



## Systematic Review

# Publication of medical research without plagiarism – How to achieve it?

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## ABSTRACT

Conducting medical research is a tedious task with months to years of hard work and dedication. The end result of scientific medical research is publishing the data in the form of an original article in a reputed medical scientific journal. Plagiarism or similarity of the manuscript or article with the previously published work of other authors may be accidental or deliberate scientific misconduct. The authors writing a manuscript are responsible for ensuring it is free from similarity. The implication of this scientific misconduct is immense, and the stakes involved are high. This article attempts to discuss what plagiarism is and why it should be avoided. Some tips and tricks on writing a manuscript without plagiarism are also discussed.

**Keywords:** Scientific medical research, Publication, Ethical issues, Plagiarism

## INTRODUCTION

Research is the essence of medical science. Academic research involves months of careful planning. The life cycle of medical research includes identifying and formulating a research question, spelling out the objectives, planning and preparing for analysis before data collection, drawing conclusions from your data, formulating recommendations based on the data generated, and informing the stakeholders of the findings. The last part of academic research ends with publishing the scientific data. Publishing your research is important not only for career progression and academic promotion but also for identifying gaps in scientific research, areas for future research, and influencing change in clinical practice. Communicating research findings to the scientific community also gives us thrills and a sense of satisfaction. It is extremely essential to be honest while carrying out scientific research and publishing the same. However, deviations do happen, sometimes unknowingly and sometimes due to willful deception. These deviations are known as scientific misconduct, and one of the most common types of scientific misconduct encountered is plagiarism. In this article, we will discuss what plagiarism is, what are the different types of plagiarism, how to avoid plagiarism, and how to publish without plagiarism.

## WHAT COUNTS FOR PLAGIARISM?

The best description of plagiarism comes from the Latin word “plagiarius” which literally means kidnapper.<sup>[1]</sup> In simple terms, it is the use of previously published work of another author and claiming it to be their own without consent or providing due credit or acknowledgement to the

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authors. There are myriad ways in which plagiarism can be done. It does not simply account for word-to-word copying of the text. The Committee of Publication Ethics (COPE) defines plagiarism as “unreferenced use of someone else’s published or unpublished work in either a scientific article or in a research proposal even when the same is done in a different language.” The Indian Council of Medical Research has subclassified plagiarism into the following subtypes:<sup>[2]</sup>

### **Direct plagiarism**

This is the most common and most obvious form of plagiarism. It is also known as “clone plagiarism.” Word-by-word copying of the work of an author is known as direct plagiarism. Changing a few words in the text also accounts for direct plagiarism if the majority of the structure remains the same as the previously published article. Acknowledging the work of the author does not solve the issue if the majority of the text is copied word-by-word.

### **Self-plagiarism**

This refers to the reuse of one’s own previously published work. Besides a copy of verbatim, the publication of similar ideas in two different articles also accounts for self-plagiarism. Although it is not direct theft of someone else’s idea, copying oneself does create issues in the scientific world. A published paper is an intellectual work of the author, but most journals ask for copyright transfer before publication. Thus, the publication house owns the copyright of the article, and thus, copying the same without proper citation, even by self, is not appropriate. Furthermore, copying of verbatim is detected by the plagiarism check software, even for someone’s own work, and this may lead to inadvertent delays in publication.

### **Mosaic plagiarism**

Copying of the idea or general structure of the concept, text, phrases, or paragraph is called mosaic plagiarism. This copying can be from a single source, or some authors use texts from different sources and intertwine them into a logical flow. Improper citation in this context accounts for mosaic plagiarism.

### **Accidental plagiarism**

Sometimes, an author unintentionally forgets to cite or uses the wrong citation while writing a manuscript. With numerous articles getting published on a similar research topic, it is not uncommon to unintentionally paraphrase others’ work. This also happens if the author starts writing without completely understanding the topic. Hence, when the author comes across an interesting phrase in another article, the same is inadvertently copied.

## **WHY SHOULD PLAGIARISM BE AVOIDED?**

Plagiarism can be regarded as an intellectual theft. It violates the integrity on which the fundamentals of medical research and scientific data sharing depend. In the scientific world of research and publication, it is inevitable to completely avoid overlaps. Minor overlaps are acceptable. However, gross overlap in sentences, texts, and phrases as well as unacknowledged copying of technique or copying of data, is gross misconduct which should be avoided by all authors. It is essential to avoid plagiarism, not only to preserve the authors’ scientific integrity but also to allow a seamless publication process, avoiding unusual delays and preventing future retraction.

