

Publication Ethics

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Publications in the field of medical literature are a matter of prestige and fame for doctors. While genuine research contributes to the existing scientific knowledge, fraudulent data make publication unreliable, demeans the credibility of the author and reduces faith in science. Research misconduct includes the three cardinal sins fabrication, falsification and plagiarism. To promote highest standards in publication ethics, Committee on Publication Ethics provides advice and guidance to journals and publishers. Investigators should abide by ethical norms during the conduct of the research. Journals also maintain editorial standards and have well-defined policies for responding to misconduct. With an increase in medical publications over the years, it is important for all stakeholders to abide by publication ethics, in order to uphold the sanctity of research and credence in science.

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Integrity in scientific research and publication is the foremost essential element to determine its credibility. Medical and research institutions should promote good clinical practices among investigators and establish an institutional ethics committee for supervision of research. Journals should have a policy for safeguarding research data submitted to them, detect research misconduct and ensure accuracy and reliability of whatever is published [1].

To promote highest standards in publication ethics, an international body named Committee on Publication Ethics (COPE) was established to provide advice, guidance for day-to-day practice and education modules for journals and publishers. The core practices laid down by COPE may be followed by journals, keeping in mind the specific national and international codes of conduct [2].

Research Integrity

Research integrity deals with Misconduct (fabrication, falsification, or plagiarism) and Self-plagiarism (duplicate/redundant publication, text recycling, salami-slicing) [3].

Research misconduct: This is defined as “fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results” [3]. These three actions are considered as cardinal sins of research conduct. Fabrication refers to the making up or construction of data or observations that never existed. Alteration or manipulation of a value to show desirable change is also fabrication. Falsification refers to the alteration or manipulation of research data, protocols or results, in an attempt to give a false impression [4]. A

systematic review [5], showed that in a total of 18 surveys, a pooled weighted average of 1.97% (95%CI: 0.86-4.45) of scientists had self-admitted to have fabricated, falsified or modified data at least once. Further, 14.12% (95% CI: 9.91-19.72) alleged falsification done by their colleagues. The authors concluded that, considering the sensitive nature of these surveys, the true prevalence of misconduct is expected to be higher [5].

Plagiarism has been described as the “appropriation of another person’s ideas, processes, results, or words without giving appropriate credit” [6]. Plagiarism is one of the most common form of research misconduct, where someone else’s work (idea, data, results, or text) is presented by an author as his/her own, without acknowledging or taking permission from the original person/source. The Council of Science Educators considers it a form of piracy, where there is a clear intent of claiming credit by the offending author [4]. Plagiarism is also defined as “an instance of someone using someone else’s intellectual product (such as texts, ideas, or results), thereby implying that it is their own” [7]. There is a lack of consensus regarding what percentage of plagiarism is acceptable in a manuscript. Conventionally, 5% or less text similarity is acceptable, while most apex bodies/editors consider anything above 10-20% as objectionable. However, even in less percentage of similarity, if the matching text is copied en-block, it is liable to be considered as significant plagiarism. Plagiarism has been categorized by COPE in to three types: *i*) Clear plagiarism (unattributed use of large portions of text and/or data and represented as one’s own original work), *ii*) Minor copying

of short phrases (e.g. part of a discussion of a research paper), *iii*) Redundancy (i.e., copying from author's previously published work or self-plagiarism) [8].

Self-plagiarism: This occurs is when an author copies text/ results from his own previous publications. Though, the originally published article was the author's own ingenuity, its copyright is transferred to the publisher, once the article is published. Any copying of the work, albeit, the author's own, is labelled as copyright infringement. Duplicate/ Redundant publication involves publication of whole articles or substantial sections more than once, without due notification of this fact or cross-referencing, thereby misleading the readers to believe that this is the primary work [8]. Text-recycling is a type of self-plagiarism where the author uses short passages of texts or some figures from his own previous work, in multiple instances [3]. The first full report of the primary outcomes of a research is considered a primary publication, while secondary publications are additional reports of results of secondary objectives, subgroup analyses, or post hoc analyses. Such additional publications should clearly mention that these are publications of secondary analysis/objectives and duly reference the primary publication. The primary article should always be accepted for publication before other reports of secondary endpoints. Such secondary publications should avoid duplication and unjustified splitting of results across several publications. Salami-slicing is another type of self-plagiarism, where the same research or set of experiments is published in parts as different papers, with an intent to increase the number of publications. Few forms of prior publication which are not labelled as self-plagiarism are listed in **Box 1** [3].

