CHAPTER «SOCIAL COMMUNICATIONS»

ACADEMIC INTEGRITY IN MEDICAL RESEARCH

Neonila Artamonova[1]
Yuliana Pavlichenko[2]

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Abstract. The issue of academic integrity (AI) is multifaceted and remains highly relevant both in Ukraine and globally, particularly in the context of medical research, safeguarding against the dissemination of pseudoscientific results, and preventing plagiarism amid the globalization of digital technologies, including artificial intelligence (AI) and chatbots. *The purpose* of the study aims to characterize contemporary perspectives on the multifaceted phenomenon of academic integrity and the components of its violation, using medical research as an example. To achieve this objective, the following tasks were set: to examine the types of academic integrity and academic plagiarism (AP), to determine the impact of AI and ChatGPT on academic plagiarism, and to analyze the legal aspects and measures for combating plagiarism. *Methodology.* To reveal the essence of academic integrity, academic plagiarism, and their features in medicine, a comprehensive study of scientific publications was conducted, taking into account legislation and its practical application. An analytical approach was used to process scientific publications from multidisciplinary digital resources, including Scopus, Web of Science Core Collection, and NCBI PubMed. *Results* of the study characterizes contemporary perspectives on academic integrity and academic plagiarism in medical research.

[1] Doctor of Sciences in Social Communications, Senior Researcher,
Leading Researcher, Head of the Group of Scientific Medical Information,
Intellectual Property and Technology Transfer
of the State Organization «Grigoriev Institute for Medical Radiology
and Oncology of the National Academy of Medical Sciences of Ukraine», Ukraine
[2] Researcher of the Group of Scientific Medical Information,
Intellectual Property and Technology Transfer
of the State Organization «Grigoriev Institute for Medical Radiology
and Oncology of the National Academy of Medical Sciences of Ukraine», Ukraine

The essence of these concepts, their types, and specific examples of AP in medical research are presented. The policies of scientific medical journals regarding AP are analyzed. The role of AI and ChatGPT in academic integrity and plagiarism is described. Key functions of ChatGPT for researchers are outlined, including the classification of AI-related plagiarism types, and the risks associated with plagiarism facilitated by chatbots are highlighted. The potential impact of ChatGPT on the quality of scientific articles is evaluated, alongside guiding principles from leading international organizations regarding the role of AI in research and publications, as well as relevant legal aspects. *Practical implications.* The use of this information will enable medical professionals to prevent violations of academic integrity and plagiarism in their practice, as well as to take into account existing approaches to the detection and prevention of academic misconduct. *Value/ Originality.* The study lies in the theoretical generalization of the researched issue, the enrichment of existing knowledge with new data and evidence, and the dissemination of this knowledge, which may assist scholars in adhering to the principles and standards of academic integrity.

«The dishonest thing is not truly beneficial»
Benjamin Franklin

1. Introduction

The concept of academic integrity (AI) has existed for as long as high culture itself. In recent years, the global scientific community has increasingly focused on issues of academic integrity and its violations, namely academic dishonesty.

These issues are being thoroughly studied both in Ukraine and worldwide. A wide range of types of academic dishonesty has been recognized, among which plagiarism occupies the first place. In recent years, growing attention has been devoted to combating plagiarism. At the state level, strict anti-plagiarism measures have been adopted and implemented, and plagiarism checks have become an everyday reality for all researchers. Printed and electronic scientific sources are full of calls for «surgical intervention» in all manifestations of dishonesty [1–4].

In the context of the globalization of digital technologies, including artificial intelligence (AI) and chatbots, the issue of ensuring academic

integrity in conducting medical research and protecting against pseudoscientific results and plagiarism has become especially relevant. The spread of new means of information exchange, such as social networks, open access electronic journals, institutional repositories, and international scientific databases, gives rise to challenges in academic integrity, including fraud, plagiarism, data presentation standards, and authorship confirmation, all of which affect authors, readers, and publishers to varying degrees [5–7].

