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Шетелдік ғылыми кеңесші  
Зимба О.А., MD, PhD,  
қауымдастырылған профессор.

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# Analysis of Retracted Publications in Medical Literature Due to Ethical Violations

Burhan Fatih Kocyigit ,<sup>1</sup> Ahmet Akyol ,<sup>2</sup> Alikhan Zhaksylyk ,<sup>3</sup> Birzhan Seil ,<sup>4</sup> and Marlen Yessirkepov

<sup>1</sup>Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Türkiye

<sup>2</sup>Physiotherapy and Rehabilitation Application and Research Center, Hasan Kalyoncu University, Gaziantep, Türkiye

<sup>3</sup>Department of Scientific and Clinical Work, Doctoral and Master's Studies, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

<sup>4</sup>Department of Biology and Biochemistry, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

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Address for Correspondence:

Burhan Fatih Kocyigit, MD

Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Kahramanmaraş Sütçü İmam University, Avsar Campus, Kahramanmaraş 46100, Türkiye.  
Email: bfk2701@hotmail.com

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ORCID iDs

Burhan Fatih Kocyigit

<https://orcid.org/0000-0002-6065-8002>

Ahmet Akyol

<https://orcid.org/0000-0002-8953-5196>

Alikhan Zhaksylyk

<https://orcid.org/0000-0002-6679-323X>

Birzhan Seil

<https://orcid.org/0000-0003-1524-8888>

Marlen Yessirkepov

<https://orcid.org/0000-0003-2511-6918>

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## ABSTRACT

**Background:** Retraction is an essential procedure for correcting scientific literature and informing readers about articles containing significant errors or omissions. Ethical violations are one of the significant triggers of the retraction process. The objective of this study was to evaluate the characteristics of retracted articles in the medical literature due to ethical violations.

**Methods:** The Retraction Watch Database was utilized for this descriptive study. The 'ethical violations' and 'medicine' options were chosen. The date range was 2010 to 2023. The collected data included the number of authors, the date of publication and retraction, the journal of publication, the indexing status of the journal, the country of the corresponding author, the subject area of the article, and the particular retraction reasons.

**Results:** A total of 177 articles were analyzed. The most retractions were detected in 2019 (n = 29) and 2012 (n = 28). The median time period between the articles' first publication date and the date of retraction was 647 (0–4,295) days. The leading countries were China (n = 47), USA (n = 25), South Korea (n = 23), Iran (n = 14), and India (n = 12). The main causes of retraction were ethical approval issues (n = 65), data-related concerns (n = 51), informed consent issues (n = 45), and fake-biased peer review (n = 30).

**Conclusion:** Unethical behavior is one of the most significant obstacles to scientific advancement. Obtaining appropriate ethics committee approvals and informed consent forms is crucial in ensuring the ethical conduct of medical research. It is the responsibility of journal editors to ensure that raw data is controlled and peer review processes are conducted effectively. It is essential to educate young researchers on unethical practices and the negative outcomes that may result from them.

**Keywords:** Article; Ethics; Medicine; Peer Review; Plagiarism; Publishing; Retraction of Publication as Topic; Scientific Misconduct

**Authors Contributions**

Conceptualization: Kocyigit BF, Akyol A, Zhaksylyk A, Seil B, Yessirkepov M. Data curation: Kocyigit BF, Akyol A, Zhaksylyk A, Seil B, Yessirkepov M. Formal analysis: Kocyigit BF. Investigation: Kocyigit BF, Akyol A. Methodology: Kocyigit BF, Akyol A, Zhaksylyk A, Seil B, Yessirkepov M. Software: Kocyigit BF. Visualization: Kocyigit BF. Writing - original draft: Kocyigit BF, Akyol A, Zhaksylyk A, Seil B, Yessirkepov M. Writing - review & editing: Kocyigit BF, Akyol A, Zhaksylyk A, Seil B, Yessirkepov M.

**INTRODUCTION**

Scientific research involves a rigorous methodology that includes developing hypotheses, designing and conducting studies, presenting, documenting, and interpreting results. It is a systematic process that requires careful planning and attention to detail to ensure the findings' validity and reliability.<sup>1,2</sup> Actions or interventions that are recognized to impede or undermine one or more of these crucial steps are deemed as research misconduct.<sup>3</sup> When a paper in the scientific literature is discovered to have significant flaws, retraction is the appropriate step to ensure that inaccurate or biased data do not mislead readers. Retraction is a process that corrects scientific literature and informs readers about publications that contain significant errors or omissions. The inaccurate data may be due to an unintentional mistake or scientific misconduct.<sup>4-6</sup>

The retraction reasons can be diverse. Over the years, the number of retracted publications has increased, but the causes of this trend remain unclear. It is uncertain whether this rise is due to a decrease in the scientific community's integrity, the enhanced visibility and availability of published articles, or advancements in software and statistical techniques. Nonetheless, erroneous conclusions in the medical literature can perpetuate flawed research and result in the mismanagement of patients, leading to harmful consequences.<sup>7-9</sup>

The retraction notes need to be informative, clear, and concise about the entity retracting the article and should avoid making defamatory statements. A balanced approach should be maintained while providing adequate information about the retraction. In addition, the retraction notes should be easily accessible and understandable.<sup>10</sup>

Ethical violations are a significant concern in the context of article retractions. Therefore, we conducted a study using the Retraction Watch Database. Our first aim is to assess the distribution of retracted articles due to ethical violations in the medical literature between 2010 and 2023. The secondary aims are to identify the journals and countries with the highest number of retracted articles in this category and to analyze the subject areas of the retracted articles. Additionally, we seek to provide comprehensive information on the retraction reasons in the identified publications.

**METHODS**

The Retraction Watch Database (<http://retractiondatabase.org/RetractionSearch.aspx?>) was utilized for this descriptive study to obtain data. The database provides 'Ethical Violations by Author' and 'Ethical Violations by Third Party' options under the reasons for retraction heading. To create a more comprehensive listing, the phrase 'Ethical Violations' was manually entered in the section under Reasons for Retraction. There are 32 medicine-related subcategories in the subject(s) category, beginning with 'Medicine-Alternative' and ending with 'Medicine-Urology/Nephrology.' To list the data relevant to all of these categories, 'Medicine' was entered manually in the subject (s) category. January 1, 2010, was set as the starting date. The last data update was made on April 25, 2023.

**Extraction of data**

The retracted papers' bibliographic data were copied to an Excel file and documented. The collected data consists of various details related to the retracted publications, such as the

title of the article, the number of authors, the date of publication and retraction, the journal of publication, indexing status in PubMed, MEDLINE, Web of Science Core Collection, and Scopus, the country of the corresponding author, subject area of the paper, and the specific reasons for retraction.

### Categorization of retraction notes

The categorization was designed in the following manner<sup>11,12</sup>:

- Date-related concerns (concerns about the accuracy or validity of the data, failure of authors to provide relevant raw data upon request)
- Authorship issues and conflicts (post-publication conflicts of interest between authors, lack of knowledge of one or more of the authors, and ghost authorship identification)
- Plagiarism (the unauthorized or improper use of texts, sections, tables, figures, photos, ideas, or study designs)
- Duplication (repeatedly publishing the same scientific product)
- Fake-biased peer review (fake reviewer or biased review process)
- Informed consent issues (failure to obtain informed consent, failure to provide adequate and appropriate information to participants, or misleading participants)
- Ethical approval issues (failure to obtain ethics committee approval or failure to comply with the conditions of scientific research submitted to the ethics committee and fulfill its requirements even if approval has been obtained)
- Fraud (the intentional or deliberate falsification, fabrication, or misrepresentation of research results or the research process)
- Irregular citation pattern (citation pattern that does not comply with scientific norms and crosses ethical boundaries)
- No clear information (ethics violations are reported, but no details are provided)

If there were multiple reasons for retracting an article due to ethical violations, each reason was noted separately. There was no specific focus on a particular type of manuscript. All listed articles were reviewed. Even if an article contains multiple reasons for retraction, it was only registered once for the relevant country in country-based analysis.

No human or animal subjects were involved in this study. Ethics approval was unnecessary because the analysis was done using publicly available data.

Data were visualized using Microsoft Excel (Microsoft, Redmond, WA, USA). Data were expressed as number (n) and median (minimum–maximum).

### Ethics statement

No human or animal was considered as a participant. Open data analysis was performed so ethics committee approval is not required.

## RESULTS

The specified search strategy retrieved a total of 177 articles from Retraction Watch. The number of retracted papers, which was 2 in 2010 (minimum number of retractions), was 14 in 2022. The most retractions were observed in 2019 (n = 29) and 2012 (n = 28). **Fig. 1** illustrates the distribution of retracted papers over the years.

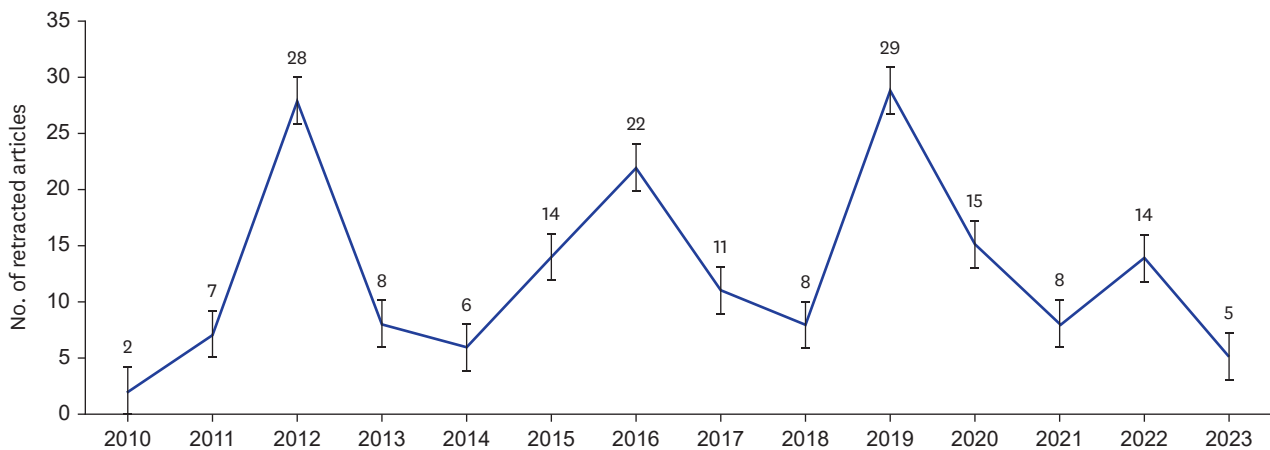


Fig. 1. Distribution of retracted publications from 2010 to 2023.

The median time interval between the initial publication date of the articles and the date of retraction was 647 (0–4,295) days. The median number of authors was 5 (1–26).

In the country analysis of retracted articles based on corresponding author, the top five countries were China (n = 47), USA (n = 25), South Korea (n = 23), Iran (n = 14), and India (n = 12) (Fig. 2).

The five journals with the highest number of retracted articles were *PLoS One* (n = 24), *Immunopharmacology and Immunotoxicology* (n = 19), *Tumor Biology* (n = 6), *Neuropsychiatric Disease and Treatment* (n = 4), and *Transplantation* (n = 4), respectively (Fig. 3). When the index status was evaluated, 97.18% (n = 172) of the articles were published in journals listed in PubMed, 73.44% (n = 130) in journals listed in MEDLINE, 88.13% (n = 156) in journals listed in Web of Science Core Collection and 89.83% (n = 159) in journals listed in Scopus.

The most common subject areas of the retracted articles were immunology (n = 27), neurology (n = 23), oncology (n = 21), toxicology (n = 16), and gastroenterology (n = 16), as shown in Fig. 4.

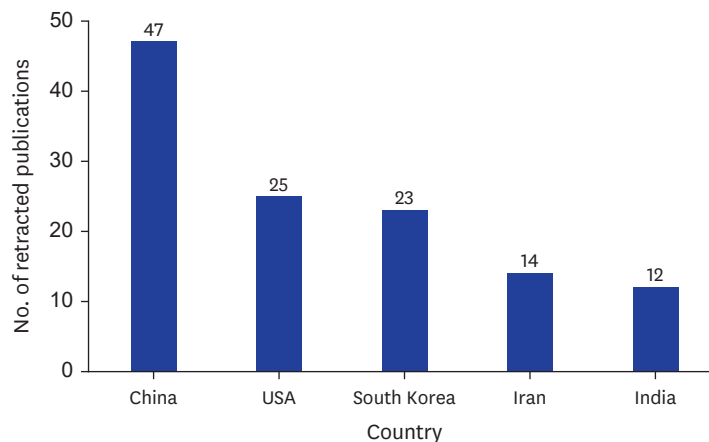


Fig. 2. Top five countries according to the number of retracted publications.

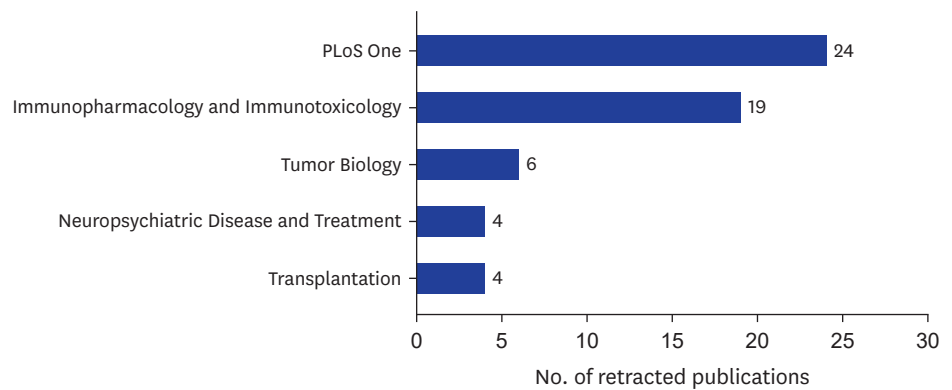


Fig. 3. The five journals with the highest number of retracted publications.

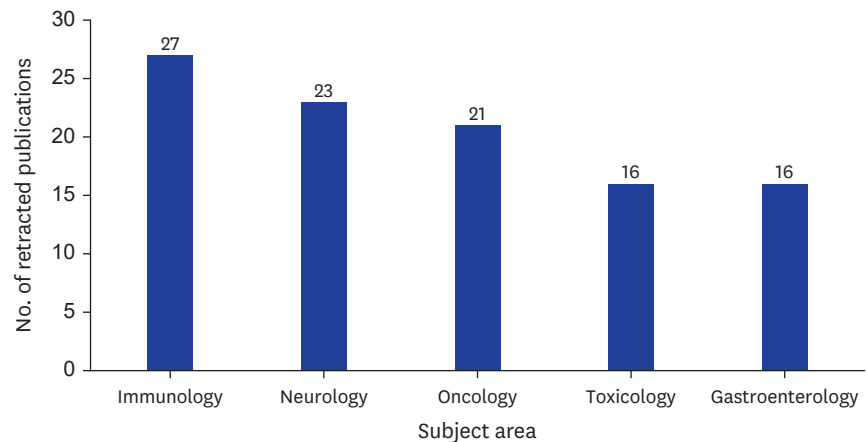


Fig. 4. The main subject areas of the retracted publications.

