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## Ethical Publication Issues in the Collection and Analysis of Research Data

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### ABSTRACT

The content of this article is about ethical issues in research and publications. It is a global issue that undermines the reputation of the institution and the concerned researcher. Conducting responsible and ethical research from the start to the finish of the research process is necessary to publish ethical research. This comprises investigating a socially relevant research question that will affect the profession and/or its users, as well as choosing a research design, protecting human subjects, evaluating data, and disclosing findings ethically. This report covered a wide range of measures necessary to publish ethical research and guarantee the validity or reliability of a researcher's results.

**Keywords:** Publications, Research, Data collection, Analysis, Ethical Issues

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### INTRODUCTION

Research is the foundation of knowledge and an essential component of progress [1]. Many coordinated actions and processes are involved in academic research: suitable study design, study execution, data gathering, data analysis, and eventually publishing [2]. While going through these phases and culminating in a publication can be an exhilarating experience, it is important to be mindful of the ethical code that binds researchers at every stage. The Committee on Publication Ethics (COPE) is an international forum for peer-reviewed journal editors and publishers that provides a "code of conduct" and "best practice guidelines" that define publication ethics and advise editors on how to handle cases of research and publication misconduct [3]. Writing and publishing require ethical integrity. The implementation of these tactics will improve ethical integrity when writing a manuscript for publication because they have been established to prevent or detect ethical violations [4]. How can we put all these principles into practice when conducting research every day? The purpose of the article is to address many ethical problems that might arise in research and publications, such as study design and ethical approval, data analysis, authorship, conflicts of interest, and plagiarism, as well as how to prevent them and maintain the integrity of both the research and the publications.

### ETHICAL THEORIES

When ethics are involved, ethical theories form part of the decision-making foundation because they represent the viewpoints from which individuals seek direction when they make decisions. Each theory highlights distinct points, a particular decision-making style, or a decision rule such as predicting the outcome and following one's responsibilities to others in order to reach what the individual deems an ethically correct option. To understand ethical choice making, researchers must recognize that not everyone makes decisions in the same way, with the same information, and using the same decision rules. To comprehend ethical theory further, it is necessary to have some awareness of a common set of goals that decision makers attempt to fulfill in order to be successful [5]. Four of these goals are as follows:

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- **Beneficence:** The beneficence principle directs the researchers to do what is right and good. This desire to "do good" makes an ethical viewpoint and possible solution to an ethical problem acceptable.
- **Least Harm:** Like beneficence, least harm considers situations in which no option appears to be beneficial. In such circumstances, researchers strive to cause the least amount of harm and to affect the fewest people.
- **Respect for Autonomy:** According to this idea, researchers should focus on allowing people to be autonomous, to make decisions that affect their life.
- **Justice:** According to the justice ethical principle, researchers should focus on acts that are fair to those involved. This indicates that ethical decisions should be compatible with ethical theory unless there are exceptional circumstances that may be justified. This also implies that cases with extenuating factors must have a considerable and critical difference from similar ones in order to justify the conflicting conclusion.

### RESEARCH

A research is a comprehensive, methodical study and examination into a certain subject of knowledge in order to establish facts or principles. "Research" is defined as "creative work undertaken on a systematic basis in order to increase the body of knowledge, including knowledge of man, culture, and society, and the use of this body of knowledge to devise new applications" [6]. Martyn Shuttleworth provides a broad definition of research: "In the broadest sense of the word, research includes any gathering of data, information, and facts for the advancement of knowledge." Creswell provides another definition of research: "Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue." It is divided into three steps: Pose a question, gather data to answer the question, and then offer an answer [7].

### CHARACTERISTICS OF RESEARCH

- **Rigorous:** The methods used to research problems are pertinent, acceptable, and justified.
- **Systematic:** The approach taken to conduct an investigation follows a predetermined logical order. The various steps cannot be carried out randomly.
- **Valid and verifiable:** Whatever conclusions are drawn in light of new information are true and can be independently verified.
- **Empirical:** Any conclusions reached are supported by verifiable data gleaned from information gained from observations or real-world experiences.
- **Critical:** A research inquiry must be critical in its examination of the techniques and methodologies used. It is necessary for the methods and process to hold up under inspection.
- **Accuracy:** Using a standardized tool, the data are collected, recorded, and evaluated as accurately as feasible.

