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Ethical dilemmas in scientific publication: pitfalls and solutions for editors

Dilemas éticos na publicação científica: dificuldades e soluções para editores

ABSTRACT

Editors of scientific journals need to be conversant with the mechanisms by which scientific misconduct is amplified by publication practices. This paper provides definitions, ways to document the extent of the problem, and examples of editorial attempts to counter fraud. Fabrication, falsification, duplication, ghost authorship, gift authorship, lack of ethics approval, non-disclosure, 'salami' publication, conflicts of interest, auto-citation, duplicate submission, duplicate publications, and plagiarism are common problems. Editorial misconduct includes failure to observe due process, undue delay in reaching decisions and communicating these to authors, inappropriate review procedures, and confounding a journal's content with its advertising or promotional potential. Editors also can be admonished by their peers for failure to investigate suspected misconduct, failure to retract when indicated, and failure to abide voluntarily by the six main sources of relevant international guidelines on research, its reporting and editorial practice. Editors are in a good position to promulgate reasonable standards of practice, and can start by using consensus guidelines on publication ethics to state explicitly how their journals function. Reviewers, editors, authors and readers all then have a better chance to understand, and abide by, the rules of publishing.

KEYWORDS: Publications, ethics. Authorship. Publication bias. Editorial policies.

RESUMO

Editores de revistas científicas precisam estar atentos aos mecanismos de disseminação de condutas inadequadas no processo de publicação. Este artigo fornece definições, formas de documentar a extensão do problema e exemplos de iniciativas para conter fraudes editorias. Fabricação, falsificação, duplicação, autoria-fantasma, autoria concedida, falta de ética na aprovação de manuscritos, não-divulgação desses fatos, publicação "salami", conflitos de interesse, autocitação, submissão e publicação duplicadas, e plágio são problemas comuns. A conduta editorial inadequada inclui: falha em seguir o processo devido, atraso nas decisões e comunicação com os autores, falhas na revisão, e confundir o conteúdo de um periódico com seu potencial promocional e de propaganda. Os editores podem ser advertidos por seus pares por não investigar comportamento científico suspeito, por não se retratar quando indicado ou não obedecer as seis principais fontes internacionais de orientação em pesquisa, publicação e política editorial. Os editores estão em posição privilegiada para promover práticas adequadas, adotando orientações éticas e claras sobre os procedimentos

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adotados nos periódicos. Assim, revisores, editores, autores e leitores terão condições de compreender e seguir as normas de publicação.

DESCRITORES: Publicações, ética. Autoria. Viés de publicação. Políticas editoriais.

INTRODUCTION

Editors who write about publication ethics without considering the research culture are as far downstream as doctors, in the emergency room, are from seatbelt legislation. As editors, we need to be interested in, and conversant with the reasons for scientific misconduct; and how fraudulent acts are perpetuated and encouraged by publication practices. The objective of this paper was to present definitions, means by which the extent of the problem can be documented, and examples of current attempts to counter fraud.

The year 2005 was a good one for fraud, and most of the top journals had something to contribute. *Science* retracted work on stem cells amidst international publicity,[6] *Cell* took back some research on trypanosomiasis,[9] *British Medical Journal* (BMJ) finally published the whole story of the researcher and the termites that ate his data.[10] Findings on the Indo-Mediterranean diet, long suspected as too good to be true, were exposed as an elaborate hoax, by the *Lancet*,[2] who were also obliged to publish an expression of concern,[3] prior to retracting[4] the entirety of a fabricated cohort study on oral cancer. The editors of the *Canadian Medical Journal* resigned following a dispute with their publisher over editorial freedom.[5] It was a busy year, even for the *Bulletin of the World Health Organization*, a much smaller journal. The Bulletin publishes mostly policy papers – and therefore lacks the irreproducibility check common to most basic science, but even so, there have been the usual amount of authorship disputes, and attempts at duplicate submission. We have also been obliged to refer cases on contractual loopholes that resulted in research being done without ethical committee approval, and investigate the rather grey area of ethical approval for non-governmental organizations doing operational research. However, it was also a good year in terms of making progress on long-standing deficits – an international clinical trials registry was established at World Health Organization (WHO),[15] and the United Kingdom finally appointed a panel on research integrity.[13]

