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Publication ethics

The mission of peer-reviewed scientific journals is to spread knowledge through their publications and so improve scientific or medical understanding and practice. Although the conclusions of an article always may be debatable, its integrity must be undisputable. From time to time cases of scientific fraud are identified.

Fraudulent data

In 2010, a spectacular case occurred in Denmark (Callaway, 2011). A successful neuroscientist and professor at the University of Copenhagen, Milena Penkowa, was accused of scientific misconduct, as her students were unable to reproduce results of her experiments. After investigations, she was found guilty of using forged laboratory rat experiments in her doctoral thesis. Penkowa denied any wrongdoing but resigned her professorship. Several articles that she had authored were retracted from journals. Even her credulous co-authors were investigated. The University of Copenhagen withdrew her doctorate degree. Penkowa appealed this decision, but the three judges in the district court of Copenhagen were in agreement: Milena Penkowa should not get her doctoral degree back.

Falsification of data is scientific fraud, but it is very difficult for reviewers and editors to detect. Falsification or manipulation of statistics is the dishonest data analysis, which is an equally serious fraud. Falsification of preliminary data that determine sample sizes in a study is also scientific fraud. Falsifying information or data to cover up potentially severe problems detected during the review process also constitutes scientific fraud. When revealed and proven, all agree that such a scientific 'crime' should have nothing but severe consequences of which withdrawal of publication(s) should be the least.

Plagiarism

Misconduct in scientific publishing occurs more frequently in other guises, including the deliberate use of data and text previously published by others, plagiarism. This seems to happen with increasing frequency (Steen, 2011), undoubtedly because academic competition has become more fierce – in certain countries more than in others. This leads to the well-known truism: 'publish or perish'. Electronic plagiarism detection tools can now easily identify previously published text in new manuscripts. Naturally, these tools alone cannot differentiate between fraudulent plagiarism and the legitimate use of quotations. The demarcation can be subtle and editorial judgement or even investigation may be required.

Auto-plagiarism, redundant (dual) publication and salami-slicing

Nobody will contest that copying other scientists' publications without giving them credit is egregious. But word-for-word copying and pasting large parts of one's own previous publications – 'auto-plagiarism' or 'recycling fraud' – is also scientific misconduct. When it comes to duplicating an article or major parts of it and the intent is to make the readers believe that each article is a unique result of the authors' research, misconduct is beyond question. Publication of the same or similar results as previously published articles in different languages must be declared to the editors so they can decide to accept or not. Although under certain circumstances it may be accepted in other journals, the *Journal of Hand Surgery (European Volume)* does not accept duplication of articles published in other languages in other journals. Likewise, copying larger parts of introductions, methods and parts of discussions, and using them in the context of other datasets can be unacceptable. Admittedly, there may be exceptions, for instance complex technical information or guidelines that may be reused with reference to the original publication. Besides being scientific misconduct, plagiarism as well as auto-plagiarism violates copyright restrictions and may have legal consequences.

Dual publication also includes publication of two or more articles from the same or similar authors based on a cohort without addition of substantially

larger numbers of patients over time and without new or different conclusions. To justify a new article, we require that the authors either have obtained substantially novel conclusions after they have included more patients, or that they have analysed the patients for substantially different study purposes that led to entirely different conclusions. For example, if authors publish an article based on 30 patients, then 3 years later they have increased the patient cohort to 50 and publish another article for similar study purposes and with the same or similar conclusions, the later publication will most likely be considered a dual publication. If in doubt, the authors should submit their article with a covering letter explaining the duplications in their work and why they consider that the new article has novel and important information. The key is honesty, which includes open identification of potential conflicts with previous publications. The editors can then make a fair judgement.

Salami-slicing is closely related to auto-plagiarism. It implies reusing a dataset in a new analysis that could and should have been included in a previous publication. This is done mainly for the purpose of increasing the number of publications. For example, in a randomized clinical trial, endoscopic versus open carpal tunnel release is investigated. The results are published, showing that the patients in the endoscopic group return to work earlier. Then, the same cohort is reused for an analysis of carpal tunnel decompression in diabetics versus non-diabetics and the results are published in a second article. Later the cohort is extended with some new patients and a third article is published, based on a retrospective analysis of prognostic factors after carpal tunnel release. This is salami-slicing, at least for the second and third articles. Publishing the first and third article separately can possibly be justified.