Few online softwares can check for plagiarism of the whole or a part of the document subject to whether the software is paid or free. All softwares may not have complete access to entire published literature or to grey literature (content that is beyond academic or commercial publishing) which may miss detection of plagiarism at some places.

Responding to Research Misconduct

Journals should have well-defined policies to handle research misconduct. Editors may need to consult the journal owner (e.g. a scholarly body/society) and the

Box 1 What is Not Self-Plagiarism

- Abstracts and posters presented during conferences.
- Results presented at meetings.
- Results kept in databases and clinical trials registries (data without interpretation, discussion, or conclusions).
- Dissertations/theses in university archives.

publisher for legal advice.

Most of the operational guidelines, provided by COPE [8] suggest that the journal should initially contact the corresponding author in writing, ideally enclosing the signed authorship statement, stating the concern regarding the identified research misconduct. If the reply from the corresponding author is unsatisfactory, or he admits guilt, the submission is to be rejected with information sent to all the authors and the institution. There should be a confidential two-way communication between research institutions and journals. In most instances, investigation into this matter is carried out by the research institutions, employers, funding body, or the relevant national statutory body rather than the journal themselves [9].

Following investigations, if an article is proven to be fraudulent, journals may publish retractions or expressions of concern. However, responsibility for disciplining the investigators and ensuring responsible conduct of research lies with the institution [9]. In case of plagiarism involving minor copying of text phrases, the review process may continue, but the corresponding author may be apprised of the disconcerting fact in neutral terms, while asking for reframing the copied phrases or citing appropriately with references [8].

Research Ethics in Journal Articles

Ethics approval: Journals should ensure that authors provide a statement mentioning approval obtained from a registered ethics committee and that the study conforms to recognized standard guidelines (Declaration of Helsinki/ ICMR). Adherence to such guidelines certifies responsible conduct of research, taking care of the autonomy, confidentiality and justice to the subjects [10,11]. Few research protocols may be exempted from ethics review like when there is no likely or possible harm to the study participants or where already available information is being analyzed. However, these studies should seek exemption from respective ethics boards before the study begins. Case reports per se do not need any ethics approval but need consent from the patients and/ or parents/guardians before publication.

Ensuring anonymity: Identifying information of any subject should not appear in an article. Authors should mention whether written consent was obtained. CARE Guidelines may be followed for ensuring adequacy and transparency while publishing case reports [12]. The International Committee of Medical Journal Editors (ICMJE) guidance states that "Informed consent should be obtained if there is any doubt that anonymity can be maintained". For example, masking the eye region in photographs of patients is inadequate protection of anonymity [12]. When publishing family genograms,

journals should require consent from family members [14].

Registration of trials: Publication of clinical trials requires a prospective registration of the trial in national/international registries, which should be included in the text of the main manuscript.

Reporting standards: Authors are required to report their study in a manner conforming to the relevant reporting standards, e.g., Consolidated Standards of Reporting Trials (CONSORT) for clinical trials, Standards of Reporting Observational Studies in Epidemiology (STROBE) for observational studies [15].

EDITORIAL STANDARDS

Authorship criteria and dispute: Authorship depicts contribution of the person in the research published, and has far-reaching academic and social implications, being linked with promotions, recognition, credit and accountability. It is different from contributor ship which may only signify one's participation in the study without any authorship [16]. ICMJE recommends fulfilment of all of the following criteria (**Box 2**) to be eligible as an author. Those who do not satisfy the authorship criteria but may have helped in data collection or supervision of the study, may be named in the acknowledgement section.

The names and the order of authorship order are confirmed by the authors cannot be modified or changed after submission without the permission of the editors. It is recommended to decide the authorship before starting the study to avoid confusion and unpleasantness during manuscript submission. Sometimes, the name of a large collaborative group may be used in authorship where individual members may also be recognized by names for due credit. The corresponding author is the person responsible for submission and communication with the journal [17].

