



# Publication ethics: Role and responsibility of authors

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## Abstract

Publication of scientific paper is critical for modern science evolution, and professional advancement. However, it comes with many responsibilities. An author must be aware of good publication practices. While refraining from scientific misconduct or research frauds, authors should adhere to Good Publication Practices (GPP). Publications which draw conclusions from manipulated or fabricated data could prove detrimental to society and health care research. Good science can blossom only when research is conducted and documented with complete honesty and ethics. Unfortunately, publish or perish attitude has led to unethical practices in scientific research and publications. There is need to identify, acknowledge, and generate awareness among junior researchers or postgraduate students to curb scientific misconduct and adopt GPP. This article discusses various unethical publication practices in research. Also, the role and responsibilities of authors have been discussed with the purpose of maintaining the credibility and objectivity of publication.

**Keywords** Authorship · Biomedical ethics · Conflict of interest · Disclosure · Duplicate publication · Editorial policies · Journal article · Manuscript · Peer review · Plagiarism · Retracted publication · Scientific misconduct

## Introduction

### Need to publish

A scientific paper is an organized description of hypothesis, data, and conclusions, intended to instruct the readers. Research conducted has to be published or documented; otherwise, it is considered not done. Publication of paper is critical for the evolution of modern science, in which the work of one scientist builds upon that of others [1]. The roots of scholarly, scientific publishing can be traced to 1665, when Henry Oldenburg of the British Royal Society established the journal *Philosophical Transactions of the Royal Society*. The aim of the journal was to create a public record of original contribution to knowledge and also to encourage scientists to “speak” directly to others [2]. Documentation of research work followed by publication helps in the dissemination of observations and findings. This flow of knowledge guides and contributes towards research

coalition. Established and budding researchers do get benefited by published literature and consolidates their research.

Publication of research in peer-reviewed journal not only validates the research and boosts confidence of the authors but also gives national and international recognition to an author, department, university, and institution [3]. Unfortunately, in some establishments, the most compelling reason for publication is to fulfill specific job requirements by employers. It may include promotion to an academic position and improving prospects of success in research grant application. The importance of publication in the career is further emphasized by the adage “Publish or perish,” i.e. publish your research or lose your identity.

### Ethics-related organizations and their role

A good research involves many coordinated steps. It starts from hypothesis, selection of appropriate study design, study execution, data collection, analysis, and finally publication. Not only the conduct of the study requires ethics to be adhered to but also the process of publication comes under the purview of ethics. Any publication that reports the results and draws the conclusion from the data which have been manipulated is considered research fraud or scientific misconduct [4]. Recently, Lancet retracted a study entitled “Hydroxychloroquine or chloroquine

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with or without a macrolide for treatment of COVID-19: a multinational registry analysis” because the veracity of the data underlying this observational study could not be assured by the study authors [5].

There are organizations which give recommendations and develop guidelines to assist authors, editors, and reviewers. The purpose is to create and disseminate accurate, clear, reproducible, unbiased research papers. The organizations involved with publication ethics are

- 1) International Committee of Medical Journals Editors (ICMJE).
- 2) World Association of Medical Editors (WAME)
- 3) Committee on Publication Ethics (COPE)

The ICMJE was established in 1978, in Vancouver, British Columbia, Canada, by a group of medical journal editors. ICMJE developed recommendations which are primarily for authors who want to submit their work in ICMJE member journals. These recommendations discuss the role and responsibilities of the authors, contributors, reviewers, and editors. Steps of manuscript preparation, submission, and editorial issues related to publication in medical journals are also discussed and drafted. The uniform requirements for manuscript submitted to biomedical journals, which most of the journals are following were drafted by ICMJE [6].

The WAME is a nonprofit voluntary association, which was established in 1995 by a group of members of the ICMJE. The goal was to improve editorial standards, promote professionalism in medical editing, and encourage research on the principals and practice of medical editing. The role of WAME is to facilitate worldwide cooperation and communication among editors of peer-reviewed medical journal. Membership in WAME is free and all decision-making editors of peer-reviewed journals are eligible to join. WAME has more than 1830 members representing more than 1000 journals from 92 countries [7].

