



Ethics: The Elixir of Publications

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Abstract

Scientific papers are the driving force for research, information dissemination, and policymaking that directly impacts society. Thus, ethical practices are the elixir of publications. Adherence to ethical practices promotes integrity in research and publication. Transgression of ethics is thus considered a poison to science. Although there is no definition of ethics, it includes a systematic approach that not only recommends but also defends and protects concepts of the conduct of right and wrong. Therefore, ethical principles should be strictly adhered to and upheld at any cost for the progression of science. This article addresses various actions that are considered ethical misconduct and guidelines to fix them. Recommendations of various organizations related to the ethics in publications are also discussed.

Keywords

- ▶ publications
- ▶ ethics
- ▶ authorship
- ▶ conflict of interests

Introduction: Need for Ethics in Publications

Every publication is a result of an observation, or more commonly, as a result of clinical/laboratory findings/research.¹ Publication of research work facilitates sharing of observations and conclusions among scientists/medical professionals, which is vital for developing reliable knowledge and advancing contemporary science.^{2,3} It demands implacable honesty, integrity, and truthfulness—all clubbed as ethics. Any deviation from ethical principles can have devastating and cascading effects on developing and understanding concepts and knowledge.^{1,3}

Unequivocally, publications are vital for disseminating concepts, hypotheses, observations, and clinical and laboratory research results. Every single publication adds value to the Web of Science.⁴ Hence, it is prudent to adhere to the ethics of publications, as it directly impacts the betterment of humankind and the progress of science. Ethics in publications and research is sacred and sacrosanct and considered a foundation of scientific advancement that affects

quality and integrity of science.⁵ Ethics is one of the strong pillars of credibility and trust of the researcher, the institution, and the journal. Adherence to ethics is therefore most necessary and deviation from ethics is considered a misconduct.⁶

Ethical publication practice involves integrity, honesty, accountability, transparency, authenticity, objectivity consistency, and thus originality and better reproducibility. Such scholarly publications can be considered a surrogate marker of social development.

Concepts of Publication Ethics

It is a set of fundamental values for systematizing, defending, and recommending concepts of right and wrong. Ethics in publications has wider coverage and is not limited to publishing data, facts, observations, or results of scientific experiments or clinical studies, but it begins from inception (study design) to research (study execution, data collection, and curation/analysis) to manuscript preparation (publication).³

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Organizations Related to Publication Ethics

Certain groups provide rules and make recommendations to help writers, editors, and reviewers. The goal is to produce and distribute replicable, unbiased, clear, and accurate research publications. The groups that are engaged in publication ethics are the following:

- International Committee of Medical Journal Editors (ICMJE).⁷
- World Association of Medical Editors (WAME).⁸
- Committee on Publication Ethics (COPE).⁹

A group of medical journal editors founded the ICMJE in 1978 in Vancouver, British Columbia, Canada. Recommendations created by ICMJE are mainly intended for authors wishing to submit their work to journals that are members of the ICMJE. The duties and roles of the authors, contributors, reviewers, and editors are covered in these suggestions. Additionally covered and drafted are the procedures for preparing and submitting manuscripts as well as editorial concerns pertaining to publication in medical journals. Most biomedical journals adhere to consistent guidelines for manuscript submission, which were developed by the ICMJE.¹⁰

The WAME is a voluntary, nonprofit organization that was founded in 1995 by many ICMJE members. The objectives were to enhance editorial standards, elevate the profession of medical editing, and fostering scholarly inquiry into the fundamentals and applications of medical editing. The WAME's job is to make it easier for editors of peer-reviewed medical journals to collaborate and communicate with one another globally. Editors of peer-reviewed journals are welcome to become members of the WAME, and they are free to join. More than 1,830 members of the WAME represent more than 1,000 journals from 92 different nations.⁸

Additionally, the COPE supports ethical publishing. A small group of United Kingdom medical editors formed COPE in 1997 as a self-help group to talk about ethical instances that they were finding difficult in the publication process. It offers paid membership and now has over 7,000 global members from a wide range of specialties. COPE aims to create codes of conduct for appropriate publication practices and to identify workable solutions for handling instances of misbehavior. Additionally, it provides money for studies based on problems with publication dishonesty.⁹