The issue of academic integrity has been analyzed in the works of both Ukrainian researchers (H. O. Ulyanova, V. O. Ulyanov, N. A. Yurko, A. S. Shtefan, I. Ye. Yakubivskyi, O. M. Ryzhko et al.) and foreign scholars (Copeland B.J., Miller D.D., Brown E. W., Kasani P. H., Cho K. H., Jang J. W., Yun C. H. et al.).

Ensuring academic integrity in medical research, protecting against the spread of pseudoscientific results and plagiarism, has acquired particular relevance [8]. Overall, the problem of violating academic integrity in global science, particularly in the medical field, remains pressing, requiring constant attention and the development of measures to combat this phenomenon in order to maintain high standards of quality in medical research.

The purpose of this study is to characterize contemporary perspectives on the multifaceted phenomenon of academic integrity and its violations, with a specific focus on medical research.

2. Methodology

To achieve the stated objective regarding the essence of academic integrity in medical research, both general scientific and specific research methods were applied. Revealing the essence of AI, its components – particularly plagiarism – and their peculiarities in medical research requires conducting a comprehensive analysis of scientific publications, taking into account their various features.

An analytical method of processing scientific publications was used, drawing upon multidisciplinary digital resources such as Scopus (https://www.scopus.com/), Web of Science Core Collection (https://www.webofscience.com/wos/woscc/basic-search), and NCBI PubMed (https://pubmed.ncbi.nlm.nih.gov/), as well as Ukrainian regulatory documents and other sources. The search period covered the years 2015–2024.

The search strategy was based on the following key terms: «Academic integrity», «Scientific fraud», «Data fabrication», «Scientific ethics», «Unfair research practices», «Academic plagiarism», «Scientific plagiarism», «Plagiarism», «Self-Citation AND Academic Publications», «Academic integrity AND plagiarism», «Academic integrity AND ChatGPT», «ChatGPT plagiarism», «Artificial intelligence and plagiarism», with filters limited to the years 2015–2024 and the field of medicine.

It should be noted, however, that in PubMed, the search was limited only by years, as this is a specialized medical database. Regarding the search results on ChatGPT, the first articles began to appear in 2023.

The criteria for selecting publications included the exclusion of duplicates and thematic relevance to academic plagiarism, with preference given to review articles. The results of the search are presented in Table 1.

Table 1

Search Results in Databases

Keywords	Number of Documents			
	WoS	Scopus	NCBI PubMed	Overall
Academic integrity	292	196	414	902
Scientific fraud	110	89	72	271
Data fabrication	478	345	111	934
Unfair research practices	12	18	326	356
Academic plagiarism	175	480	327	982
Scientific ethics	1622	2691	280	4593
Scientific plagiarism	242	637	889	1768
Plagiarism	539	1392	2589	4520
Self-Citation AND Academic Publications	37	51	35	123
Academic integrity AND plagiarism	14	859	146	1019
Academic integrity AND ChatGPT	18	19	136	173
Artificial intelligence and plagiarism	22	0	197	219
ChatGPT plagiarism	19	38	146	203

As can be seen from the table, different numbers of documents were found for the same query (keyword or phrase). This is understandable, since the WoS and Scopus databases are multidisciplinary and contain a wide range of medical publications, whereas PubMed is a specialized medical information resource.

It is also important to determine the structure of the distribution of publications. The largest number of publications is devoted to issues of scientific ethics as the foundation of academic integrity. The second most actively studied topic is plagiarism, particularly scientific plagiarism. A significant number of publications also focus on issues related to data falsification.

3. The Essence of the Main Concepts

Academic integrity is a set of ethical principles and defined rules that participants in the educational process must follow during learning, teaching, and conducting scientific (creative) activities in order to ensure trust in the results of education and/or scientific (creative) achievements [9].