In these adversarial times, what can editors do to build and maintain the reputations of their journals? We review definitions of the most common types of misconduct, and provide pointers to resources for editors' intent on doing their best to run a clean ship. As far as authors are concerned, there are both sins of omission and commission: fabrication, falsification, duplication, ghost authorship, gift authorship, lack of ethics approval, non-disclosure, 'salami' publication, conflicts of interest, auto-citation, duplicate submission, duplicate publications, and plagiarism. There are important incentives to ethical misconduct on the part of all involved and editors too should be held to standards of reasonable practice. However, given the lack of oversight, and the traditional impunity with which editors made decisions, definitions of editorial misconduct are less clear – submission of research to one's own journal for example, ranges from a proscribed activity, to a common occurrence, to the only rationale for the title. Examples of editorial misconduct include failure to observe due process, undue delay in reaching decisions and communicating these to authors, inappropriate review procedures, and confounding a journal's content with its advertising or promotional potential. Editors also can be admonished by their peers for failure to investigate suspected misconduct, failure to retract when indicated, and failure to abide voluntarily by the six main sources of relevant international guidelines on conducting, reporting, and editing research:

- Council of International Organizations for Medical Sciences (CIOMS)[16]
- World Medical Association (WMA)*
- Consolidated Standards of Reporting Trials (CONSORT)[7]
- International Committee of Medical Journal Editors (ICJME)**
- World Association of Medical Editors (WAME)***
- Committee on Publication Ethics (COPE)****

*World Medical Association - WMA. The World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. Available from http://www.wma.net/e/policy/b3.htm [2006 Jul 7]

**International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication. Available from http://www.icmje.org [2006 Jul 7]

***World Association of Medical Editors - WAME. Recommendations on Publication Ethics Policies for Medical Journals. Available from http://www.wame.org/pubethicrecom.htm. [2006 Jul 7]

****Committee on Publication Ethics - COPE. Guidelines on good publication and the Code of Conduct. Available from http://www.publicationethics.org.uk/guidelines [2006 Jul 7]

COMMON PITFALLS: WHO WROTE THIS PAPER, AND HOW MANY TIMES HAS IT BEEN PUBLISHED?

COPE has classified the most common types of ethical problems in scientific publications. The two most frequent were disputes on authorship and duplicate publication.

Authorship

The ICMJE,* also known as the Vancouver group (because of the location of their first meeting) have given three conditions on which authorship credit should be based. These criteria are: 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. All three conditions should be met for assigning authorship.

Although the ICMJE criteria are clear, many authors are unaware of them or prefer to use their own *ad-hoc* criteria for deciding authorship. Editors are therefore often faced with deciding on rightful authorship. Ethical problems regarding authorship of scientific manuscripts can be divided into two main categories: Inclusion of authors who did not contribute substantially to the study (gift authorship) and exclusion of authors who did contribute significantly to the study (ghost authorship).

Gift authorship usually involves inclusion of people hierarchically senior to the author(s) such as their supervisor, team leader, head of department or director of institute. Their names may be included as a recognition of their contribution to the research topic, the provision of funding for the research, granting of laboratory space to carry it out or general advice. Although these contributions can be acknowledged they do not by themselves constitute criteria for authorship. Less charitably, these names may have been included for fear by the authors of retribution if they were left out, to please those in power, or in the belief that the addition of prestigious names may aid in the acceptance of the manuscript for publication. All of these are clearly unethical actions.

Another form of gift authorship occurs between colleagues and collaborators. In this case a name of a colleague is unjustifiably added to the manuscript in the expectation that the favor will be returned. In this way both authors unethically increase the number of their publications.