### FUNCTIONS OF RESEARCH

- It contributes to the generation of new information and the intellectual and professional growth of the researcher.
- As new knowledge is included into the curriculum, teaching becomes better.
- It may serve as a means of support. Research funding is a source of revenue.
- It encourages societal advancement.
- It boosts the reputation of the subject and the organization.
- It makes it possible to handle issues and settle social conflicts.

Table 1: Principles of Research Ethics [8]

Principles	Definition
Voluntary participation	Every participant in your study has the option to participate or not at any time.
Informed consent	Before they decide whether or not to participate, participants are aware of the study's goals, advantages, risks, and funding.
Anonymity	The participants' identities are unknown to you. No personally identifiable information is gathered.
Confidentiality	Although you are aware of who the participants are, you keep this information a secret from the others. In order to prevent others from connecting personally identifiable information to other data, you anonymize it.
Potential for harm	Physical, social, psychological, or otherwise is kept to a bare minimum.
Results communication	You make sure that your work is original, devoid of research misconduct, and that it accurately represents your results.

### Study Design and Ethics Approval

Good research should be well-adjusted, well-planned, suitably constructed, and ethically accepted, according to the Committee on Publication Ethics (COPE). A lesser quality of scientific conduct may be considered misconduct [9]. This may seem like a strict requirement, but it underscores the fundamental need for a researcher to carry out their research properly. A study procedure should be created and followed in order to accomplish this. All contributors and collaborators must carefully agree to it, and early clarification of each team member's exact responsibilities including those related to authorship and publication is required. Instead than just collecting data, research should aim to provide answers to specific problems. Studies involving persons, medical data, and anonymized human tissues must have approval from the Institutional Review Board or Ethics Committee of the relevant organizations. The research proposal ought to cover any potential ethical concerns that might arise. To avoid breaking ethical rules, researchers should pay extra attention to vulnerable individuals (such as children, criminals, pregnant women, mentally challenged people, and those who are economically and educationally disadvantaged). During recruiting, subjects should be provided a patient information sheet outlining the goals, methods, potential advantages and disadvantages, as well as their right to decline taking part in the study. The subjects or their guardians should be informed and asked for their consent, and measures should be made to preserve the confidentiality of any information the subjects choose to disclose.

### Data Analysis in Research

The researcher must do an appropriate analysis of the data. Even if improper analysis isn't always misbehavior, purposeful leaving out of the results might lead to confusion and lead the readers astray. Data fabrication and data falsification do qualify as misconduct. For instance, if a medicine is determined to be useless during a clinical trial, this study should be reported. According to [10], there is a propensity for researchers to downplay bad findings, which is partly due to pressure from the pharmaceutical business, which is funding the clinical trial. All sources and techniques used to collect and analyze the data should be properly disclosed in order to ensure effective data analysis. Failure to do so could cause readers to interpret the results incorrectly without taking the likelihood that the study was underpowered into account. Any bias concerns should be addressed in the discussion section of the manuscript along with an explanation of how the study's design and interpretation addressed them.

### Publications

Publications make scientific knowledge accessible to the general public and enable the academic community at large to assess the caliber of the research. Publications have an impact on not only the research community but also, indirectly, society at large because they serve as the foundation for both new research and the application of findings. Therefore, it is the duty of researchers to prevent selective or confusing reporting and to guarantee that their publications are clear, accurate, comprehensive, and honest [11].

### Purpose of Publications

- Scientific publications (publications meant to advance science and provide new information); by publishing their findings, researchers acquire recognition and become associated with scientific discoveries.

- Publications meant to provide knowledge to the general public.

Table 2: Different Types of Publications [7].

Types of publications	Purpose	Writing Style	References/ Bibliography	Authors
Scholarly Journals	Report original research or theories to advance knowledge	Uses specialized vocabulary Requires prior training or subject expertise	Documentation of sources, quotes, facts, and ideas is required. Must be cited in footnotes or a bibliography.	Scholars or researchers. Academic credentials, degrees, and/or affiliation are almost always provided.
Professional/Trade Publications	Provide practical information for members of a profession, industry, or organization: news, trends, products, research summaries	Uses specialized vocabulary. Requires prior training or subject expertise.	Documentation of sources not required, though there are sometimes brief bibliographies of further readings	Journalists or members of the profession, industry, or organization
Popular/General Interest Magazines	Provide information, news, opinions, entertainment to the general public	Uses vocabulary understood by the general public.	Documentation of sources is not required and is rare	Journalists



