

Good Scientific Practice

Part IX. Scientific communication – legal and ethical aspects*

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Key words: copyright law, good scientific practice, professional ethics, publishing, scientific fraud, scientific misconduct

“Every single case of fraud and misconduct reduces public confidence, abuses the use of public and charitable funds, and causes insult and frustration to the vast majority of careful, honest workers.”

The Joint Consensus Conference on Misconduct in Biomedical Research, Edinburgh 1999 [1]

The core of the whole scientific enterprise are honesty and integrity, the lack of which may undermine public confidence in science and scientists. That is why research is the subject of both legal and ethical considerations; the same applies to the final stage of research - the scientific publication. Scientific work is highly sensitive to any violation of high ethical standards of science; because of that, science is protected by internationally accepted rules of ethical conduct of science (Good Scientific Practice) [2] and copyright laws [3,4]. These internationally valid benchmarks for quality assurance provide safeguards against scientific dishonesty and fraud.

Because of numerous possibilities of scientific dishonesty in any kind of scientific communications, various legal and ethical principles are of great concern.

Professional ethics

The different phases of the scientific process may be affected by dishonesty. So, the false information on previously performed research may be given in the first of them - named the application phase. In the planning stage, the outright plagiarism, e.g., appropriation of another person's ideas, data, or analysis, may be seen. Fabrication or falsification of data may occur in the production phase as well.

In the reporting phase, which should follow the production phase, i.e. in the publication of research, numerous ethical problems that are beyond outright fraud [5, 6] may arise: distorted presentation or omission of data, failure to mention side effects and distortion of conclusions, misappropriation of authorship [7, 8], simultaneous submission of the same manuscript to two or more journals, failure to cite references of earlier authors, redundant or duplicate publications [9], and failure to disclaim the conflict of interest [10, 11]. Because of their importance for documenting priority and performance, the publications may be the object of many conflicts and controversies.

Every primary research journal requires originality and because of that the editor(s) would refuse publication if he/she were aware of prior publication. Normally, the consent of the editors would be granted only if a publication was in a non-primary journal. Obviously, parts of the paper (tables and illustrations) could be republished in a review article. Republication

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*This article is an extended and updated version of the article presented at the 8th International Inter University Scientific Meeting of Academy of Studenica, 2002, and published in Ann Acad Studenica 2002;5:S6-S8. The permission for publication in J BUON of this updated version was obtained from Prof. Vladimir Baltić, Editor-in-Chief of the Ann Acad Studenica J.

would almost always be permitted in a Collected Reprints volume of a particular institution, in a Selected Papers volume of a particular scientist. In all such instances, however, appropriate permission should be asked for both ethical and legal reasons. These issues are best explained, expanded and revised to address questions of publication ethics in the Uniform Requirements for Manuscripts submitted to Biomedical Journals [4], in the recently revised section on publication ethics. The authors of this important document (International Committee of Medical Journal Editors – ICMJE) encourage investigators to use the revised ICMJE requirements on publication ethics to guide the negotiation of research contracts. These contracts should give the researchers a substantial say in trial design, access to raw data analysis and interpretation, and the right to publish. The revised requirements assure the authors a truly independent role in the study that bears their name. The authors should not enter agreements that interfere with their control over the decision to publish the papers they write [4, 10, 11]. Because the submitted manuscript is the intellectual property of its authors and not of the sponsor, the sponsor does not have sole control of the data and is not authorized to withhold publication. Such arrangements not only erode the fabric of intellectual inquiry that has fostered so much high-quality clinical research, but also make the medical journal party to potential misrepresentation. In this way the published manuscript may not reveal the extent to which the authors were powerless to control the conduct of a study that bears their names [10,12].