In contrast, ghost authorship usually involves people hierarchically junior to the author(s) such as postgraduate students, postdoctoral fellows and visiting researchers (often from another country). Here the author hopes to gain greater credit for his own work by not recognizing the contribution of others, who may either have left his team by the time the work is published or be too junior to protest. The authors normally belittle the contributions of others by classifying these as merely the collection of data, the supply of biological specimens, the provision of reagents or not worth acknowledging, when in fact the ghost author may have made a significant contribution to the study.

Another area of confusion surrounds people involved in the preparation of manuscripts. Scientific illustrators, medical writers or technical editors may have made a substantial contribution to the clarity, readability and presentation of the manuscript. Such contributions should be fully acknowledged, but are insufficient grounds on which to grant authorship.

Given the potential pitfalls in attributing authorship and the few resources available to most editors what can one do besides meekly accepting the list of authors supplied with the manuscript? Although editors seldom know all the facts, there are a number of measures we can take. We can require that the exact contribution of each author and their address is clearly stated with every manuscript submitted. Editors can then examine these contributions against the ICMJE criteria and question the inclusion of any author who does not appear to meet them. Editors can send the letter acknowledging receipt (this is obviously much easier via e-mail) of the manuscript to all authors listed, thereby alerting any who have been included without their knowledge. Some journals ask all authors again for their exact contributions just before accepting the manuscript, and check for consistency in the declarations.

Other measures can be taken once a manuscript has been accepted. Editors can post a list of titles and authors of forthcoming accepted manuscripts on the journal's web-site or in the current issue. Ghost, or inadvertent guest, authors can thereby alert an editor of their concerns.

Editors can also work on educating authors in their particular scientific discipline. At relevant scientific meetings or in editorials, one can explain the criteria for authorship and stress the importance of discussing authorship when research is being planned. Edi-

*International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication. Available from http://www.icmje.org [2006 Jul 7]

tors can remind their colleagues that a final decision on authorship and the order in which authors' names appear should be made before the paper is written. This stimulates all authors to participate in the writing and approval of the paper and avoids the inclusion of guest authors once the paper is completed. An editor can also publish the stated contributions of each author to the work together with the final article. Public scrutiny can be a powerful deterrent to unethical behavior.

Overlapping publications

Overlapping publications are another topic which frequently provide ethical issues for the editor to resolve. They can be classified into four categories: duplicate submission, duplicate publication, competing submissions, sibling publications.

The simultaneous submission of manuscripts to more than one journal is considered unethical as there is both a potential for disagreement over the right to publish among the journals and the possibility of unnecessary duplication of peer review and editing. Co-publication is permissible when it is the result of the deliberate synchronization of content, (usually editorial) by editors who are using their respective journals to achieve the broadest possible dissemination of particular content. Most of the editorial guidelines, written by consensus of editorial groups, have been announced in this way.

A duplicate publication is considered redundant when it substantially overlaps with an already published article. Redundant publications are considered unethical for many reasons: they waste the time of peer-reviewers and editors, consume journals' resources and fill pages, increase the work of indexing and abstracting services, distort the academic rewards' system and inflate the scientific literature, all for no benefit other than to the author. Duplicate publications may also infringe on copyright, and contribute to flawed meta-analysis.

The latter reason is probably the most serious problem. The double counting of data from redundant publications can distort the results of meta-analyses and affect the evidence on which decisions are taken. The problem is unfortunately widespread. Von Elm et al[12] screened 141 systematic reviews for evidence of duplicate publication. Fifty-six systematic reviews (40%) reported (either in the published article or by contacting authors) finding duplicate publications. The redundant articles represented 8% (103) of the total articles reviewed and 9% (12,500) of the total number of patients examined. Many among the 103 articles were duplicated several times. Similarly Mojon-Azzi et al[8] reported that in a study of 70 ophthalmologic journals between 1997-2000 at least 32 journals were victim to duplicate publication involving a minimum of 210 authors. The COPE* estimates that 13% of published papers are repetitive publications.

