Editorial

Ethics in Publication

Saurabh Srivastava[1] Anil K. Jain[2]

[1] Professor and Head, Department of Medicine, Government Institute of Medical Sciences, Greater Noida, Uttar Pradesh
[2] Professor Orthopaedics, Ex-Principal, University College of Medical Sciences, New Delhi, Ex-Dean, Faculty of Medical Sciences, University of Delhi, Delhi, India

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The growth of Medical Sciences is very fast. The core of enrichment of Medical Sciences is dependent on the evidence gathered and published. Performing a well-organized experimental research and final submission of the same as an article is a tedious and painstaking process. Published research article is only the tip of the iceberg. It involves long planning, execution, analysis, and document preparation.[1]

Ethical principles apply at every stage of research starting from planning till the publication of the document. Ethics is derived from the Greek word "*ethikos*," which is derived from the Greek word *ethos*, meaning custom or character. Ethical issues and principles are important for all the pillars of publication, that is, authors (during execution and reporting of research), reviewer (at the time of reviewing the article), and the editor of the journal.

Research misconduct is defined by the Royal College of Physicians of Edinburgh as "any behavior by a researcher, whether intentional or not, that fails to scrupulously respect high scientific and ethical standards."[2] Various types of research misconduct include fabrication or falsification of data, plagiarism, problematic data presentation or analysis, failure to obtain ethical approval by the Research Ethics Committee or to obtain the subject's informed consent, inappropriate claims of authorship, duplicate publication, and undisclosed conflict of interest.

Recently there has been a decline in the ethical principles guiding scientific research. Serious thought has to be given on commercialization of scientific research, which has its effects on the ethical principles and advancement of scientific knowledge. Ethical misconduct done out of ignorance or intentionally has the same consequences, and seriousness of the event remains the same.

Types of Research Misconduct

Research misconducts should be taken on priority to respect the intellectual property rights of others and uphold the standards for academic publishing. Research misconducts can be broadly classified into the following:

- **Plagiarism:** Plagiarism is presenting another person's thoughts, ideas, figures, mythology, words, etc., as if they were author's own work, without giving due credit or acknowledgment.
- **Fabrication:** Fabrication is generation of data without the research being conducted.
- **Falsification:** Falsification is manipulation of data end results intentionally to make them clinically relevant. Selective reporting of data also comes under this heading. Selective reporting is primarily done in pharma industry where the main effects of drugs are highlighted and the other effects are either concealed or given less weightage.
- **Copyright infringement:** It is presenting another person's work of authorship or their ideas as his or her without giving proper acknowledgment.
- **Duplicate (or redundant) publication:** This is the practice of submitting the same article to multiple journals or republishing the same manuscript without reference to a previous publication. When the article republished adds a part of a previously published article, it is known as ***redundant publication***. Publication of single dataset into multiple articles is known as ***salami slicing***.
- **Overlapping publication:** This is the practice of publishing an article that overlaps with the previously published article.
- **Inappropriate authorship:** According to the International Committee of Medical Journal Editors (ICMJE) guide-

Address for correspondence Saurabh Srivastava, Professor and Head, Department of Medicine, Government Institute of Medical Sciences, Greater Noida 201310, Uttar Pradesh (e-mail: saurabhsrivas@gmail.com).

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lines, anyone who has made substantial contribution to the conception or design of the work, or the acquisition, analysis, or interpretation of data; drafting or revising the article for intellectual content; or participated in the final approval of the version to be published; or agreement to be accountable for all aspects of the work is entitled to be an author.[3] Authorship dispute arises when an author who has contributed in the manuscript is not included in the author list or a person who had not contributed is given an authorship (guest, ghost, and gifted authorship).

- **Misconduct within the publication process** includes authors submitting manuscripts under fraudulent names or with fraudulent affiliations or reviewer misconduct during the peer review process.