One of the forms of academic dishonesty in scientific practice is plagiarism, in particular academic plagiarism (AP), which constitutes a serious violation of the ethical norms of science. There are many definitions of AP depending on the field of knowledge and the legislation of different countries. For example, the definitions may vary for scientific works, for editorial policies of scientific journals, etc. [10]. However, what is common to all definitions is the appropriation of results obtained by other persons (Latin: *Plagiatus* – stolen).

In Ukraine, AP is defined as «the publication (partially or fully) of scientific (creative) results obtained by other persons as one's own research (creativity), and/or the reproduction of published texts (disclosed works of art) of other authors without attribution» [9].

Academic plagiarism, as a form of academic dishonesty, is the deliberate dissemination of someone else's scientific information under the guise of one's own authorship. Academic plagiarism is not limited to textual overlaps; it may also concern the incorrect borrowing of facts, hypotheses, numerical data, methods, illustrations, formulas, models, programming codes, and more [11].

Plagiarism is an age-old phenomenon, often labeled as literary theft, academic crime, intellectual dishonesty, or failure [12]. To «plagiarize» means: to steal and pass off (another's ideas or words) as one's own; to use (another's work) without acknowledging the source; to commit literary theft; to present as new and original an idea or product derived from an existing source.

Focusing specifically on academic plagiarism, it is important to note that it primarily concerns academic texts, i.e., authors' works of scientific, scientific-technical, and educational nature in the form of dissertations, qualification theses, scientific publications, scientific articles, reports in the field of scientific and scientific-technical activities, deposited research papers, textbooks, teaching manuals, and other scientific and educational-methodological works [13; 14].

With regard to the medical field, Al-Lamki L. noted: «Medicine is a profession based on trust and honesty. A doctor must certify or testify only to what he has personally verified» [15].

4. Specific Examples of Violations of Academic Integrity

Over the past two decades, a large number of publications in the field of dental research have been retracted, mainly due to cases of scientific misconduct [16]. An analysis of 333 retracted articles showed that most of these publications were authored by researchers from Asia (60.6%), particularly from India (22.2%) and China (20.1%). More than half of the publications were retracted due to various forms of misconduct (57.4%), such as plagiarism, data duplication, and data fabrication. Oral pathology was the subsection of dentistry with the highest number of retracted publications (26.4%), and animal studies were the most common type of research among retracted publications (14.1%).

Freedman J. E. [17] emphasized that scientific fraud, especially in medical journals, is a critically important and complex problem, given its potential consequences for public health. Currently, the Retraction Watch database contains more than 50,000 retractions, with approximately 5,400 in 2022 compared to around 120 in 2002. Among the well-known forms of academic misconduct, he also includes conflicts of interest, publication bias, and data manipulation in clinical trials, which overall cast doubt on the reliability of research results.

Many violations concern medical imaging. For example, Kwee R. M. [18] surveyed authors in nuclear medicine journals regarding image fraud. Common forms included selective image reporting, unauthorized reuse of images, and misleading enhancements. Use of AI for image falsification was reported by 1.1% of respondents, while 2.8% witnessed colleagues

doing so. Publication pressure, competition, and aesthetic expectations were cited as driving factors [17].

Taylor D. B. [19] analyzed plagiarism in manuscripts submitted to the American Journal of Roentgenology (AJR). Using the overall similarity index (OSI), 10.9% of manuscripts contained plagiarism, with the original source often uncited. Average OSI combined with the highest similarity from a single source proved most effective for detecting potential plagiarism.

A study by Haskal Z. J. [22] highlighted misconduct examples such as duplicate submissions, identical articles in multiple journals, falsified sample numbers, and trials conducted without ethical approval.

AI-related violations of academic integrity were classified into:

– Data fabrication: generating or manipulating data using AI;

– Content plagiarism: improper citation or misattribution via AI;

– Opacity of results: undisclosed methodology or data sources due to AI processing [23].

The authors proposed a SWOT-analysis system to assess AI's multifaceted impact on research integrity across strengths, weaknesses, opportunities, and threats [23].