Figure 1: Types of research and publication ethics [2]

### Academic Publishing

Academic publishing is the process of incorporating the findings of one's research into the body of knowledge. Literature can be obtained from a variety of sources.

a. **Primary literature:** which comprises original scientific research published in scholarly publications. Primary literature includes patents and technical reports for minor research findings and engineering and design work (including computer software).

b. **Secondary literature:** Includes papers in review journals (which provide a synthesis of research articles on a topic to emphasize advances and new areas of inquiry), books for huge projects, broad arguments, or article collections.

c. **Tertiary literature:** This category includes encyclopedias and other related publications. The majority of academic work is published in the form of a journal article, which can be printed or emailed, as well as a book or thesis.

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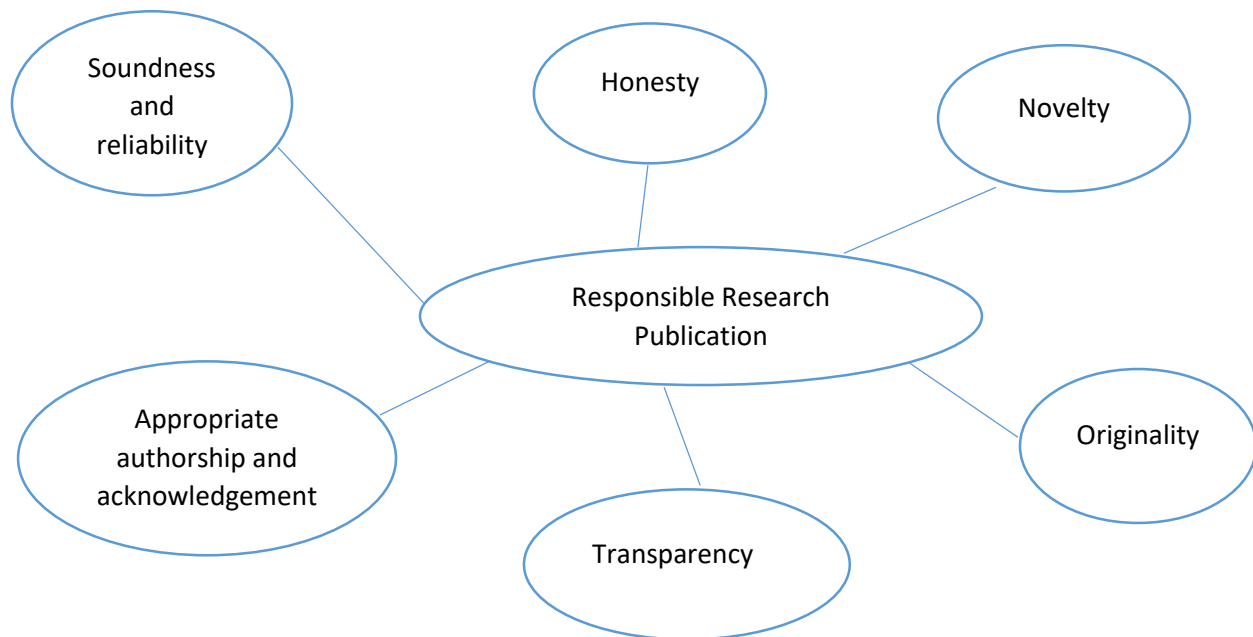


Figure 2: The characteristics of good and responsible Research Publication [7].

#### **Publishing Process in Research**

- Online submission of the article by the authors
- Peer review step
- Reviewers comments given to authors
- Corrections submitted by the authors
- Acceptance/Rejection
- Copyright transfer by the authors to publication house
- Copy editing, typesetting
- Proof reading by authors
- Printing and online publication.

#### **Ethical Issues in Research and Publications**

##### **a. Data Manipulation and Research Fraud**

The European code of conduct defines fabrication as "making up results and recording them as if they were real." [12]. Publications that state results and draw conclusions from data that were not generated by the study (fabrication) or were obtained by changing the data (falsification) are examples of research fraud. These offenses also apply to photos that have been altered to conceal the truth. Looking at the data, tables, P values, 95% confidence intervals, odds ratios, and so on, skilled reviewers and editors can quickly determine whether the authors committed research fraud. Fabrication and falsification are severe forms of scientific misconduct. If editors or reviewers feel suspicious throughout the review process, they may request that the authors release the raw datasheets to validate or assuage their concerns. If sufficient doubt is expressed, editors may seek datasheets even after a few years of publication. As a result, all clinical study data should be kept for a reasonable amount of time.