To assess the data regarding falsification and fabrication, Daniele Fanelli conducted 21 surveys that were included in the systematic review and 18 in the meta-analysis. A pooled weighted average of 1.97% of scientists admitted having fabricated, falsified, or modified data or results at least once and up to 33.7% admitted other questionable research practices. In surveys asking about the behavior of colleagues, admission rates were 14.12% for falsification and up to 72% for other questionable research practices.[4]

Fang et al, in a review article, showed that 67.4% of retractions of publications were attributable to misconduct, including fraud or suspected fraud (43.4%), duplicate publication (14.2%), and plagiarism (9.8%). He also stated that the percentage of scientific articles retracted because of fraud has increased approximately 10-fold since 1975.[5] A Chinese journal also finds that 31% of the articles are plagiarized.[6]

Falsification and fabrication were considered as most common and frequent violation (44.9%) in a recent review by Armond et al. Other violations in decreasing order of frequency are non-adherence to laws and regulations (15.7%) such as research and ethics committee approval and lack of informed consent, patient safety issues (11.1%), and plagiarism (6.9%). Most of the cases reported were from Medical and Health Sciences (80.8%), other cases were from Natural Sciences (11.5%), Social Sciences (4.3%), Engineering and Technology (2.1%) and Humanities (1.3%). Most prevalent sanction was paper retraction (45.4%) followed by exclusion from funding applications (35.5%).[7]

An article was published to find out the number of retracted articles from Indian authors, and it showed that there are 508 retracted articles (as on November 2, 2020) authored by Indian authors and account for nearly 6.2% of retracted publications indexed in the PubMed database. However, the number of retracted articles is very low compared with the number of publications contributed by Indian scientists in the database (~0.1%). Twenty-five percent of retracted articles were published in the top 15 journals and 33% were published in the nonimpact factor journals.[8]

Research misconduct leads to many long-lasting consequences. The product developed, based on false and fabricated data, can be unsafe for humanity. This can also mislead the fellow researchers as well as medical practitioners and students. Also, it may destroy public trust on science and misguide the government to implement erroneous health policies.

Fabrication of data for research is a criminal act. Fabrication/falsification leads to wrong conclusions and use of such information may harm the patient and endanger life. The future research may be intended on articles with falsified/fabricated data such as misconduct including redundant publication/salami slicing, and overlapping publication, which can lead to flawed conclusions in a meta-analysis.

Avoiding Accidental Plagiarism

Several steps can be taken to avoid accidental plagiarism. They can be summarized as the following:

- Scrupulously acknowledge prior relevant work.
- Use quotation marks for direct quotes.
- Clearly indicate direct quotation while making notes.
- Use your own words while paraphrasing someone's ideas.
- Provide citations for commonly known facts.

Ethical Issues Arising due to Increasing Use of Artificial Intelligence

It has been advocated that decisions made by artificial intelligence (AI) are based on informed decisions and are devoid of any bias and subjectivity. However, this is not always true, and there are many ethical issues related to it.

- There is lack of transparency of AI tools. Thus, decisions taken are not always comparable to humans.
- AI is not neutral and is susceptible to inaccuracies, discriminatory outcomes, and bias.
- Surveillance practices for data gathering and privacy.
- One must be careful while using AI, and human supervision has to be individualized, or else false information will be disseminated.

Recommendations

World Association of Medical Editors (WAME), ICMJE, and Committee on Publication Ethics (COPE) are the guiding forces to interpret ethical publication appropriately. In any kind of misconduct, COPE guidelines are to be followed. They address various issues of study design, ethical approval, authorship, conflict of interest, data analysis, plagiarism, duplicity, salami publication, and also duties of the editors and reviewers. The following are a few recommendations for ethics in publication:

- Assessing the quality of research by the number of publications and other such metrics, which happens too frequently, should be stopped as this leads to people participating in various forms of misconduct, including augmenting publication numbers most commonly by salami slicing of manuscripts.
- Public universities and public-funded science should not be neglected; researchers in these places are accountable to the public.
- Ethical standards and conduct have to start from school.

- It is essential to have investigative committees with external people who are unbiased.
- Citation should be read critically and selection bias should be avoided.
- The best way to avoid plagiarism is to cite other's work in quotation marks and ask permission from the copyright holder.
- Authorship criteria should be followed as per the ICJME guidelines, and contribution of the authors should be stated.
- Any conflict of interest should be disclosed.
- Research integrity should be encouraged among medical researchers.
- Journal editors must provide WAME, ICMJE, and COPE guidelines to authors as well as reviewers.
- Latest technological support and strong peer review system should be used.

It can be concluded that research is conducted to alleviate human sufferings, so the authors must plan, execute, analyze, and publish their research in an honest way. An ethical environment in the institution will always promote good and ethical publication.

Conflict of Interest
None declared.

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