The reasons for retracting the papers were identified and classified as follows: fraud (n = 9), ethical approval issues (n = 65), informed consent issues (n = 45), fake-biased peer review (n = 30), duplication (n = 11), plagiarism (n = 25), authorship issues and conflicts (n = 20), data-related concerns (n = 51), irregular citation pattern (n = 1), and no clear information (n = 11) (Fig. 5).

## DISCUSSION

One of the most significant barriers to scientific advancement is unethical behavior. The number of articles retracted for ethical violations in the medical literature has fluctuated from 2010 to 2023. The most common reasons were ethical approval issues, data-related concerns, and informed consent issues. The vast majority of articles were listed in reputable indexes.

The number of retracted papers due to ethical violations had two major peaks in 2019 and 2012, with a relatively smaller peak in 2016. There are articles in various biomedical disciplines that demonstrate an upward tendency in the number of retractions over time, as well as articles that do not support this result.<sup>13-16</sup> Differences in the biomedical field, country, and period may underlie the discrepancy between the results. Our article focuses on the period between 2010 and 2023, as this time frame encompasses more than ten years

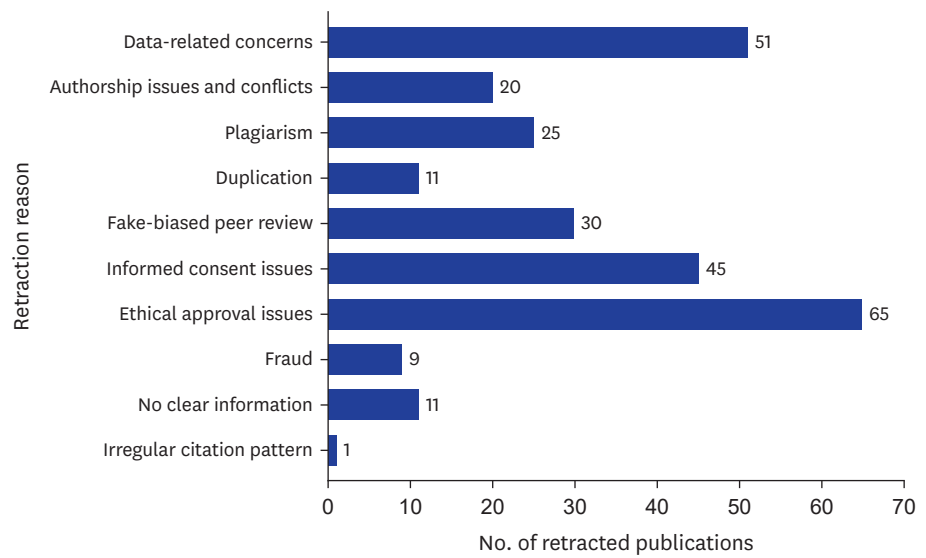


Fig. 5. Number of publications by retraction reasons (multiple reasons are available).

and includes over 150 articles, which we consider sufficient to identify any emerging trends. Additionally, by focusing on more recent data, we aim to provide a current understanding of retracted articles due to ethical violations.

The median period between the articles' first publication date and retraction date was 647 (0–4,295) days. Retraction analyses presenting shorter and longer time intervals are available in the literature.<sup>6,17,18</sup> One of the most crucial objectives should be to minimize this time interval as much as possible. This prevents the spread of inaccurate-biased data and information.

The median number of authors of the retracted articles was 5. Tang et al.<sup>19</sup> investigated the relationship between the number of authors and retraction. Furthermore, the effect of collaboration on the process was evaluated. The results did not support the assumption that retractions are the undesirable aspects of collaboration; instead, the idea that teamwork encourages ethical behavior came to the fore.

In the country-based analysis, China, the USA, South Korea, Iran, and India were at the forefront. Several retractions-based articles in the biomedical literature highlighted similar countries.<sup>20-23</sup> These outcomes could be due to a variety of factors. Specified countries may be at the forefront due to their large population and amount of researchers. Therefore, calculating the number of retracted articles per researcher may give more accurate results. Young and inexperienced researchers in developing countries may be prone to ethical mistakes. These countries may have intense competition in the scientific field, and as a result, increasing pressure on researchers may result in unethical behavior.

*PLoS One* and *Immunopharmacology and Immunotoxicology* were the two journals that stood out by far in the number of retracted articles. Similar groups of researchers had prompted multiple retractions in both journals. This result suggests that authors with a propensity for ethical violations favor these two journals. Consistent with our results, Gasparyan et al.<sup>24</sup> determined that *PLoS One* was at the forefront regarding the number of corrections. This result was attributed to the 'publish first and judge later' approach. A considerable

proportion of the retracted papers were published in journals listed in reputable indexes. The high number of retractions in high-quality journals may be attributed to these journals having a large readership and a broad reach, allowing for more feedback from experienced researchers. This feedback could lead to the detection and reporting of violations, resulting in the retraction of articles that do not meet ethical standards. No country or journal is inherently resistant to publishing unethical articles. The initial step in preventing ethical violations is to make publications accessible to a large scientific audience and to reach experienced readers who can detect and report minor and major errors.

The field with the most retracted articles was immunology, followed by neurology and oncology. The high number of publications in these fields may increase the occurrence of retracted articles. Researchers with experience in these disciplines may have provided more criticism about unethical behavior to journals and editors. Additionally, academic competition may be more intense in these fields, leading some researchers to use unethical means to distinguish themselves. The availability of high research budgets and the potential for monetary rewards may also be factors.

The leading causes of retraction were, in order of frequency, ethical approval issues, data-related concerns, informed consent issues, and fake-biased peer review. Diverse reasons, including plagiarism, duplication, error, fabrication-falsification, unreliable data, and fraud, come to the forefront in retraction analyses conducted in various disciplines, periods, and databases.<sup>6,25-27</sup> The focus of this article on ethical violations and the fact that the listing was compiled in this context drew attention to different reasons. In a substantial part of the articles, there was a declaration that ethical approval or informed permission was acquired. However, the required paperwork was not supplied to the journal upon request. Some articles did not adhere to the requirements stated in the ethical approval details, while others provided inadequate information to the participants. Post-publishing errors or manipulations were suspected in the papers under the title of data-related concerns. Raw data requests to authors were often left unanswered. Fake-biased peer review category of retracted articles involved cases where fake or biased peer reviews were used to influence the publication process. This included the creation of fake reviewers and email accounts submitted to journals to manipulate the review process.

Although it is not the primary goal of our post, it would be beneficial to provide suggestions on this issue. During submission, journals can request details about ethics committee approvals and informed consent. In addition, authors can submit English versions of the informed consent forms as supplemental material. This can help ensure that the proper ethical standards are met, and that the necessary documentation is provided to the journal.

Journals can collaborate with experienced statisticians and, when necessary, request raw data to discover errors and manipulations before publication. To avoid fake and biased peer reviews, editors should confirm each potential reviewer's identity and email account, mainly when the account is generic or non-institutional. In addition, possible conflicts of interest between reviewers and authors should be examined.<sup>28</sup> Particularly young researchers should be educated on the issues encompassed by unethical methods and their potential negative consequences. In addition, researchers should be shielded from the "publish or perish" pressure.<sup>29</sup> Editors should play a crucial role in preventing violations of ethics and take substantial steps in this regard. Rather than depending solely on software and online tools at this point, editorial experience and intelligence should take priority.



The biomedical literature evaluation in this article was based on a single database, and only articles that fell under the category of ethical violations were analyzed. Furthermore, the list starting from 2010 was used. Therefore, the generalization of results may be limited, despite revealing certain trends. Although the retraction reasons are accessible via Retraction Watch, no detailed retraction notes are provided. This is an inherent limitation of the database in comparison to PubMed. Additionally, some articles lacked details regarding detecting ethical violations, and the retraction notes were not uniform. No analyses based on article type were conducted. Due to the relatively small sample size, all listed articles were reviewed. It is essential to keep in mind that the data only reflects a snapshot and that the retraction of an article can occur even after a long time, making the data dynamic. The current article presented descriptive data; no further statistical analysis was conducted.

Conducting a thorough assessment of articles before publishing, establishing an unbiased peer-review procedure, and providing priority to chosen scientific papers are all essential components of scientific communication.<sup>30</sup> The number of articles retracted due to ethical violations in the medical literature has fluctuated from 2010 to 2023, with two notable peaks in 2019 and 2012. The main retraction reasons were ethical approval issues, data-related concerns, and informed consent issues. China, USA, South Korea, Iran, and India were the leading countries in the number of retractions. Immunology was the discipline with the most retractions, followed by neurology and oncology. In light of these findings, methods for preventing unethical behavior should be prioritized. Journals, editors, and scientific societies should take the initiative. The primary motivations that drive researchers to use these approaches should be examined.

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# Characteristics of Retracted Publications From Kazakhstan: An Analysis Using the Retraction Watch Database

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**Address for Correspondence:**

**Burhan Fatih Kocyigit, MD**  
Department of Biology and Biochemistry,  
South Kazakhstan Medical Academy, Al-Farabi  
Square 1, Shymkent 160001, Kazakhstan.  
Email: bfk2701@hotmail.com

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**ORCID iDs**

Burhan Fatih Kocyigit   
<https://orcid.org/0000-0002-6065-8002>  
Alikhan Zhaksylyk   
<https://orcid.org/0000-0002-6679-323X>  
Ahmet Akyol   
<https://orcid.org/0000-0002-8953-5196>  
Marlen Yessirkepov   
<https://orcid.org/0000-0003-2511-6918>

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**Authors Contributions**

Conceptualization: Kocyigit BF, Zhaksylyk A, Akyol A, Yessirkepov M. Data curation: Kocyigit BF, Zhaksylyk A, Akyol A, Yessirkepov M. Formal analysis: Kocyigit BF. Investigation:

**Burhan Fatih Kocyigit** <sup>1</sup>, **Alikhan Zhaksylyk** <sup>2</sup>, **Ahmet Akyol** <sup>3</sup> and **Marlen Yessirkepov** <sup>4</sup>

<sup>1</sup>Department of Physical Medicine and Rehabilitation, University of Health Sciences, Adana Health Practice and Research Center, Adana, Turkey

<sup>2</sup>Department of Scientific and Clinical Work, Doctoral and Master's Studies, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

<sup>3</sup>Physiotherapy and Rehabilitation Application and Research Center, Hasan Kalyoncu University, Gaziantep, Turkey

<sup>4</sup>Department of Biology and Biochemistry, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

## ABSTRACT

**Background:** Retraction is a correction process for the scientific literature that acts as a barrier to the dissemination of articles that have serious faults or misleading data. The purpose of this study was to investigate the characteristics of retracted papers from Kazakhstan.

**Methods:** Utilizing data from Retraction Watch, this cross-sectional descriptive analysis documented all retracted papers from Kazakhstan without regard to publication dates. The following data were recorded: publication title, DOI number, number of authors, publication date, retraction date, source, publication type, subject category of publication, collaborating country, and retraction reason. Source index status, Scopus citation value, and Altmetric Attention Score were obtained.

**Results:** Following the search, a total of 92 retracted papers were discovered. One duplicate article was excluded, leaving 91 publications for analysis. Most articles were retracted in 2022 (n = 22) and 2018 (n = 19). Among the identified publications, 49 (53.9%) were research articles, 39 (42.9%) were conference papers, 2 (2.2%) were review articles, and 1 (1.1%) was a book chapter. Russia (n = 24) and China (n = 5) were the most collaborative countries in the retracted publications. Fake-biased peer review (n = 38), plagiarism (n = 25), and duplication (n = 14) were the leading causes of retraction.

**Conclusion:** The vast majority of the publications were research articles and conference papers. Russia was the leading collaborative country. The most prominent retraction reasons were fake-biased peer review, plagiarism, and duplication. Efforts to raise researchers' understanding of the grounds for retraction and ethical research techniques are required in Kazakhstan.

**Keywords:** Retraction of Publication; Kazakhstan; Plagiarism; Ethics; Peer Review; Scientific Misconduct; Publications

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## INTRODUCTION

The publication of incorrect and misleading results in the scientific literature can have severe consequences on clinical practice and upcoming academic endeavors. When an article is retracted, it means that a previously published paper has been found to include untrustworthy data and flawed methodologies or to have engaged in unethical research practices such as plagiarism, fabrication, and biased-fake peer review. The retraction process is vital in preserving the scientific literature's integrity and credibility by ensuring that faulty or deceptive data is rapidly corrected and eliminated from the scientific environment.<sup>1-3</sup>

The retraction notes should contain sufficient and balanced information regarding who retracted the publication and why the outcomes and data were deemed unreliable/misleading. In addition, offensive statements should be avoided, and a balance should be established when addressing retractions. Retraction notes should be straightforward, free, and readily accessible, with a link to the original retracted publications.<sup>4</sup>

Kazakhstan, a non-English-speaking multinational country, has a rising economy and enormous research and scientific progress potential. Central Asian authors have had limited access to academic English resources for decades.<sup>5</sup> The analysis of publications in predatory journals revealed that a large percentage of these articles were submitted by researchers from Asia and Africa, many of whom had limited expertise and were non-native English speakers.<sup>6</sup> Additionally, the educational systems in Asian countries exhibit a notable dearth of emphasis on research methodologies and an insufficient prioritization of the intricate process involved in generating and disseminating scientific papers.<sup>7</sup>

An additional concern arises from the influence of social media and internet-based platforms, wherein retracted articles persistently garner attention, thereby perpetuating the dissemination of erroneous and misleading information.<sup>8</sup>

The present article focuses on Kazakhstan as the primary subject of investigation, wherein the subsequent principal points are scrutinized:

- The number of retracted publications from Kazakhstan and their distribution over the years.
- Analysis of retractions according to the publication type.
- Examination of the subject category and index status of the retracted publication sources.
- Evaluation of the subject areas of retracted publications.
- Documentation and listing of retraction reasons.
- Evaluation of retracted publications in terms of citations and Altmetric scores.

## METHODS

Data were obtained using the Retraction Watch Database (<http://retractiondatabase.org/RetractionSearch.aspx?>) for this descriptive study. The Retraction Watch Database was chosen as the source for this research due to its broad coverage and comprehensive accumulation of retractions-related data. The database was deemed extremely useful for conducting the research because it contains a vast array of retractions data, including retractions' causes, publication details, and pertinent contextual information. Retracted publications from Kazakhstan were searched on PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%22retracted+publication%22%5Bpt%5D+and+Kazakhstan&sort=date>),

and a total of six articles were listed (date: July 10, 2023). This data confirms the comprehensiveness and extensive data network of Retraction Watch. Kazakhstan was chosen for the country option, and the listing was generated without restrictions.

### Data extraction

The following data were recorded from the list: publication title, DOI number, number of authors, publication date, retraction date, source (journal, conference, congress, or book), publication type (research article, abstract, review article, or chapter), subject category of publication, collaborating country, retraction reason. The duration between the publication date and the retraction date was calculated. The time between the submission and accepted dates was calculated and recorded as peer review time. The sources' indexing status in Web of Science (WoS), Scopus, PubMed, MEDLINE, and Directory of Open Access Journals (DOAJ) was reviewed and recorded. The open access status of the sources was searched and noted.

