

Editor's Page

Ethical Considerations in the Publication of Scientific Articles

Consideraciones éticas de la publicación de artículos científicos

Pablo Avanzas,^{a,*} Antoni Bayes-Genis,^a Leopoldo Pérez de Isla,^a Juan Sanchis,^a and Magda Heras^b

^a Associate Editor, *Revista Española de Cardiología*

^b Editor in Chief, *Revista Española de Cardiología*

Article history:

Available online 6 April 2011

At the origins of science, the only motivation in scientific research was simple curiosity, the desire to know more about something specific. Nowadays, the relationship between science and society has changed. Current research requires material and human resources that are very costly from an economic standpoint, and therefore depends on financing from public administration or private companies with very specific interests. In this context, scientists must compete for the resources to conduct research and publish the results as soon as possible to further their scientific reputation in the investigated subject matter, which is the only way to secure funding sources for future research. This pressure to publish has led some authors to fall into the trap of lowering the ethical quality of their research, which in some cases results in scientific fraud. In this respect, we must remember that the publication process is based on credibility, truth, authenticity, and scientific honesty.¹

To ensure transparency in the publication of articles and fight against scientific fraud, the editors of various journals meet regularly and implement initiatives to achieve these purposes, such as the use of specific software programs to detect plagiarism² or disclosure of conflict of interest by authors, reviewers and editors. The editors of the HEART group journals, of which *Revista Española de Cardiología* forms part, have designed and introduced a document with some ethics guidelines regarding the publication of the findings of scientific research.³ With initiatives like this, the editors of scientific journals seek to standardize the criteria to identify cases of scientific fraud and to be pro-active.

The most common ethical issues that the editors of *Revista Española de Cardiología* have found in recent years are duplicate publications⁴ (especially the so-called “hidden” or “covert” publications, which are carried out without the knowledge of the journals’ editors and without cross-referencing the original document) and partial publications or *salami slicing*, in which a significant study is split into smaller sections and then published as separate articles, usually in different journals.

The new editorial board of *Revista Española de Cardiología* wants to convey to our readers our unequivocal commitment to the ethics guidelines developed by the HEART group.³ In the following paragraphs, we deal with some ethical issues raised in that document, such as integrity in research, criteria for authorship of scientific articles, and conflicts of interest, and, lastly, we provide a

list of ethical requirements for articles to be submitted for review for publication in *Revista Española de Cardiología*.

INTEGRITY IN RESEARCH

According to the National Research Council of the National Academies,⁵ integrity in research can be defined as a series of good practices, which include:

- Intellectual honesty in proposing, performing, and reporting research.
- Accuracy in representing contributions to research proposals and reports.
- Fairness in peer review.
- Collegiality in scientific interactions, including communications and sharing of resources.
- Transparency in conflicts of interest or potential conflicts of interest.
- Protection of human subjects in the conduct of research.
- Humane care of animals in the conduct of research.
- Adherence to the mutual responsibilities between investigators and their research teams.

Most authors and institutions do not address the topic of integrity in research because they have no doubt that the scientific community follows good practice guidelines. However, the pressure to publish may lead to not following appropriate quality standards and in some cases results in so-called “FFP” literature: fabrication, falsification or plagiarism in proposing, conducting, or describing a study, as well as in the publication of the findings.⁶

- Fabrication is inventing data or findings and saving or publishing them.
- Falsification is manipulating research material, equipment, or the various processes involved, or changing or omitting data or findings, so that the findings of the investigation are not representative of the research conducted.
- Plagiarism is using ideas, processes, findings, or words from another person without making due reference to that person.

A clear example that illustrates lack of honesty and scientific misconduct in research is the comment published by Martinson et al. in *Nature*.⁷ These authors conducted a survey of 3247 scientists who had published an article within 3 years prior to the survey, in which they were asked about ethical behavior in their

* Corresponding author: *Revista Española de Cardiología*, Sociedad Española de Cardiología, Nuestra Señora de Guadalupe 5-7, 28028 Madrid, Spain.

E-mail address: rec@revvespcardiol.org (P. Avanzas).

research. Of those surveyed, 33% admitted having participated in at least one of the 10 ethically questionable behaviors within the previous 3 years. A meta-analysis⁸ of 21 surveys regarding scientific misconduct concluded that 34% of those surveyed admitted carrying out questionable practices from an ethical standpoint and 2% admitted falsifying data.

