



## Ethics and integrity in scientific publishing

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Currently, science is one of the most important pillars for social progress and human development. This is why the recent significant increase in retractions of scientific articles, especially in the health area seems to be a concern, as it casts a shadow over the credibility of science, affecting clinical decisions and public policies, as well as damaging people's trust in scientific discoveries. These retractions are mostly the result of misconduct, i.e. the intentional violation of the principles of honesty and integrity in the research. Basically, misconduct has been represented by plagiarism, fabrication or falsification of data, as pointed

out by recent systematic reviews.<sup>1,2</sup> PubMed's recent record on 02/28/2025 shows 25,994 retractions, almost half of which, 11,857, were published in the last five years. This significant increase in the publication of retractions in recent years has also been described by the "Retraction Watch Database" platform,<sup>3</sup> which monitors and reports retractions of scientific articles in all areas of knowledge.

The increase in retractions is not only a consequence of the misconduct of some researchers, but also reflects structural flaws in the scientific system. The pressure for productivity, competition for funding, the exaggerated economic interest of the pharmaceutical industry, the explosion of predatory journals, which are scientific journals that exploit the open access model to make a profit, as well as the excessive value placed on metrics, create an environment where positive and unpublished results are prioritized to the detriment of quality

and ethics. Misconduct may seem like a quick fix to achieve goals, but its consequences are long-lasting. Retractions affect the reputation of authors and institutions, generate moral damage, financial costs and delay scientific progress. More concernedly, these retractions have compromised the trust of society in science, especially at a time when disinformation movements are already challenging the role of science as a reliable source of knowledge.<sup>4</sup>

Science has the greatest relevance and social contribution for the benefit of mankind. And scientific publication in the health area is even more important, as it is part of the construction of new knowledge for public health and clinical decision-making, as well as having significant direct implications in everyone's lives. The publication of incorrect or fraudulent information can lead to ineffective treatments, delays in the development of therapies and irreparable damage to patients' health. For this reason, it is essential that all scientific dissemination should be honest and upright, because scientific knowledge in this area is not just an ethical issue, but a social responsibility that involves authors as well as editors, reviewers, research funding institutions and journal maintainers.

Journals play an important role in preventing and tackling misconduct. Requirements for ethics committee approval, informed consent of the participants, declaration of potential financial or personal conflicts of interest, prior registration of research protocols, attribution of



authorship, transparency and detailed description of the methodology, availability of raw and supplementary data, rigorous peer review processes, use of technological tools to detect plagiarism and data manipulation are fundamental measures.<sup>5</sup> In addition, editors must be prepared to act decisively when suspicions of misconduct arise, ensuring impartial investigations and adopting retractions when necessary. Articles that have already been published and in which misconduct has been identified remain indexed in the database as retracted and should no longer be cited. The retraction must document the reason, through communication from the author or editor or other authorized agent, and published in the same journal. Errors or flaws, regardless of their nature or origin, provided they do not constitute misconduct, should be corrected by means of an erratum.<sup>5</sup>

Fraud in scientific publications can manifest itself in various ways, the most common being falsification of data (papermills), plagiarism and self-plagiarism and fragmented publication of the same set of data (salamipublication), with the aim of artificially increasing the number of articles published.<sup>6</sup>

Papermills are a form of industrial fraud that is widespread in the academic sector. These are unofficial, profit-driven and potentially illegal organizations that produce and market fabricated or manipulated manuscripts to simulate legitimate research.<sup>7</sup>

Plagiarism involves the use of someone else's ideas, processes, results or words without proper credit being given. Self-plagiarism occurs when authors reuse their own previously disseminated content and present it as new, without informing the reader of its previous appearance.<sup>8</sup>

"Salamipublication", or segmented publication, is characterized by the undue fragmentation of a study, resulting in multiple publications that share similar hypotheses, methodology or results, without necessarily presenting textual overlap. This type of practice cannot be objectively identified by similarity detection software and thus represents a significant threat to the ethics of scientific publication.<sup>9</sup>

Editors face limited resources to identify misconduct on the part of authors. The detection of fraudulent activities in manuscripts, such as the use of "papermills", is based on the analysis of signs of fraud, such as suspicious citations and inadequate linguistic construction. For the identification of plagiarism and self-plagiarism, specialized software is currently available and has the ability to detect such practices effectively. Detecting salami publications can be difficult due to the lack of specific software.<sup>10</sup>

Nevertheless, the prevention of misconduct must begin even before articles are submitted. Although journals are the last barrier against the publication of

fraudulent articles, the fight against misconduct needs to start in academic institutions. Universities and research centers should include training in scientific ethics in graduate curricula and promote a culture of integrity that values quality over quantity of publications. In addition, ethics committees need to play a more active role, not only approving research protocols, but also monitoring compliance with ethical guidelines throughout the study process.<sup>11</sup>

Combating misconduct is not only an ethical obligation, but also a defense of the very future of science, which must be trustworthy, i.e. transparent, rigorous and, above all, ethical. The proliferation of articles published on the internet, without proper peer review and the approval of an Editorial Board, has allowed inappropriate practices to spread. This scenario requires readers to adopt a critical and attentive attitude when consuming such content, in order to avoid the influence of scientifically unscrupulous individuals.

## Authors' contribution

The authors conceived the article and declare no conflict of interest.

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