Scimago Journal & Country Rank (SJR) data was accessed via the website (<https://www.scimagojr.com/>). SJR presents a public-facing platform that is accessible and free of charge.<sup>9</sup> The data of journals and other sources were accessed through SJR, and 'subject area and category' information was processed.

Scopus was chosen as the database for citation data due to its extensive content, involving a wide range of medical and other scientific fields.<sup>10</sup> By utilizing Scopus, citation data were obtained for the analysis.

A toolbar was obtained to access the publications' Altmetric Attention Scores (AAS). The AAS is a metric designed to evaluate a publication's influence based on the attention it receives across various online platforms. The interface permitted automatic and free retrieval of AAS for the publications.<sup>11</sup> AASs of publications noted.

### Categorization of retraction notes

The retraction notes were classified using the following criteria<sup>12,13</sup>:

- Data-related concerns: Concerns about the accuracy or validity of the data, as well as cases when authors neglected to provide the raw data.
- Authorship issues and conflicts: This category involves examples of ghost authorship, one or more authors lacking appropriate knowledge or engagement, and post-publication conflicts of interest amongst authors.
- Plagiarism: Plagiarism is defined as the unacknowledged or improper use of an author's text, sections, photos, opinions, or research designs without providing appropriate acknowledgment or citation to the original author.
- Duplication: Publication of the same scientific research, in whole or in part, more than once.
- Fake-biased peer review: Instances of fake reviewers or biased review processes that compromise the integrity of the peer review system.
- Informed consent issues: Failure to obtain informed consent from participants, insufficient information was given to participants, or misleading participants about the nature and purpose of the research.
- Ethical approval issues: Researchers either did not obtain ethics committee approval or did not adhere to the conditions and requirements established by the ethics committee, even when initial approval was obtained.
- Fraud: It is the deliberate falsification or misrepresentation of scientific research results or research process.

- Irregular citation pattern: Citation patterns that depart from scientific norms and exceed ethical bounds, such as excessive self-citation or citation manipulation.
- Fabrication: It denotes the act of generating or fabricating data or outcomes that do not exist in reality.
- Error: Unintentional errors or oversights that occur during the research process.
- No clear information: The retraction is notified, but no information regarding the nature of the violation is provided.

If an article was retracted for multiple reasons, each was documented and recorded separately. In articles with multiple subject areas, each was noted individually. All subject categories provided by SJR were recorded while determining subject categories of journals and other sources.

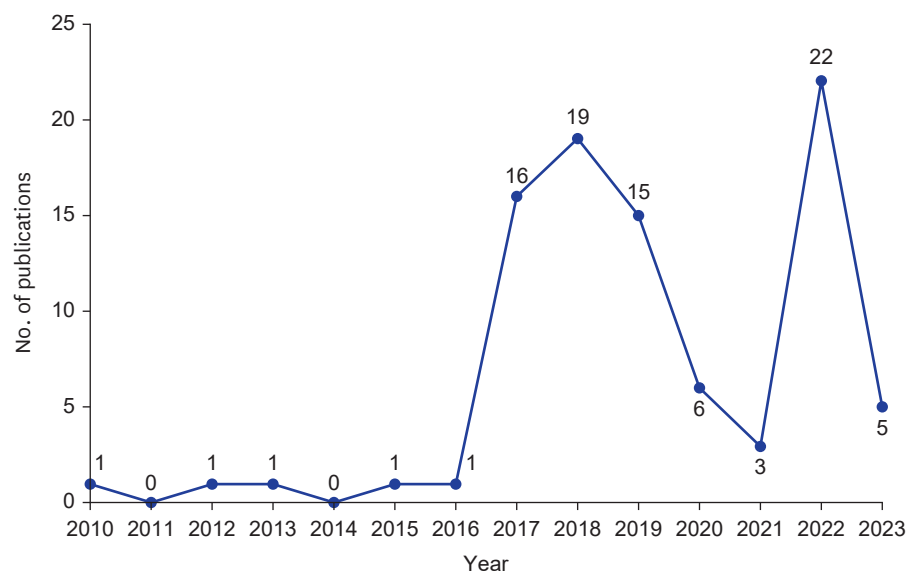
The study did not include human or animal subjects. No ethical approval was necessary as the analysis was performed exclusively on publicly accessible data. The data was visualized utilizing Microsoft Excel and presented as number (n), percentage (%), and median (minimum–maximum). The latest data update was executed on July 10, 2023.

### Ethics statement

Ethics committee approval was not required for this study because there were no human or animal subjects, and open data analysis was done.

## RESULTS

A total of 92 retracted publications were listed using the specified search procedure. One repetitive article (with a preprint version) was excluded, and 91 publications were analyzed. In analyzing the retracted publications by year, most articles were retracted in 2022 (n = 22) and 2018 (n = 19). There were no articles retracted before 2010. **Fig. 1** depicts the distribution of data by year.



**Fig. 1.** Distribution of retracted publications over the years.

The median duration between the publication date of the articles and the retraction date was 451 days, ranging from 27 to 2,074 days. The median duration for the peer review process was 58 days, ranging from 16 to 316 days. The median number of authors was 3 (1-13).

Of the publications, 49 (53.9%) were research articles, 39 (42.9%) were conference papers, 2 (2.2%) were review articles, and 1 (1.1%) was a book chapter (Fig. 2).

There were 28 (30.8%) papers published in WoS-indexed sources, 34 (37.4%) in Scopus-indexed sources, 6 (6.6%) in PubMed-indexed sources, 5 (5.5%) in MEDLINE-indexed sources and 11 (12.1%) in DOAJ-indexed sources. Seventy-nine (86.8%) of the papers were published in open-access sources. The DOI numbers of 32 (35.2%) articles were not available in the Retraction Watch Database.

Russia (n = 24) and China (n = 5) were the most collaborative countries in the retracted publications (Fig. 3).

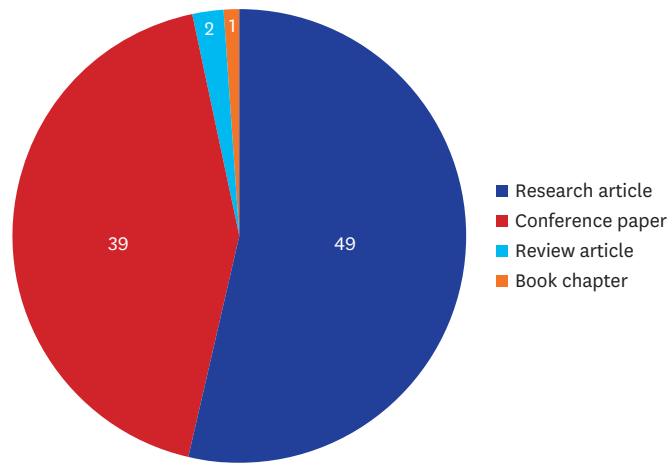


Fig. 2. Distribution of retracted publication types.

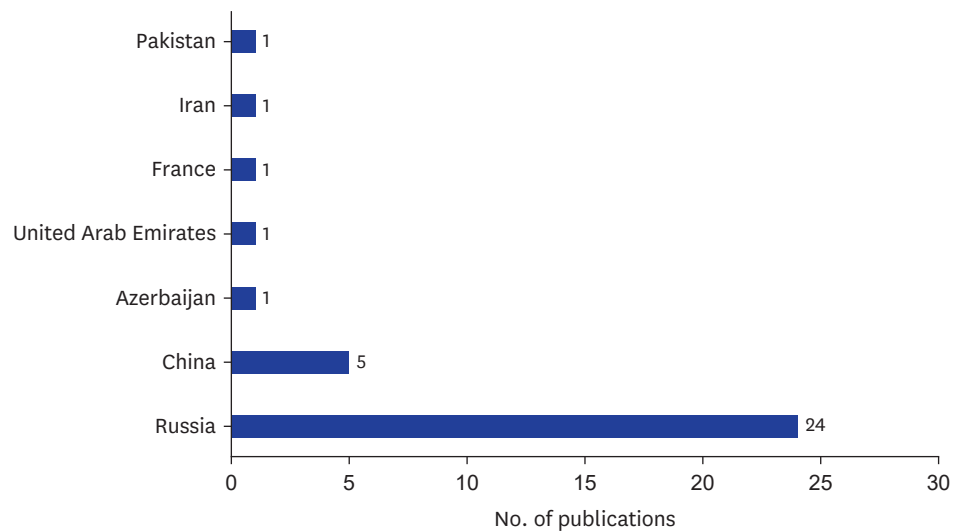


Fig. 3. The collaborative countries of retracted publications.



The most common subject areas of retracted publications were education (n = 36), engineering (n = 24), technology (n = 17), psychology (n = 10), and mathematics (n = 6) (Fig. 4).

When the subject categories of the sources were listed, engineering (n = 24), computer science (n = 21), education (n = 15), social sciences (n = 6), and medicine - healthcare (n = 6) occupied the top five places (Fig. 5).

The reasons for retracting the papers were examined and listed as follows: Fake-biased peer review (n = 38), plagiarism (n = 25), duplication (n = 14), authorship issues and conflicts (n = 13), fraud (n = 7), error (n = 5), ethical approval issues (n = 3), informed consent issues (n = 2), data-related concerns (n = 2), fabrication (n = 2), irregular citation pattern (n = 1), and no clear information (n = 1) (Fig. 6).

The top 5 sources, according to the number of retracted publications, were the *2018 International Conference on Computing and Network Communications* (n = 19), *Thinking Skills and Creativity* (n = 14), *Education in Russia and Abroad: Traditions and Challenges of a New Time* (n = 13), *International Journal of Emerging Technologies in Learning* (n = 4), *Modern Scientific Technologies* (n = 2) (Fig. 7).

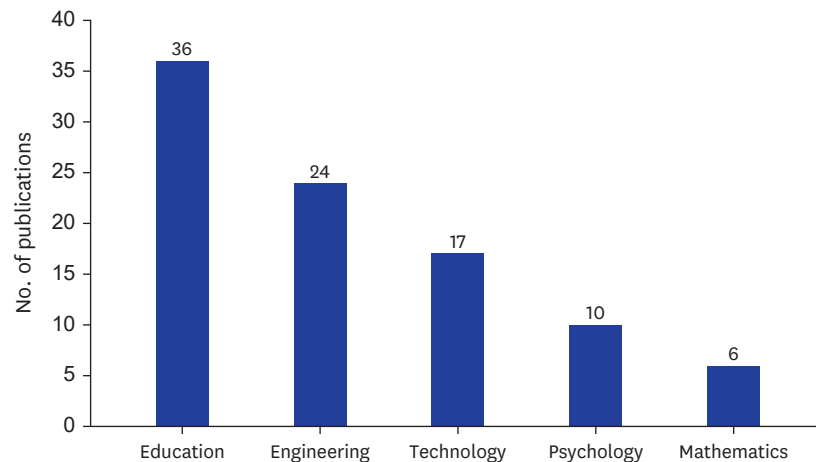


Fig. 4. The main subject areas of retracted publications. Multiple subject areas are available.

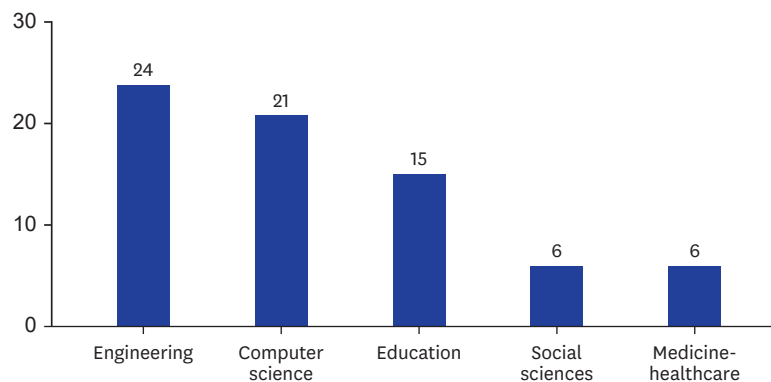


Fig. 5. The main subject categories of the sources. Multiple categories are available.



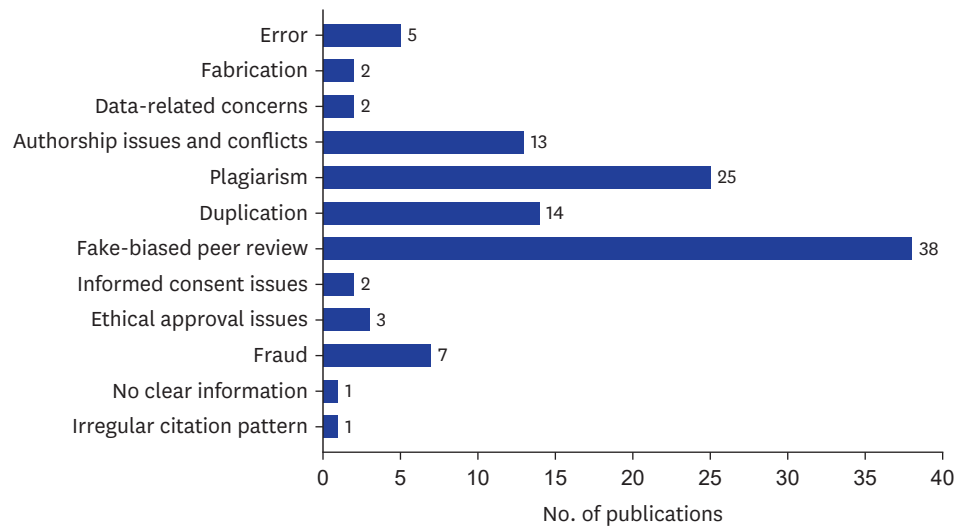


Fig. 6. Number of publications by retraction reasons. Multiple reasons are available.

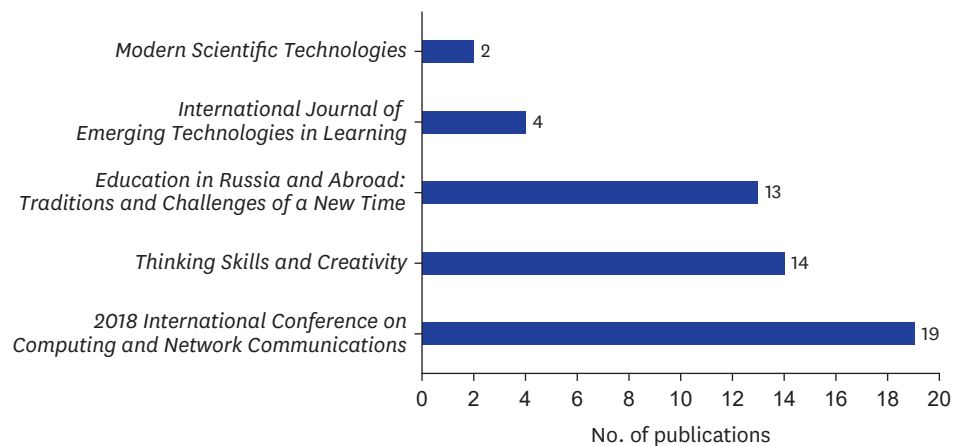


Fig. 7. Top five sources in the number of retracted publications.

