

On the impact of Generative Artificial Intelligence on peer review

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A recent article on the impact of Generative Artificial Intelligence (AI) on peer review process has attracted the attention of our Editorial Office.¹ Here we shall briefly summarize the main points discussed in that article, leaving to our readers to go deeper on the original text.

Peer review is a well-known procedure in which experts in the same field evaluate an author's manuscript before it is published in a scientific journal. The specific details of the review process may vary among different journals. However, it generally involves two or three reviewers providing feedback to a journal editor who ultimately makes the final decision regarding publication. The peer-review procedure is a fundamental aspect of academic publishing, safeguarding the standards and reliability of scientific investigations. However, peer review is a time-consuming process that requires specialized knowledge and is prone to potential bias. As such, any technological advancements to reduce the time spent on peer review or related editorial tasks could yield immediate and tangible benefits to science communication.

The cited article has evaluated the impact of AI's capabilities in the peer review process. Generative AI can automate many tasks and save time. It cites a report by BioMed Central and Digital Science, where it was recommended that this technology be utilized to support and enhance the peer review process.

The use of Generative AI in peer reviews offers several ben-

efits. Its ability to handle large volumes of data and automate repetitive tasks makes it a potentially valuable tool. It can automate initial checks on academic papers and identify instances of plagiarism. This examination can expedite the review process and enhance efficiency. It can also enhance reviewer selection by utilizing previous reviews and the expertise of reviewers. The Authors argue that using Generative AI can assist editors in their peer review responsibilities by aiding in the search for appropriate reviewers, conducting initial evaluations of manuscripts, and generating final decision based on individual review reports. The integration of Generative AI tools could prove beneficial for editors in addressing one of their primary challenges, namely, the scarcity of reviewers; editors, as we at BTVB experience every day, often face difficulties in identifying suitable reviewers and maintaining reasonable journal turnaround times. Generative AI can change the role of peer reviewers and editors by improving the quality of reviews and addressing review shortages. ChatGPT's extensive knowledge and language processing abilities could improve the efficiency and quality of the peer review process.

However, integrating Generative AI into peer reviews raises concerns regarding transparency and accountability. The Authors point out that Generative AI lacks the depth of human creativity, intuition, and critical reasoning necessary for a nuanced understanding and interpretation of complex academic work. There are other significant concerns regarding the use of Generative AI in peer reviews, particularly related to biases, confidentiality, and the potential erosion of academic relationships. One can add challenges, such as the inability to review figures and images and discrepancies with complex articles.

On the basis of an original investigation on the perspectives of 12 journal reviewers from diverse academic disciplines on using large language models in the peer review process, the Authors conclude that the integration of Generative AI into the review process has the potential to automate screening and provide assistance to editors and reviewers, which can lead to a paradigm shift. However, this raises ethical questions concerning transparency, bias, and power dynamics. While Generative AI has the potential to augment the efficiency and uniformity of the review process, its use must be judiciously considered in light of ethical implications. Their findings suggest that Generative AI can complement human input in the review process but should not entirely replace it. The potential impact on the workload of human reviewers and the role of reviewers in the review process warrants further investigation.

In that light, after the acceptance of the mini-review on "common soil" by Iacoviello and Donati,² with the permission of both Authors, we asked chatGPT to review their manuscript and provide a critical report. You will find here below this report (Table 1).

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ChatGPT operates by default with the GPT-4o model, which (according to ChatGPT itself) is “ideal for most questions.” However, ChatGPT can also use models that offer “advanced reasoning,” such as the o1 model. The first revision was generated using the GPT-4o model. Not all AI tools are the same, and even within them, different “models” can produce significantly different performances.

We therefore obtained a second review provided by ChatGPT with the o1 model (Table 2). As the readers can see, both

reviews are similar and substantially positive, but there are several differences too, both in form and content. And if one switches tools (Copilot, Gemini, DeepSeek, *etc.*), one might find even more. It is a bit like asking different reviewers for their opinion: each one will have their own take.

We leave to the readers of BTVB to comment, reflect, discuss it and make their conclusions. The Letters to the Editor section of our journal is open to a debate. Further reading available on our journal.³

Table 1. Peer review of the article “Unveiling the “common soil” of cardiovascular disease and cancer”,² generated by ChatGPT with the GPT-4o model.