Potential Areas of Ethics Misconduct

When scientific research is published with deviation from accepted standards of scholarly behavior and ethics, it is damaging to the integrity of the entire system. Many areas of potential misconduct are essential for all authors to know and should always be avoided in true spirits (– Fig. 1).¹¹

These begin right from the conceptualizing ideas and methodology to conduct a study. Data collection, curation, and analysis are one of the potential areas of misconduct, and

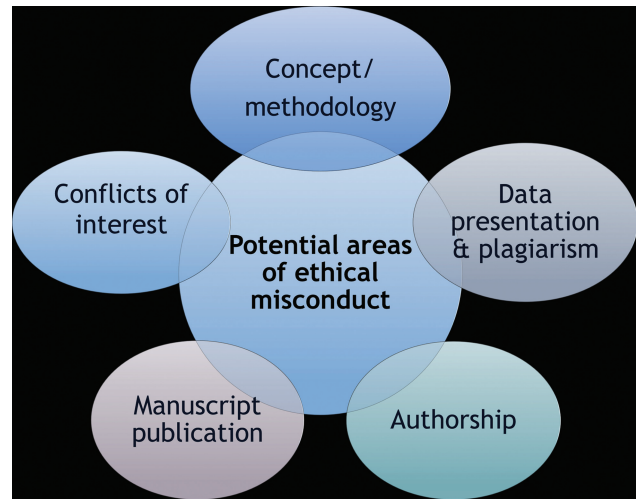


Fig. 1 Areas of potential misconduct in the publication.

data should never be falsified or fabricated to the needs of the researcher.³ The manuscript should be a true representation of the facts and figures, and credits should be given to all previous researchers and authors. Conflicts of interest should be declared without any ambiguity, and authorship should be reserved to all those who have contributed significantly. Details of these potential areas are explained subsequently.¹² As recommended by COPE, editors or publishing firms can take disciplinary action against scientific misconduct. Authors can be placed on a blacklist or prohibited from submitting work to that particular publication in the future.⁹

Methodology

Conduct of any research and subsequent publication is a systematic process. Study design, methodology, statistics, and ethical approvals from competent authorities have to be followed scrupulously and unrelentingly with total honesty. During the conduct of the study, personal biases or any other areas of conflict should be neutralized.¹³

Researchers/potential authors should describe instruments, techniques, and manufacturer's details with explanation of study design (prospective/retrospective, blinded/trial), and any deviation thenceforth are considered an ethical misconduct. Clinical or drug trial mandates registry as per national guidelines. Any deviation can invite legal action besides submission difficulties to journals for publication.¹⁴

Consent forms, ethical approvals, and guidelines for the Declaration of Helsinki for animal studies should be strictly adhered to.¹⁵

Data Presentation and Analysis

Data emerging from a study are prime and further curation and analysis should be done honestly with high standards of scholarly and ethical behavior irrespective of the outcomes. Publications that present findings and draw conclusions from data that were either fabricated (fabrication) or produced by modifying the data (falsification) are considered research fraud.¹⁶

Table 1 Guidelines to avoid data fabrication

Sl. no.	Guidelines
1	Meticulous record keeping: never change or temper data. If possible, keep two copies of data with two different scholars
2	Keep data available: in case required by editor
3	Align with journal and publisher policies
4	Declare if image is edited for clarity

Data fabrication includes the invention or creation of data/cases/results that never existed or were not produced by the study. While falsification includes (1) willful distortion of data; (2) manipulation of research materials, equipment, or processes; and (3) changing or omitting data due to personal bias and noninclusion of data on side effects especially in clinical trials.¹⁶ Some troubleshooting tips are listed in **Table 1**.

Images should never be altered or modified, and, if done, should be declared.

During the review process, editors or reviewers may ask the authors to provide the raw datasheets to allay or confirm any suspicions they may have. If enough uncertainty is expressed, editors have the right to request access to the datasheets even after a few years of publication. As a result, all clinical trial data must be kept for a respectable amount of time.¹⁷

Plagiarism Issues in Publication

Plagiarism is defined as using another author's previously published work in one's own writing without that author's permission, credit, or recognition. It is the most prevalent instance of wrongdoing in science. Both intentional and inadvertent plagiarisms are possible. Articles authored by undergraduates or early career researchers frequently contain inadvertent plagiarism. Unintentional plagiarism is caused by ignorance and a lack of awareness. Intentional plagiarism occurs when a writer takes documented or published works and passes them off as their own. Both forms of plagiarism are immoral and against the law, and they can destroy a writer's reputation and career.¹⁸