The median Scopus citation value of the publications was 1 (0–22). AAS of 11 publications were reached. The median value was 1 (1–10).

## DISCUSSION

The years with the most retracted articles were 2022 and 2018. Almost all of the retracted publications from Kazakhstan were research articles or conference papers. Russia and China were the primary collaborators in the retracted publications. The main subject areas of retracted publications were education, engineering, and technology. Engineering, computer science, and education were the most prominent subject categories among the sources. Fake-biased peer review, plagiarism, and duplication were the leading causes of retraction.

The first retracted article from Kazakhstan was in 2010, and there has been an increase since 2017 and has followed a fluctuating course. Several articles have demonstrated an upward trend in retraction numbers.<sup>14-16</sup> The rise in the total number of papers published over

time may have contributed to this result. One possible explanation is the editors', authors', reviewers', and publishers' growing awareness of retractions. The enhanced detection of retractions by software tools can also be a factor.<sup>17,18</sup>

The median duration between the publication and the retraction dates was 451 days. The median duration for the peer review process was 58 days. The lag time until retraction occurs varies across the studies.<sup>12,19,20</sup> Efforts should be on shortening the lag time for retractions to minimize the spread of erroneous information and misleading data.

The vast majority of the retracted publications comprised research articles and conference papers. The extant body of literature posits that behaviors culminating in retractions exhibit a higher prevalence within the research articles.<sup>12,21</sup> Nevertheless, it is a more accurate approach to accept that the dynamics of each country exhibit considerable variation. The current data suggest that the specified publication types should be evaluated more deeply in the peer review and post-publication processes. The enhancement of transparency in conference paper assessment processes is of particular importance.

A considerable portion of the papers appeared in sources not listed in major reputable indexes, including WoS, Scopus, PubMed, MEDLINE, and DOAJ. The median Scopus citation value of the retracted publications was 1. Additionally, DOI numbers could not be found in the database of just over a third of the publications. Kazakhstan is still in the middle of scientific development and has a long way to go. Inexperienced authors may seek academic success by focusing on low-quality sources. It may be challenging for Kazakh authors whose native language is not English to publish in reputable indexed journals that publish primarily in English.<sup>22</sup> At this time, it is critical that experienced editors and academics mentor Kazakh authors. By focusing on high-quality journals, Kazakh authors can limit the likelihood of retraction while also contributing to scientific advancement.

Russia and China were the most collaborative countries in the retracted publications, with Russia leading by a considerable margin. Throughout history, it is worth noting that Russia has had a considerable influence on the field of education and scientific endeavors in Kazakhstan. This influence has primarily been manifested through the adherence to directives and norms that were established within the Soviet Russian System.<sup>5</sup> Therefore, Russian dominance over retracted publications is an anticipated outcome.

The leading subject areas of retracted publications were education, engineering, and technology. Additionally, the main subject categories of the sources were engineering, computer science, and education. The huge volume of papers published in these disciplines may increase the number of retractions. In addition, academic competition may be fiercer in these subject areas, causing some researchers to employ unethical methods to differentiate themselves. The availability of substantial research funds and the potential for financial rewards may also play a role. There may be various reasons why the field of medicine - healthcare remains in the background in retracted publications. The number of articles produced in this field may be more limited. In addition, researchers in this field may be more experienced and less prone to unethical behaviors and undesirable errors.

The leading retraction reasons were fake-biased peer review, plagiarism, duplication, and authorship issues and conflicts. The reasons for retraction exhibit variability across different countries.<sup>23</sup> There may be differences between countries in the retraction trends.<sup>24</sup> The

leading causes in India were plagiarism, fake data, and error.<sup>25</sup> Duplication, plagiarism, and fake peer review were the most common reasons for retraction in articles originating from Iran.<sup>26</sup> In the biomedical literature from China, plagiarism, error, and duplication came to the fore.<sup>27</sup> The aforementioned results suggest the presence of regional disparities in the retraction reasons. Various factors, including the scientific infrastructure of nations, the level of expertise possessed by researchers, and the extent of institutional support, have the potential to exert an influence on the outcomes. In Kazakhstan, where universities and academics are striving to advance in the field of science, it is crucial to prioritize education on retraction processes. Given that inexperience and lack of knowledge can contribute to certain retractions, the significance of education becomes evident. Collaborating with experienced researchers and editors, as well as seeking support from reputable institutions, would be beneficial in this regard.

AAS was only available for 11 articles, and the median value was 1. The AAS was developed mainly to assess the individual impact of an article using the attention gained across multiple Internet platforms.<sup>28,29</sup> There may be several reasons for the limited AAS data associated with the retracted publication from Kazakhstan. It is difficult for articles in local languages, particularly in Russian, to attract global attention. The poor quality of the sources from which the articles are published may be another factor. Although low AAS scores are advantageous for retracted publications, strategies, in general, should be created to ensure that papers from Kazakhstan receive long-term attention on the Internet.

More than four-fifths of the articles were published in open-access sources. Traditional print-based subscriptions have given way to an open-access and digital model in scholarly publishing. However, this transformation has also spawned unethical and predatory publishing industry practices. Utilizing a “pay-to-publish” strategy, predatory journals exploit the open-access system to generate revenue for their editors-owners. Despite their false claims to the contrary, the most conspicuous characteristic of these journals is their lack of a rigorous peer review process.<sup>30,31</sup>

Retraction Watch provides access to the retraction reasons, but no comprehensive retraction notes are supplied. In comparison to PubMed, this is an intrinsic restriction of the database. Retraction Watch may not include reasons for the retraction of a small proportion of articles. It is critical to remember that the data only represents a snapshot in time, and that an article’s retraction can occur even after a long period of time, rendering the data dynamic. The present article provides descriptive data. Data was obtained only from Retraction Watch. Scopus and WoS were not used.

A notable result is a substantial rise in the number of retracted papers from Kazakhstan beginning in 2017. The vast majority of articles were published in sources not listed in reputable indexes. Fake-biased peer review, plagiarism, duplication, and authorship issues—conflicts came to the forefront as reasons for the retraction. The fields of engineering, education, and technology necessitate primary attention for retraction. The resolution of challenges associated with peer-review processes may be attainable through the implementation of enhanced mechanisms for managing professional journal-congress interactions. Implementing educational initiatives focused on plagiarism and duplication, devising comprehensive webinar sessions, and seeking assistance from globally experienced editors-researchers are viable strategies to effectively mitigate the retraction rates.

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Original Article  
Editing, Writing & Publishing



# YouTube as a Source of Information on Public Health Ethics

Alikhan Zhaksylyk ,<sup>1</sup> Marlen Yessirkepov ,<sup>2</sup> Ahmet Akyol ,<sup>3</sup> and Burhan Fatih Kocyyigit <sup>4</sup>

<sup>1</sup>Department of Scientific and Clinical Work, Doctoral and Master's Studies, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

<sup>2</sup>Department of Biology and Biochemistry, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

<sup>3</sup>Physiotherapy and Rehabilitation Application and Research Center, Hasan Kalyoncu University, Gaziantep, Turkiye

<sup>4</sup>Department of Physical Medicine and Rehabilitation, University of Health Sciences, Adana City Research and Training Hospital, Adana, Turkiye

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Address for Correspondence:

Burhan Fatih Kocyyigit, MD

Department of Physical Medicine and Rehabilitation, University of Health Sciences, Adana City Research and Training Hospital, 4522. Sokak No:1, Adana, Turkiye.  
Email: bfk2701@hotmail.com

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ORCID iDs

Alikhan Zhaksylyk   
<https://orcid.org/0000-0002-6679-323X>

Marlen Yessirkepov   
<https://orcid.org/0000-0003-2511-6918>

Ahmet Akyol   
<https://orcid.org/0000-0002-8953-5196>

Burhan Fatih Kocyyigit   
<https://orcid.org/0000-0002-6065-8002>

Disclosure

The authors have no potential conflicts of interest to disclose.

## ABSTRACT

**Background:** Public health ethics (PHE) is a dynamic area within bioethics that addresses the complex moral implications of public health measures in the face of growing health threats. YouTube is a powerful and widely used platform for disseminating health-related information. The primary objective of this study is to assess videos related to PHE on YouTube. The aim is to gauge the extent of misinformation in collecting PHE videos on the platform.

**Methods:** On October 25, 2023, a thorough investigation on YouTube was undertaken, employing pre-determined search phrases involving 'public health,' 'healthcare,' 'health services administration,' and 'health policy and ethics.' The research encompassed a total of 137 videos that were selected according to strict inclusion and exclusion criteria. The videos were evaluated using the Global Quality Scale to measure quality and the modified DISCERN tool to evaluate reliability. The researchers identified video sources and compared several video attributes across different quality groups.

**Results:** A total of 137 videos were analyzed, and 65 (47.45%) were classified as high quality, 52 (37.23%) as moderate quality, and 21 (15.32%) as low quality. In high-quality videos, academic, government, physician, and university-hospital sources predominated, whereas Internet users and news sources were connected with low-quality videos. Significant differences in DISCERN score, per day views, likes, and comments were seen across the quality groups ( $P = 0.001$  for views per day and  $P = 0.001$  for other characteristics). According to the findings, low-quality videos had higher median values for daily views, likes, and comments.

**Conclusion:** Although nearly half of the videos were high-quality, low-quality videos attracted greater attention. Critical contributors to high-quality videos included academic, government, physician, and university-hospital sources. The findings highlight the importance of quality control methods on social media platforms and strategies to direct users to trustworthy health information. Authors should prioritize appropriate citations and evaluate YouTube and other comparable platforms for potential promotional low-quality information.

**Keywords:** Social Media; Internet; Information Science; Public Health; Ethics

**Data Sharing Statement**

Raw data can be provided to researchers upon request.

**Author Contributions**

Conceptualization: Zhaksylyk A, Yessirkepov M, Akyol A, Kocyigit BF. Data curation: Akyol A, Kocyigit BF. Formal analysis: Akyol A, Kocyigit BF. Investigation: Zhaksylyk A, Yessirkepov M, Akyol A, Kocyigit BF. Methodology: Zhaksylyk A, Yessirkepov M, Akyol A, Kocyigit BF. Software: Akyol A, Kocyigit BF. Visualization: Zhaksylyk A, Yessirkepov M, Akyol A, Kocyigit BF. Writing - original draft: Zhaksylyk A, Yessirkepov M, Akyol A, Kocyigit BF. Writing - review & editing: Zhaksylyk A, Yessirkepov M, Akyol A, Kocyigit BF.

**INTRODUCTION**

Public health ethics (PHE) is a field that is still developing within the broader field of bioethics. The topic concerns the complex moral and ethical implications of numerous strategies and acts intending to preserve, enhance, and sustain public health (PH). PHE uniquely integrates ethical issues and empirical elements within health policy and science. In an atmosphere characterized by increasing risk factors, such as the emergence of infectious diseases like the coronavirus disease 2019 (COVID-19) pandemic and the persistent challenges presented by chronic health conditions like obesity and smoking, there is a greater focus on the complex ethical dilemmas inherent in PH. The field of study garners the interest of policymakers, PH professionals, and community stakeholders due to its complicated ethical issues related to PH approaches and interventions.<sup>1,2</sup>

The primary goal of PH practices is to prioritize preventive medicine, emphasizing disease prevention over treatment. Unlike medical specializations that focus on individual patients, PH policies attempt to improve the health of entire populations. Due to differences in clinical and PH approaches, the ethical standards used in PH can vary considerably. Due to the preventive nature of PH, the discipline confronts challenges regarding the extent of action that should be pursued and the moral and ethical implications associated with potential infringement upon individual liberties.<sup>3,4</sup>

In the era referred to as the Information Age, characterized by notable technological breakthroughs, a significant portion of the population has interacted with the Internet due to the widespread use of smartphones. The Internet has emerged as a significant facilitator, accelerating the accessibility of diverse information across multiple fields.<sup>5,6</sup> Social media platforms have undergone significant progress and now serve as valuable tools for facilitating the rapid dissemination of scientific content immediately upon its release.<sup>7,8</sup> YouTube, a well-recognized platform for sharing videos, has increasingly become a popular tool for disseminating health-related information. Historically, individuals frequently relied on written sources to access information. However, the extensive utilization of the Internet has resulted in a significant shift towards disseminating such information through video-sharing platforms.<sup>9,10</sup> Free usages and a user-friendly interface are other advantages. Social media can also spread incorrect or misleading data.<sup>11</sup> This condition stems from the lack of a regulatory structure on the platform responsible for monitoring and reviewing the norms and quality of content.<sup>12</sup>

The primary goal of this research is to evaluate the PHE videos on YouTube. The study aims to determine the degree of misinformation in a body of PHE videos on YouTube. It also seeks to identify reliable sources of high-quality videos. Such an endeavor is advantageous for directing consumers to trustworthy sources of information. Furthermore, evaluating the videos will help develop future ways for generating educational videos that efficiently serve the public and healthcare professionals' interests.

**METHODS**

This descriptive study delved into YouTube (<https://www.youtube.com/>) as its primary research arena, with video scans executed on October 25, 2023. When establishing the appropriate search terms, the authors have reached a consensus, with due consideration



given to MeSH terms. Search terms are 'public health,' 'healthcare,' 'health services administration,' and 'health policy and ethics.' The researchers performed steps to avoid potential biases to ensure the search was conducted independently of previous searches. The researchers diligently wiped the digital slate clean, erasing the Internet browser's cookies and search history to ensure an unbiased search, conducting it in incognito mode. This strategy was used to keep the search's integrity and neutrality, preventing personalized search results or past data from influencing the study's findings.<sup>12,13</sup> The researchers decided to utilize the "relevance" filter by default on YouTube to ensure the accuracy and pertinence of the search outcomes. Through this procedure, they attempted to align their search lists with the typical experiences of the general population when using the platform to conduct inquiries. According to existing research, most individuals restrict their inspection of search results to the first three pages. Historically, YouTube employed a design wherein 20 videos were presented on each page. However, the platform has since transitioned to a continuous style for displaying search results. Given this context, the research employed a methodology in which the initial 60 videos corresponding to each search term were subjected to analysis.<sup>14,15</sup>

The review process comprised two authors, AA and BFK, doing independent assessments of the videos. In cases where there were inconsistencies, consensus was reached to address them. The evaluation process excluded videos that were repeated, irrelevant, unrelated to PHE, in a language other than English, or of low audio/visual quality. Out of the total number of videos, 27 were identified as duplicates, 70 were deemed irrelevant to the issue, and three were found to be in a non-English language. Moreover, three were determined to have poor audio/visual quality. Consequently, 137 videos meeting the stringent evaluation criteria were enlisted for in-depth analysis. Cohen's kappa coefficient was employed to gauge the concordance in their evaluations.

### Video parameters

The total length of the videos was determined in seconds. The date of video uploads was recorded, and the duration in days between this date and October 25, 2023, was calculated. Furthermore, comprehensive data were documented regarding the total number of views, likes, comments, and the corresponding daily figures.

### Video sources

The video sources were classified into the categories: university-hospital, government organization, physician, non-profit organization and association, website, academic, Internet user, patient, non-physician health professional, and news.