Most publication houses now have integrated plagiarism detection software such as “iThenticate” or “Turnitin.” This software seamlessly detects the index of similarity of a submitted manuscript with the already published article in the scientific community. A similarity index beyond the acceptable range for that particular journal is sent back to the author for appropriate corrections. Most publishing houses have now become stringent in the author guidelines section for plagiarism and usually follow the COPE guidelines.<sup>[3]</sup>

A comparative analysis of plagiarism in the published manuscript between 2013 and 2018 has shown that there has been a decline in the element of similarity from 65.9% to 44%.<sup>[4]</sup> This data emphasizes two points. First, it is impossible to avoid similarity completely, and second, the plagiarism detection software has made the system so robust that if we wish to seamlessly publish an article, we should take care to run the manuscript through one of this software before submitting it to the journal to avoid inadvertent delay in the publication process.

## **HOW DOES COPE DEALS WITH SUSPECTED PLAGIARISM?**

COPE has a defined protocol to deal with suspected plagiarism in both the submitted unpublished manuscript as well as a published manuscript. In a manuscript which is submitted to a journal for publication, the editor or reviewer is the initial node who detects plagiarism. Most publishing houses use plagiarism detection software which seamlessly detects the degree of similarity in the submitted manuscript. Some degree of similarity is unavoidable in the present era. In fact, while writing this particular manuscript, we were concerned about similarities with previously published work since the article on this topic has been published by multiple authors in the past, and inadvertent copying of phrases that have been previously published is almost unavoidable. Hence, a margin of 10% similarity is usually acceptable by most of the journals. Anything beyond this is unacceptable. If the editor or reviewer identifies similarity beyond 10%, a check is done

to establish if it is a case of clear plagiarism or redundancy, that is, copying of the submitting authors' previous published work, or it is a minor copying of short phrases. The actions in all these three scenarios are different. In case of minor copying, the editor/reviewer contacts the author, expressing disappointment and asking for rephrasing of the manuscript. In case of redundancy, minor overlap may be brought to the attention of the corresponding author, requesting the addition of missing references or removal of overlapping material. Major redundancy is where very similar data have been used again to write a new manuscript or submitting similar data by changing the authorship order and avoiding or hiding reference to the previously published article; the editor/reviewer prefers to write to all the authors, bringing into their notice the element of redundancy and asking for an explanation. If the explanation is satisfactory, the editor may ask for corrections or may reject the manuscript, with some advice to avoid such behavior in future. If the explanation is unsatisfactory, the manuscript is rejected, and the higher authority of the institution from which the manuscript was submitted is informed about the misconduct. If the manuscript shows clear plagiarism, the actions are very similar to that of major redundancy, however, the author may also have the risk of getting blacklisted.<sup>[5,6]</sup>

Plagiarism may also be detected after publication of a manuscript. This is usually brought to the notice of the editor of the journal by a reader of the article or any of the authors of the previously published victim article. If the case is of minor copying of short phrases without gross misappropriation of data, the editor usually contacts the corresponding author and asks for publishing corrections/addendums with a warning to avoid such misconduct in future. If the article shows clear plagiarism, like unattributed use of large text or data, the editor writes to the corresponding author seeking an explanation. If the explanation is satisfactory, the editor may ask for correction or consider retraction with advice to avoid such misconduct in future. If the explanation is unsatisfactory, the editor contacts all the authors of the article, informing them of such misconduct. The published article is retracted, and a retraction note is also published by the editor. The editor, as well as the publisher of the previously published victim article are also informed. Furthermore, the superiors of the author, including the head of the institution, the Institute's Ethical Committee, or the person involved with the governance of research of the institution from where the article was published are informed about the misconduct. There is also a risk that the author may be blacklisted from publishing in all journals of the publication house in future. Furthermore, the person or reader who informed the editor regarding the case of plagiarism is thanked and informed about the action being taken by the editor and publication house.<sup>[7]</sup> There is data to show that as many as 21% of manuscript retraction is due to plagiarism.<sup>[8]</sup> Furthermore,

there are studies to show that corrective measures do help in reducing plagiaristic behavior.<sup>[9]</sup>