Title: The title effectively captures the essence of the article, indicating the interconnectedness between cardiovascular disease (CVD) and cancer. It is clear, engaging, and aligned with the content.

Abstract: The abstract succinctly summarizes the key points of the article. The introduction of the “common soil” hypothesis is compelling, and the emphasis on prevention strategies is well-placed. However, the abstract could be slightly more structured, explicitly highlighting objectives, methods, key findings, and conclusions to enhance clarity.

Introduction: The introduction provides a strong rationale for investigating the link between CVD and cancer. The analogy of trees with intermingled roots effectively conveys the complexity of shared risk factors and mechanisms.

- **Strengths:** Well-written and engaging; sets the stage for the discussion effectively.
- **Areas for Improvement:** Consider briefly discussing the novelty of this review in comparison to existing literature.

Understanding the Shared Burden: The section thoroughly presents epidemiological data supporting the connection between CVD and cancer. The reference to the Global Burden of Disease study and the Framingham Heart Study enhances credibility.

- **Strengths:** Well-supported by references; demonstrates the magnitude of the problem.
- **Areas for Improvement:** More elaboration on the causal relationship (if any) between these conditions could enhance this discussion.

Life’s Simple 7: A Bridge Between CVD and Cancer Prevention: The incorporation of LS7 as a unifying framework is an excellent addition.

- **Strengths:** The evidence from the Moli-sani study strengthens the argument for lifestyle interventions.
- **Areas for Improvement:** Unpublished data are mentioned; more detail on the nature of this data (or its expected publication timeline) would be beneficial for transparency.

The Role of Inflammation and Coagulation Pathways: This section effectively highlights the molecular and inflammatory links between CVD and cancer.

- **Strengths:** The discussion on inflammatory markers, the INFLA-score, and the Ridker *et al.* study adds substantial depth.
- **Areas for Improvement:** The text could benefit from a clearer distinction between correlation and causation regarding inflammation and disease development.

Glucose, Fibrinolysis, and Coagulation as a Shared Pathway: The explanation of glucose metabolism’s role in both conditions is scientifically sound and well-referenced.

- **Strengths:** The link between PAI-1, thrombosis, and cancer is well-articulated.
- **Areas for Improvement:** The discussion could include potential therapeutic interventions targeting these shared pathways.

A Call for Integrated Prevention Strategies: This section effectively ties together the findings and advocates for a holistic approach to disease prevention.

- **Strengths:** Strong public health message; aligns with contemporary preventive medicine principles.
- **Areas for Improvement:** A brief mention of potential policy implications or the role of healthcare systems in implementing these strategies would enhance this discussion.

Conclusions: The conclusion effectively reinforces the key message of the article, emphasizing the need for integrated prevention.

- **Strengths:** Concise and well-structured.
- **Areas for Improvement:** Could benefit from a clearer statement on future research directions or unanswered questions in the field.

References: The article is well-referenced, citing a strong selection of relevant literature.

However:

- Ensure consistency in citation formatting.
- Consider adding more recent studies if available to strengthen the findings further.

Figure 1: The graphical representation is a useful addition. If possible, provide a brief legend describing the elements in the figure for improved clarity.

Overall Assessment:

- **Originality:** The article presents a compelling synthesis of existing evidence on the shared pathways between CVD and cancer.
- **Scientific Rigor:** The references are strong, and the discussion is well-supported.
- **Clarity and Readability:** Generally well-written; minor improvements in structure and flow could enhance readability.
- **Impact:** High potential for influencing both clinical practice and public health policy.

Final Recommendation: The article is well-prepared and should be suitable for publication with minor revisions to enhance clarity, structure, and depth in certain areas.

Table 2. Peer review of the article “Unveiling the “common soil” of cardiovascular disease and cancer”,² generated by ChatGPT with the GPT-o1 model.

Title: The title effectively captures the essence of the article, indicating the interconnectedness between cardiovascular disease (CVD) and cancer. It is clear, engaging, and aligned with the content.

Abstract: The abstract succinctly summarizes the key points of the article. The introduction of the “common soil” hypothesis is compelling, and the emphasis on prevention strategies is well-placed. However, the abstract could be slightly more structured, explicitly highlighting objectives, methods, key findings, and conclusions to enhance clarity.

Introduction: The introduction provides a strong rationale for investigating the link between CVD and cancer. The analogy of trees with intermingled roots effectively conveys the complexity of shared risk factors and mechanisms.

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