 1. Dos and don´ts of artificial intelligence in scientific writing

When used judiciously, AI can be a valuable tool in scientific writing, particularly for tasks such as text revision and structural organization. However, it is imperative that researchers critically evaluate and validate AI-generated content to ensure accuracy, avoid plagiarism, and address ethical concerns [3]. Over-reliance on AI for critical thinking and content generation must be avoided, as it can introduce significant flaws, undermine the integrity of the research, and damage the authors' credibility — a consequence that is often difficult to remediate. For now, invaluable guidelines on scientific writing remain essential [7–9]. Although written a decade or more ago, they continue to serve as the cornerstone of scientific writing in the field of oral and maxillofacial surgery.

Keywords: artificial intelligence, scientific writing, surgery, oral, maxillofacial injuries, medical writing

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