In contrast, analyses of data extracted from patient registries may result in multiple, legitimate publications *that have largely different study purposes*, even though coming from the same dataset and from the same or different authors. Registry studies have gained increasing importance: they are large and ever-growing cohorts that are prospectively maintained. They have the advantage of providing a base for assessment of new questions concerning outcomes, demographics, incidences, etc. However, less important research themes should be combined or integrated into other articles based on the same database, to avoid producing salami-slicing.

According to Tolsgaard et al. (2019) plagiarism, auto-plagiarism, and salami-slicing can be considered a major issue of unacceptable academic behaviour 'when authors fail to provide any referencing to the publication from which the text was plagiarized'. Wallace et al. (2018) state that the key principles for avoiding duplication are that the new article should:

- clearly indicate that the new article is an extension of prior work and explain what substantial new questions are addressed;
- reference the prior work to demonstrate how the new work builds a body of knowledge with novel and significant information;
- clearly indicate what information overlaps with prior work, such as what proportion of patients in the new study were previously reported.

The key is 'substantial new information'. Salami-slicing may be difficult to define for a given set of articles from the same authors; and individual authors, editors, and readers may have different views, but it is very clear that repeated questionable salami-slicing will diminish authors' reputations. Although editors cannot openly challenge the authors, editors can reject these borderline submissions. For authors who cherish their academic reputation, questionable salami-slicing should be avoided. The senior authors should have a higher bar to prevent this happening to their research team.

Publishing full-manuscript results that have previously been recorded as abstracts in conference proceedings is not considered auto-plagiarism or dual publication.

Authorship

Over the years, the number of authors per article has steadily grown higher. More often than not, the normally accepted maximal number of six is reached. The International Committee of Medical Journal Editors (ICMJE) (2019) makes it clear that only those who have substantially contributed to a study should be included as authors and those who have contributed to a lesser degree have to be appropriately 'acknowledged'. Those who have participated in investigations without contributing to study design or interpretation of findings may not qualify as authors, and those who have only reviewed manuscripts definitely do not qualify.

The ICMJE recommends that authorship be based on ALL of the following four criteria: (downloaded 20 December 2019 from www.icmje.org):

- substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND

- drafting the work or revising it critically for important intellectual content; AND
- final approving of the version to be published; AND
- agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Thus, co-authorship means that all the authors are equally responsible for the authenticity and originality of the contents of an article.

Conflicts of interest

The potential for conflict of interest and bias exists when professional judgement concerning a primary interest (such as patients' welfare or the validity of research) may be influenced by a secondary interest, including financial gain (www.icmje.org). The lack of transparency in statements of conflicts of interest is scientific misconduct (Krimsky, 2007). Also, the potential conflicts of interest of editors and reviewers may play a role when decisions are made on the publication of manuscripts; and if it is the case, they must be declared.

Ethical approval

The *Journal of Hand Surgery (European Volume)* conforms to the ICMJE requirement that clinical trials are registered in a World Health Organization-approved public trials registry at or before the time of first patient enrolment as a condition of consideration for publication. The Helsinki Declaration of the World Medical Association (WMA), last published on 9 July 2018, declares that ethical approval for all interventional studies is required (WMA Declaration of Helsinki, 2018). Most academic journals, including the *Journal of Hand Surgery (European Volume)*, that publish studies involving animals or human participants, require evidence that the research has been approved by an institutional review board (IRB) or its equivalent. The *Journal of Hand Surgery (European Volume)* requires a statement in the methods section that the relevant ethics committee or IRB provided (or waived) approval.

Journal editors and reviewers have a duty to evaluate systematically the ethical soundness of manuscripts submitted for review. The lack of approval may result in rejection of a manuscript. Falsely reporting a nonexistent IRB approval is scientific misconduct and will be sanctioned as such. This is exemplified in the Macchiarini case reported below: The Swedish Expert Group on Scientific Misconduct at the Central Ethical Review Board stated in its conclusions on this case that *'there was false information of ethical approval, which also constitute scientific misconduct'.*

Consequences of publication misconduct and sanctions imposed

Data manipulation and falsification are the most serious acts of scientific misconduct. As mentioned above, it may ultimately result in dismissal, withdrawal of academic degrees, and legal actions for forgery.

Serious sanctions imposed by editors and journals can also be the consequence of plagiarism and salami-slicing, when authors repeatedly fail to be transparent about it. Editors should not simply reject articles that raise questions of misconduct, but according to the guidelines on good publication practice published by the Committee on Publication Ethics (COPE) (https://publicationethics.org/guidance/Guidelines), they are also ethically obliged to pursue the case. This may result in blacklisting authors and co-authors and retracting earlier published articles. If editors are presented with convincing evidence of serious misconduct, they should immediately pass this on to the authors' institutional boards and notify the authors that they are doing so. Less severe cases of auto-plagiarism and salami-slicing may result in rejection and cautioning of the authors.