The COPE also helps in ethical publication. COPE was founded in 1997 by a small number of UK medical editors as a self-help group to discuss troubling ethical cases in the publication process. It provides paid membership and currently has more than 7000 members in various disciplines from all parts of the world. The purpose of COPE is to find the practical ways to deal with the misconduct cases and to develop codes of conduct for good publication practice. It also generates the funding for the research based on the issues related to publication misconduct [8].

## Process of publication

The scientific publication is a team effort. Transforming the research findings and observations into a published article is

an art as well as science, which involves multiple steps. The very first step is the preparation of the manuscript as per the journal’s requirement. The language in which the manuscript has been drafted is important. It should be checked by an expert or native language speaker and the senior authors. Clear and concise language helps editors and reviewers to concentrate on the content. For up-to-date information, recent references should be cited. Final manuscript must be shared with all the authors and it should have approval of all the authors. Copyright transfer form should be signed by all the authors before submitting to the journal. Signing the copyright form brings responsibility.

Submitted manuscripts are first screened by the editors for its suitability, content, novelty, and what it adds to existing knowledge. The subject of research work should be synchronized with the target journal. It should comply with journal’s manuscript drafting guidelines. After the editorial screening, if some technical issues or non-adherence to manuscript guidelines are observed, it is sent back to the author for technical modifications. The peer review process gets initiated after technical modifications are acceptable. It may take a couple of weeks/months.

In light of reviewer’s recommendations, the editor sends the decision letter to the author mentioning the status of the manuscript, i.e. accepted, rejected, or requires revision. In case of revision, author(s) reply in detail to all comments of reviewers and submit to the journal again within stipulated time. After deliberation on replies and revised manuscript submitted, the editor decides for suitability of publication or if it needs to be sent out for review again. These steps get repeated until the manuscript is accepted or rejected. Once it gets accepted, it goes under proof read stage and finally gets published. The author is never in direct communication with the reviewer. He communicates with the Editorial board only. The reviewer should declare conflicts of interest (COI), if any, before reviewing the manuscript. Manuscripts are usually mailed to reviewers without information of the authors and their affiliations; hence, reviewers are blinded.

## What is publishable or not publishable?

Writing for publication is an important yet challenging form of knowledge dissemination. Journals like to publish articles that present an exhaustive meaningful research. It should contribute towards the knowledge building and awareness of readers. At the very minimum, a publishable article needs to be original. It should be conducted and drafted with robust methodology and significant findings, well organized, well written, and concise yet clear. It should be drafted with clear explanation of how the article addresses the existing knowledge gap. Conclusion drawn should be relevant to the audience or readers with

a comprehensive list of up-to-date references. Papers that are poorly organized, cluttered with unnecessary information, and consist of routine extension of previous reports or fragmentary reports of research results are not accepted for publication. Violation of ethical or legal norms, including plagiarism, duplicates publication lead to immediate rejection of the paper [9].

## Scientific misconduct

*Scientific misconduct* is the violation of the standard codes of scholarly conduct and ethical behavior in the publication of scientific research [10]. Misconduct in the scientific publication process by the authors is detrimental for integrity of the whole system and is considered unethical. Falsification or fabrication of data is the gravest form of scientific misconduct wherein authors either manipulate skewed data to look favorable or generate data where no data exists. Different forms of scientific misconduct are plagiarism or misappropriation of the ideas of others, improprieties of authorship, simultaneous publications, duplicate publications, salami slicing, and non-declaration of COI. Conducting research without informed consent or ethics approval and not maintaining data confidentiality is a form of scientific misconduct. Editors or publication houses do take disciplinary action as per COPE recommendations against scientific misconduct. Authors are blacklisted or banned to submit articles in the respective journal in the future [11].

