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SYSTEMARIC REVIEW **MEDICAL WRITING & ETHICS**

Ethics and ethical issues in medical writing

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ABSTRACT

Background: Medical writing is an important aspect of healthcare communication because it makes it easier to share clinical information and research findings. Medical writing is essential when it comes to conveying clinical and scientific knowledge. But the field is facing more and more ethical issues that might compromise public confidence and scientific integrity. For medical literature to be transparent, accurate, and trustworthy, ethical norms must be upheld.

Objective: The purpose of this narrative review is to examine the basic principles of ethics and prevalent ethical issues in medical writing, emphasizing the significance of maintaining accuracy, accountability, and transparency.

Methodology: A systematic search of MEDLINE/PubMed and Google Scholar databases, then thoroughly reviewed the articles, focusing on those published in the last 10 years. Ethical issues, including use of AI, plagiarism, ghostwriting, and disputes over authorship, data falsification, and conflicts of interest, were analyzed.

Conclusion: Maintaining the integrity of scientific papers and safeguarding patient welfare depend heavily on ethical medical writing. Preventing misbehavior and ensuring responsible communication in medical literature requires awareness, adherence to ethical principles, and appropriate training for researchers and authors.

Keywords: Authorship; Ethics; Ghostwriting; Medical writing; Plagiarism; Publication ethics; Scientific integrity

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1. INTRODUCTION

The term ‘Ethics’ refers to the study of right and wrong in human conduct. To put it another way, it includes the views on what is ethically right or suitable and is described as a code of morals or moral philosophy upheld by an individual or a community. This is particularly significant in scientific tasks, as fairness, honesty, and ethical behavior are fundamental human necessities.[1]

While many people think of ethics as a set of rules that distinguish between right and wrong, Resnik (2011) states that the term really refers to norms of behavior or conduct in a variety of academic areas of study. Norms or ethics in research promote "knowledge, truth, and avoidance of error" and help prevent "fabricating, falsifying, or misrepresenting experimental data". It is the collaborative duty of researchers, editors and publishers to ensure that every aspect of the research procedure and the sharing of results remain transparent, honest, and reliable. Scientific conduct guidelines uphold moral and social principles that protect the health and welfare of participants, both human and animal, and contribute to the public's continued trust in the "quality and credibility of the research."[2]

Several professional organizations such as ICMJE (International Committee of Medical Journal Editors) and COPE, the Committee on Publication Ethics have

created distinct ethical guidelines pertaining to research. [3] Among the ethical standards outlined, several key principles are vital for maintaining research integrity, such as honesty, objectivity, diligence, and respect for intellectual property rights, confidentiality, non-discrimination, fairness, transparency, responsible mentoring, social responsibility, collegial respect, and the safeguarding of human and animal subjects.[4, 5] This review aims to discuss the major ethical concerns in medical writing and suggest practical recommendations to address them. By emphasizing these components, the paper aims to increase understanding and promote ethical conduct among medical writers and researchers.

2. Ethical standard in medical writing or research

There are number of reasons why it is crucial to follow ethical standards in research.

Firstly, these standards help to achieve the objectives of research, which include preventing errors, pursuing information, and finding the facts.

Secondly, ethical norms promote the principles of trust, accountability, respect for one another, and fairness, all of which are essential for collaborative efforts because research frequently necessitates extensive coordination and cooperation between several individuals from various fields and institutions. For instance, numerous ethical rules in research, including those pertaining to data sharing methods, authorship, copyright and patent laws, and confidentiality during peer review, are designed to ensure intellectual property rights while encouraging teamwork.

Thirdly, a variety of ethical standards help guarantee that researchers answer to the public. To ensure that researchers who receive public funding may be held accountable to the public, for instance, federal legislation pertaining to research misconduct, conflicts of interest, the protection of human participants, and the care and use of animals are important.

Fourthly, ethical standards in research helps in gathering public support for scientific initiatives. Individuals are more inclined to finance research initiatives if they have confidence in the research's quality and integrity.