5. Publishing Policies of Scientific Medical Journals Regarding Academic Integrity

The first decades of the 21st century brought significant transformations to scientific publishing due to the information revolution, enabling rapid publication, broader connectivity, and open access to databases. However, it also increased the potential for unethical practices, including image manipulation, plagiarism, and other breaches of research ethics.

The development of artificial intelligence (AI) technologies since late 2022 has introduced additional challenges for scholarly publishing. The rapid adoption of AI-based tools has increased the responsibility of journals to ensure the integrity of published materials by implementing new policies, verifying AI-generated content, and addressing ethical questions associated with the use of AI in academic work [24].

Scientific publications must be reliable, given their influence on medical decision-making. Inaccurate information can jeopardize patient safety and increase healthcare costs. Consequently, medical publishers place significant emphasis on plagiarism detection for all submitted manuscripts [24].

Editorial boards adhere to guidelines issued by international organizations, particularly COPE, ICMJE, and others [24].

Editorial boards rely on the recommendations of international organizations, most notably the Committee on Publication Ethics (COPE), the International Committee of Medical Journal Editors (ICMJE), and others [26]. Equally important are the contributions of associations aimed at combating academic misconduct, including the World Association of Medical Editors (WAME) and the International Society for Medical Publication Professionals (ISMPP).

Prior to publication, most journals require a manuscript similarity index below 20%. If this threshold is exceeded, authors are asked to reduce the similarity index during the review process before the final editorial decision is made.

In line with ethical standards, journal editorial boards typically distinguish the following forms of academic plagiarism [27]:

Major plagiarism – including any of the following: republication of a paper under another author's name (either in the original language or in translation), or literal copying of more than 100 words from another (including one's own) publication without appropriate citation. Such cases typically result in the initiation of retraction procedures.

Minor plagiarism – including:

– literal copying of fewer than 100 words without attribution, unless the text refers to standardized descriptions (e.g., methodology in the «Methods» section);

– indirect copying (paraphrasing with only minor modifications) of significant sections of text (over 100 words) from another article without citation.

In cases of minor plagiarism, journal editors are required to inform the author, request a written explanation, and determine corrective measures. Nonetheless, unreliable publications continue to appear, whether due to unintentional errors or deliberate misconduct [28].

A recent study [29] examined author guidelines in 213 cardiovascular journals indexed in MEDLINE to evaluate policies on AI use in manuscript preparation. The results indicated minimal differences between journals with and without AI-specific policies. Among journals with such guidelines, 156 of 158 (98.7%) explicitly excluded AI from authorship, yet all

allowed the publication of AI-assisted content. These findings suggest that although many journals recognize AI's role in content creation, disclosure requirements remain inconsistent.

6. What Is Article Retraction?

Retraction is a formal procedure through which readers are notified that a published scientific article contains serious flaws or false information that should not be trusted. It functions as a corrective tool, enabling publishers to withdraw unreliable content while ensuring transparency in the scientific record [30, 31].

Grounds for retraction include requests by authors or third parties reporting violations, as well as actions initiated by editorial boards or publishers. Retraction may be warranted when [32]:

– there is clear evidence that the reported data are unreliable or falsified;

– major mistakes are identified (e.g., miscalculations or experimental errors);

– the article has been previously published elsewhere without proper justification (redundant publication);

– plagiarism is detected (journals commonly screen submissions with Google, Grammarly, Plagiarism Detector Pro, and AdvegoPlagia);

– the article reports unethical research.

Retraction policies in both Ukrainian and international journals follow the guidelines of professional organizations, including COPE [32], ICMJE [33], WAME [34], among others.

Thus, the retraction of a scientific work represents an essential component of the self-regulation of science and serves as evidence that academic publications fulfill their mission. However, as the number of journals and articles has grown to unprecedented levels, it has become increasingly difficult for publishers and readers to identify and monitor retracted papers. This complicates the determination of whether a given article has been retracted. Addressing this challenge is the establishment of the Retraction Watch Database, the largest open-source repository of retractions, publicly launched in 2018. The database reduces duplication, enhances efficiency, and ensures transparency and accessibility for all, while providing detailed information on the reasons for retraction based on a comprehensive taxonomy system [32–34].