### Assessment of quality

The appraisal of video quality relied on employing the Global Quality Scale (GQS), a universally acknowledged yardstick for gauging online materials' educational merit and usefulness.<sup>16</sup> The GQS features a scoring system consisting of five points. The minimum score is 1, while the maximum score is 5. A score of 1 for poor quality signifies a lack of coherence, significant information gaps and is not beneficial for patients. Conversely, a score of 5 for excellent quality signifies a high level of coherence and substantial usefulness for patients.<sup>17</sup> On this scale, videos that amass a total score of 4 or 5 ascend to the rank of high-quality, while those securing a score of 3 are classified as moderate in quality. Meanwhile, videos that score 1 or 2 are relegated to the low-quality category.<sup>18</sup>



### Assessment of reliability

The evaluation of reliability was carried out utilizing the modified DISCERN tool. This tool assesses multiple aspects, including clarity and comprehensibility, including references and supplementary sources in the videos, bias, and objectivity. The methodology utilizes binary questions, where an affirmative response is allocated a value of one, while a negative response is awarded a zero value. As a result, the highest achievable score with this approach is 5 points.<sup>19,20</sup>

### Statistical analysis

The statistical analysis was conducted using the Statistical Package for the Social Sciences version 20.0 software (SPSS Inc., Chicago, IL, USA). Before running the analyses, an assessment of conformance to distribution was assessed using the Shapiro-Wilk test. The data were presented as median (minimum–maximum), number (n), and percentage (%). Three distinct groups were established, and further comparisons were made using the Kruskal-Wallis test. The Kappa coefficient was computed to evaluate the consistency (between BFK and AA). Interpretations about statistical significance were conducted according to a level of 0.05.

### Ethics statement

No human or animal was considered as a participant. Open data analysis was performed so ethics committee approval is not required.

## RESULTS

At the outset, a cumulative count of 240 videos was recorded. After applying the exclusion criteria, ratings were conducted on 137 videos (Fig. 1). The videos were categorized based on their sources, which included university-hospital (n = 13; 9.5%), government (n = 10; 7.3%), physician (n = 19; 13.9%), non-profit organization (n = 18; 13.1%), website (n = 14;

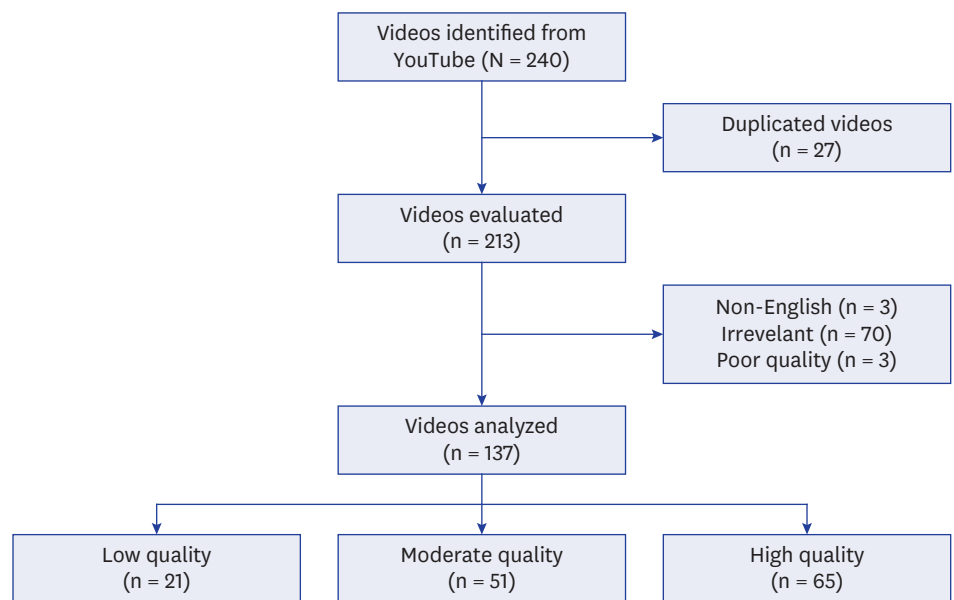


Fig. 1. The flowchart illustrates the process of selecting YouTube videos.

**Table 1.** General features of the videos

Video features	Median (min-max)
Duration (sec)	516 (26–6,580)
Number of views	54,292 (54–6,081,929)
Number of likes	641 (0–163,000)
Number of comments	24 (0–57,582)

10.2%), academic institution (n = 6; 4.4%), Internet user (n = 36; 26.3%), non-physician health professional (n = 9; 6.5%), and news (n = 12; 8.8%). **Table 1** displays the overarching attributes of the videos.

The quality groups based on the GQS framework were established. Out of the entire dataset of 137 videos, 65 (47.5%) were categorized as high quality, 51 (37.2%) as moderate quality, and 21 (15.3%) as low quality. Analyses were performed independently in the high and low-quality groups. Ultimately, the goal was to discover, in percentage terms, which sources contributed most to high and low quality. Academic (n = 5; 83.3%), government (n = 7; 70%), physician (n = 13, 68.4%), and university-hospital (n = 8; 61.5%) are the sources with the highest percentage of high-quality videos. On the opposite end of the quality range, Internet user (n = 12; 33.3%) and news (n = 3; 25%) provided low-quality videos (**Table 2**).

Comparisons were conducted on the video parameters between the quality groups, with the per-day values serving as the foundation for obtaining more precise outcomes. Significant differences were seen across the groups in DISCERN score, per day views, likes, and comments ( $P = 0.001$  for views per day and  $P < 0.001$  for other parameters). The high-quality group exhibited the highest median DISCERN score. The low-quality group displayed the highest median values of daily views, likes, and comments (**Table 3**).

The Kappa coefficient was computed to be 0.81.

**Table 2.** Categorization of the videos according to sources

Source	Low quality	Moderate quality	High quality	Total
University-Hospital	0 (0)	5 (38.5)	8 (61.5)	13
Government	1 (10)	2 (20)	7 (70)	10
Physician	1 (5.3)	5 (26.3)	13 (68.4)	19
Non-profit organization	2 (11.2)	8 (44.4)	8 (44.4)	18
Website	0 (0)	6 (42.9)	8 (57.1)	14
Academic	0 (0)	1 (16.7)	5 (83.3)	6
Internet user	12 (33.3)	13 (36.1)	11 (30.6)	36
Patient	0 (0)	0 (0)	0 (0)	0
Non-physician health professional	2 (22.3)	4 (44.4)	3 (33.3)	9
News	3 (25)	7 (58.3)	2 (16.7)	12

Values are presented as number (%).

**Table 3.** Comparison of the video parameters between the low-quality, moderate, and high-quality groups

Video quality	DISCERN score <sup>a</sup>	Views per day <sup>b</sup>	Likes per day <sup>a</sup>	Comments per day <sup>a</sup>
Low	2 (2–3)	605.2 (0.3–6,501.4)	27.4 (0–356.4)	4.3 (0–39.7)
Moderate	3 (3–5)	50.8 (0.7–5,720.5)	0.8 (0–428.6)	0.1 (0–79.6)
High	4 (4–5)	24.9 (0–1,492)	0.2 (0–47.6)	0 (0–4.6)

Values are presented as median (min-max).

<sup>a</sup> $P < 0.001$ ; <sup>b</sup> $P = 0.001$ .

## DISCUSSION

This study conducted a thorough investigation of YouTube as a critical platform for the dissemination of information on PHE. The ever-changing characteristics of PHE and the growing incidence of health-related issues have brought ethical questions in PH measures to the forefront. In the Information Age, characterized by significant technological improvements that have become the Internet an omnipresent repository of information, it is crucial to comprehend the standards of reliability and quality of content disseminated on platforms like YouTube.<sup>21</sup> The present article's key findings are as follows:

- Approximately half of the videos were of high quality, while fewer than one-fifth were of low quality.
- The primary sources of the high-quality videos were academic, government, physician, and university-hospital. On the opposite end of the spectrum, Internet users and news were viewed as providers of low-quality videos.
- The data analysis revealed that low-quality videos exhibited the highest median values for daily views, likes, and comments.

Despite the positive outcome of almost half of the videos being categorized as high-quality and the comparatively low percentage of low-quality videos, it is imperative not to overlook the issue. Videos of low quality are recognized as a prominent tool for disseminating misleading, incorrect, and biased information.<sup>22</sup> The emergence of low-quality videos poses a significant risk to the PH.

Classifying video sources is crucial in defining the domain of PHE information. University-hospital, academic, government, and physician sources emerged as the primary providers of high-quality videos. Contrastingly, Internet users and news sources were associated with low-quality videos. The analysis of PH information regarding COVID-19 vaccination on YouTube revealed that medical professionals obtained the highest DISCERN scores, while Internet users obtained the lowest outcomes.<sup>23</sup> A YouTube article on COVID-19 highlighted professionals and government entities as sources of factual information while emphasizing the prevalence of non-factual information from news outlets and Internet consumers.<sup>24</sup> An article on YouTube on ankylosing spondylitis exercises mentioned academic, university, and physician as high-quality video sources, consistent with our findings.<sup>25</sup> The results emphasize the importance of reliable and knowledgeable professionals in PH education. Academic institutions and government organizations, renowned for their policy and research functions, exert significant influence over the dialogue surrounding PHE. Physicians' significant influence in providing high-quality content underscores the responsibility of healthcare practitioners to distribute precise and morally sound health information. The decentralized structure of independent user-generated online content, which frequently lacks professional supervision, makes ensuring accuracy and reliability challenging. While news outlets are influential, they may favor sensationalism over sophisticated ethical debates.

The differences in DISCERN scores, daily views, likes, and comments among the quality groups provide intricate and nuanced perspectives. Firstly, it can be argued that there is a parallel progression between the quality as measured by the GQS and the reliability as measured by the DISCERN score. High-quality videos can be regarded as reliable sources. Second, low-quality videos received more daily views, likes, and comments. The existing literature presents conflicting findings about this particular topic. An analysis of orthodontics videos on YouTube found that videos with excellent information content

had a considerably greater interaction index.<sup>26</sup> Examining fibromyalgia videos revealed no statistically significant link between DISCERN scores and the like ratio and video power index.<sup>27</sup> In support of our results, an examination of videos related to rotator cuff repair revealed that sources of poorer quality tended to get greater attention.<sup>28</sup> There may be several factors that contribute to the inconsistent results. Possible factors might include changes in the subject matter being examined, the timing of the assessments being carried out, and discrepancies in the inclinations of Internet users. However, discovering this paradoxical phenomenon encourages contemplation regarding the intricacies of online interaction. The presence of high-quality content has the potential to attract an audience that values in-depth analysis and factual accuracy. Conversely, low-quality information may generate greater interaction due to its sensationalized or misleading characteristics.

The study possesses several limitations. Neglecting videos in languages other than English may give rise to linguistic bias, perhaps resulting in disregarding important information available in other languages. Therefore, the potential constraint on the generalizability of our findings to other languages and nations may exist. The quality of videos was assessed using a single time point. However, it should be noted that search results may exhibit variability over time. We restricted the number of videos analyzed for each search phrase. More video examinations would have resulted in more comprehensive results. The video contents were not categorized, and sub-breakdowns were not created.

Our results suggest that PHE-related YouTube videos encompass a wide range of high-quality and low-quality content. Furthermore, the current study emphasizes the importance of source evaluation in attaining high-quality videos. The essential role of quality control techniques on social media platforms in ensuring accurate and ethical health information transmission emerges. Authors should take caution, prioritizing appropriate referencing and rigorously investigating content for potential promotional, deceptive, or poor-quality information on YouTube and comparable platforms in the shifting digital ecosystem.<sup>29</sup>

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Review Article  
Editing, Writing & Publishing



# Research Integrity: Where We Are and Where We Are Heading

Alikhan Zhaksylyk <sup>1</sup>, Olena Zimba <sup>2,3,4</sup>, Marlen Yessirkepov <sup>5</sup> and Burhan Fatih Kocyigit <sup>6</sup>

<sup>1</sup>Department of Scientific and Clinical Work, Doctoral and Master's Studies, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

<sup>2</sup>Department of Clinical Rheumatology and Immunology, University Hospital in Krakow, Krakow, Poland

<sup>3</sup>National Institute of Geriatrics, Rheumatology and Rehabilitation, Warsaw, Poland

<sup>4</sup>Department of Internal Medicine N2, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

<sup>5</sup>Department of Biology and Biochemistry, South Kazakhstan Medical Academy, Shymkent, Kazakhstan

<sup>6</sup>Department of Physical Medicine and Rehabilitation, University of Health Sciences, Adana City Research and Training Hospital, Adana, Turkiye



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**Address for Correspondence:**

**Burhan Fatih Kocyigit, MD**

Department of Physical Medicine and Rehabilitation, University of Health Sciences, Adana City Research and Training Hospital, Dr. Mithat Özsan Bulvarı Kışla Mah., 4522 Sok. No: 1 Yüreğir/Adana 01370, Turkiye.  
Email: bfk2701@hotmail.com

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**ORCID iDs**

Alikhan Zhaksylyk   
<https://orcid.org/0000-0002-6679-323X>

Olena Zimba   
<https://orcid.org/0000-0002-4188-8486>

Marlen Yessirkepov   
<https://orcid.org/0000-0003-2511-6918>

Burhan Fatih Kocyigit   
<https://orcid.org/0000-0002-6065-8002>

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**Author Contributions**

Conceptualization: Zhaksylyk A, Zimba O,

## ABSTRACT

The concept of research integrity (RI) refers to a set of moral and ethical standards that serve as the foundation for the execution of research activities. Integrity in research is the incorporation of principles of honesty, transparency, and respect for ethical standards and norms throughout all stages of the research endeavor, encompassing study design, data collecting, analysis, reporting, and publishing. The preservation of RI is of utmost importance to uphold the credibility and amplify the influence of scientific research while also preventing and dealing with instances of scientific misconduct. Researchers, institutions, journals, and readers share responsibilities for preserving RI. Researchers must adhere to the highest ethical standards. Institutions have a role in establishing an atmosphere that supports integrity ideals while also providing useful guidance, instruction, and assistance to researchers. Editors and reviewers act as protectors, upholding quality and ethical standards in the dissemination of research results through publishing. Readers play a key role in the detection and reporting of fraudulent activity by critically evaluating content. The struggle against scientific misconduct has multiple dimensions and is continuous. It requires a collaborative effort and adherence to the principles of honesty, transparency, and rigorous science. By supporting a culture of RI, the scientific community may preserve its core principles and continue to contribute appropriately to society's well-being. It not only aids present research but also lays the foundation for future scientific advancements.

