

Editorial

Peer review challenges in the age of generative artificial intelligence

Mohan Kumar P^{1,*}¹Dept. of Periodontics, Vishnu Dental College, Bhimavaram, Andhra Pradesh, India

Received: 25-09-2025; Accepted: 11-10-2025; Available Online: 14-10-2025

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1. Introduction

In the era of generative artificial intelligence (AI), peer review is in serious trouble. One area of academic research that is changing rapidly due to the rapid rise of AI (including generative) technology is peer review.¹

2. Key Challenges^{1,2}

- Limits in volume and resources:** With the rising number of manuscript submissions, peer review systems will continue to face serious challenges, demonstrating a clear need to leverage AI tools in the peer review process.
- Ethics and biases:** The introduction of bias and ethical issues that arise because of the use of AI in peer review.
- Authenticity and hallucinations:** The advancements of generative AI to produce believable evidence, uses, or narratives, such as deepfakes and synthetic media, threaten the foundations of truth and trust in use of the peer review process.
- Authorship and attribution:** As the emergence of manuscripts or content generated by AI develops, the identification of the author and appropriate attribution in peer review becomes exaggeratedly difficult.
- Deepfakes and misinformation:** The emergence of AI-generated misinformation has the potential to distort and deceive, thereby shaping public perception and confidence in scientific work.
- Transparency and explainability:** The benefits of transparency and explainability highlight that without

these attributes, the opacity of AI technologies can facilitate embedded bias and discrimination.

3. Positive Solutions²

- AI-Augmented peer review:** Applying AI to enhance and facilitate the peer review process while managing volume and resources.
- Transparency and auditing:** There should be transparency measures and third party auditing to uncover and correct biases within AI systems.
- Guidelines:** Recommendations For developing solid recommendations regarding the application of generative AI in peer review and academia.
- Collaboration and education:** Encourage cross-sector collaboration and educate the general public about an effective approach in reducing AI-enabled disinformation and promoting responsible use of AI.
- This is expounded on by focusing on the delicate dance between generative AI and peer review that these problems and solutions present, showcasing the necessary constant dialogue and evolution that must occur in order to uphold scientific publication quality.

4. Overcoming Difficulties in Peer Review with Generative AI

The opportunities and challenges this presents to academic publishing need to be acknowledged where peer review and generative AI are concerned.^{2,3}

*Corresponding author: Mohan Kumar P
Email: mosups@gmail.com

5. Important Things to Think About

1. **Peer review:** Generative AI might make the peer review process more efficient by assisting with automation, say for identifying reviewer potential or screening manuscripts per se.
2. **Authenticity and honesty:** Journals are developing guidelines for standardizing addressing the important concerns of how to verify authorship, integrity of submissions and computer authors.
3. **Fairness and bias:** AI systems can suffer from bias, and in peer review systems careful design and audit is required to help mitigate these risks.
4. **Transparency:** Honest and clear communication about the use of AI in peer review is necessary to ensure trust.
5. **Ethical framework:** Formulating and following ethical rules for the use of AI in Peer Review can be useful to overcome challenges.

6. Risks and Opportunities¹⁻³

1. **Efficiency gains:** AI could potentially speed up some review processes and help manage the number of submissions.
2. **Quality-improvement:** AI can play a role in identifying plagiarism or flawed methodology.
3. **Risks of Over-reliance:** Relying too much on AI may affect the human ability to make nuanced decisions during peer review.

7. Methods for the Future¹⁻³

1. **Models that are hybrid:** It would be great if AI was used in peer reviews strengthened by human expertise.
2. **Policy development:** Publishers and journals are working on guidelines on the use of AI in reviewing and submission process.
3. **Work together and communicate:** As issues change, its important for the community—publishers, researchers, AI developers—to stay in touch. New developments surround the application of generative AI in peer review, which would require careful consideration of pros and cons in order to preserve integrity of scholarly publishing.

8. Conflict of Interest

None.

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Cite this article: Kumar PM. Peer review challenges in the age of generative artificial intelligence. <i>Int Dent J Stud Res</i>. 2025;13(3):111–112.