For instance, an analysis of 192 retracted articles in medical imaging found that 23.4% were published in journals classified under "Radiology, Nuclear Medicine, and Medical Imaging." Between 1984 and 2021, most retracted papers originated from China (31.3%), followed by the USA (12.5%), Japan (7.3%), and South Korea (6.3%). Additionally, 10.9% of cases involved multinational authorship. The most common reasons included redundant publication (7.1%), plagiarism (6.8%), institutional investigations (4.5%), falsified authorship (4.0%), and scientific negligence (55.7%) [30].

A study of Korean medical journals [35] revealed similar trends: among 114 retractions, the primary reasons were duplication (57.0%), plagiarism (8.8%), scientific errors (4.4%), authorship disputes (3.5%), and other causes (26.3%). While most cases complied with COPE recommendations (79.8–100%), some retractions did not fully meet international standards.

Bhende V. V. et al. [36] identified additional reasons for rejection, including misalignment with journal scope, lack of novelty, methodological weaknesses, unconvincing results, ethical concerns, inadequate data transparency, misconduct, and plagiarism.

It should also be noted that there has been a significant increase in the number of rejected scientific articles in the field of technology, with the most pronounced growth occurring during 2009–2011 [37]. The majority of these papers were related to modeling, genetic algorithms, mechanical properties, microstructures, neural networks, and data analysis. According to the authors, the implementation of an open peer review model is expected to reduce the incidence of scientific misconduct.

Despite these efforts, no universal threshold for defining plagiarism has been established in medical publishing. Some studies propose a threshold of >20% similarity [38]. For example, Swaan P. W. [39] reported that manuscripts submitted to *Pharmaceutical Research* with similarity indices above 20–25% undergo additional scrutiny, while Baskaran S. [40] recommended treating 21–50% similarity as moderate to high in andrological research, suggesting a 15% threshold for caution.

Bakker C. et al. [41] outlined measures to prevent the use of retracted publications in evidence synthesis, recommending actions for six stakeholder groups: authors of systematic reviews (8 proposals), journal editors (3), editorial boards retracting publications (3), citation software developers

(3), database providers (4), and research institutions/funding bodies (3). Their framework emphasizes transparency, efficiency, and accountability in scientific correction.

7. The Role of Artificial Intelligence and Chatbots in Academic Integrity

Recent advances in information technology, particularly the rise of artificial intelligence, have significantly reshaped research practices, influencing both research questions and methodologies. While AI provides powerful tools for data analysis and knowledge generation, it simultaneously increases risks of misconduct, including plagiarism and falsification.

AI is now deeply embedded in scientific workflows but also raises new integrity challenges. The spread of open science, combined with AI-driven tools, may inadvertently promote academic dishonesty by normalizing questionable practices [24]. Furthermore, AI can facilitate more sophisticated forms of misconduct that are harder to detect.

AI-based chatbots, such as ChatGPT, simulate human communication and are increasingly used in drafting scientific manuscripts [42]. Although they can enhance efficiency, they also risk introducing inaccuracies, conceptual distortions, and fabricated references [43].

In the academic community, ChatGPT has elicited mixed responses, reflecting the ongoing debate regarding the advantages and risks of advanced AI technologies [44, 45]. On the one hand, ChatGPT can be valuable for conversational and writing tasks, contributing to improved efficiency and accuracy of outputs [46, 47]. On the other hand, concerns persist regarding potential biases stemming from the datasets used to train chatbots, which may limit their capabilities and lead to factual inaccuracies that nonetheless appear scientifically plausible. Some scholars, such as Deng J. and Lin Y., refer to this phenomenon as «hallucinations» [48].