The consequences of scientific misconduct extend beyond those that fall on the Principal Investigator who bears the guilt. If the misconduct is not detected and fraudulent research findings are published, the scientific literature will contain erroneous information, which makes other scientists waste their time and resources (which are limited and often come from the taxpayer) trying to replicate the published findings. The findings published with fabricated or falsified data may adversely influence routine clinical practice or health planning policies. The researcher who is convicted may lose the ability to work in his or her field and the opportunity of obtaining funding for future research. Furthermore, the reputation of the other members of the laboratory is tarnished as a result.

AUTHORSHIP OF A SCIENTIFIC ARTICLE

Authorship of a scientific article is one of the most important merits in science, but defining who should be an author of an article varies considerably by discipline and between scientists.⁹ The International Committee of Medical Journal Editors (ICMJE) has established and periodically reviews criteria for authorship of a scientific article,¹⁰ based on considering the person who has made substantial intellectual contributions to the investigation to be the author. Authorship credit should be based on:

1. Substantial contributions to study conception and design, acquisition of data, or analysis and interpretation of data.
2. Drafting the article or revising it critically for important intellectual content.
3. Final approval of the version to be published.

According to the ICMJE, the authors should meet all of the above criteria.

Ghost Writers

One growing concern in our environment in terms of authorship of scientific articles is the so-called ghost writing. Some pharmaceutical companies use the scientific literature as a marketing tool. They hire staff who specialize in writing medical articles and then try to get these articles signed by prestigious investigators who usually have not made any substantial contribution whatsoever to the article (guest authors). Moreover, they do not declare any conflicts of interest that could occur with the financial compensation they receive from the companies. People who contribute substantially to the manuscript but do not appear among the authors are known as ghost writers. Initially, it was thought to be a marginal problem, involving a ridiculously small number of articles. However, the emergence of the first statistics on this practice demonstrates that it currently represents a major problem. A survey published in 2007¹¹ compared the authors of 44 research protocols promoted by the pharmaceutical industry with authors of published articles with the results of such research and found evidence of ghostwriting in 33 studies (75%). These practices are ethically questionable because they create problems of credibility and copyright. The credibility issues arise because in many of these articles one cannot identify the persons responsible for a particular aspect of the investigation or

its publication.¹² For example, in many of the articles analyzed by Gøtzsche et al.,¹¹ it was impossible to identify anyone who conducted the data analysis. If the person responsible for this analysis remains anonymous and does not appear among the authors, it would be very difficult for the reader to trust the findings and the conclusions of the research. These articles have a serious problem with authorship as they are usually written by staff hired by a pharmaceutical company and not identified as an author. Hence, this practice violates a basic principle that exists among authors and readers: the names of the authors that appear in the article are the true authors and furthermore, these names indicate where the articles come from.¹²

CONFLICTS OF INTEREST

Undoubtedly, one of the most controversial aspects to be taken into account in any scientific article is the existence of potential conflicts of interest that the authors of the manuscript may have with the message or the conclusions that are published. This is an issue in which there is no precise "ethical borderline" and where a balance needs to be found between scientific stringency, free from manipulation for personal or business purposes, and the opportunity for industry and institutions to have the ability to develop new products, equipment, and technologies and make their findings visible in the scientific community. That is, the reader of an article should be able to precisely understand the relationship that exists between the author of a study, the subsequent findings, and the company or entity that will directly or indirectly be affected by them.

At present, most scientific journals require the statement of potential conflicts of interest. It is important to remember at this point that this statement is mandatory and the reporting responsibility does not fall on the editorial team, but rather the author of the study. Furthermore, authors should consider the statement of conflict of interest as genuine protection for their scientific study: once the statement has been made, it is less likely that anyone can question the validity of the study, since stating a potential conflict of interest does not imply making a confession of "guilt" or manipulation of the findings.

One fundamental question that every author asks at the time the statement of conflict of interest is made is: "How far do I have to go in making my statement?" On the one hand, one must respect the right of the reader to be informed and, on the other hand, the author's right to privacy. At present, many scientific journals require a form for the statement of conflicts of interest to be filled out. The problem arises when an author must fill out a different type of form for each journal, which clearly brings to light the blurred boundaries of this declaration. Meanwhile, as a result of the differences in the laws governing each country, there is great difficulty in universally adopting a single conflict of interest document because activities that are perfectly legitimate in some countries may pose a conflict of interest in others (a clear example is funding for attendance at medical conferences). Recently, in an attempt to standardize criteria, the ICMJE presented a model for the statement of potential conflicts of interest that was adopted after extensive discussions and some changes by the editors of other journals such as the HEART group.¹³ In this document, authors are asked to present 4 types of information: their relationship with commercial institutions that lent support to the submitted study, their relationship with commercial institutions that might have an interest in the area involved in the study, any similar relationship of their spouse and dependents under 18 years of age, and other non-financial relationships that may be relevant. As can be seen, although this document tries to identify what must be stated, most of the information is left to the discretion of the author.