##### **b. Plagiarism**

Plagiarism is defined as the use of previously published work by another author in one's own manuscript without consent, credit, or acknowledgment and passing it off as one's own work. This is the most common type of scientific misconduct in the writing of manuscripts. Plagiarism can be classified into two types based on the extent of the content reproduced: (a) clear plagiarism, defined by COPE as the unattributed use of large portions of text and/or data presented as if they were written by the plagiarist, and (b) minor copying of short phrases only (e.g., phrases in a research paper discussion) with no data misattribution. Literal copying, which refers to reproducing large portions

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#### c. Simultaneous Submission

Simultaneous submission refers to the process of submitting a work simultaneously to many scientific journals. Most journals require authors to certify that their work is original and that it is not already being considered for publication by another scientific journal at the time of manuscript submission. Declaring as such and then ignoring this procedure results in submission to another publication where the authors believe their chances of success are better. The same manuscript can end up being published by two distinct journals as a result. The onus is on the author to submit to one journal and wait for a decision before submitting to another journal because this kind of wrongdoing happens at the author's sole discretion. Authors may still submit the same manuscript for publication in a peer-reviewed journal after submitting or presenting it at a scientific conference.

#### d. Duplicate Publication

Duplicate publication is when a new manuscript is submitted with the identical theories, information, points of discussion, and/or conclusions as a paper that has already been published. This is comparable to plagiarism, except that the identical data, pictures, and study hypothesis are repeated in another publication instead of copying sentences verbatim. Duplicate publications are divided into major and minor offenses by the COPE. A severe offense is defined as a second publication using the same dataset with identical results and/or proof that the authors tried to conceal redundancy, for as by altering the title or author order or omitting references to earlier works. A duplicate publication with some element of redundancy or justified repetition or reanalysis (e.g., subgroup/extended follow up/repeated procedures) is classified as a minor offense, sometimes known as "salami slicing." Authors most frequently utilize articles in regional or non-English journals as duplicate publications. Authors must desist from such activity and acknowledge that it is unethical. Along with rejecting and revoking papers that have been submitted or published, the COPE also offers explicit rules on how to handle duplicate publications. Even when the study premise is the same, doing a separate confirmatory investigation without using previously published data and with a bigger sample size does not constitute duplicate publication.

#### e. Self-citation

Self-citation is the practice of referencing one's own previously published work in articles that are not related to the study being discussed. For seasoned scholars, a paper's citation count can occasionally be more important than its actual publication. Senior authors are encouraged to pursue self-citation because total citation counts are also used to calculate metrics like the G and H index, which may be taken into account for academic promotions. The majority of the scientific community views this as immoral, and colleagues despise it. However, occasionally authors may have produced a significant body of work in their specialized field, and the succeeding publication is a continuation of earlier papers, necessitating self-citations. To credit one's own work, authors should refrain from introducing ideas that are not relevant to the current piece. The responsibility to prevent such scientific misconduct still rests with the authors.

#### f. Conflicts of Interest

Conflicts of interest, also known as conflicting interests, are described as financial, personal, social, or other interests that directly or indirectly impact the author's actions in relation to a certain manuscript. Having competing interests in a product or device under examination is not considered unethical; but, failure to disclose such concealed interests jeopardizes the paper's findings. Once stated, it is up to the readers to decide the impact of the conflicts of interest on the paper's conclusions. According to a recent study, Indian medical experts and journals have a poor knowledge of "conflicts of interest" and critical ethical issues [13]. The ICMJE has developed a standard form for disclosing any conflicts of interest, which must be signed individually by each coauthor and uploaded to the journal along with the article files. When the author works for, has stock in, or owns patents for the product (drug, gadget, etc.) addressed in the study, a direct conflict of interest arises. When the author receives honoraria and research funds to conduct the study, paid talks to market the product, and so on, an indirect conflict occurs. What constitutes a conflict of interest is left to the author's discretion, and authors are recommended to declare all financial disclosures, regardless of whether they are linked to the present article or not.