## SECTIONS OR PARTS OF A MANUSCRIPT WHERE THERE IS A HIGH CHANCE OF PLAGIARISM

To avoid plagiarism, it is essential to have a thorough understanding of the topic before drafting the manuscript. The most common parts of an original article that are detected by the plagiarism detection software are the "introduction" and "discussion" sections of the manuscript. It is prudent to write the introduction and discussion completely in your own words and then use the references at appropriate places where other authors' data is being quoted in the text. This approach reduces the chances of plagiarism detection by the modern-day software. Another part of the article which may have an element of plagiarism is the "material and method" or "methodology" section. This especially happens for studies which try to recapitulate another study in a particular community. These types of studies may use material and methods which have been previously published. It is important for the authors to write the material and method in their language and then appropriately cite the article from which the original idea was sourced. *The most important part of the manuscript is the results, and any plagiarism in this section raises suspicion of copying data from another manuscript.* This is not accidental but deliberate copying, and it questions the scientific integrity of the author(s). Hence, all care must be taken to avoid any overlap in the results section.

## HOW TO PUBLISH WITHOUT PLAGIARISM

There are some simple tricks which go a long way in avoiding plagiarism.<sup>[10-13]</sup> The most common issue leading to plagiarism is the inability to acknowledge or obtain permission from the referring article. Hence, it is extremely essential to attribute references and describe all sources of information systematically used in the manuscript. If short phrases have been copied from another article, "quotation marks" should be used, followed by providing appropriate references. Attempts should be made to rephrase the original work as far as possible. If it is unavoidable to use long sentences from another published manuscript, it is pertinent to obtain permission from the publisher of the original work from which these sentences have been sourced. The same stands true for your self-published work as well, as the copyright of a published manuscript is with the publishing house and not with the author. The same stands true in the case of the publication of illustrations, flow charts, or drawings.

In this era of artificial intelligence (AI), there is a growing concern about its use for writing medical scientific manuscripts. However, there are software programs that can

detect if the manuscript was written by a human or machine. There is also tempting software, which may re-phrase a write-up written by AI, but still the same may get picked up. It is important to remember that the purpose of writing a medical scientific article is to increase the existing scientific know-how and also learn medical science in the process. Using these mechanical tools does not serve both of these purposes, as the write-up done by AI would only benefit from the existing medical knowledge.

### COMMON TIPS FOR AVOIDING PLAGIARISM

- Acquire a clear understanding of the topic before drafting the manuscript
- Write the manuscript in your own words; do not read the published article while drafting the initial manuscript
- Use quotation marks for minor copying of phrases from another article
- Obtain permission for the source article if a large part of a previously published article is quoted
- Always acknowledge the source article with correct references
- Avoid writing multiple manuscripts on similar data sets; try to compile the findings of research in one manuscript
- Use plagiarism check software before submitting the manuscript
- A lot of people contribute to scientific work, and some people do not qualify to be authors. Acknowledge their contribution
- If it is impossible to bring down the similarity index, inform the editor in the cover letter, ask for his advice, and let him decide if (s)he wishes to consider the manuscript for publication in the journal
- All institutes should provide training to budding medical graduates on how to write a scientific article and do so without plagiarism
- “Publish or perish.” This mantra leads to undue pressure to publish and inadvertently to plagiarism. Publishing should not be an academic promotion drive activity.

### CONCLUSION

Publishing medical research is extremely essential for increasing the knowledge of the medical community. The onus to ensure plagiarism-free publication lies with the medical scientists, and “honesty” is the mantra to be followed. Knowledge, understanding, and planning before writing the manuscript are essential components to avoid plagiarism. It is the responsibility of the peers to spread awareness regarding this scientific misconduct. All acts of plagiarism should be dealt with strictly by the publication house as well as by the ethical board of the institute. If published with plagiarism, the article should be retracted, and the authors should be

appropriately punished to set an example in the scientific community and avoid such future behavior.

### Ethical approval

The Institutional Review Board approval is not required.

### Declaration of patient consent

Patient’s consent was not required as there are no patients in this study.

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### Conflicts of interest

Prakas Kumar Mandal and Ankit Jitani are members of the editorial board of the Journal.

### Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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