A dispute regarding authorship may occur when an author's contribution is not highlighted or is falsely credited. Unethical authorship practices are usually driven by the pressure to publish [18,19]. A common authorship

misconduct is guest authorship where peers and colleagues, are added a co-authors on mutual agreement without having fulfilled the criteria for authorship. Authorship may also be unjustifiably gifted to co-authors as a sign of gratitude and for shared responsibility for work, though not fully qualifying authorship. This is sometimes done to acknowledge supervisors or those involved in financing. An honorary authorship is one which is granted to a senior with administrative/hierarchical powers, even without having contributed significantly to the development of the manuscript, to facilitate publication, appease authorities at work (coercive authorship) or improve credibility of the manuscript among readers [19]. The most serious form of misconduct is sold authorship where authorship is obtained in lieu of money. Ghost authorship is the reverse of the above forms of authorship, where there is a wrongful exclusion of a contributor's name. This may happen when a hired professional author is recruited for publication purpose, or when the professional alliance or insufficient experience of a peer may endanger the reputation of the publication. Use of scientometric methods like tracking publication profile and biblio-graphic data via online platforms can help detect likely suspicious activity [20]. Around one-third of 1246 authors, majority of whom had published in journals with impact factor between 2 and 5, reported chief reasons for gifted authorship as complimentary and to avoid conflict at work, or increase the article acceptance rate. Articles from Europe and Asia, especially case reports/series and those with higher number of authors, were more likely to receive honorary authorship [21]. A significant decline in ghost-authorship has also been recorded with professional medical writers now receiving due credit [22].

Contributor role taxonomy (CRediT) has been recently introduced as a more structured format of declaring author contributions. It shows the credit for being in lead, equal or supportive roles for different aspects of a manuscript development, namely, conceptualization, methodology, software, validation, formal analysis, data curation, investigations, resources, writing of original draft, writing-editing and review, visualization, supervision, project administration and funding [23]. Such systematic and structured declaration of contribution increases transparency in authorship and helps to identify individual authors, thus being more advantageous in collaborative research [24]. The Consortia for Advancing Standards in Research Administration Information (CASRAI) is a non-profit, Canada based organization, which manages and supports CRediT taxonomy. The Contributor Role Ontology (CRO) is an open community resource which credits author contributions as an extension of CRediT [16]. Creation of a persistent identifier to track a person's

Box 2 ICMJE Criteria for Authorship [13]

- 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 approval 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.

Source: ICMJE Recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals [13].

name, affiliation and research work can help construct a scholarly graph for the particular person, comprehensively displaying the research credentials. Options for creating persistent identifiers are mentioned in **Web Table I**, which may have open or guarded display.

Pre-publication: Pre-publication of a manuscript or its part may be done by the authors on informal platforms other than the journal. Pre-publication does not undergo peer-review or text formatting as per the journal's instructions. It is thus quicker and easier but the credibility and validity of the content in pre-publication may be questionable. The details of pre-publication of an article should be communicated to the journal during submission.

Funding: Complete details of funder, the recipient, grant number and date of approval for a project should be declared in the manuscript, in order to acknowledge the role of funding agencies and to maintain transparency in research.

Conflict of interest: Conflict of interest (CoI) is a relationship or acquaintance like employment, stock ownership, partnership, honoraria, patents, etc., which may involve the author directly or through immediate family member. This may be perceived to introduce bias while publishing the results of a study or during the peer-review process, even when the judgment may not have been influenced. The declaration of such competing interests is entirely the responsibility of the authors in order to maintain transparency. Authors may best avoid getting into agreements with study sponsors for the rights of study data analysis and publication. In addition to authors, editors and reviewers should also disclose any CoI which may introduce bias in their decisions. A disclosure statement of the editorial staff may be declared by the journal from time to time [25].

Peer review: Peer review is a process of independent assessment of the submitted manuscript by a reviewer, applicable for all categories of articles, including invited reviews. However, subjecting a manuscript to peer-review process is not mandatory if the editorial board decides to reject it at the very outset, on the grounds of inappropriate quality or content as per the mandate of the journal. Peer reviewers are selected by invitation and are usually anonymized to ensure transparency. In a single-blind review, the identity of the reviewer is blinded from the authors, while the identity of authors is known to the reviewer. In a double-blind review, the identities of both reviewers and authors are blinded to each other. The final editorial decision may not strictly abide by the reviewers' comments, but comments of all reviewers and final editorial decision should be shared with the reviewers of the paper for improving learning. Reviewers should also maintain