#### g. Authorship

There is no commonly accepted definition of authorship [14]. An author is widely recognized to have made a significant contribution to the intellectual content, including conceptualizing and designing the study, as well as

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gathering, analyzing, and interpreting the data. The author should also accept public accountability for the work and confirm that the manuscript reflects authentic work. Finally, an author is typically involved in the drafting or revision of the article, as well as the approval of the submitted manuscript. Data collecting, grammar and language editing, and other regular tasks do not merit authorship. It is critical to decide early in the study planning process who will be attributed as authors, contributors, and acknowledged. It is also advisable to carefully examine the target journal's "Advice to Authors" section, which may serve as a guide to the issue of authorship. The order of authors is determined by the level of involvement. However, the sequence of authors, particularly the first and corresponding author, can occasionally be a source of contention and disagreement. It is always a good idea for the study team to meet and resolve authorship concerns at the start of the study, and ideally sign into a contract, allocating distinct duties to authors based on their authorship order. Ghost authorship, gifted authorship, and guest authoring are the three basic categories of authorship misconduct. Ghost writers are individuals who make significant contributions to the creation of the paper but do not receive authorship or acknowledgement in the published paper. These are normally compensated authors, and if authorship is not disclosed, they should be acknowledged. The term "gift authorship" refers to inclusion on a list of coauthors solely because of association with the institute where the research was done. Gift authorship is routinely granted to heads of universities or departments even when they have made no major contributions to a specific study. Guest authorship is typically granted to those whose participation as a coauthor considerably improves the manuscript's prospects of acceptance. Changes to authorship (addition/removal) are allowed after acceptance or, in certain cases, after publishing if all coauthors agree to the change and have individually signed the requisition sent to the journal's editor.

#### **Reasons for Ethical Misconduct in Research**

- Lack of awareness about research and publication ethics
- Pressure for publication
- Financial enticement to compromise integrity
- Academic advancement and promotion
- Competition among colleagues
- Professional supremacy

#### **Consequences of Publication Misconduct in Research**

When each of the aforementioned misconducts is detected, the COPE provides explicit recommendations and measures to be taken [2]. The editorial board's initial step is to contact writers and inform them that their misconduct has been found. If the authors admit and accept their mistake, the work is rejected, and the authors' institution's leadership is notified. If the work has already been published, the authors are given the option to confess in the form of an erratum in the journal. If the misbehavior is serious, the editor has the authority to cancel the paper after conducting due diligence and confirming the misconduct. The journal may blacklist the authors, and the information is communicated with COPE so that all member journals are informed. If authors deny any form of misconduct, editors can take notice and take necessary action in accordance with COPE rules. Other effects may include:

- The termination of a researcher's career
- The loss of academic achievement
- A significant loss of funds, time, and reputation to the editor and reviewer as well as the researcher;
- The destruction of public trust in researchers.

#### **Publication Ethical Requirements in Research**

- Honesty and carefulness
- Objectivity and integrity
- Transparency and confidentiality
- Legality and Competence

#### **CONCLUSION**

This article established that it is the researcher's responsibility to guarantee that research is conducted ethically and responsibly from planning through publishing. Researchers and authors should become familiar with and adhere to these standards. Authors engage in a variety of unethical acts, sometimes intentionally and sometimes unintentionally. Being aware of the publication ethics outlined here will assist in intentionally avoiding such wrongdoing and conducting honest ethical research and pursuing publications. Researchers must maintain high standards of scholarly work as well as integrity in knowledge dissemination. Scholarly activity must be carried out in a responsible and ethical manner.

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### RECOMMENDATION

There are publishing ethics guidelines in place to ensure high-quality scientific publications, public trust in scientific discoveries, and that people receive credit for their effort and ideas. The following principles should be followed by researchers or authors in order to avoid ethical misconduct in research and publications.

- Declare to your chosen journal that your manuscript has not been submitted or published elsewhere
- Declare any conflicts of interest
- Check that all co-authors meet authorship criteria and that appropriate acknowledgements are made in the manuscript
- Register clinical trials
- Explain how animal research is handled responsibly
- Show informed consent and provide reassurance that participants' rights are respected
- Be aware of bias and follow rules for honest and comprehensive study reporting
- Inform the journal if you later discover errors in your research
- Sign a copyright agreement.

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