The final or the evaluation phase includes potential problems of the scientist about security of his raw data in a form which allows others to test the results. On the other hand, evaluators (reviewers) are obliged to adhere to the principles of professional ethics, i.e. impartiality, independence, confidentiality, respect of allotted time for reviewing, politeness etc. [13-15]. In this phase of the scientific process, the reviewers (and sometimes the editors) may appropriate ideas or data for use in their own research (plagiarism, piracy) [16]. Luckily, it seems that such misbehaviors of reviewers and editors are extremely rare.

Apart from ICMJE, several other associations of medical journal editors have taken very seriously these problems, and issued several statements, recommendations and policies addressed to medical journals [1, 17, 18], in order to promote honesty and integrity of scientific publication. They insist that better ethical standards are ensured by the promotion of good scientific and publication practices as much as in the policing and detection of misconduct.

The unpardonable wrongdoings – outright fraud - are the subject of legal regulations (law), since plagiarism is a lie, and piracy is a theft. As such, they are sanctioned by the penal code (falsification) or by the civil law (plagiarism, piracy) [19, 20].

Legal aspects

Apart from above-mentioned outright fraud (falsification, plagiarism, piracy), existing legal regulations do not cover other forms (so-called grey zone) of possible misconduct in science. The scientific idea or conception alone of how a problem may be searched is not properly protected. What is protected is the written presentation of the idea. At this moment, the legal right(s) of author(s) should be transferred to the publisher(s) for reproducing and selling this written intellectual property. Upon acceptance of the paper, the authors will be asked to transfer the copyright to the publisher. This transfer serves to ensure the widest possible dissemination of information.

Copyright (ownership) is the exclusive right of an author or his heirs to multiply copies of a written or printed composition, or a work of art. In science publishing, the ethical side of the question is even more pronounced, because originality in science has a deeper meaning than it does in other fields. A short story, for example, can be reprinted many times without violating ethical principles. On the contrary, a primary research paper can be published in a primary journal only once. Dual publication can be legal if the appropriate copyright release has been obtained; otherwise, it is universally considered to be a cardinal sin against the ethics of science.

The listing of authors' names (authorship) is of considerable not only ethical, but also legal importance. Every listed author must take intellectual responsibility for the paper and for the validity of the science being reported. Copyright protects the authors of the paper and each person who has collaborated in the work, so each person is a co-owner of the copyright, with equal rights. Copyright is divisible. The owner of the copyright may grant one person a nonexclusive right to reproduce the work and another the right to prepare the derivative works based on the copyright paper.

Transfers of the copyright must be made in written form by the owner. If an author has transferred the complete copyright of his work to a publisher, he also must obtain permission from the publisher for the use of his own material.

The publishing company and authors whose

work is contained in its journals are protected and they must have the legal basis for acquiring copyright. In this way the publisher acts in his own interest and on behalf of all authors to prevent unauthorized potential misuse of a published work. Because of that, most publishers now require that each author contributing to a journal assign copyright to the publisher (a document usually titled "Copyright transfer form"), either at the time the manuscript is submitted or when it is accepted for publication.

All copyright laws, and all rules and regulations pertaining to copyright, hold right for electronic publication also, including material posted on the Internet. Since technology is changing so rapidly and providing so many new ways to publish and distribute data, the field of electronic copyright is also in flux [3].

Conclusion

In such a complex and highly competitive field as contemporary science, temptations to violate high ethical norms of science do occur. Until recently, the evidence about violations of publication ethics has been considered more as anecdotal than comprehensive. Now, there is growing evidence that breaches of ethics are much more common than expected [1,7,21]. However, the scientific community is now aware that ethical issues, which often involve legal and policy issues and sometimes become indistinguishable, are of fundamental importance. All actors in the publication game – authors, reviewers and editors - must be concerned about ethics, having the responsibility to maintain the integrity of scientific publication, without which the public trust in science may be lost. They are also responsible to create an environment that promotes science ethics – and this is what a small group of Serbian scientists tries to do wherever and whenever possible [20,22,23].

Acknowledgements

We are thankful to Mrs. Gordana Todorović for improving the language.