confidentiality and sanctity of the review process, without infringement of the intellectual content of the paper. Traditionally peer-review means commenting on an article before it is accepted for publication. However, with an increase in online journals where manuscript processing is fast-tracked, a peer-review may be done after the publication of the article. An informal post-publication review could be submitted at blogs or newsfeeds. Recently, few third-party websites provide access to the reviewers and authors to interact like PubPeer and PubMed Commons. The post-publication review thus increases the opportunity of discussion with more experts on the research, though the comments may get overwhelming and may need to be moderated. Journals usually acknowledge the contribution of peer reviewers [25]. Persistent identifiers can be created to credit the reviewers for their quality reviews acknowledging their contribution for further promotion and recognition [16].

Appeals: Authors can make an appeal against an editorial decision or editorial handling process. Editors usually acknowledge the appeal, though they may or may not revert their decision. Appeals should however, be made only when there is a genuine concern like technical errors or conflict of interest of peer-reviewers involved in the review process.

Corrections/erratum: Journals may sometimes need to publish corrections or corrigendum for previously published information, which may include correction in authors' names (not addition or deletion of an author), typographical errors in results or any modification in a reported fact in the paper which inadvertently changed the interpretation or meaning of the statement. The corrections in the results should not alter the conclusions drawn earlier. It can be reported by the author or a reader and needs to be confirmed by the authors before incorporation. An update of a previously published guideline or recommendation is not a correction, and should be published anew as a fresh manuscript. The corrected manuscript published in the journal, should also be displayed with the previous version of the article. The most recent version of the article should be cited for reference [26].

Retractions: A manuscript is retracted or removed from the journal if a serious degree of publication misconduct or a gross error in reporting results is identified, after publication of the paper. Common instances where papers have been retracted include plagiarism, falsification of data, misclassification or miscalculation leading to communication of wrong conclusions, or objection by third party for fraudulent work [26]. Retracted papers can be searched at <http://retractiondatabase.org/> or <http://retractionwatch.com/> which provides the date, journal, authors and country, as well as the reasons for retraction.

The announcement of the retracted paper should be displayed along with the abstract and full text of the paper at all places.

Withdrawal of articles: This pertains to removal of an already submitted article before it has been published, usually in view of ethical misconduct, or rarely due to author's personal reasons.

Copyright and intellectual property: All journals demand a written agreement by the authors for transfer of copyright of the article, including all its contents, to the publisher, after publication of the article. Thus, a manuscript submitted to a journal, with a signed copy-right transfer agreement, becomes the copyright of that journal and the authors forfeit all claims or intellectual right over the published work. Subsequently, the information in the article may only be used by the authors for honest and non-malafide interests, with due permission of the editor-in-chief.

CONCLUSIONS

Publication of medical research has significant implications for influencing public awareness, health policies, guidelines, vaccine development, drug licensing, etc. It also determines the credibility and honour of an author and his institution. As authors and reviewers, fabrication, falsification, or plagiarism should be strictly avoided. Authors should fulfill all the ICMJE authorship criteria and disclose any potential conflicts of interest or funding. It is our responsibility as researchers to uphold the standard and reliability of scientific reporting by following ethical practices in publishing.

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Web Table I Persistent Identifiers for Authors and Reviewers [16]

<p>Open display and access</p> <ul style="list-style-type: none">• Cross Ref. https://www.crossref.org• Open Citations. https://opencitations.net• ORCID. https://orcid.org• Research Organization Registry (ROR). https://ror.org/about• Semantic Scholar. https://www.semanticscholar.org• VIAF. http://viaf.org• VIVO. https://duraspace.org/vivo• Wikidata Scholia. https://www.wikidata.org/wiki/Wikidata:Scholia
<p>Guarded display</p> <ul style="list-style-type: none">• Dimensions. https://www.digital-science.com/products/dimensions• Google Scholar. https://scholar.google.com/• Microsoft Academic. https://academic.microsoft.com• Publons. https://publons.com• Scopus. https://www.elsevier.com/solutions/scopus• Symplectic Elements. https://www.symplectic.co.uk• Web of Science. https://clarivate.com/webofsciencegroup/solutions/webof-science/
<p>Limited access</p> <ul style="list-style-type: none">• Academia.edu. https://www.academia.edu• Research Gate. https://www.researchgate.net