## Criteria of authorship

Academic life revolves around publications. The publication adds to the credibility of the research and brings fame and recognition. An author is an individual who fulfills enlisted criteria collectively: (1) substantial contributions to conception and design; (2) acquisition of data, or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content; and (3) final approval of the version to be published. Individuals who have provided technical services/translating text/identifying patients for study/supplying material/providing funds/applied statistics/medical writers are not eligible for authorship. However, all those contributors who do not meet the criteria for authorship should be listed in the acknowledgement section [12, 13]. Because of the important role of publication in clinical practice and academic setting, the authorship of articles must be honest, reliable, trustworthy, and transparent.

## Types of authors

Since authorship is sought after, many unethical practices are also prevalent. Ghost, guest, or gift authors are the examples of such practices. A ghost author is a person who has made a substantial contribution to the research or writing of a manuscript but is not listed as an author. A ghost author might be a direct employee or hired contract employee of pharmaceutical company and hence, listing him as an author amounts to COI [14]. It is dishonest to omit an author who has made significant contributions. In contrast to ghost author, guest or gift/honorary author is someone who is named as an author, but who did not contribute in a meaningful way to the design, research, analysis, or writing of a paper. Often guest or gift authors are well known and well respected in the field of research. The inclusion of their name in the author list might increase chances of acceptance for publication.

However, sometimes senior investigators may also give honorary authorship to their colleagues for encouraging collaborations and maintaining good working relations or as repayment of favors. Whatever the cause, the gift or guest authorship is an unacceptable practice in publication. The presence of well-known author on the board as a guest author can influence the opinion of clinicians, academicians, and politicians about a particular drug or device. Secondly, due to gift authorship, the person is perceived as being more skilled than his colleague who has not published [12, 13]. In multicenter trials, since investigators from different sites have contributed, they qualify for the authorship and all those who qualify for authorship should be listed [15]. One should always remember that authorship brings responsibility and authors have to be accountable to the data and results which are published.

## Authorship issues/disputes

Authorship issues or disputes account for 2% to 11% of all disagreement in the scientific community. The authorship disputes could range from order of authorship, inclusion or exclusion of authors, number of authors etc. Request for addition of authors after submission or even after publication is quite common. In contrast, there are examples where a co-author denies becoming a part of a manuscript, once any scientific misconduct including plagiarism is detected [16].

The order of authorship should be mutually decided before taking up the study. It has to be a joint decision of all co-authors. In multicenter trials, research group includes large number of researchers. Hence, the corresponding author specifies and registers the group name and clearly identifies the group members who can take credit and responsibility for the work as an author.

ICMJE and other organizations issued the guidelines regarding group authorship and stated that in case of group

authorship the byline of the article identifies who is directly responsible for the manuscript, and MEDLINE lists as authors. If the byline includes a group name, MEDLINE will list the names of individual group members who are authors or who are collaborators [17]. Despite these guidelines, authorship battles for inappropriate attribution of credit are witnessed in this area also.

Usually, the dispute is for the “First author” place because most of the articles are cited by the name of the first author. Conventionally, the extent of involvement decides the order of authorship; for example, the person who has done the majority of the groundwork would be considered eligible for being the first author (junior researcher) and the person who planned and conceived the study would be the last author (supervisor). There is no general consensus in order of authorship, and there are different schools of thoughts [16]. During submission of revised manuscript, order of authorship should not be altered without any justification. Approval from all authors is warranted in case of revision of order of authorship. It affects the credibility of manuscript too.

## How to resolve authorship issues

The best way to prevent disputes in authorship is to generate awareness among research groups about authorship criteria and to develop Standard Operating Procedure (SOP) for the conduct and publication of research. COPE guidelines are to be referred in case of authorship or conflicts [18]. The next best option to prevent disputes is to have open discussion among all the authors involved in multidisciplinary research prior to initiating research, i.e. at the time of protocol drafting. Defining the role and responsibility of each author further reduces the chances of disputes within the research team. Editors do ask for individual contributions of authors in designing manuscript. The journal can blacklist guest or ghost authors [12].

