Editorial
Journal of Rafsanjan University of Medical Sciences
Vol. 25, May 2026, pp. 101–102

Utilizing Generative Artificial Intelligence in Research

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In their review article, Mohamed Khalifa and Mona Albadawy have analyzed and synthesized papers focusing on the use of generative artificial intelligence (AI) in research and scientific writing. By searching three databases—PubMed, Embase, and Google Scholar—from 2019 onwards and using the keywords "Artificial Intelligence," "Academic Writing," and "Research," they identified twenty-four English-language articles in this field. They thoroughly examined these articles and, based on their findings, identified six areas where generative AI can be effective in research and scientific writing (1).

The first area is dedicated to idea development and research design, including idea generation (using brainstorming, identifying the gaps in published studies, and hypothesis generation), as well as research planning by assisting in the study design.

The second area focuses on concept development and structure generation, where generative AI acts as a writing assistant, helping not only to expand the written text but also to structure it. In this section, generative AI can assist in creating diagrams, tables, posters, and even PowerPoint presentations.

The third area addresses literature review and the analysis and synthesis of sources. In this section, generative AI helps not only to accelerate the review of literature and extraction of findings but also enables the analysis and synthesis of the obtained findings in the form of summarized tables.

The fourth area is devoted to data management and analysis. At this stage, generative AI helps with data analysis, description, and visualization. Furthermore, data management, such as the generation and curation of datasets, can be performed with the help of generative AI.

The fifth area is dedicated to editing, review, and AI support in article publication. In this section, AI can assist in editing articles, preparing abstracts, reviewing manuscripts, and helping to draft responses to reviewers and cover letters to editors.

The sixth area focuses on communication, disseminating results on social media, and ethical issues. In this section, generative AI can help prepare study results for dissemination on various social media platforms. Tasks such as translating articles into other languages and using chatbots are also within the capabilities of generative AI. Furthermore, generative AI can address certain ethical issues, such as identifying the level of plagiarism or the extent to which the conducted research complies with ethical considerations.

At the end of their article, Khalifa and Albadawy state that researchers must receive adequate training before using generative AI to avoid errors. We have previously pointed to some of these errors, such as the use of non-existent sources or reliance on Western-centric texts (2). Furthermore, we consider it essential to mention that using AI for manuscript editing—while disclosing the type and version of the generative AI used—can be very helpful. However, the use of generative AI in writing an article is not recommended, as generative AI cannot fulfill the role of an author (3).

Moreover, the use of generative AI in highly sensitive areas, such as idea development and research design—especially for students—cannot be easily recommended. This is because idea development and research design are better carried out

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[DOI: 10.66224/jrums.25.1.1]

by experienced researchers, or under their supervision, through critical and extensive reviews of existing literature. Finally, the use of generative AI in peer review remains shrouded in uncertainty. As we mentioned in the editorial of the previous issue of this journal, the Global Burden of Disease study group has requested that its extensive network of collaborators refrain from using generative AI in the critical review of pre-publication manuscripts (4).

Citation: Rezaeian M. Utilizing Generative Artificial Intelligence in Research. *J Rafsanjan Univ Med Sci* 2026 Apr; 25 (1): 1-2. doi: 10.66224/jrums.25.1.1.

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