



Use of Generative Artificial Intelligence, Including Large Language Models Such as ChatGPT, in Scientific Publications: Policies of *KJR* and Prominent Authorities

Seong Ho Park, Editor-in-Chief

Department of Radiology and Research Institute of Radiology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea

Keywords: Generative; Artificial intelligence; Large language model; ChatGPT; Publication; Writing; Editing; Peer review; Policy

Generative artificial intelligence (AI) refers to algorithms that can be used to create new content, such as text, code, images, videos, and audio. Particularly, with the introduction of generative adversarial networks (GAN) in medical imaging [1,2], generative AI has gained significant attention in the scientific community, leading to numerous publications in the past few years. The *Korean Journal of Radiology (KJR)* has published several articles on this topic [3-5]. However, the landscape of generative AI in scientific research and publication has dramatically shifted with the emergence of generative large language models (LLMs), such as ChatGPT, which are capable of generating text that closely resembles human writing and easily accessible to the public. The use of LLMs is rapidly expanding in scientific publications [6], creating ethical and legal concerns and challenges related to research integrity, plagiarism, copyright infringement, and authorship, not only for authors, but also for peer reviewers and editors [7-9]. Moreover, these concerns and challenges

extend beyond AI-generated text and LLMs to include other AI-generated content used in scientific publications.

Despite these concerns and challenges, generative AI can significantly enhance the reporting of scientific work, if used responsibly. Thus, implementing an outright ban on this technology would be shortsighted [10]. Instead, it is crucial to establish guidelines to promote the responsible and effective use of generative AI in scientific publications [10]. *KJR* has already adopted a policy that explicitly prohibits authorship assignment to LLMs [11]. Herein, we present a more comprehensive journal policy regarding the use of generative AI in scientific publications. Our policy aligns with the policies of several prominent authorities in scientific publishing, as summarized in Table 1 [6,9,12-17]. Notably, *Science Journals* have a stricter stance than others, including *KJR*, banning the use of AI-generated content without explicit permission from the editors [16].

We present the following guidelines for the proper use of generative AI in manuscripts submitted to *KJR*:

1. Authorship assignment to AI is prohibited, as stated in our previous policy editorial [11].
2. Authors who employ generative AI tools are solely responsible for all content produced and submitted. They shall be accountable for any ethical or legal breach such as plagiarism or copyright violation.
3. *KJR* discourages the use of generative AI tools for the primary purpose of creating any types of content for scientific manuscripts except for studies mentioned in point 5 below. However, if such tools are used, the authors must report their use transparently. The report should include specific details, such as the name and version of the AI tool, date of access, name of the manufacturer/creator,

Received: July 10, 2023 **Accepted:** July 10, 2023

Corresponding author: Seong Ho Park, MD, PhD, Department of Radiology and Research Institute of Radiology, Asan Medical Center, University of Ulsan College of Medicine, 88 Olympic-ro 43-gil, Songpa-gu, Seoul 05505, Republic of Korea

• E-mail: parksh.radiology@gmail.com

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Table 1. Comparative summary of policies on the use of generative artificial intelligence by prominent authorities in scientific publication and the *Korean Journal of Radiology*

Name*	Guidelines for AI authorship [†]	Additional guidelines for authors, reviewers, and editors [‡]
Journal		
JAMA and JAMA Network journals [12]	Nonhuman AI, language models, machine learning, or similar technologies do not qualify for authorship. If these models or tools are used to create content or assist with writing or manuscript preparation, authors must take responsibility for the integrity of the content generated by these tools.	<ul style="list-style-type: none"> • The submission and publication of content/images created by AI, language models, machine learning, or similar technologies is discouraged, unless part of formal research design or methods, and is not permitted without clear description of the content that was created and the name of the model or tool, version and extension numbers, and manufacturer. Authors must take responsibility for the integrity of the content generated by these models and tools. • Authors should report the use of AI, language models, machine learning, or similar technologies to create content or assist with writing or editing of manuscripts in the Acknowledgment section or the Methods section if this is part of formal research design or methods. This should include a description of the content that was created or edited and the name of the language model or tool, version and extension numbers, and manufacturer. (Note: this does not include basic tools for checking grammar, spelling, references, etc.)
<i>Journal of Clinical Oncology (JCO)</i> [13]	JCO does not accept manuscripts with nonhuman authors. LLMs and AI tools cannot be listed as an author under any circumstances.	<ul style="list-style-type: none"> • Authors must be aware of the rapidly evolving capabilities and deficiencies of these tools. Authors remain responsible for the accuracy of all content submitted and are liable for any breach of publication ethics. • JCO generally discourages the use of LLMs and AI tools to generate written content in submissions. LLMs and AI tools used to assist in writing Original Reports or Clinical Trial Updates must be noted in the Acknowledgments. If LLMs or AI tools are used in the research itself (eg, data analysis), it must be disclosed in the Methods section. In either place, the authors must note the LLM or AI tool used, the version number, the date accessed, and the manufacturer/creator name along with a description of how and for which parts of the submission the tools were used. AI tools used to assist with grammar, spelling, formatting, and reference clean up do not need to be disclosed. • JCO forbids the use of LLMs or AI tools in the preparation of submissions primarily advancing the authors opinion and perspective. • Reviewers may not use LLMs or AI tools when reviewing work submitted to JCO for peer review.
<i>Korean Journal of Radiology (KJR)</i> [†] [14,15]	Authorship assignment to AI is prohibited.	<ul style="list-style-type: none"> • Authors who employ generative AI tools are solely responsible for all content produced and submitted. • KJR discourages the use of generative AI tools for the primary purpose of creating any types of content for scientific manuscripts. If such tools are used, the authors must report their use transparently, including specific details and a comprehensive explanation of the use in the study conduct and manuscript writing. • The use of LLMs or other AI tools to enhance the linguistic quality of a submission is considered acceptable and does not require specific disclosure. • When generative AI itself is the focus of a study, the use of AI should be explicitly detailed in the Materials and Methods section. • Reviewers are forbidden from using LLMs for the primary purpose of generating review comments.
<i>Nature</i> and Springer Nature journals [14,15]	LLMs, such as ChatGPT, do not currently satisfy our authorship criteria.	Use of an LLM should be properly documented in the Methods section (and if a Methods section is not available, in a suitable alternative part) of the manuscript.
<i>Science</i> journals [16]	An AI program cannot be an author of a <i>Science</i> journal paper.	Text generated from AI, machine learning, or similar algorithmic tools cannot be used in papers published in <i>Science</i> journals, nor can the accompanying figures, images, or graphics be the products of such tools, without explicit permission from the editors.