## Plagiarism: do’s and don’ts

The word plagiarism was first used in the English language in the year 1601 by the dramatist Ben Jonson to describe someone who was guilty of theft. Plagiarism is derived from the Latin word “plagiare” which means to “kidnap.” A plagiarist is the person who commits plagiarism [19]. By definition, plagiarism is the use of previously published work by another author in one’s own manuscript without consent, credit, or acknowledgement. It is the most common form of scientific misconduct [4]. Plagiarism can be intentional or unintentional. Unintentional plagiarism is usually seen in articles written by students or junior researchers. Lack of awareness and

ignorance lead to unintentional plagiarism. Intentional plagiarism happens when an author deliberately copies documented or published work and presents it as his/her own. Both types of plagiarism are unethical and illegal, which can ruin the career and reputation of the writer [19].

Plagiarism of idea occurs when a plagiarist copies or steals the idea or thought of someone else and presents it as his/her own. Such type of plagiarism is difficult to detect; however, once detected, it is considered serious offense. The example of plagiarism of idea is presenting or documenting an idea of someone else which is being discussed or presented in any conference or seminar without citing proper sources. Plagiarism of text or direct plagiarism, i.e. word to word writing, is when a researcher takes large section of an article from another source and pastes it in his/her own research without providing proper citation. One of the hybrid varieties of plagiarism is Mosaic plagiarism where the author steals the idea, opinion, words, and phrases from different sources and merges words without acknowledging the original author.

Self-plagiarism is the practice of an author using portions of their previous writings on the same topic in their subsequent publications, without specifically citing it formally in quotes. There is no consensus as to whether this is a form of scientific misconduct, or how many of one’s own words one can use before it is truly “plagiarism.” To be on the safer side, authors should cite source or give reference of their previous publications. There are examples in which plagiarism engulfed the entire career of authors and writers and it became the reason of article retraction or rejection [20].

Culture of publish or perish is one of the important causes of plagiarism. The researcher needs to publish a large number of papers in limited time period to get more opportunities in career and research. In addition, lack of knowledge, laziness, and fear of failure and desire of getting recognition also lead to plagiarism. Many softwares, which can detect plagiarism are available online. It is the responsibility of the author to run their manuscript through software before submitting it to the journal [19, 21].

The very first step to prevent plagiarism is the awareness about plagiarism, the consequences, and how to avoid plagiarism. Authors can avoid plagiarism by acknowledging the original source of the idea or word and enclosing them within quotation marks. In case of paraphrasing, where the writer writes the text in his own word, authors must properly cite the original source. Authors must always obtain permission for use of published illustration. Authors should avoid writing multiple separate articles if he can present a large, complex study in a cohesive manner in a single article [21].

## Conflict of interest

Conflict of interest is an attribute which is invisible to the reader or editor, but which may affect or influence his or her



judgment or objectivity. Academicians/physicians and researchers often work in collaboration with pharmaceutical and biotechnology companies to develop a product for the well-being of society. However, there are examples where financial and non-financial ties of researchers or physicians with the company have compromised the integrity of research [22].

Conflict of interest describes the situations where the impartiality of the research may be compromised because the researcher stands to profit in some way from the conclusions they draw [23]. Examples of potential conflicts of interests that are directly or indirectly related to the research may include research grants from funding agencies, honorarium for speaking at symposium, financial support for educational programs, employment, and multiple affiliations. In addition, non-financial benefits including recognition, career advancement, advocacy for a strongly held position, and support for friends and colleagues can also affect the research work and result biases in the research. These biases, when hidden, can affect clinical decision-making by making interventions appear safer or more effective than they really are [24].