Idea plagiarism is the act of someone stealing or copying someone else's idea or thought and passing it off as their own. Although it can be challenging to identify this kind of plagiarism, once it is, it is taken very seriously. Presenting or recording someone else's idea without properly citing the source is an example of idea plagiarism that occurs during conferences and seminars.^{2,18}

Text plagiarism, also known as direct plagiarism or word-for-word writing, occurs when a researcher copies a significant portion of an article from another source and inserts it into their own work without properly citing it.^{18,19}

Mosaic plagiarism is a hybrid form of plagiarism in which the writer borrows concepts, viewpoints, words, and phrases from several sources and combines them without giving credit to the original writer.¹⁹

Table 2 COPE guidelines for authorship

Sl. no.	Contributions of authors for eligibility for authorship
1	Conception and design
2	Analysis and interpretation of data
3	Drafting the article or revising it critically
4	Final approval of the version to be published

Abbreviation: COPE, Committee on Publication Ethics.

Self-plagiarism is the act of a writer utilizing passages from earlier works they have written on the same subject in later works they have written without properly attributing them in quotes. Whether this constitutes scientific misconduct and how much use of one's own words constitutes true "plagiarism" are unresolved issues. Authors should provide references to their prior publications or credit sources to be on the safe side. In certain cases, plagiarism destroys an author's or writer's entire career and leads to the rejection or retraction of an article.^{18,19}

Authorship Issues and Guidelines

Authorship in publications is coveted and recognized among peers and in the scientific community at large. At the same time, it carries responsibility, and authors are answerable for the information and findings that are made public.²⁰ COPE has defined authorship criteria, which are listed in **Table 2**.⁹

Various authorship issues can be author inclusion or exclusion, hierarchy, author count, and addition of guest authors.

A *ghost author* is someone who has significantly contributed to the writing or research of a document but is not identified as an author. Ghost authorship entails a conflict of interest (COI) since the ghostwriter may be a direct hire or a contract employee of a pharmaceutical firm.²⁰ To leave out a writer who has contributed significantly is dishonest.

A *guest or gift author*, as opposed to a ghostwriter, is a named author who did not significantly contribute to the planning, writing, research, or analysis of a publication. The gift or guest authorship is an undesirable publishing practice, regardless of the reason. In the realm of research, guest or gift writers are frequently well known and highly esteemed persons, and their names are added as it increases the chances of the manuscript being accepted. Moreover, a well-known author serving as a guest author has the potential to affect how politicians, academics, and medics feel about a specific medication or equipment. Second, the person is seen as more skilled than his colleague who has not published because of their gift of authorship.²¹

Honorary authorship is usually granted to colleagues in return for favors or to foster cooperation and positive working relationships.

To avoid authorship misconduct, it is advisable to decide the sequence of authorship before conducting of study or publication with the creation of standard operating procedures (SOPs). Usually, open, frank, and healthy conversations

with all the authors involved in interdisciplinary research are the best. Disagreements inside the study team can be further decreased by clearly defining each author's position and responsibilities.

Since the first author's name appears in the citations for most papers, disputes are usually centered around this position. Generally, authorship is ranked according to the level of involvement. For instance, a junior researcher who has completed most of the groundwork could be the first author and a supervisor/mentor who planned and conceptualized the study should be the last and corresponding author. Needless to say, different schools of thought exist, and the order of authorship is not universally agreed upon.²⁰

Finally, if a revised article is submitted, the order of authorship should not be changed arbitrarily. If the order of authors is changed, approval from each author is required. It also has an impact on the manuscript's believability.

It may be noted that if authorship misconduct is identified by the editorial team, contributions of individual writers can be requested. The journal has the authority to ban guests or ghost writers.