**Keywords:** Scientific Misconduct; Research Misconduct; Ethics in Publishing; Scientific Fraud; Scientific Dishonesty; Plagiarism

## INTRODUCTION

The importance of 'Research Integrity' (RI) cannot be underestimated. RI is regarded as a mechanism that serves the dual purpose of safeguarding the professional careers and reputation of researchers while upholding societal confidence in scientists and research. RI plays a significant role in fostering economic and social advancements. It generates trust and benefits all stakeholders, including researchers, individuals, research funders, and governmental authorities responsible for science policy. RI is at the heart of the research



Kocyigit BF. Data curation: Zhaksylyk A, Zimba O, Yessirkepov M, Kocyigit BF. Formal analysis: Kocyigit BF. Investigation: Zhaksylyk A, Zimba O, Yessirkepov M, Kocyigit BF. Methodology: Zhaksylyk A, Zimba O. Software: Kocyigit BF. Writing - review & editing: Zhaksylyk A, Zimba O, Yessirkepov M, Kocyigit BF.

process. It allows scientists to trust one another and the data results, and it serves as the foundation for the general public's trust in research evidence, results, and scientists. RI protects patients and the public from the negative consequences of misleading and erroneous data.<sup>1,2</sup>

Scientific misconduct is defined as “intentional falsification of scientific data by presentation of fraudulent or incomplete or uncorroborated findings as scientific fact.”<sup>3</sup> Misconduct can be associated with all activities involving humans, and given the internationalization of scientific research, scientific misconduct is thus a worldwide concern. Although the majority of research on scientific misconduct has been conducted in high-income countries, limited data from low- and middle-income countries suggest that research misconduct is also prevalent in these countries.<sup>4</sup>

Historically, RI has concentrated on addressing three core issues about scientific research<sup>5</sup>:

‘Fabrication’ refers to the act of making up data, conclusions, and scientific details that were not obtained or noticed during the examination process.

‘Falsification’ is changing or manipulating data, outcomes, or other research-related information into a format distinct from its original version.

‘Plagiarism’ refers to the unauthorized utilization of intellectual property belonging to others, encompassing a wide range of materials such as academic papers, research methodologies, visual representations, and conceptual frameworks.<sup>6,7</sup>

As is evident from the preceding definition of scientific misconduct, the scope is limited. Consequently, it does not adequately reflect the variety of RI challenges. Other improper conduct, such as undisclosed conflicts of interest, violations of research policies, concerns with informed consent forms, violations of ethics committee regulations, and fraudulent peer review, can jeopardize the reliability of research processes and outcomes. They are also likely to have a significant effect on research efforts. These acts are known as questionable research practices. Ignoring and hiding specific research outcomes and highlighting the most interesting ones can also be considered.<sup>5,8,9</sup>

## AIM

The main objective of this overview is to provide a general perspective on RI and scientific misconduct. Secondly, we touched upon the components of the academic sphere that have responsibilities in the context of scientific misconduct. In addition, we emphasized scientific misconduct prevention strategies. Finally, the responsibilities of journal editors and reviewers in providing RI were summarized.

## SEARCH STRATEGY

Gasparyan et al.<sup>10</sup> presented recommendations for comprehensive and systematic search strategies. Based on these recommendations, we designed our search strategy. We compiled a list of keyword combinations involving ‘Scientific Misconduct,’ ‘Research Misconduct,’ ‘Ethics in Publishing,’ ‘Scientific Fraud,’ and ‘Scientific Dishonesty.’ When choosing our search queries, we considered the presence of Medical Subject Headings terms. We searched through

MEDLINE/PubMed, Scopus, Web of Science, and Directory of Open Access Journals. All article categories were included in the searches. Publications inconsistent with our objectives were excluded. No time constraints or intervals were set when we created our search strategy.

## WHO IS RESPONSIBLE FOR SCIENTIFIC MISCONDUCT?

### Researchers and self-regulation

The scientific community has viewed self-regulation as the basis of RI, including the concepts of rights and responsibilities. The onus of self-regulation is with individual researchers, who are responsible for upholding the accuracy and reliability of their works and outcomes. This procedure also involves pertinent organizations, such as research institutions and financing departments, which have organizational responsibility for their employees and members. Researchers must assume a sense of responsibility in promoting the progress of scientific knowledge while adhering to the highest standards of integrity.<sup>11</sup>

Since scientific papers play an essential role in clinical practice and academic endeavors, the principles of appropriate authorship should be considered.<sup>12</sup> The growing importance of authorship within academic spheres has been accompanied with multiple instances of unethical conduct. Ghostwriters, guest authors, and gift authors are frequently debated instances of inappropriate authorship. Ghostwriters are individuals who contribute substantially to scientific documents and avoid listing their names in the author bylines. One of the reasons ghostwriting is a conflict of interest is because it excludes transparent authorship.<sup>13</sup> In contrast, guest or gift authors are those who are listed in the author bylines without substantial contributorships throughout the entire research process, starting from the hypotheses formulation to writing and publishing.<sup>14</sup>

Researchers are responsible for generating ethical hypotheses, adhering to the regulations of ethics committees, obtaining written informed consents, collecting, analyzing, and interpreting data, correctly listing co-authors, contributing to revisions, choosing target journals, and taking full responsibility for all aspects of their works. Researchers must conduct this entire procedure ethically and by self-regulating.<sup>15</sup>

### Research supervisors–mentors

Research supervisors should arrange comprehensive discussions regarding scientific misconduct and RI with their students and trainees. If a student or inexperienced researcher encounters challenges in an experiment, the mentors should guide for comprehending the underlying causes of the issue and suggesting appropriate steps for corrections. The mentor may also recall their own achievements and failures, serving as a role model. Errors committed within the scientific realm should not be regarded as mere challenges but rather as valuable occasions for teaching students the fundamental principles of scientific practice. Inexperienced researchers may inadvertently make errors and overlook essential details at the early stages of their research projects, potentially leading to misconduct. Mentors must maintain continuous oversight over their researchers. The occurrence of errors should not be regarded as a source of shame for researchers but rather as a chance for advancing research skills.<sup>16,17</sup>

It is crucial for supervisors and mentors to actively execute their responsibilities to facilitate the growth of their mentees as honest and ethical researchers, thus enhancing the trustworthiness and integrity of the scientific field.



### Research institutions

Numerous institutions are currently undertaking various initiatives to mitigate the issue of research misconduct. Academic institutions often monitor scholarly activities that may violate the basic principles of ethical research, writing, and publishing. Researchers committing misconduct often face consequences. Nonetheless, one of the crucial mechanisms is to prevent scientific misconduct rather than punish unethical individuals. Drafting and enforcing protocols and guidelines for ethical practice are essential steps for upholding RI.<sup>18</sup>

Nurturing an atmosphere of academic freedom is essential for science growth. However, creating mechanisms for preventing scientific misconduct and safeguarding RI is equally important. Research institutions worldwide should reach a consensus on methods aimed at regulating research activities and developing recommendations for promoting adherence to sound scientific and research practices. Universities and research institutions may adapt these recommendations to their local circumstances. Research institutions should monitor research projects, peer review evaluations, and dissemination of research results. Furthermore, institutions should protect research participants' rights and uphold standards of data recording. To effectively deliver these services, it would be beneficial to establish RI departments.<sup>19,20</sup>

Due to the significance of the corporate image, some individuals and organizations may endeavor to downplay the disclosure of unfavorable information, thereby impeding the transparent dissemination of research results via news outlets and online platforms. Institutional authorities may be inclined to disregard or downplay charges of potential research misconduct to safeguard researchers' financial interests. The authorities may lack comprehension of the significance of assessing research misconduct and may have limited capabilities to undertake an investigation effectively.<sup>21</sup> Key elements responsible for scientific misconduct are visualized in Fig. 1.

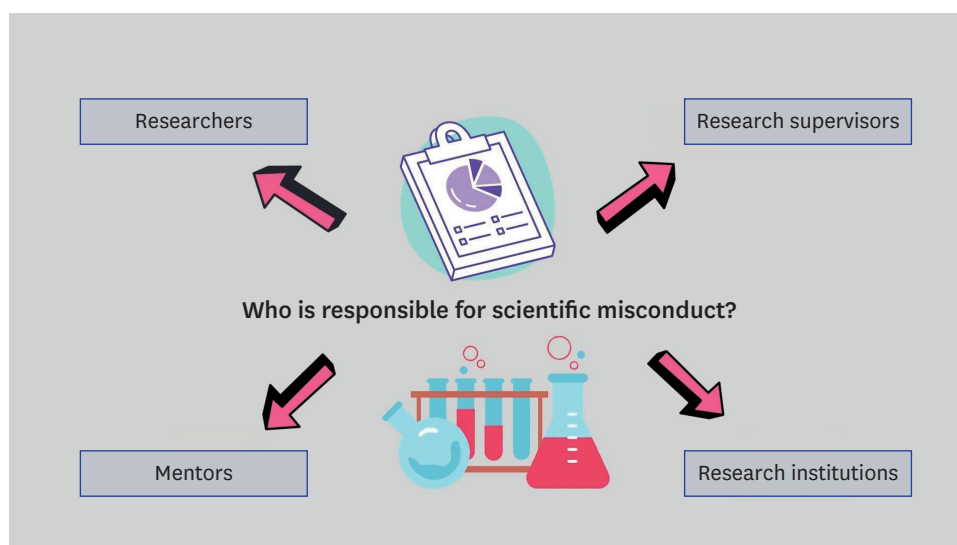


Fig. 1. Key elements responsible for scientific misconduct.

## HOW TO AVOID SCIENTIFIC MISCONDUCT?

Various solutions are available for mitigating instances of scientific misconduct. There is no one-size-fits-all answer to this big issue. The following section presents an overview of potential approaches.<sup>21,22</sup>

### Education

The initial step in mitigating scientific misconduct involves establishing an information program and educating about acceptable clinical practices and research standards. The provision of education should be extended to encompass all facets of academic activities. A considerable proportion of errors may be regarded as unintentional. These honest errors stem from misconceptions in methodology, limited expertise, and insufficient education.<sup>23</sup> Education is a prerequisite for preventing these errors, which may be overlooked by reviewers and editors. Suggestions on ethical publishing norms should be incorporated in educational programs. An analysis revealed a notable occurrence of scientific misconduct and violation of accepted publishing norms among young undergraduates and those residing in non-English-speaking nations.<sup>24,25</sup> These particular groups should be the focus of educational efforts.

### Ethics committees and monitoring of research protocols

The ethics committee is an autonomous entity comprising experts with knowledge and skills in scientific research and related activities. Its primary objective is to safeguard the rights of research participants and ensure that research activities follow ethical norms. The approval of research activities is dependent on a comprehensive evaluation of research protocols by ethics committees affiliated to academic institutions or hospitals.<sup>26</sup> Even after obtaining the ethics approval/waivers, some institutions and universities fail to monitor compliance with specified protocols and standards. Hence, it is essential to establish mechanisms that offer monitoring of the entire process after obtaining the ethics considerations by ethics committees.<sup>27</sup>

### Enhanced peer review

Reviewers offer their services voluntarily and are chosen by editors based on their established academic reputation and expertise in a particular field. The reviewers play a crucial role not only in the rejection of publications that fail to meet the required scientific standards but also in identifying and reporting scientific misconduct. Topical training programs can be arranged for them, accompanied by various rewarding mechanisms, to enhance the efficacy of the reviewing process. Considering peer-review activities as essential components of scholars' academic achievements should be a part of complex measures for upholding writing, editing, and publishing standards.<sup>28,29</sup>

### Protection of whistleblowers

Research institutions should establish mechanisms that allow whistleblowers to expose unethical conduct without fear of retaliation. It is critical to protect individuals who expose scientific misconduct to maintain RI. Reporting of scientific misconduct may become widespread, with institutions and regulatory agencies strengthening whistleblower protection. Research managers should ensure that reports on misconduct are properly dealt with and not discarded.<sup>30,31</sup>

### Preventing predatory publishing

Inexperienced researchers should be educated to avoid being trapped by predatory journals. They should be aware of unethical and poor open access journals that damage their authors' academic reputations. Predatory journals do not actively employ plagiarism detection procedures and lack robust peer review evaluations. The objective should be to raise researchers' awareness of the predatory publishing characteristics and mechanisms to publish in reliable and ethical journals. It is crucial to caution researchers who publish in predatory journals and inform them about the dire consequences of the short-cuts in the publishing enterprise.<sup>32,33</sup>

### Open science practices

Open science is a global initiative that seeks to enhance the transparency, partnership, and accessibility of the scientific process.<sup>34</sup> The implementation of open science approaches yields numerous advantages and can uphold standards and implications of reliable research.<sup>35</sup>

The sharing of research data is regarded as a crucial aspect of open science. Enabling open access to research data facilitates open post-publication evaluation. The utilization of open data also facilitates the verification of research outcomes and the formulation of innovative research strategies. The promotion of openness enhances the trust in the accuracy and reliability of data. The advent of digitalization has brought about significant transformations in the publishing enterprise. The Open Access global initiative has already positively impacted the visibility and accessibility of scientific articles.<sup>36,37</sup> Strategies to avoid scientific misconduct are summarized in Fig. 2.

## HOW CAN JOURNALS AND EDITORS PREVENT SCIENTIFIC MISCONDUCT?

Scientific journals serve a crucial role in the research process as they facilitate the distribution of data. Hence, editors need to safeguard the integrity of the scientific papers they disseminate. The frequency of prominent retractions, particularly in esteemed scientific journals, reveals the



Fig. 2. Strategies to avoid scientific misconduct.

shortcomings of traditional prepublication peer review in identifying fraudulent or unethical studies.<sup>38,39</sup> On the other hand, these retractions emphasize the effectiveness of the publishing enterprise. Editors fulfill their duties, act responsibly, and retract inaccurate and misleading articles.<sup>40</sup> Journal editors may be hesitant to initiate the retraction procedure. One of the reasons for the hesitance is the editors' unjustified fear of damaging their journal's reputation.<sup>41</sup> To prevent disseminating misleading information, editors should be updated on guidelines for retracting fraudulent, erroneous, and misleading reports.<sup>42</sup>

Journal editors can proactively detect and reject potentially retractable reports at the in-house and external evaluation stages. They can be influential instructors, establishing good research strategies for current and prospective authors. Journal instructions and ethics statements should not only advise authors but also educate reviewers and editors on their responsibilities.<sup>43</sup>

Journals employ several strategies to minimize and expose instances of scientific misconduct. A prime example is requesting the authors to confirm that their submissions are authentic, previously unpublished, adherent to ethical authorship regulations, and open data sharing opportunities.

Most journals currently employ plagiarism detection software to identify instances of copying and otherwise unlawful writing, reusing graphics, misappropriating ideas, and failing to properly reference.<sup>44</sup> A growing number of journals request their authors to list all contributors' identifiers and disclose external writing and editing support.

Scientific journals should transparently display their editorial and publishing policies. Merely providing links to global editorial guidelines without related interpretations and definitions can be viewed as poor editorial practice. In today's world, websites have become repositories of journal rules and regulations, serving as crucial resources for authors. Implementing enhanced transparency in establishing authorship policy has been suggested as a means to mitigate misinterpretation and prevent inappropriate attribution of authorship.<sup>45</sup>

The editorial staff cannot assess the scientific methodologies or the raw data in each and every submitted article. Nevertheless, when faced with uncertainty, they can adopt an effective strategy by requesting access to the raw data and seeking the expertise of experienced statisticians to verify the results.<sup>46,47</sup>

## HOW CAN READERS DETECT AND PREVENT SCIENTIFIC MISCONDUCT?

The role of readers in identifying and addressing scientific misconduct is essential as they serve a crucial role in exerting caution and critical analysis. Readers can check the references provided in the article. Misleading, erroneous, or non-existent references may point to misconduct.<sup>48</sup> Readers may carefully analyze data and graphical materials. If inconsistencies contradict conclusions, journal editors can be contacted, and raw data can be requested.<sup>49</sup> The active engagement of readers in online platforms and the involvement of post-publication peer review processes have the potential to make a valuable contribution to this overall effort. Inconsistencies between formulated hypotheses, research questions, and employed research designs can also be detected by attentive readers. Overall, readers should keep up with the latest trends in research ethics, scientific misconduct, and retractions.

