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**EDITORIAL**

# Artificial intelligence and scientific publishing: challenges, potentialities, and ethical responsibilities

The challenges of scientific publishing today have become increasingly complex, reflecting a scenario marked by rapid technological transformations, changes in reader behavior, and new regulatory demands. In this context, editorial management of scientific journals must continuously reinvent itself, balancing quality, agility, and ethical responsibility. Open Science, as an internationally consolidated movement, redefines editorial practices by demanding transparency in peer review processes, the availability of data, and the promotion of broad and democratic access to knowledge[1-2].

Thus, it is necessary to rethink publication models. Traditionally organized into periodic issues, many journals have begun to adopt continuous publication flow, a modality that ensures greater agility in disseminating scientific knowledge. This change prevents approved articles from waiting long periods before publication, thereby responding more promptly to the needs of the academic community and society. The Revista Família, Ciclos de Vida e Saúde no Contexto Social (REFACS), attentive to this movement, has implement in 2025 the process of continuous publication flow, aligning itself with the most recent editorial best practices and reaffirming its commitment to innovation and social relevance.

In this scenario, the rise of Artificial Intelligence (AI) brings both direct and indirect impacts to scientific publishing. On one hand, there are tools capable of supporting plagiarism detection, assisting reviewers with textual similarity analyses, and even suggesting improvements in style and clarity in manuscripts. On the other hand, ethical debates surrounding the responsible use of these technologies have intensified, particularly concerning authorship, originality, and the reliability of academic production[3]. It is the responsibility of editors and scientific communities to establish clear guidelines that promote the ethical use of AI, in order to leverage technological advances without compromising scientific integrity[4].

Initially, the use of AI in manuscript preparation was met with distrust by scientific editors. Many journals sought to implement tools designed to identify texts produced with the aid of AI, concerned about possible risks to the originality and credibility of science. However, several journals have recently begun to accept the use of these technologies, provided that authors transparently disclose how AI tools were employed in the writing process. Such disclosure should preferably appear in the Methods section or, when pertinent, be

communicated through a letter to the editor, in accordance with best practices for academic integrity[5].

In peer review, AI is beginning to be explored as a support tool, assisting in the initial screening of manuscripts, checking for similarities, and even suggesting areas for improvement. However, there are limitations to this resource, particularly when compared to the critical analysis provided by subject matter experts. Peer review, in addition to being technical, is also an interpretative and evaluative activity, requiring academic sensitivity and deep knowledge of the specific field of study. Therefore, while AI may serve as a valuable support, the qualified judgment of human reviewers remains irreplaceable to ensure the quality, relevance, and impact of scientific production[6].

Beyond its direct effects on scientific publishing, AI has expanded its presence across multiple fields of knowledge and social practice, demonstrating potential to transform processes, optimize resources, and support decision-making. In the fields of health, education, and public administration, there is growing interest in exploring these tools as strategies for innovation and efficiency, even as they bring ethical, technical, and regulatory challenges.

AI has become increasingly prominent in healthcare, with applications ranging from diagnostic support to the management of highly complex services. In hospital oncology, reviews highlight the use of machine learning algorithms, decision-support systems, and mathematical modeling to optimize care pathways. Nevertheless, most of the available evidence originates from developed countries, revealing a gap in studies focusing on Brazil's Unified Health System (*Sistema Único de Saúde* - SUS)[7]. In critical contexts, such as intensive care units, AI has shown an impact on reducing clinical errors, improving diagnostic accuracy, personalizing therapies, and enhancing resource allocation - contributing to safer and more efficient care[8]. These advances reinforce the potential of technology to strengthen public policies and expand the capacity to respond to healthcare needs.

Despite its potential, the incorporation of AI in healthcare requires attention to ethical, social, and environmental risks. Among the challenges are algorithmic biases, which may compromise equity when information systems are trained on underrepresentative datasets, thereby amplifying existing disparities among population groups. In addition, issues related to privacy, information security, and model transparency must be considered to ensure that automated decisions maintain trust in care delivery.

Another emerging concern relates to the environmental impact of large-scale models, which demand high energy consumption and disproportionately affect countries with fewer resources, thereby deepening existing inequalities. It is therefore essential to develop solutions

grounded in fundamental bioethical principles - beneficence, justice, and autonomy - aligned with public policies, adequate regulation, and applied research within the Brazilian context, ensuring an equitable and sustainable integration of AI in healthcare services[9].

In public administration, one of the main challenges lies in safeguarding the public interest amid technological innovations. Institutions must strive to balance the incorporation of AI solutions with the proper management of inherent risks. Digital transformation, however, presents itself as an inevitable process, since AI offers significant opportunities to optimize the provision of public services across multiple sectors[10].

Conversely, barriers such as the need for investment in information technology infrastructure and the training and continuous development of public servants may slow the adoption of AI systems. Another relevant aspect concerns compliance with the General Data Protection Law (*Lei Geral de Proteção de Dados Pessoais* - LGPD), which imposes strict requirements for data processing and the protection of citizens' privacy[11].

In higher education, the adoption of AI systems has enhanced innovative pedagogical practices, including personalized learning, the use of generative tutors, near real-time formative feedback, and resources that foster accessibility and inclusion. Learning analytics platforms enable the early identification of learning difficulties, the guidance of adaptive learning pathways, and the optimization of teaching time through the automation of repetitive tasks, large-scale pedagogical feedback, and data-driven management.

AI-based research and writing tools can assist in bibliographic organization and linguistic revision. However, these benefits depend on qualified pedagogical mediation and the critical literacy of students and educators to evaluate evidence, recognize biases, and avoid excessive dependence on automated responses[12].

For the responsible use of AI in universities, clear institutional governance is essential: transparency and authorship guidelines, evaluation criteria that preserve academic integrity, continuous education for faculty and students in digital and ethical literacy, as well as data security and privacy tools[13].

The implementation of such policies must also promote equitable access to technologies, avoiding the deepening of inequalities - especially in a country like Brazil, where four in ten educated citizens face difficulties performing basic online tasks, as shown by the Functional Literacy Indicator (*Indicador de Alfabetismo Funcional* - INAF), which in 2024 began to measure digital performance as well. Thus, in alignment with the principles of Open Science, explicit documentation of AI use in learning and research processes, as well as responsible reproducibility and data sharing, becomes essential[14]. As in scientific publishing, the key lies in

integrating AI as a supporting instrument, without replacing academic judgment or intellectual autonomy.

The integration of AI into science, public administration, healthcare, and higher education requires balance between innovation and responsibility. Technologies must be understood as instruments of support, never as substitutes for human judgment, scientific rigor, and intellectual autonomy. In scientific publishing and other strategic areas alike, the future will depend on the collective capacity to articulate governance, ethics, and innovation - ensuring that AI is applied for the benefit of society, with equity, transparency, and a steadfast commitment to the public interest.

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Good reading!

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