

Ethics in Publication

Effective research involves a series of systematic procedures that researchers must undertake in order to contribute to the existing evidence base. It includes identification of research problem, formulation of research questions, objectives and hypothesis, selection of appropriate study design, data collection and analysis, and publication^{1,2}. Publication of scientific paper is essential for evolution of science as well as for career development. It helps in dissemination of study findings and gives visibility to the research. Research work that is not published or documented is considered not done³. It is mandatory to follow proper ethical guidelines in every step of the research process.

Organizations involved with publication ethics

There are some organizations who have developed guidelines for facilitating ethics in publication. Authors, editors and reviewers must adhere to these guidelines in order to produce accurate and unbiased scientific papers. Organizations involved with publication ethics are:

- **Committee on Publication Ethics (COPE):** It is a forum created by editors of peer-reviewed journals for discussing issues related to publication ethics. COPE published "Guidelines on Good Publication Practice" to assist authors, editors, editorial board members, and reviewers in the publication process⁴.
- **Council of Science Editors (CSE):** It promotes effective communication of scientific information through identification of research misconduct and guidelines for action⁵.
- **International Committee of Medical Journal Editors (ICMJE):** It is a group of medical journal editors who developed guidelines primarily for authors who want to publish in ICMJE member journals. Roles and responsibilities of those involved in publishing are clearly outlined. Most journals follow ICMJE recommendations for manuscript submission⁶.
- **World Association of Medical Editors (WAME):** It is a non-profit voluntary association of editors of peer-reviewed journals. WAME facilitates cooperation and communication among medical journal editors in order to improve editorial standards⁷.
- **Consolidated Standards of Reporting Trials (CONSORT):** It aims to address issues arising from inadequate reporting of randomized controlled trials (RCTs). CONSORT provides guidelines for reporting of RCTs⁸.
- **Sense about science:** It is an independent charitable organization that promotes public understanding and respect for scientific evidence⁹.

Ethics approval and informed consent

It is mandatory for researchers to get their research proposal approved by Institutional Ethics Committee (IEC) or Institutional Animal Ethics Committee (IAEC). All clinical trials must be registered with Clinical Trials Registry of India (CTRI) and authors must provide CTRI registration number in their publications. In addition to this, obtaining informed consent from all study participants is vital for conducting effective research³.

Scientific misconduct

Scientific misconduct refers to violation of standard codes of scholarly conduct and

ethical behaviour in publication of research. Misconduct may occur at any stage of the research process and puts a question mark on integrity of the research. Research fraud including fabrication or falsification of data are serious forms of scientific misconduct because they distort observed truth. Fabrication refers to publishing results and conclusions from data that were not generated by experiments or observations. Falsification refers to manipulating research materials, images, data, equipment, or processes in order to alter observed results of a study. Most publishers have strict rules against research fraud and may take disciplinary action as per COPE recommendations. Scientific misconduct also includes plagiarism, violation of authorship rules, simultaneous submissions, duplicate submissions, salami slicing, and non-declaration of conflict of interest^{10,11}. A study conducted among medical professionals in India indicated that 65.1% offered gift authorship, 56.7% knew of an individual who fabricated data, and 53.5% observed plagiarism¹². Scientific misconduct, however, does not include ordinary errors, differences in interpretation of data, and scholarly or political disagreements.

Authorship

An individual who has made significant contribution to the research study in question is considered to be an author. Contributions may include conceptualizing and designing the study; data acquisition, analysis and interpretation; writing draft or editing the manuscript; approving the final draft; and being accountable for the accuracy or credibility of the research¹¹. ICMJE guidelines state that all authors should fulfil criteria for authorship and those who fulfil criteria should be named in publication⁶.

Authorship issues should be resolved before conducting the study to avoid conflicts in future. Order of authorship should be a joint decision of co-authors based on extent of contribution of individual authors¹³. It is to be noted that individuals who have provided technical support, advice, research space, departmental support or financial support do not qualify for authorship. They may be listed as contributors or acknowledged individuals¹⁴.

Ghost authorship, gifted authorship, and guest authorship are the most commonly encountered authorship misconduct. Ghost authors are those individuals who have made substantial contribution to research but are not listed in publication. Guest authors are those individuals who are named in publication despite making no significant contribution to the study. Guest authorship is usually provided to improve chances of acceptance of manuscript. Gift authors are usually people in academic or administrative positions who have made no significant contribution to study but are listed as co-authors in publication due to their tenuous affiliation with the study¹¹.

Gifted or guest authorship is unethical and unacceptable in publication. Authorship in research publication is a responsibility and authors are accountable for the study findings and results which are published.

Conflict of interest

Conflict of interest (COI) occurs when researchers' financial or personal interest affects their judgement and influences conclusions of the study. This deteriorates quality and integrity of research. Employment, grants, patents, honorarium from funding agencies, or multiple affiliations are often reasons for potential competing interests. Most journals ask for disclosure of potential competing interests during submission of manuscript for publication⁶.

Plagiarism

Plagiarism refers to use of another author's work in the manuscript without taking consent, or giving credit or acknowledgement. This is the commonest type of scientific misconduct and research fraud. There are several forms of plagiarism, some of which are listed below:

- **Direct plagiarism or plagiarism of text:** This is when a researcher reproduces another researcher's previously published work entirely or parts of it without giving credit or acknowledgement to the original work. Direct plagiarism must be avoided by citing the original source in references or putting the copied part within quotation marks.
- **Plagiarism of ideas:** This refers to copying and reproducing someone else's ideas without giving proper credit to the original researcher. This form of plagiarism is difficult to detect and often goes unnoticed. This is a serious offence and must be avoided.
- **Self-plagiarism:** When an author uses sections of their own previous work in following publications having similar topic, it is called self-plagiarism. This can be avoided by proper citations or putting copied text within quotation marks¹³.

Simultaneous submission

Simultaneous submission occurs when researchers submit the same manuscript to more than one journal simultaneously. This is a serious scientific misconduct and can lead to the same paper being published in two journals. During manuscript submission, most journals require declaration from the researcher that the manuscript has not been submitted elsewhere simultaneously. It is important for researchers to abide by this rule and wait for decision before submitting to another journal⁹.

Salami slicing

Researchers often publish multiple papers using same dataset, same study population, same methodology, or same hypothesis. Slicing up a large study into multiple segments and publishing them

separately is called salami slicing. This is an unethical practice and must be avoided.

However, large clinical trials or epidemiological studies having multiple endpoints may be published separately. Each publication should have a clearly defined hypothesis and outcome of interest¹⁵.

Self-citation

It is unethical for authors to cite their previously published work in subsequent publications which are out of context. Self-citation is often done to increase metrics such as G-Index or H-Index. This is scientific misconduct and undermines reputation of the researcher in the scientific community. However, it is acceptable when researchers use self-citation for their subsequent publications which are continuations of their previous work or are within the same context³.

Conclusion

Authors must adhere to recommendations by COPE or ICMJE for their publications. The issue of unethical publications must be addressed through appropriate training and guidance. Scientific misconduct harms the reputation of the researcher as well as the journals publishing such work. Serious offences may lead to blacklisting of the researcher and retraction of publication from the journal.

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