## SPECIFIC STEPS TO BE TAKEN IN THE FIELD OF SCIENTIFIC MISCONDUCT

Individuals, institutions, and journals should all take particular steps to deal with and prevent scientific misconduct. To summarize the recommendations mentioned in the previous sections:

Researchers should consistently educate themselves regarding ethical principles and standards within their respective academic disciplines. It is imperative to maintain a state of being well-informed regarding the continuous development of ethical considerations. Strict data management practices should be put in place. Experiment, data collecting, and analysis records should be preserved on a regular and transparent basis. Researchers should communicate openly with their peers, mentors, and colleagues. Constructive criticism and peer review can assure research quality and integrity.

Institutions should provide thorough ethics training programs for both researchers and staff members. It is imperative that these programs be made compulsory and implemented in a repetitious manner. Institutions should establish confidential reporting mechanisms to document individual abuse cases and foster an atmosphere of trust. The ethics committee system should be developed as much as possible. It is necessary to develop an institutional culture that values RI by rewarding and recognizing ethical behavior.

Journals should keep a strict peer-review mechanism in place to check papers for ethical and methodological concerns. It is essential to establish precise guidelines for retractions and corrections. The retraction process needs to be transparent. Journals should make every effort to detect plagiarism. Editorial independence should be preserved, and editors should be protected from excessive influence that could jeopardize RI.

## CONCLUSION

The preservation of RI is of utmost importance in the pursuit of expanding the boundaries of knowledge and upholding the credibility of scientific investigations. Scientific misconduct not only undermines the basis of trust within the academic community but also poses significant obstacles to the development of scientific understanding.

RI is a collective responsibility shared by researchers, institutions, journals, and readers. Researchers must uphold the utmost ethical standards throughout the entire research process, encompassing the formulation of experimental designs as well as the dissemination of results. Institutions have a role in cultivating an environment that upholds principles of integrity. Editors and reviewers serve as protectors, responsible for maintaining the publishing standards. Readers play a crucial part in the identification and reporting of fraudulent activities by engaging in a critical evaluation of content.

The battle against scientific misconduct is multidirectional and continuous. It takes a team effort as well as dedication to the principles of honesty, transparency, and rigorous science. The scientific community may preserve its essential ideals and continue to contribute effectively to the well-being of society by encouraging a culture of RI.

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**РЕЦЕНЗИЯЛАНАТЫН ҒЫЛЫМИ-ТӘЖИБЕЛІК ЖУРНАЛ  
РЕЦЕНЗИРУЕМЫЙ НАУЧНО-ПРАКТИЧЕСКИЙ ЖУРНАЛ  
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Оригинальная статья

## Анализ базы данных Retraction Watch по ретрагированным медицинским статьям из Казахстана

[Жаксылык А.А.](#)<sup>1</sup>, [Есиркепов М.М.](#)<sup>2</sup>, [Бекарысова Д.С.](#)<sup>3</sup>, [Сейил Б.С.](#)<sup>4</sup>

<sup>1</sup> Руководитель управления научно-клинической работы, докторантуры и магистратуры, Южно-Казахстанская медицинская академия, Шымкент, Казахстан. E-mail: nur-ali@list.ru

<sup>2</sup> Кафедра «Биологии и биохимии», Южно-Казахстанская медицинская академия, Шымкент, Казахстан.

E-mail: marlen-forex@inbox.ru

<sup>3</sup> Офис управления проектами и коммерциализации, Южно-Казахстанская медицинская академия, Шымкент, Казахстан.

E-mail: bekarysova.da@gmail.com

<sup>4</sup> Кафедра «Биологии и биохимии», Южно-Казахстанская медицинская академия, Шымкент, Казахстан.

E-mail: birzhan7101423@gmail.com

### Резюме

**Введение.** В настоящее время научное сообщество придает большой интерес к качеству научных публикаций.

Опубликованные работы, содержащие неточности и ошибки, подвергаются процедуре ретракции, важной для обеспечения честности и этичности публикаций, выявляя нарушения, такие как фабрикация, фальсификация, конфликты интересов и плагиат.

**Цель исследования.** Это исследование направлено на анализ ретрагированных статей в медицине и общественном здоровье из Казахстана, с целью выявления причин ретракции и привлечения внимания научного сообщества к улучшению качества научных публикаций.

**Методы.** В данном исследовании авторы провели поиск данных в базе Retraction Watch, с актуальной информацией на 18 января 2024 года. Было обнаружено 129 ретрагированных статей из Казахстана, среди которых 13 были связаны с медициной и общественным здоровьем. Критериями включения были приняты ретрагированные статьи из Казахстана в категориях "Медицина" и "Общественное здоровье", исключены статьи, опубликованные авторами не из Казахстана или не относящиеся к указанным категориям.

**Результаты.** Результаты исследования показали, что из 13 ретрагированных статей, 8 относились к медицинским темам, а 5 к области общественного здоровья и безопасности. Были выделены причины ретракции, такие как опасения по данным, расследования со стороны журналов, отсутствие этического одобрения, дублирование статей, фальшивое рецензирование и плагиат. Дополнительный анализ показал, что половина ретрагированных статей была результатом совместной работы казахстанских и российских авторов. Чаще всего подвергались ретракции типа «исследовательская статья», а промежуток между публикацией и ретракцией варьировал от 6 до 54 месяцев.

**Выводы.** Обсуждение результатов подчеркивает важность соблюдения этических стандартов в медицинских исследованиях. Ретракция статей играет ключевую роль в поддержании качества и надежности научных публикаций, подчеркивая необходимость точности в проведении исследований и их публикации в данной области.

**Ключевые слова:** ретракция статей, этические нарушения, медицина, здравоохранение, Казахстан.

Corresponding author: Dana Bekarysova, Department of Project Management and Commercialization, South Kazakhstan Medical Academy, Shymkent, Kazakhstan.

Postal code: 160001

Address: Al-Farabi Square 1/1, Shymkent, Kazakhstan

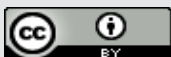
Phone: 87472462463

E-mail: bekarysova.da@gmail.com

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## Введение

В рамках научных исследований неизбежна необходимость строгой методологии, включающей формулирование гипотезы, разработку, проведение, документирование и интерпретацию результатов. Тем не менее, на практике в опубликованных исследованиях, время от времени выявляются неточности и серьезные ошибки [1]. С целью предотвращения введения читателей в заблуждение, применяется процедура ретракции, которая является важным этапом в обеспечении честности и этичности публикации научных статей. Ретракция научных статей представляет собой механизм, с помощью которого издатели сообщают о выявленных серьезных нарушениях этических стандартов в опубликованных материалах [2,3]. Такие нарушения могут быть вызваны как непреднамеренными ошибками, так и научным недопониманием [4]. Ретракция может быть инициирована авторами, редакцией журнала, издателями или по запросу общества. Среди распространенных нарушений публикационной этики, приводящих к ретракциям, можно выделить фабрикацию, фальсификацию, фиктивное авторство, отсутствие этического одобрения, конфликты интересов, дублирование публикаций и плагиат [5].

Проблемы авторства в научных статьях, являются серьезным аспектом, влияющим на этичность научной публикации [6]. Фиктивное авторство включает в себя введение ложных авторов или исключение реальных без их согласия с целью улучшения статуса публикации [7]. В современном исследовательском сообществе существуют и другие этические проблемы, связанные с авторством, такие как гостевое авторство, исключение заслуженных авторов и недостаточная прозрачность вклада авторов [8]. Для их решения необходимо соблюдение четких стандартов и этических норм в области авторства, включая ясные критерии вклада каждого автора, обязательное согласие всех авторов на публикацию и постоянное обновление списка авторов при необходимости [9].

Редакторы и издатели также играют важную роль в обеспечении соблюдения этических стандартов на всех этапах публикации. Получение этического одобрения для исследований, вовлекающих живых существ, также является важным этапом [10]. Процесс этической экспертизы служит средством обеспечения уверенности участников в том, что возможные риски были адекватно рассмотрены, сведены к минимуму и считаются приемлемыми [11].

Исследователям важно различать и разграничивать такие нарушения, как фабрикация и фальсификация. Фабрикация предполагает создание поддельных данных или результатов, в то время как фальсификация включает манипулирование исследовательскими материалами, оборудованием или процессами, в том числе внесение изменений в данные или результаты [12,13]. При таких грубых нарушениях, последствия для авторов заключаются не только в потере доверия, но могут приводить к всевозможным санкциям, таким как потеря статуса или даже юридические последствия.

Заявление о конфликте интересов является еще одной важной составляющей этично выполненного научного исследования [14]. В медицинском и научном сообществе

конфликт интересов определяется как ситуация, при которой первичные профессиональные интересы подвергаются влиянию второстепенных интересов [15]. Эти аспекты включают влияние на объективность, доверие общества, благосостояние пациентов, транспарентность и этику. В медицинских исследованиях конфликт интересов может привести к приоритетам, не соответствующим благосостоянию пациентов [16]. Решение этой проблемы требует установления и строгого соблюдения стандартов прозрачности, обязательного раскрытия конфликтов интересов и разработки эффективных механизмов контроля и надзора [17]. Плагиат и эвфемизмы плагиата также являются частыми причинами ретракции научных статей. Плагиат включает не только буквальное копирование текста, но и воспроизведение концепции или идеи без должной ссылки на первоисточник [18]. Наряду с плагиатом, частым нарушением публикационной этики является и дублирование. Данное понятие иногда путают с плагиатом, однако, дублирование или как его иногда называют "дубликатное публицирование" возникает тогда, когда авторы публикуют тот же самый материал или значительно похожий материал в нескольких научных журналах или других изданиях без четкого указания на предыдущую публикацию. В настоящее время известно два основных вида дублирования, полное и частичное. Полное дублирование представляет собой текст или существенно схожий текст, который публикуется в различных источниках одним автором, в то время как частичное дублирование связано с использованием авторами значительных частей своих предыдущих работ, представляя их как новые. Чтобы избежать дублирования и других нарушений публикационной этики, авторам следует тщательно планировать свои исследования, избегая публикации одного и того же материала в нескольких источниках.

Усиление внимания к вопросам ретракции в медицинской сфере подчеркивает важность постоянного мониторинга и анализа данных о ретракции. Ошибочные выводы и нарушения в медицинских публикациях могут привести к последующим некачественным исследованиям, некорректному ведению пациентов и дальнейшим неблагоприятным исходам [19]. В различных областях науки, включая медицину, наблюдается необходимость в ретракции определенных публикаций, содержащих неверные данные. Ранее авторами статьи был проведен анализ ретрагированных публикаций в медицине из-за нарушений этических норм по разным странам [20]. В этом исследовании авторы представили анализ ретрагированных статей в категориях «Медицина» и «Общественное здоровье» из Казахстана. В данном контексте авторы стремятся не только внести свой вклад в расширение понимания причин ретракции статей из Казахстана, но и нацелены на то, чтобы полученные результаты приносили пользу научному сообществу, издателям и исследователям, способствуя повышению общего качества научных публикаций.



## Материалы и методы

Данное исследование было реализовано в рамках описательного информационно-аналитического дизайна исследования. Для обзора литературы был проведен поиск полнотекстовых статей в базах данных Scopus, Web of Science и PubMed. Поиск актуальной литературы был проведен по ключевым словам “retraction” AND “ethics” OR “publication ethics”. Для набора материала по случаям ретрагированных статей, авторами был проведен поиск данных в базе Retraction Watch. В настоящее время база данных Retraction Watch, запущенная в 2018 году, является самой крупной и всесторонней базой данных по отозванным (ретрагированным) публикациям [21]. Актуальная информация по базе Retraction Watch была получена по состоянию на 18 января 2024 года. Всего было найдено 129 ретрагированных статей из Казахстана.

Критериями включения являлись: ретрагированные статьи из Казахстана во всех категориях, имеющих связь с термином «медицина» и «общественное здоровье».

Критерии исключения: статьи, не относящиеся к категории «медицина» и/или «общественное здоровье», статьи опубликованные

## Результаты

В результате поиска авторами было найдено 13 статей в категориях, связанных с медициной и общественным здоровьем. Среди 13 статей, восемь статей принадлежали к категории «Медицина», пять статей принадлежали к категории «Общественное здоровье и безопасность». Одна ретрагированная статья относилась сразу к трем медицинским категориям: «Альтернативная медицина», «Психиатрия» и «Реабилитация и терапия»; четыре статьи охватывали по две категории медицины: «Кардиология» и «Хирургия»; «Неврология» и «Акушерство и гинекология»; «Ортопедия» и «Педиатрия»; «Педиатрия» и «Реабилитация и терапия». Среди выявленных причин ретракции были перечислены следующие: опасения/проблемы по поводу данных, опасения/проблемы, связанные с результатами, ненадежные результаты, фальшивое рецензирование, отсутствие этического одобрения, плагиат статьи, отзывы/вопросы об авторстве, расследование со стороны журнала/издателя и

## Обсуждение

В ходе проведенного исследования было выявлено, что наиболее частыми причинами отзыва статей стали ненадежные результаты и расследования со стороны журналов/издателей, занимая первое место в списке. За ними следуют отсутствие этического одобрения и дублирование статей. Фальшивое рецензирование и плагиат также выделяются как частые причины ретракции. Интересно отметить, что почти половина из ретрагированных статей была результатом совместной работы казахстанских и российских авторов, этот факт указывает на необходимость более тщательного контроля этических стандартов в коллективной международной научной деятельности. Исследовательская статья оказалась наиболее частым типом статей среди ретрагированных, что может быть связано с особенностями методологии и анализа данных

авторами не из Казахстана. Глубина поиска не была задана. Всего авторами было найдено 13 статей в категории «Медицина» и «Общественное здоровье». Были изучены ретрагированные статьи в таких категориях, как «Альтернативная медицина», «Реабилитация и терапия», «Психиатрия», «Анестезия», «Кардиология», «Хирургия», «Кардиоваскулярная медицина», «Стоматология», «Дерматология», «Диабетология», «Разработка лекарств», «Эндокринология», «Гастроэнтерология», «Общая медицина», «Гериатрическая медицина», «Иммунология», «Инфекционные болезни», «Внутренняя медицина», «Неврология», «Акушерство и гинекология», «Сестринское дело», «Онкология», «Офтальмология», «Ортопедия», «Педиатрия», «Оториноларингология», «Медицинская патология», «Фармакология», «Пульмонология», «Медицина и спорт», «Трансплантология», «Урология и нефрология», «Общественное здоровье и безопасность». Полученные данные были сгруппированы в таблицу и проанализированы в соответствии с причинами ретракции. В исследование также было включено сравнение полученных результатов, с результатами других исследований, описанных в доступной литературе.