Secondary publication may be acceptable for certain kinds of papers such as guidelines, articles in different languages or in commemorative journal issues. However, certain requirements have to be met, including approval from the editors of both journals, prominent citation of the primary publication, obviously distinct readerships, and accurate reflection of data and interpretations of the primary version. The ICMJE recommends that a footnote on title page of the secondary version should state the primary reference such as "This article is based on a study first reported in the J. …"

Sibling publications are related papers submitted to different journals with no cross citation. They are often the result of a researcher dividing up the results of a study into as many papers as possible with a view to increasing publication counts - also called "salami" publication. This practice is also unethical as it fragments the scientific record and is unhelpful to readers.

Editors can largely prevent this problem by asking authors to provide all related papers, including those in press and under review, when submitting a manuscript. Journals generally expect authors to furnish copies of any papers that overlap by more than 10% with the current submission. Editors can educate their authors that good publication practice is to provide full disclosure, full citation and full discussion of their related work.[11] It is also unacceptable to duplicate someone else's work, by plagiarism - passing off as one's own the ideas or writings of another. Plagarism can take a number of forms from verbatim copying of scientific texts to the copying and pasting of phrases and sentences by lazy or language-challenged authors. Of course there is no problem in using someone else's idea or writing provided this is made clear in the text and the source is cited. A number of online services are available for preventing plagiarism. Some of these are run as a commercial service but there are other sources that an editor can use with creativity to detect cheating. An example is the eTBLAST service of the University of Texas Southwestern Medical Center.** By pasting paragraphs

*Committee on Publication Ethics - COPE. Guidelines on good publication and the Code of Conduct. Available from http://www.publicationethics.org.uk/guidelines [2006 Jul 7]
**http://invention.swmed.edu/etblast/index.shtml

from a suspected text, possible cases of scientific dishonesty can be detected.

Editors can monitor their own journals for overlapping publications by using the 'related article' feature of PubMed. If a duplicate publication is identified the editor of the other journal should be promptly informed. The two papers should be independently reviewed for redundancy. The corresponding author should be invited to refute the accusation and describe the circumstances in which it arose. If redundancy is confirmed the editors should publish a notice of duplicate publication in their journals.

OTHER WAYS EDITORS CAN IMPROVE PUBLICATION PRACTICES

Editors can be severely limited in ability, or inclination, to police publication practices. They are often obliged to juggle conflicting priorities such as: their publishers' interests in lean processes, their authors' desire for ever faster decisions and shorter times to publication, achieving increased press coverage of scientific results and the thankless and invisible task of protecting the integrity of the scientific record.

The COPE* has provided a 10-item checklist for editorial standards and policies. Most of the items are concerned with declared mechanisms (for peer review, appealing editorial decisions, dealing with complaints, pursuing misconduct, separating editorial and commercial decisions on supplements and advertising) rather than the more difficult measure of how things are actually done: managing conflicts of interest, satisfying editors that ethics committee approval has been adequate, mitigating expertise and competitiveness in small fields where the anonymity of peer review is illusory. This checklist is an easy way for journals to see immediately how they and their competitors stand.

Editors can easily record how their journals rank on ratios of advertisements to scientific material - and help to define the limits of excessive advertising. Friedman & Richter[1] established that the middle ground for this ratio is 0.4-0.5; one page of advertisement for every two pages of editorial content. High-circulation general medical journals tend to have higher ratios of advertising to content, while low-circulation specialty journals have lower ratios. This explicit evidence of how much advertising revenue is potentially influencing editorial decisions can be defended by clear separation of editorial and commercial decision-making, and transparent statements of advertising policies.