The use of AI and chatbots raises a number of ethical challenges within academic and scientific communities. Plagiarism represents one of the most significant threats to academic integrity, as the Internet provides easy access to vast amounts of information and content, thereby creating temptation for researchers and healthcare professionals to engage in such misconduct. Among the various forms of plagiarism associated with AI use, the following can be distinguished [43–48]:

– **Direct plagiarism**: AI-generated text is copied and pasted without modification and without acknowledgment of authorship or disclosure of AI use.

– **Paraphrasing plagiarism**: AI-generated text is superficially modified (e.g., word substitutions, reordering of phrases), while the core content remains unchanged, again without proper attribution.

– «**Hidden» plagiarism**: AI is used to generate ideas or structural frameworks that are subsequently rephrased by the author without indicating reliance on AI. This represents a complex case, as proving plagiarism may be challenging.

– **Code plagiarism**: In medical research involving bioinformatics or data analysis, AI may generate code. Copying such code without proper acknowledgment also constitutes a form of plagiarism.

– **AI «hallucinations»**: AI systems may not only generate plagiarized material but also produce factually inaccurate information that appears plausible («hallucinations»). This presents an additional risk for scientific publications and necessitates careful verification of all AI-generated content.

– **Authorship issues**: The question of authorship in the context of AI use remains unresolved in many jurisdictions. The prevailing view is that responsibility for content rests with the individual who employs AI. Therefore, it is critically important to explicitly disclose the use of AI as a tool. Under Ukrainian law, this issue is regulated unambiguously: all rights belong to the author of the copyrighted work.

In one study [49], GPT-4 was tested on its ability to write biomedical review articles. While it performed adequately in summarization and text generation tasks, it struggled with generating accurate figures and tables, and often produced incomplete or fabricated references.

Another important caveat regarding the use of chatbots for text generation is the risk of plagiarism, as in such cases the actual author of the content is not a human being [50; 51]. In particular, plagiarism may also be considered in situations where AI is employed to generate text, but certain word sequences from the original source are reproduced in a subsequent manuscript [52; 53] without proper citation. The problem lies not only in the fact that the author «did not create the content» independently, but also in the potential for its unlawful use – either through the absence of appropriate attribution or by presenting it as the author's own work.

The Committee on Publication Ethics (COPE) and WAME have issued guidance stressing the risks of AI-assisted misconduct and urging transparency in its use [53; 54]. Similarly, ISMPP calls for responsible use of AI, confidentiality safeguards, and accountability in medical communication.

Research on AI usage policies at leading global universities also merits attention. Harvard University Information Technology (2024), the Massachusetts Institute of Technology (2024), Stanford University (2023), and the University of Washington (2023) have consistently issued guidelines on the use of generative AI, establishing a foundational consensus emphasizing «responsible use, prioritization of safety, maintenance of transparency, and adherence to academic integrity and ethical standards». The evolutionary trajectory of these policies indicates that higher education institutions' approach to AI technology is gradually shifting from initial caution and restrictive measures toward openness and proactive regulation [55]. These studies provide valuable insights for developing robust academic integrity frameworks in the emerging AI-driven era.

In summary, the integration of AI into research and publishing requires a careful balance between leveraging technological benefits and safeguarding ethical standards. Training researchers in AI literacy and ethical awareness is essential for maintaining academic integrity.

8. Legal Aspects of Academic Integrity Violations

The question of authorship in AI-generated works has become a major area of legal debate. Traditional copyright law is grounded in the principle of human creativity, asserting that works must embody original human expression to qualify for protection [56; 57].

The issue of authorship for works created with the assistance of artificial intelligence (AI) has become a subject of scholarly debate. Traditional copyright law emphasizes «human creativity» as a fundamental requirement, asserting that works must reflect original expression [58]. However, in AI-assisted writing scenarios, the creative process often involves complex interactions between humans and machines, rendering the boundaries of originality increasingly ambiguous. In academic discourse, three primary theoretical perspectives have emerged: the AI tool theory, the AI independent creation theory, and the AI joint creation theory [59], each interpreting

copyright attribution for AI-generated content from different viewpoints. Regarding generated content, AI systems may tend to reproduce patterns of expression derived from training data, thereby increasing potential copyright infringement risks [60]. Studies indicate that large language models can inadvertently replicate (copy or adapt) expressions from their training data during content generation. This phenomenon of «latent derivation», in which AI systems subtly embed existing expressions without explicit attribution, introduces new challenges for copyright protection.