Из тринадцати ретрагированных статей, шесть статей были написаны казахстанскими учеными в соавторстве с российскими, одна статья была опубликована в соавторстве с болгарскими коллегами. Девять статей из тринадцати относились к типу «исследовательская статья», три статьи относились к типу «клиническое исследование» и одна публикация была материалом конференции. Максимальное количество соавторов в изученных ретрагированных статьях составляло 13 (n=1), минимальное количество соавторов составляло 3 (n=3). Большинство ретрагированных статей было опубликовано в 2020 году (n=4). Наибольшее количество ретракций медицинских статей из Казахстана пришлось на 2023 год (n=7). Временной промежуток между публикацией статьи и ее ретрагированием, в среднем составил 28,8 месяцев. Подробный анализ ретрагированных медицинских статей из Республики Казахстан изложен в Таблице №1 (Приложение).

Временные рамки между публикацией и отзывом статей варьируются от 6 до 54 месяцев. Данное исследование проведено авторами после того, как ранее ими были опубликованы результаты анализа ретрагированных статей из Казахстана без учета категорий (сфер) деятельности. Тогда авторами были выявлены 92 ретрагированные статьи, при этом основные причины ретракций приходились на проблемы с рецензированием (38 статей), проблемы плагиата (25 статей) и дублирование (14 статей). Большинство ретракций приходилось на 2018-2022 годы. Примечательно, что в предыдущем исследовании также, как и в текущем, самым частым типом ретрагированных статей являлась «исследовательская статья» [22].

Если говорить о мировых тенденциях, то в анализе 1339 ретрагированных статей Г. Ли и коллег, отмечается, что наибольшее количество ретракций было зафиксировано в США, Японии и Германии. Основными причинами отзыва статей в этих странах стали разнообразные неправомерные действия (685 публикаций) и ошибки (193 публикации) [23]. Что касается разных сфер медицины, то в исследовании М. Бордино и коллег, было выявлено, что наиболее часто ретракции статей встречались в таких областях как реабилитация (20%), применения лекарств (17%), хирургии (13%) [24]. Анализ международных публикаций о ретрагированных статьях в различных областях медицины также выявил, что основными причинами ретракции в хирургии позвоночника являются ошибки в данных, плагиат и отправка в другой журнал [25]. В анестезиологии причины ретракции включают неправомерные действия авторов, расследования, инициированные учреждением, фальсификацию или фабрикацию данных [26]. А в области акушерства большинство ретракций было связано с вопросами, связанными с содержанием, дублированием и плагиатом [27].

**Сильные стороны данного исследования.** Это исследование акцентирует важность на этичности и честности в научных исследованиях, особенно в контексте медицинской сферы. Оно не только обращает внимание на значимость этических

## Выводы

Резюмируя вышеописанное, авторы пришли к выводу, что избегание ретракции статей — это трудоемкий процесс, который начинается с этического планирования проведения исследования и заканчивается бережным вниманием к деталям в процессе публикации. Авторами были выделены несколько принципов, следуя которым, исследователям вероятнее всего удастся избежать проблем, которые могут приводить к ретракциям:

1. Тщательное планирование исследования. Исследователям следует планировать и проводить исследование с соблюдением высоких стандартов честности и надежности данных, также следует быть точными в сборе, анализе и представлении данных.
2. Соблюдение этических стандартов. Обязательное получение этического одобрения для исследований, особенно если в них участвуют люди или животные.
3. Избегание дублирования. Если у исследователей есть необходимость повторно публиковать некоторые данные из предыдущего исследования, им следует ссылаться на это исследование.
4. Честность в представлении авторства. Исследователям следует указывать всех соавторов согласно их фактическому вкладу в исследование и избегать включения авторов, которые не внесли значительного вклада в работу.
5. Избегание плагиата. Исследователям следует использовать только собственные идеи и обязательно проверять свои рукописи на плагиат перед отправкой на публикацию.
6. Серьезное отношение к замечаниям рецензентов. Исследователям следует прислушиваться к конструктивной критике своих рукописей и при необходимости вносить коррективы.

аспектов, но и подчеркивает роль ретракции в решении серьезных этических нарушений. Исследование придает особую актуальность проблемам, связанным с ретракцией, рассматривая ее как важный механизм, направленный на восстановление этических стандартов в публикациях.

Одним из ключевых аспектов данного исследования является его фокус на проблемах ретракции публикаций в Казахстане. Таким образом, данное исследование не только поднимает важные вопросы этичности в науке, но и предоставляет конкретные примеры исследования проблем ретракции в конкретной стране.

**Ограничение исследования** заключается в том, что было найдено всего 13 ретрагированных статей из Казахстана в области медицины и общественного здоровья, что не является большой выборкой, чтобы делать окончательные выводы о причинах ретракции. Однако, это исследование является продолжением предыдущих исследований в области ретракций статей, которые ранее раскрывали проблемы ретракции по разным странам в разных сферах науки, данное же исследование ограничивается конкретными категориями и территориальными рамками.

Таким образом, проведенный анализ подчеркивает необходимость строгого соблюдения этических стандартов и точности при проведении и публикации научных исследований в области медицины общественного здоровья. Ретрагирование статей является важным механизмом для поддержания качества и надежности научных публикаций.

**Конфликт интересов.** У авторов нет конфликта интересов, о котором они могли бы заявить.

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**Финансирование.** Авторы заявляют об отсутствии финансирования исследования, а также об отсутствии финансирования кого-либо из авторов.

**Авторский вклад.** Концептуализация – Ж.А.; методология – Б.Д.; проверка – Е.М.; формальный анализ – С.Б.; написание (оригинальная черновая подготовка) – Ж.А., Б.Д.; написание (обзор и редактирование) – Ж.А., Е.М., Б.Д., С.Б.

Все авторы прочитали, согласились с окончательной версией рукописи и подписали форму передачи авторских прав.

Таблица 1 - Анализ ретрагированных статей по специальности «Медицина» и «Общественное здоровье и безопасность»

№	Категория	Причина	Дата публикации	Дата ретрагирования	Через сколько времени ретрагирована
1	Альтернативная медицина	+Опасения/проблемы по поводу данных, +Опасения/проблемы, связанные с результатами, +Ненадежные результаты	20/12/2021	14/09/2022	9 месяцев
	Психиатрия				
	Реабилитация и терапия				
2	Кардиология	+Фальшивое рецензирование +Отсутствие этического одобрения +Плагиат статьи	27/02/2021	12/07/2023	29 месяцев
	Хирургия				
3	Эндокринология	+Автор не отвечает на запросы +Опасения/проблемы с данными +Фальшивое рецензирование +Расследование со стороны журнала/издателя +Отсутствие этического одобрения +Ненадежные результаты	25/08/2021	30/05/2023	21 месяц
4	Инфекционные болезни	+Эвфемизмы для плагиата +Плагиат текста	10/10/2011	28/11/2013	25 месяцев
5	Неврология	+Отзывы/вопросы об авторстве +Конфликты/проблемы с рецензированием +Расследование со стороны журнала/издателя +Отсутствие этического одобрения	05/03/2020	03/10/2023	43 месяца
	Акушерство и гинекология				
6	Онкология	+Дублирование статьи	01/04/2015	09/10/2019	54 месяца
7	Ортопедия	+Дублирование статьи +Эвфемизмы для дублирования +Фальшивое рецензирование +Информированное/пациентское согласие - нет/ отказано +Расследование со стороны журнала/издателя +Отсутствие этического одобрения	15/06/2020	27/09/2023	39 месяцев
	Педиатрия				
8	Педиатрия	+Дублирование статьи	19/05/2016	09/09/2019	40 месяцев
	Реабилитация и терапия				
9	Общественное здоровье и безопасность	+Опасения/проблемы, связанные с привлечением третьих сторон +Опасения/проблемы с рецензированием +Расследование со стороны журнала/издателя +Недостовверные результаты +Отказ от участия	24/11/2020	05/07/2023	32 месяца
10	Общественное здоровье и безопасность	+Опасения/проблемы, связанные с привлечением третьих сторон +Опасения/проблемы с рецензированием +Расследование со стороны журнала/издателя +Недостовверные результаты +Отказ от участия	26/11/2020	09/06/2023	31 месяц
11	Общественное здоровье и безопасность	+Автор не реагирует +Дублирование статьи +Эвфемизмы для дублирования	01/02/2022	23/05/2023	15 месяцев
12	Общественное здоровье и безопасность	+Ошибка в анализе +Ошибка в результатах и/или выводах +Извлечение и замена	09/10/2019	24/04/2020	6 месяцев
13	Общественное здоровье и безопасность	+Эвфемизмы для плагиата +Плагиат текста +Взято из диссертации/тезисов	21/03/2016	26/10/2018	31 месяц

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### Қазақстаннан ретракцияланған медициналық ғылыми мақалалар бойынша Retraction Watch деректер базасын талдау

Жақсылық А.А.<sup>1</sup>, Есіркепов М.М.<sup>2</sup>, Бекарысова Д.С.<sup>3</sup>, Сейіл Б.С.<sup>4</sup>

<sup>1</sup> Ғылыми-клиникалық жұмыстар, докторантура және магистратура басқармасының жетекшісі, Оңтүстік Қазақстан медицина академиясы, Шымкент, Қазақстан. E-mail: nur-ali@list.ru

<sup>2</sup> Бірінші проректор, Биология және биохимия кафедрасының меңгерушісі, Оңтүстік Қазақстан медицина академиясы, Шымкент, Қазақстан. E-mail: marlen-forex@inbox.ru

<sup>3</sup> Жобаларды басқару және коммерцияландыру офисінің меңгерушісі, Оңтүстік Қазақстан медицина академиясы, Шымкент, Қазақстан. E-mail: bekarysova.da@gmail.com

<sup>4</sup> Ғылыми жұмыстар секторының меңгерушісі, Оңтүстік Қазақстан медицина академиясы, Шымкент, Қазақстан. E-mail: birzhan7101423@gmail.com

#### Түйіндемесі

**Кіріспе.** Қазіргі уақытта ғылыми қауымдастық ғылыми жарияланымдардың сапасына үлкен қызығушылық танытуда. Дәлсіздіктер мен қателіктерден тұратын жарияланған жұмыстар жалған, бұрмалау, мүдделер қақтығысы және плагиат сияқты бұзушылықтарды анықтау арқылы жарияланымдардың шындығы мен этикасын қамтамасыз ету үшін маңызды ретракция процедурасынан өтеді.

**Зерттеудің мақсаты.** Бұл зерттеу ретракцияның себептерін анықтау және ғылыми жарияланымдардың сапасын жақсартуға ғылыми қоғамдастықтың назарын аудару мақсатында Қазақстаннан медицинада және қоғамдық денсаулықта ретракцияланған мақалаларды талдауға бағытталған.

**Әдістері.** Бұл зерттеуде авторлар қажетті деректі 2024 жылы 18 қаңтардағы өзекті ақпараттық Retraction Watch дерек қорынан іздеді. Қазақстаннан 129 ретракцияланған мақала табылды, олардың 13-і медицина мен қоғамдық денсаулыққа қатысты. Қосу критерийлерімен Қазақстаннан "Медицина" және "Қоғамдық денсаулық" санаттарында ретрагирленген мақалалар қабылданды, Қазақстаннан емес немесе көрсетілген санаттарға жатпайтын мақалалар алынып тасталды.

**Нәтижелер.** Іздеу нәтижелері 13 ретрагирленген мақаланың сегізі медициналық тақырыптарға, ал бесеуі Қоғамдық денсаулық пен қауіпсіздік салаларына қатысты екенін көрсетті. Деректерге қатысты алаңдаушылық, журналдарды тергеу, этикалық мақұлдаудың болмауы, мақалалардың қайталануы, жалған шолу және плагиат сияқты кері кетудің себептері анықталды. Қосымша талдау көрсеткендей, ретрагирленген мақалалардың жартысы қазақстандық және ресейлік авторлардың бірлескен жұмысының нәтижесі болды. Зерттеу мақалалары көбінесе ретракцияға ұшырады, ал жариялау мен ретракция арасындағы алшақтық 6 айдан 54 айға дейін өзгерді.

**Қорытынды.** Нәтижелерді талқылау медициналық зерттеулерде этикалық стандарттарды сақтаудың маңыздылығын көрсетеді. Мақалалардың тартылуы ғылыми жарияланымдардың сапасы мен сенімділігін сақтауда шешуші рөл атқарады, бұл зерттеу жүргізуде және оларды осы салада жариялауда дәлдіктің қажеттілігін көрсетеді.

**Түйін сөздер:** мақалаларды ретракциялау, этикалық бұзушылықтар, медицина, денсаулық сақтау, Қазақстан.

## Retraction Watch Database Analysis of Retracted Medical Articles from Kazakhstan

[Alikhan Zhaksylyk](#)<sup>1</sup>, [Marlen Yessirkepov](#)<sup>2</sup>, [Dana Bekaryssova](#)<sup>3</sup>, [Birzhan Seil](#)<sup>4</sup>

<sup>1</sup> Head of the Department of Scientific and Clinical Work, South Kazakhstan Medical Academy, Shymkent, Kazakhstan.

E-mail: nur-ali@list.ru

<sup>2</sup> First Vice-Rector, Head of the Department of Biology and Biochemistry, South Kazakhstan Medical Academy, Shymkent, Kazakhstan.

E-mail: marlen-forex@inbox.ru

<sup>3</sup> Head of the Department of Project Management and Commercialization, South Kazakhstan Medical Academy, Shymkent, Kazakhstan. E-mail: bekaryssova.da@gmail.com

<sup>4</sup> Head of the Research sector, South Kazakhstan Medical Academy, Shymkent, Kazakhstan.

E-mail: birzhan7101423@gmail.com

### Abstract

**Introduction.** Nowadays, the scientific community attaches excellent interest to the quality of scientific publications. Published papers containing inaccuracies and errors are subjected to the retraction procedure, which is essential to ensure the integrity and ethics of publications, revealing irregularities such as fabrication, falsification, conflicts of interest and plagiarism.

**This study aims** to analyse retracted articles in medicine and public health from Kazakhstan to identify the causes of retraction and draw the scientific community's attention to improve the quality of scientific publications.

**Methods.** In this study, the authors searched the Retraction Watch database with up-to-date information as of 18 January 2024. They found 129 retracted articles from Kazakhstan, among which 13 were related to medicine and public health. Inclusion criteria were retracted articles from Kazakhstan in the categories "Medicine" and "Public Health", excluding articles not from Kazakhstan or not related to these categories.

**Results.** The search results showed that of the 13 retracted articles, eight were related to medical topics, and five were in the field of public health and safety. Reasons for retraction were highlighted, such as data concerns, journal investigations, lack of ethical approval, duplicate articles, fake peer review, and plagiarism. Additional analysis showed that half of the retracted articles resulted from joint work between Kazakhstani and Russian authors. Research articles were most often retracted, and the interval between publication and retraction ranged from 6 to 54 months.

**Conclusion.** The discussion of the results emphasises the importance of adhering to ethical standards in medical research. Retraction of articles plays a crucial role in maintaining the quality and reliability of scientific publications, emphasising the need for accuracy in conducting and publishing research in the field.

**Keywords:** retraction, ethical violations, medicine, health care, Kazakhstan.