References

1. Available at: www.publicationethics.org.uk/about/.
2. Milošević D, Vučković - Dekić Lj. Good Scientific Practice: ethical codex of science. II. Proposals for safeguarding Good Scientific Practice. *J BUON* 2003; 8: 93-95.
3. Day AR. Ethics, rights, and permissions. In: Day AR (ed): *How to write and publish a scientific paper* (5th edn). Phoenix: Oryx Press, 1998, pp 193-199.
4. International Committee of Medical Journal Editors. Uniform Requirements for Manuscript Submitted to Biomedical Journals. Updated October 2004. Available at: <http://www.icmje.org>
5. Martinson BC, Anderson MS, de Vries R. Scientists behaving badly. *Nature* 2005; 435: 737-738.
6. Marinković M, Vučković-Dekić Lj. Good Scientific Practice. III Scientific misconduct. *J BUON* 2003; 8: 203-207.
7. Wagena E. J. The scandal of unfair behaviour of senior faculty. *J Med Ethics* 2005; 31: 308.
8. Vučković-Dekić Lj. Good Scientific Practice. Part IV. Authorship/Coauthorship. *J BUON* 2003; 8: 309-312.
9. Yank V, Barnes D. Consensus and contention regarding redundant publications in clinical research: cross-sectional survey of editors and authors *J Med Ethics* 2003; 29: 109-114.
10. Davidoff F, DeAngelis DC, Drazen JM et al. Sponsorship, Authorship, and Accountability. *JAMA* 2001; 286: 1232-1234.
11. Vučković-Dekić Lj. Good Scientific Practice. Part VI. Conflict of interest. *J BUON* 2004; 9: 359-362.
12. Vučković-Dekić Lj. Good Scientific Practice. Part VII. Underpublishing / underreporting research. *J BUON* 2005; 10: 43-46.
13. Bogdanović G, Vučković-Dekić Lj. The publication ethics (in Serbian). In: Vučković-Dekić Lj, Milenković P, Šobić V (eds): *Ethics of scientific research in biomedicine*. (2nd edn). KAM-GRAF, Belgrade, 2004, pp 67-80.
14. Vučković-Dekić Lj. Peer review system - professional ethics. *Arch Oncol* 2002; 10: 95-97.
15. Vučković-Dekić Lj. Good Scientific Practice. Part VIII. Being a peer reviewer – you like it, or you hate it? *J BUON* 2005; 10: 319-322.
16. Godlee F. Dealing with editorial misconduct. *Br Med J* 2004; 329: 1301-1302.
17. World Association of Medical Editors (WAME) recommendations on publication ethics policies for medical journals. *Arch Med Res* 2004; 35: 361-367.
18. Federal Policy on Research Misconduct. Available at: http://www.ostp.gov/html/001207_3.html
19. Brydenscholt HH. The legal basis for the Danish Committee on Scientific Dishonesty. *Sci Eng Ethics* 2000; 6: 11-24.
20. Vučković-Dekić Lj, Radulović S, Stanojević-Bakić N et al. Good Scientific Practice - Ethical codex of science (in Serbian). In: Vučković-Dekić Lj, Milenković P (eds): *Ethics of scientific research in biomedicine*. Sprint, Belgrade 2004, pp 177-189.
21. Wadman M. One in three scientists confesses to having sinned. *Nature* 2005; 435: 718-719.
22. Milošević D, Borojević N, Vučković-Dekić Lj. Good Scientific Practice – Paneuropean initiative for safeguarding quality assurance in science and the response of the Serbian scientific community (in Serbian). In: Šobić V, Vučković-Dekić Lj, Nešković-Konstantinović Z (eds): *Novelties in diagnostics and therapy of mammary carcinoma*. Sprint, Belgrade, 2005, pp 227-235.
23. Vučković-Dekić Lj, Milošević D, Borojević N. Safeguarding Good Scientific Practice. Ongoing developments in Serbia. *Total Quality Management & Excellence* 2005; 33: 245-248.