Table 1. Comparative summary of policies on the use of generative artificial intelligence by prominent authorities in scientific publication and the *Korean Journal of Radiology* (continued)

Name*	Guidelines for AI authorship [†]	Additional guidelines for authors, reviewers, and editors [‡]
Organization		
COPE [6]	COPE joins organisations, such as WAME and the JAMA Network among others, to state that AI tools cannot be listed as an author of a paper.	Authors who use AI tools in the writing of a manuscript, production of images or graphical elements of the paper, or in the collection and analysis of data, must be transparent in disclosing in the Materials and Methods (or similar section) of the paper how the AI tool was used and which tool was used. Authors are fully responsible for the content of their manuscript, even those parts produced by an AI tool, and are thus liable for any breach of publication ethics.
ICMJE [17]	Chatbots (such as ChatGPT) should not be listed as authors because they cannot be responsible for the accuracy, integrity, and originality of the work, and these responsibilities are required for authorship. Authors should not list AI and AI-assisted technologies as an author or co-author, nor cite AI as an author.	<ul style="list-style-type: none"> • At submission, the journal should require authors to disclose whether they used AI-assisted technologies (such as LLMs, chatbots, or image creators) in the production of submitted work. • Authors who use such technology should describe, in both the cover letter and the submitted work, how they used it. • Humans are responsible for any submitted material that included the use of AI-assisted technologies. • Authors should carefully review and edit the result because AI can generate authoritative-sounding output that can be incorrect, incomplete, or biased. • Authors should be able to assert that there is no plagiarism in their paper, including in text and images produced by the AI. • Humans must ensure there is appropriate attribution of all quoted material, including full citations.
WAME [9]	Chatbots cannot be authors.	<ul style="list-style-type: none"> • Authors should be transparent when chatbots are used and provide information about how they were used. • Authors are responsible for material provided by a chatbot in their paper (including the accuracy of what is presented and the absence of plagiarism) and for appropriate attribution of all sources (including original sources for material generated by the chatbot). • Editors and peer reviewers should specify, to authors and each other, any use of chatbots in the evaluation of the manuscript and generation of reviews and correspondence. If they use chatbots in their communications with authors and each other, they should explain how they were used. • Editors need appropriate tools to help them detect content generated or altered by AI. Such tools should be made available to editors regardless of ability to pay for them, for the good of science and the public, and to help ensure the integrity of healthcare information and reducing the risk of adverse health outcomes.

*Listed in alphabetical order, [†]Direct quotes from the statements of respective authorities, [‡]Summary of the current policy statements. Please refer to the main text for further details.

AI = artificial intelligence, LLM = large language model, COPE = Committee on Publication Ethics, WAME = World Association of Medical Editors, ICMJE = International Committee of Medical Journal Editors

and a comprehensive explanation of the use in the study conduct and manuscript writing. Authors may provide this information in a relevant section of the manuscript (e.g., figure legends for AI-generated figures) or collectively in the Acknowledgments section.

4. The use of LLMs or other AI tools to enhance the linguistic quality of a submission is considered acceptable. This includes improving grammatical accuracy, rectifying

typographical errors, enhancing formatting, ensuring clarity, etc. Such applications can be particularly beneficial for non-native English speakers and do not require specific disclosure.

5. When generative AI itself is the focus of a study, for example, research employing GAN in medical image analysis or investigating the use of LLMs for medical inquiries [3,5,18,19], the use of AI should be explicitly detailed in

the Materials and Methods section.

6. Reviewers are forbidden from using LLMs for the primary purpose of generating review comments. The review process is valued for its human expert perspective, and substitution of this perspective with AI-generated inputs is not permitted. However, reviewers may use LLMs or other AI tools to enhance the linguistic quality of their review comments (improve grammatical accuracy, rectify typographical errors, enhance formatting, ensure clarity, avoid demeaning or condescending tones, etc).

KJR acknowledges that authors and reviewers may find generative AI tools, particularly LLMs, useful for scientific writing and review processes. However, generative AI tools should be used carefully and responsibly. We believe that these guidelines will promote the proper use of generative AI and facilitate the sharing of valuable scientific information through publications while avoiding scientific misconduct and breach of publication ethics.

Conflicts of Interest

The author has no potential conflicts of interest to disclose.

ORCID ID

Seong Ho Park

<https://orcid.org/0000-0002-1257-8315>

Funding Statement

None

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