Disclosure of COI is the basic requirement to prevent attribution-related bias in the research. The ICMJE has produced a common form to disclose any COI and that has to be individually signed by each co-author. It has to be uploaded along with the manuscript files. The intent of the disclosure form is not to prevent authors with a potential COI from publication. It is merely intended that any potential conflict should be declared so that the readers may form their own judgment about the findings and observations. It is for the readers to determine whether the authors' outside interest may reflect a possible bias in either the exposition of the conclusions presented [25]. Authors are supposed to declare COI in the manuscript text too which is meant for readers.

## Duplicate publication

Duplicate publication or redundant publication is a publication of a paper that substantially overlaps with one which is already published, without clear, visible reference to the previous publication [26]. As per copyright law and publication ethics, whatever is available in the journal for reading would be original unless there is a clear statement that the author and editor are intentionally republishing an article. Hence, duplication of publication is the breach in the copyright law and against the ethical conduct. In addition, duplication of publication causes waste of limited resources and also leads to inappropriate weighting of the result of a single study. It was observed that duplicate publications of Ondansetron led to overestimation of its efficacy by 23% in one of the meta-analyses [26, 27].

The COPE classifies duplicate publication into major and minor offenses. The major offense is the one where duplicate publication is based on the same data set and findings which are already published. It is also considered if there is evidence that the author tried to hide duplication by changing the title or order of authorship or by not referring previous publication [28]. Minor or salami slicing is considered segmental publication or part publication of results or reanalysis derived from a single study. Authors do it to increase the number of publications and citations. It is considered unethical and it is taken in a bad taste because for a reader it may cause distortion in the conclusions drawn. Publication of the results of a single study in parts in different journals might lead to over-judgement. Wrong conclusions may be drawn from a study if it is done on a fixed number of subjects but the data are being presented in fragments in different journals.

When an author needs to submit a report that has been already published or closely related to another paper that has been submitted elsewhere, the letter of submission should clearly say so. The authors should declare and provide copies of the related submission to help the editor decide how to handle the submission. Authors who attempt to duplicate publication without such notification can face prompt rejection of the submitted manuscript. If the editor was not aware of the violations and the article has already been published, then the article might warrant retraction with or without the author's explanation or approval.

Duplicate publication does not prevent the author to disseminate important public health information in case of public health emergency. In fact, ICMJE encourages editors to give priority to authors who have made crucial data publicly available without delay [26]. Duplicate publications are justified if it is about combined editorials, clinical guidelines, and translation of archives.

## Predatory publishing

Predatory publishing is the publication of an article in the journal that lacks the usual feature of editorial oversight, transparent policies, and operating procedure of legitimate peer review journals. Predatory journals exploit the authors by charging the publication fee and deceiving them by providing the false claim about the journal's impact factor, indexing, and peer review [29].

Predatory publishing is harmful for both the author and the community. Predatory publishing may tarnish the image of the author. Articles published in predatory journals are usually not appreciated by the subject expert. It can misinform the readers and propagate wrong science because of poor quality control. Sometimes genuine information also gets missed

because most of the predatory journals are not indexed in the database, so papers are not easily traceable [30].

Predatory publishing can be avoided by educating researchers, supervisors, and administrators about fake journals. Authors should also learn how to identify trustworthy journals. If the journal website mentions of indexing, then it is important to cross check the inclusion of the journal in the mentioned databases. For an open-access journal, the inclusion in Directory of Open Access Journals (DOAJ) can be checked at the DOAJ website. The journal's claim of the Journal Citation Report (JCR) impact factor can be verified by its International Standard Serial Number (ISSN) number in the JCR Master list. Another approach to check trustworthy journals is to self-asses the journal through websites like <https://thinkchecksubmit.org/> [30].

## Responsibility of author

Authorship is not just a list of names. It is the matter of pride that has to be deserved, earned, and declared [15]. To

maintain the integrity and credibility of medical research and to nourish the trust of public in scientific endeavors, all authors must follow the rules of good scientific publication practice and should stick to the following responsibilities (Table 1):

- Do not fabricate or manipulate the data
- Avoid plagiarism and give proper acknowledgment to other works
- Decide the order of authorship prior to writing the paper to avoid future conflicts
- Declare whether research work has been published or presented before
- Declare COI
- Avoid ghost/gift/guest authorship
- Do not submit the manuscript to more than one journal for simultaneous consideration
- Take approval from the Institutional Ethics Committee before conducting research
- Last but not the least, take direct responsibility for appropriate portions of the content.