Publication Misconduct

Redundant or duplicate publication: The article once published is considered an original contribution from authors and subject to copyright laws. A publication that significantly overlaps with the one that has already been published without a clear, obvious reference to the earlier publication is referred to as a redundant or duplicate publication. This is not only unethical but also an infringement of copyright laws. Moreover, duplicate publication wastes scarce resources and results in an incorrect assessment of the significance of a single study's findings.²²

The COPE categorizes duplicate publication into major and minor violations.⁹ The primary transgression occurs when two publications are produced using identical data and previously published findings. It is also considered if there is proof that the author attempted to conceal plagiarism by altering the title or authorship sequence, omitting references to earlier works, or any other method. Segmental publication, partial publication of results, or reanalysis arising from a single study is referred to as salami slicing or minor publication. Authors engage in this practice to increase the number of published articles and citations. It is regarded as unethical and deemed indecent since it could lead a reader to draw conclusions that are not accurate. The partial publication of a single study's findings in several journals may cause people to make rash decisions. If a study is conducted on a constant number of people, but the findings are presented fragmentarily in multiple journals, incorrect conclusions may be derived from the study.^{9,22}

Journals, nowadays, ask for a cover letter or an endorsement that the manuscript under submission is original and has not been submitted elsewhere or is closely related to another article that has been submitted elsewhere. If authors try to duplicate a publication without providing this notice, their submission may be promptly rejected. The article may

need to be retracted, with or without the author's consent, if the editor was unaware of the infractions and it had already been published.²

Selective reporting practices: While writing manuscripts, selective reporting practices refer to any additions, deletions, or modifications made to the planned study elements. This is also known as spin, and it is defined as "a specific reporting that fails to faithfully reflect the nature and range of findings and that could affect the impression that the results produce in readers, a way to distort science reporting without actually lying." The main reason for this is to increase the likelihood of publication, although it does not always increase the possibility of such outcomes; however, a spin can be unintentional and may be justified in some situations, such as when post hoc exploratory analyses are performed and yield new insights.²

Conflict of Interest

Transparency and objectivity are keys for research and publications. An objective, commitment, or value that is held by a person, a group of people, or an institution that affects them might be defined as "interest."

A situation known as a COI arises when a set of conditions exists in which professional judgment concerning a primary interest tends to be unduly influenced by secondary or competing interests. These can be personal (get a promotion, become famous), commercial (promotion of a product/drug), political, academic, or financial.¹²

COI should always be declared, which are limited to not only association with commercial organizations, manufacturing companies, or the pharmaceutical industry but also association with any other interest/s that authors consider relevant. The source of funding, if any, must also be declared.¹²

Study Population's Right to Privacy in Publication

Reports in academic and professional journals are likewise covered by the right to privacy for personal health information and the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"). During a patient-clinician or participant-investigator interaction, patients and study participants who consent to authorize access to personal information do not relinquish all of their rights to that information. Confidentiality and privacy should be upheld both during and after these interactions, and no release of identifying personal information should occur without consent.²³

Ethical Considerations with Use of Artificial Intelligence

With the advent of artificial intelligence (AI), which is poised to have implications in the medical field and research, there remain various ethical considerations with its usage.²⁴⁻²⁶ As AI involves huge data, it requires an emphasis on ensuring data privacy regarding the placement of strong security protocols. Various publishers and advisory groups issued



Fig. 2 Precepts that can guide authors to avoid ethical misconduct.

statements about using AI tools in scholarly publications. While some journals have a policy prohibiting the use of AI tools, others favor clear disclosure over outright bans.²⁶ However, all agree that chatbots do not qualify for authorship as per the ICMJE criteria. Ethical vigilance is required to navigate various challenges of AI and realize its full potential in health care and research.

Precepts to Avoid Ethical Misconduct

Publications are essential for the progression of science and understanding of concepts/observations. They are the foundation of further experiments and directly impact the society. Every effort should be made to be ethically correct. It is all about morality, integrity, fairness, originality, and honesty, which are the building blocks and should never be compromised. Although there are no clear-cut rules, there are precepts that can guide authors to avoid ethical misconduct and are represented in ►**Fig. 2**. Further, there can be a checklist, which can be personal, group, or institutional. In case of any ambiguity, one can always seek advice/guidance from seniors, the journal office, or the editorial team.³

Conclusion

Publication is an impetus for the development of science and has a direct impact on patients and policy decisions in medicine. It must be thorough, neutral, objective, and wise. Authors must stick to the principles of ethics with strict adherence to methodology and should avoid data falsification and fabrication. Authorship should not be gifted and at the same time, every author should be given due credit for their work. It is the combined duty of the authors and the publishers to guarantee that the information released is accurate and legitimate, having been gathered using procedures compliant with generally recognized ethical standards. Any deviation or misconduct can not only bring disrepute but also dent the credibility and reputation of individuals and institutions.

Note

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Conflict of Interest

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