What happens if an author does not make a statement? It should be clarified that the responsibility for making or not making a statement of potential conflict of interest lies solely and expressly with the author. The editorial team should ask for the statement and, as a rule, must rely on the information submitted by each author. They should never attempt to play a role of "policing"; this is not their job. As a result, the first and last person who is responsible for the statement is the author to whom the editors grant credibility.

In short, we can say that the author is solely responsible for his or her statement of potential conflict of interest and he or she should understand this as a means of defending the credibility of the study and his or her own professional integrity.

Finally, we would like to point out that authors are not the only ones required to make a statement of conflict of interest. Reviewers and journal editors make the same declaration. The editors of *Revista Española de Cardiología* made a statement of conflicts of interest which is available to the public and is posted on the journal's website.

ETHICAL STANDARDS FOR PUBLICATION

Scientific journals help researchers communicate new information which they rely on to make progress. Therefore, we cannot allow the system to be put into jeopardy because of the occurrence of misconduct. Publishers must ensure that the credibility achieved so far by *Revista Española de Cardiología* is not altered by this type of conduct that violates academic ethics and creates an unjust situation for other authors.¹

To give special relevance to the ethical aspect of publishing scientific articles, the editors of *Revista Española de Cardiología* are modifying the guidelines for article submission. Each article submitted for consideration must meet the following requirements:

1. The corresponding author has the consent of all the authors for the submission and publication of the article that was submitted for review.
2. All the authors have substantially contributed to the article, without omitting any person, and the contribution of each author is specified.
3. The article is an original document that has not been previously published and has not been simultaneously submitted for review to another journal (presentations to scientific conferences are excluded from this definition).

4. The article does not contain any unpublished material copied from other authors without their consent.
5. All data included in the article that come from previous studies have been referenced, regardless of whether or not they are from the same authors. If an article submitted for review is a sub-analysis of previously published project results, the publication must always be cited.
6. The article shall be kept on file in the *Revista Española de Cardiología* and will be considered a valid publication, provided that it meets every one of the abovementioned criteria.
7. If any of the abovementioned criteria is not met, the authors must notify *Revista Española de Cardiología* immediately so that it can remove the publication.
8. *Revista Española de Cardiología* reserves the right to return to the author any article that does not meet the abovementioned guidelines.

REFERENCES

1. Alfonso F, Bermejo J, Segovia J. Nuevas Recomendaciones del Comité Internacional de Editores de Revistas Médicas. Cambiando el énfasis: de la uniformidad de los requisitos técnicos a los aspectos bioéticos. *Rev Esp Cardiol*. 2004;57:592-3.
2. Kleinert S, on behalf of the editors of all *Lancet* journals. Checking for plagiarism, duplicate publication, and text recycling. *Lancet*. 2011;377:281-2.
3. Declaración de principios éticos del grupo HEART. *Rev Esp Cardiol*. 2008;61:651-2.
4. Alfonso F, Bermejo J, Segovia J. Publicación duplicada o redundante: ¿podemos permitirnoslo? *Rev Esp Cardiol*. 2005;58:601-4.
5. National Research Council of the National Academies. Integrity in Scientific Research: creating an environment that promotes responsible conduct. Washington: The National Academies Press; 2002.
6. Horner J, Minifie FD. Research ethics III: publication practices and authorship, conflicts of interest, and research misconduct. *J Speech Lang Hear Res*. 2011;54:S330-45.
7. Martinson BC, Anderson MS, De Vries R. Scientists behaving badly. *Nature*. 2005;435:737-8.
8. Fanelli D. How many scientists fabricate and falsify research? A systematic review and meta-analysis of survey data. *PLoS One*. 2009;4:e5738.
9. Beisiegel U. Research integrity and publication ethics. *Atherosclerosis*. 2010;212:383-5.
10. International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publications. 2009 [cited 2 Feb 2011]. Available at: <http://www.icmje.org>
11. Gøtzsche PC, Hróbjartsson A, Johansen HK, Haahr MT, Altman DG, Chan AW. Ghost authorship in industry-initiated randomised trials. *PLoS Med*. 2007;4:e19.
12. Barbour V. How ghost-writing threatens the credibility of medical knowledge and medical journals. *Haematologica*. 2010;95:1-2.
13. Drazen JM, Van der Weyden MB, Sahni P, Rosenberg J, Marusic A, Laine C, et al. Uniform format for disclosure of competing interests in ICMJE journals. *N Engl J Med*. 2009;361:1896-7.