Lastly, many research norms foster a range of significant moral and social principles, such as social responsibility, human rights, and animal welfare, adherence to legal standards, and health and safety For example, a researcher who falsifies data in a clinical study may cause injury or even put patients in danger, and a researcher who neglects rules and regulations related to biological or radiation safety can risk his own health and safety as well as the health and safety of staff and students. [2]

3. Ethical issues in medical writing

Although the idea of medical writing is commendable, it brings certain duties for medical writers. In today's age of technological progress, written content can be quickly shared globally. Articles that are published hold significant authority, especially when featured in academic journals. Other ethical issues may also emerge, including plagiarism and simultaneous submissions. These issues typically go undetected by editors or their staff. It is crucial for medical writers to understand the ethics surrounding medical writing and adhere to specific guidelines. Following are some of the issues in medical writing.

3.1. AI as an emerging ethical issue

The rapid rise in chatbot usage and the development of a dual use dilemma raise concern about how medical research quality will change over time. The problem relates to basic technical issues is: these tools still frequently produce fraudulent medical papers that appear to be of high quality on the surface but frequently fail to deliver accurate answers to queries. AI can't yet express complex inductive reasoning, which is necessary for clear thinking, like the human brain can. The widespread and mostly uncontrolled application of AI in medical writing may potentially cause text to become more homogenized over time, losing its uniqueness leading to accuracy may decline, the number of published papers may increase, and the ability to identify validity issues could decrease. [6]

3.2. Simultaneous submission

A writer should avoid sending the same article to multiple publications at once. This behavior is often seen among students or authors who have not yet been published. They may think that submitting the same paper to various outlets will enhance their chances of acceptance. However, this leads to the real risk of the same article being published by two or more journals. This puts all of the involved publications in an unpleasant and embarrassing position. Many journals, such as International Journal of Scientific Research and Biotechnology IJSRBP, CSC journals, JSAMS plus (via Elsevier/Science Direct) require the author to provide a signed declaration stating that the work has not been submitted to any other outlet. [7]

An additional behavior observed among authors or students is dividing the data gathered from a single study

into several research pieces, each of which is published independently in a different journal, is known as **salami publication**, or more specifically, salami slicing. The frequency of duplicate and salami articles is rising, despite the fact that they are unethical. Salami publications are thought to be harmful to the scientific community. A few journals have procedures implemented to prevent the publication of salami.[8]

3.4. Plagiarism

Plagiarism constitutes the violation of intellectual property rights. Plagiarism has typically been characterized as taking another person's idea, thought, language, or expression and presenting it as one's own original creation.[1] In its most obvious instance, it involves the verbatim copying of another author's words without permission or attribution. As a result, the individual found guilty of plagiarism faces academic penalties and damage to their professional reputation.

A more subtle ethical issue arises when someone appropriates ideas or rephrases another's work. This represents a form of intellectual complacency that fails to acknowledge the original creator. The straightforward solution is to acknowledge the original source properly. Using footnotes serves as an excellent way to attribute an original idea or research to the respective author(s). [9,10]

3.5. Authorship and Contributorship

The World Association of Medical Editors has identified three essential elements required for authorship, specifically:

i. An intellectual contribution to the research

ii. Involvement in the writing process

iii. Participating in the manuscript's final approval as written.

The credibility of scientific publications is compromised by inappropriate authorship, which is a significant problem for the academic and research world. Honorary and ghostwriting are examples of inappropriate authorship.