**Table 1** Role and responsibilities of author

Unethical practice	Misconduct	Role and responsibility of author
Authorship	<ul style="list-style-type: none"> <li>• Order of authorship</li> <li>• Ghost/guest/gift authors</li> </ul>	<ul style="list-style-type: none"> <li>• Decide in advance</li> <li>• All authors must fulfill the criteria of authorship</li> </ul>
Plagiarism	<ul style="list-style-type: none"> <li>• Major/clear plagiarism: word to word copy of large part of previous manuscript including data</li> <li>• Minor plagiarism: copying of short phrases only without any manipulation of data</li> </ul>	<ul style="list-style-type: none"> <li>• Cite the original source properly and enclosed the copy phrase within quotation mark</li> <li>• Obtain permission for the use of published illustration</li> </ul>
Redundant/duplicate publication	<ul style="list-style-type: none"> <li>• Major: Duplicate publication is based on the same data set and findings which are already published and author attempts to hide redundancy</li> <li>• Minor/salami slicing: Duplicate publication with some element of redundancy or legitimate repetition</li> </ul>	<ul style="list-style-type: none"> <li>• Mention in letter of submission that the work has been already published and provide copies of related work to editors</li> <li>• Avoid publication of fragmentary results or findings</li> </ul>
Conflicts of interests	<ul style="list-style-type: none"> <li>• An undisclosed relationship or funding source that may pose a competing interest</li> </ul>	<ul style="list-style-type: none"> <li>• Disclose any type of conflicts of interest at time of submission Authors are supposed to declare COI in manuscript text too which is meant for readers</li> </ul>
Drafting of manuscript	<ul style="list-style-type: none"> <li>• Nonuniformity in reporting randomized clinical trials</li> <li>• Nonstandard way of reporting animal research studies</li> </ul>	<ul style="list-style-type: none"> <li>• All manuscripts reporting clinical trials should be drafted as per CONSORT guidelines</li> <li>• Reporting of all animal research studies should confine to ARRIVE guidelines</li> </ul>
Ethics approval	<ul style="list-style-type: none"> <li>• Working on unapproved projects</li> <li>• Taking up a research without getting it approved from Institutional Ethics Committee (IEC) or Institutional Animal Ethics Committee (IAEC)</li> </ul>	<ul style="list-style-type: none"> <li>• Protocol should always be approved by the IEC and IAEC before initiating research.</li> <li>• Name of IEC and IAEC along with approval number to be provided in manuscript</li> </ul>
CTRI registration	<ul style="list-style-type: none"> <li>• Nonregistered clinical trial in CTRI</li> </ul>	<ul style="list-style-type: none"> <li>• All clinical trials should be registered with CTRI and author should document CTRI registration number in manuscript</li> </ul>

COI conflict of interest, CONSORT Consolidated Standards of Reporting Trials, ARRIVE Animal research: reporting in vivo experiments, CTRI Clinical Trials Registry - India

## Conclusion

Awareness of good publication practices should be generated among novice authors to prevent unethical practices in publication of scientific research. Each institute or department should resort to COPE or ICMJE recommendations for publications and draft their own SOP for authors who are actively involved in research. Unethical practices on the part of the authors or scientific misconduct should be discouraged and addressed by appropriate training and guidance.

## Compliance with ethical standards

**Conflict of interest** SS, and BSK declare that they have no conflict of interest.

**Disclaimer** The authors are solely responsible for the data and the contents of the paper. In no way, the Honorary Editor-in-Chief, Editorial Board Members, the Indian Society of Gastroenterology or the printer/publishers are responsible for the results/findings and content of this article.

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