Globally, oversight of academic plagiarism is often handled by ethical rather than legal frameworks, guided by organizations such as COPE, ICMJE, and WAME. In this context, plagiarism is predominantly addressed as an ethical violation, though its legal implications remain unsettled [55].

At present, few countries have specific legislation on AI and chatbots. Instead, regulation is largely achieved through institutional policies, guidelines, and conceptual frameworks. The legal classification of AI-related plagiarism is still under discussion, particularly concerning intersections with copyright law.

The «AI tool theory» positions AI as an auxiliary resource, with copyright for AI-assisted works belonging to the human user. Courts have increasingly affirmed this approach. In the landmark case Shenzhen Tencent v. Yingweinuo (Dreamwriter case), a Chinese court ruled that AI-generated financial reports possessed originality, assigning copyright to the organization managing the process [61]. This precedent highlights human oversight as central to AI-assisted authorship.

On February 19, 2020, the European Commission issued its White Paper on Artificial Intelligence, accompanied by a report on safety and accountability systems. The White Paper initiated consultations with civil society, industry, and academia, laying the groundwork for a European regulatory framework on trustworthy AI [56]. It addressed intellectual property, ethics, and safety concerns, underscoring the urgent need for legal and ethical clarity regarding AI's role in academic and scientific domains.

It should also be noted that all instances of fraud that have been detected and made public do not accurately reflect the true scope of misconduct, substantially underestimating its actual prevalence. This discrepancy arises because instances of data fabrication and falsification are rarely reported by whistleblowers and are inherently difficult to detect within

scientific materials [62]. Even when violations are identified, proving them is challenging, as the accused researchers may claim that the errors were unintentional. Distinguishing deliberate bias from inadvertent mistakes is particularly difficult, especially when falsification is subtle or when original data have been destroyed. Consequently, in many cases, only the researchers themselves are aware of whether they or their colleagues intentionally manipulated the data.

For these reasons, these issues remain a pertinent subject for further investigation.

Conclusions

The conducted analysis indicates that plagiarism remains the most frequent violation of academic integrity. Unlike the general concept of «plagiarism», *academic plagiarism* pertains specifically to scholarly texts and involves reproducing another author's work in a scientific manuscript without modification, without proper citation, or entirely without indicating the source of the information. In other words, academic plagiarism constitutes the use of concepts, words, or textual structures without appropriate acknowledgment of the source for personal or professional gain.

The concept of article retraction has been examined as a mechanism for correcting information published in journals, based on guidelines, recommendations, and standards established by international professional organizations.

It has been shown that the development of artificial intelligence (AI) opens new opportunities for science while simultaneously posing challenges to maintaining academic integrity. AI-based tools, such as ChatGPT, significantly facilitate the creation of plagiarized content, necessitating the development of new approaches for detecting and preventing academic misconduct. Addressing this issue requires coordinated efforts among authors, scientific publishers, educational institutions, and AI technology developers. Our study provides an overview of the potential for ethical use of AI chatbots by researchers within the scientific community.

Thus, the issue of academic integrity and its violations is complex and multifaceted. In many cases, academic plagiarism occurs due to authors' lack of awareness or disregard for legal regulations and the permissible boundaries of fair use. Determining whether a work contains plagiarism

is a challenging task, often relying on the assessment of experts or peer reviewers.

Ensuring academic integrity is particularly important for fostering trust in science, attracting new talent to research, and utilizing knowledge to address social challenges. Moreover, attention should be given to the integration of AI into medical research in strict accordance with academic integrity standards, as this field remains one of the most critical for society.

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