Honorary or Gift authorship as the term suggests, is given to unworthy writers who don't fit the proper authorship criteria. In the medical community, this is the most prevalent instance of outrageous abuse. [11] Gift authorship is given to recognize friendship, win favor, or add more credibility to the paper. Adding well-known senior investigators as authors to their articles is still rather usual, even though the senior may not have contributed anything to the work. [12]

Ghost authorship: A ghost author is someone who significantly contributed to the writing or research of a manuscript but is not listed as an author. [3]

Clinical trials carried out by manufacturers of medical drugs and devices have frequently reported cases of this type of unethical behavior.[1,13] Past study concludes that 21% of articles published in the leading general medical journals experienced issues with honorary authorship, while close to 8% of articles in these journals may have featured unnamed significant contributors.[14]

3.6. Patient confidentiality and informed consent

The right of research participants to maintain their integrity must always be respected. The confidentiality of patient data and the privacy of the subjects should be protected at all costs. [15] The participant should be informed that there are no implications if they choose not to participate in the study or withdraw their consent at any time. After ensuring that the patient understands all the details, the doctor should obtain the patient's freely given informed consent, preferably in writing. If written consent cannot be obtained in writing, it must be legally recorded and verified.[16]

3.7. Data Integrity and Accuracy

There is dispute on the prevalence of data fabrication and falsification by medical researchers as well as other types of scientific misconduct. Falsification is the modification of data or experimental procedures to achieve a desired conclusion, while fabrication is the recording of false data when none exists. Altering data can result in misleading conclusions and pose risks to patients.[7, 17]

Data falsification poses several issues. Firstly, it undermines the credibility of other scientific research, both from the individual(s) involved and from their peers in the discipline. Secondly, if it remains undetected, it can squander other researchers' time and efforts trying to recreate or expand on the information provided in a falsified study. Lastly, it threatens public confidence in the scientific community. [18]

The integrity of research records is frequently compromised for immediate benefits, potentially compromising patient safety. The medical research community must approve reforms to guarantee that readers receive accurate information about all studies, particularly randomized trials, which are crucial for determining the most effective treatments for patients.

The evidence base for healthcare decision making is severely distorted when the results of all studies especially randomized trials are not published. This

result in misleading representation of data or results that can undermine the credibility of the research. [19]

3.8. Human use concerns

Following the World War II, a set of 10 criteria was created to evaluate the actions of medical professionals and researchers who participated in experiments involving concentration camp inmates. Known as the Nuremberg Code, these guidelines were the first to set forth ethical standards for human experimentation. According to the code, human experiments are allowable only if they will benefit society, if the participants provide informed consent and can withdraw at any moment, and if the investigation causes no harm or discomfort to the subjects involved. [18]

3.9 Conflict of interest and bias

As the usage of medical equipment and technology grows, the writers must honestly disclose any conflicts of interest. Any personal or financial ties that can affect its publishing must be disclosed by the authors. This should be on the title page of the submitted work and is typically asked by editors and publishers. [20] This gives the readers a well-rounded viewpoint as well as raise public confidence and enables them to use their own discernment to wisely interpret the findings of any scientific study. [1]

4. CONCLUSION

Evidence-based scientific research promotes novel ideas and concepts and should not tolerate intellectual dishonesty or plagiarism. Institutions should regularly train researchers and medical writers on publishing ethics in order to address ethical concerns in medical writing. Journals should encourage the use of plagiarism detection and data verification techniques and strictly enforce adherence to authorship and disclosure requirements. To promote an ethical writing culture and guarantee accountability and transparency in scientific communication, cooperation between academic, editorial, and regulatory organizations is crucial.

5. LIMITATIONS

The majority of the research on ethics and ethical issues in medical writing is based on rules and current literature, which might not fully account for the scope of unethical behavior that takes place in real-life scenarios. Additionally, there is a lack of statistical data regarding the frequency and consequences of particular ethical mistakes, and the generalizability of results may be impacted by differences in ethical norms among countries and organizations.

6. RECOMMENDATIONS

Further research should concentrate on gathering empirical and statistical data on the prevalence and consequences of unethical acts in medical writing in order to fill in the gaps in the current body of information. A more accurate picture of ethical issues can be obtained through surveys, audits, and case studies conducted in various academic and healthcare facilities. Furthermore, it is advised to do cross-cultural research to examine how ethical standards vary among nations and organizations in order to create more universally applicable standards.

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