The lead author and co-authors carry *the same* responsibilities should any severe problems or misconducts or violation of ethical rules be found. Ultimately, they may all face serious consequences imposed by their institutions and national regulating bodies, including dismissal of investigators and of any authors who have been deemed guilty of serious misconduct. When conclusive evidence of scientific misconduct is found, the authors risk being dismissed and even struck off their medical register.

In many countries, retraction of an article based on scientific misconduct may even lead to dismissal of senior authors, and resignation from such positions as chair or dean of the institution, and of any academic appointments such as professorship. More severe misconduct involving multiple articles means a definite end to the authors' research and academic career.

The Paolo Macchiarini case

The Macchiarini case is an example of serious scientific misconduct. It illustrates the ultimate consequences and sanctions that can result from fraudulent acts in biomedical research. The Italian

thoracic surgeon, Paolo Macchiarini, was affiliated to the Karolinska Institute in Stockholm, Sweden, in 2010. He became famous for performing tracheal transplants using a synthetic scaffold seeded with the patient's own stem cells. In 2014 he was accused of scientific misconduct for not having obtained ethical approval for his experimental surgery and for having falsified some of the results of his operations. Initial investigations concluded that he was guilty of scientific misconduct, but this conclusion was rejected by an internal committee of the Karolinska Institute. Macchiarini was completely rehabilitated in an editorial in *The Lancet* (Editorial, 2015). The case was reopened after a report of the investigation was broadcast on Swedish television. The Karolinska Institute requested Sweden's national scientific review board to review six of Macchiarini's publications. The committee concluded that all six publications were the result of scientific misconduct because they failed to report the complications and deaths that occurred after the interventions. One of the articles also claimed that the procedure had been approved by an ethics committee, which was untrue. In 2018, *The Lancet* published a new editorial to announce that the two articles that had been published in this journal were now retracted (Editorial, 2018). The editors also stated that six of the co-authors were found 'guilty of misconduct, based on their intention to deceive at the time of publication, or their negligence in obtaining information or permits that were required'. Other co-authors were deemed 'blameworthy'. The secretary of the Nobel Committee for Physiology or Medicine, Urban Lendahl, resigned in 2016, because of his involvement in recruiting Macchiarini to the Karolinska Institute in 2010. The Vice Chancellor, Anders Hamsten, who in 2015 had cleared Macchiarini resigned as well. Macchiarini's contract with Karolinska was terminated (Vogel, 2016).

There have been other cases. For example, in September, 2018, Cornell University in the United States of America announced that an investigation had revealed 'misreporting of research data, problematic statistical techniques, failure to properly document and preserve research results, and inappropriate authorship' of articles of Brian Wansink and his co-workers. Wansink was removed from research and teaching and was obliged to 'spend his time cooperating with the university in its ongoing review of his prior research'. In Taiwan, an Education Minister resigned after a co-authored article was retracted in July, 2014.

Azoulay et al. (2017) reported that eminent scientists are more harshly penalized than their less distinguished peers in the wake of a retraction in cases involving fraud or misconduct. When the retraction event had its source in errors during study (''honest mistakes''), they found no evidence of differential stigma between high- and low-status faculty members. Their findings illustrate that scientific community emphasizes the importance and responsibility of eminent scientists.

Concluding remarks

The key is honesty. We are privileged to treat fellow humans who are often in vulnerable circumstances. It is easy for us to persuade them of the merits of one treatment option over another: but we have a duty of care, upheld by the vast majority of doctors, to honestly advise our patients of what we consider is in their best interest regardless of our benefit, be it financial or reputational. Sadly we know this duty has not always been followed, but most doctors are honest with their patients, in contrast to some practices of modern capitalism, which appear to be guided by the principle of caveat emptor, namely it is the responsibility of the 'buyer' to make the checks, not for the seller to be open and honest.

Likewise, in research, honesty is assumed but not always practised. It is easy to falsify data by omission or commission. Because clinicians (or editors) cannot easily prove dishonesty, they are dependent upon the honesty of researchers. Otherwise, clinicians will be deceived about the best treatments and so may inadvertently deceive (mistreat) their patients. The sanctions for dishonesty need to be very high as honesty is such an important pillar of research. If authors have doubt about how their research may be received, they should take advice in advance so that clearly informed decisions can be made and flaws in any study (which always occur) can be highlighted.

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