Academic institutions need to measure the output of their workers, and this can produce unethical practice depending on the measure chosen. Quantitative measures inspire producers to cheat, while qualitative ones provide ample opportunity for the reviewers to do so. An equivalent situation exists with the impact factor, this flawed and easily-manipulated measure of a journal's influence. In its favour, it does provide a perverse incentive to not publishing by decreasing their denominator (the number of citable items), journals can increase their perceived impact for the same numerator (the number of citations). The temptation to manipulate journals' impact factors can be appealing to editors. Recently, COPE held a debate on the depravity or otherwise of deliberately altering the impact factor. One way that this is done is by editors requesting that authors insert references to their own journal as a prerequisite to publication. Those in favour of this practice claimed that the measure of impact is so flawed that editors have a duty to subvert it.

The impact factor may turn out to be a problem that is eventually solved by evolution of the technology that originally created it. Inadvertent authorship is now routinely exposed by electronic manuscript tracking systems that send e-mails unbidden to all authors listed. As online content becomes the default way of accessing scientific publications, Google's automated ranking of web pages may rapidly surpass Institute for Scientific Information - ISI's impact factor, as its algorithms evolve to stay ahead of self-citation and other deliberate manipulations.

Recommendation that editors follow-up on suspicions of misconduct in papers that are rejected are unlikely to be tenable. Journals with over 80% routine rejection rates are too occupied in trying to deal with the papers that they are going to publish, let alone policing the authors of those that they have rejected. What editors really hate ishaving to retract published work. It looks bad, makes the press suspicious of everything else, and invariably throws the peer review process, and the editors' own critical skills into serious disrepute.

CONCLUSIONS

If editors really want to influence the ethical standards of publication, then they need to get involved upstream, while research is being planned. Editors may usefully participate, with the necessary declarations of conflicting interests, in funding bodies, and ethical review committees. Although the UK Department of Health has recently concluded that ethical

*Committee on Publication Ethics - COPE. Guidelines on good publication and the Code of Conduct. Available from http://www.publicationethics.org.uk/guidelines [2006 Jul 7]

committees have no role in commenting on the scientific worth of a research protocol,* for developing countries, who may lack specific scientific review committees, such input is very valuable. Memberships of such committees also provide a chance for editors to comment on the eventual suitability of the results for publication - regardless of where the authors may choose to submit their papers. Actively seeking, reviewing and publishing research protocols, alongside or prior to the papers reporting outcomes is also an option used by some journals.

The incentives for people to cheat are too great to ignore. Until people are penalized, rather than rewarded, for publishing more than is humanly possible without recourse to duplication, gift authorship, plagiarism and salami slicing, the rewards for getting away with it, compared to the likelihood of getting caught, make trying a very attractive proposition. As most publication misconduct appears to be in the attempt to multiply the number of publications (by duplication, plagiarism and gift authorship), and the fact that the journals are largely complicit in this, as mutual needs coincide, it is only by seriously altering the incentives for publication that the situation will change. What is needed is an impact factor for individuals – calculated for each author as the number of citations divided by the number of publications; not as a summation of the journal's impact factors in which their papers have been published. Editors could provide some guidance to the scientific community on how much output is a reflection of reasonable effort, how much is 'remarkable productivity' and a range of publications above which authors' work becomes frankly suspect.[14]

Editors have a continual task to develop and share reasonable standards of practice, and are in a good position to suggest alternatives to the unbounded quantity of scientific publication. A good start is familiarization with the existing consensus guidelines on publication ethics, in order to inform explicit statements about how each journal functions. Reviewers, editors, authors and readers all then have a better chance to understand, and abide by, the rules of publishing.

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HM and LG are editors at the Bulletin of the World Health Organization, and previously worked for the Memórias do Instituto Oswaldo Cruz and The Lancet, respectively. The Bulletin is a member of the Committee on Publication Ethics, and strives to follow its guidelines to the extent that is possible for a publication of an intergovernmental organization.

*Department of Health. 268110/Report of the Ad Hoc Advisory Group on the Operation of NHS Research Ethics Committees; 2005.