Original Research

A Survey of Retracted Articles from Three OIC Member Countries (Iran, Turkey, & Egypt) in the Web of Science (WoS)

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Abstract

The present study examines the retracted articles from three OIC member countries (Iran, Turkey, and Egypt) in the Web of Science (WoS). All articles from Iran, Turkey, and Egypt, published in the journals indexed in the WoS and retracted due to scientific misconduct, consisted of the research population. This analytical survey examined the retracted articles regarding research areas, periods, cumulative citations, and names of collaborating authors and countries by country, discipline, and field via scientometrics. With 38%, Iran has the most retracted articles in various fields and scientific fields. Most of the retracted articles are related to basic sciences, medicine, and engineering, respectively. In the analysis of statistics, the publisher of retracted articles, in Iran, Turkey, and Egypt, we can name two countries, the United States and the United Kingdom, which are among the publishers with many publishing activities in all countries. Considering that the number of retracted articles globally has increased significantly, informing researchers and those involved in scientific journals and regular monitoring of citation performance of journals can prevent similar events in the future.

Keywords: Web of Science, Retracted Articles, OIC, Iran, Turkey, Egypt.

Introduction

Scientific journals are critical channels for spreading knowledge that lead to the creation and expansion of scientific communication. On the other hand, they play an essential role in the flow of information and represent the achievements of the scientific community in their broadest dimensions in terms of global, national, and regional. In other words, the scientific journals of any society reflect the scientific life of that society. On the one hand, the increasing number of scientific journals and the wide acceptance, use, and dependence of the scientific community have made their quantitative and qualitative study one of the most critical issues in evaluating this type of resource. Due to the globalization and development of information and communication technology, scientific research has gained international nature and scope. In

other words, sometimes, in scientific and academic societies, the quality of a researcher's scientific output is measured based on the quality of its publishing journal. In the meantime, scientific journals play an essential role in exchanging scientific information worldwide, to the extent that various researchers worldwide strive to conduct valuable research and influence their research findings through publication in prestigious journals. One of the factors indicating the validity of scientific journals is their indexing in reputable international databases and citations systems. (Erfanmanesh & Nojavan, 2016).

One of the factors indicating the validity of scientific journals is their indexing in reputable international databases and citations. The presence of each country's scientific journals in these databases can provide the necessary grounds for the publication and availability of more scientific products of that country at the international level and a more effective presentation of the research community of that country in the process of evaluating and publishing global scientific products (Norouzi Chakoli, Hassanzadeh, Noormohammadi & Etemadifard, 2009). Besides, it is important to select and publish articles in reputable scientific journals during the researchers' evaluation and promotion. Lack of familiarity of some researchers with the validity of journals and, on the other hand, some fake and unreliable publishers and magazines will cause problems. So, the presence of such factors highlights the importance of the issue.

Furthermore, research principles in which there are ethical and scientific standard codes should be observed. Also, scientific misconduct includes cases such as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research (Moradi & Genavi, 2017, Sugawara et al., 2017). Therefore, scientific products with scientific misconduct may be retracted by the relevant journals for any reason and be taken out of the scientific cycle. Of course, this does not mean the complete elimination or complete retraction of these products worldwide. Only the relevant subject publisher can inform about retracting this type of article so that the authors know the scientific fate of these articles. Despite the use of various types of plagiarism detection software and the attention of judges and publishers, it is still possible to publish an article with some kind of scientific misconduct. It is also possible that violations of a piece of research will never be revealed. However, sometimes after the publication of a piece of research, it becomes clear that it is not qualified for publication, and some scientific mistake or scientific misconduct has been committed in it. In this case, researchers and the scientific community should be informed of such scientific misconduct (Rajabzadeh Assarha & Abbasian, 2016). Scientific misconduct is a sign of non-compliance with scientific standard codes (Cross, 2016). As a reputable international center, the Islamic World Science Citation Database (ISC) prepares, processes, and updates research information via a specialized, committed, and efficient workforce. Also, using advanced technologies following international standard codes, this center measures and supports Islamic countries' significant research and educational policies and improves their scientific levels. The vision of the ISC on the 2025 horizon is to achieve the authority to measure and evaluate the scientific development and research performance of 57 OIC countries and to have a credible position tantamount to citation centers and international rankings (ISC Document of Future Perspective, 2009). Journals are the most desirable platform for new ideas, and the articles presented in them have been accepted as the first conduit for new ideas in different societies. Scientific journals can be considered the most crucial official channel for disseminating and disseminating scientific and technical information. Evaluating and analyzing journals are among the ISC's tasks. Today researchers consider retractions of many journals in different countries, so the "COPE's retraction

guidelines have codified standard codes" (Wager, Barbour, Steven & Kleinert, 2009) to identify research misconducts to take the fairest measures against violating researchers.

In Iran, strengthening and integrating the country's scientific and technological information system with the mission of standardizing and modifying the production; registration; review; and evaluation processes, creating combined databases for dissertations; research and technology projects; articles, journals; scientific books; and inventions and discoveries are among the national measures of the fourth macro strategy of the comprehensive scientific map. This strategy emphasizes institutionalizing knowledge management and explaining community management on ethics and knowledge based on Iranian-Islamic models in scientific, economic, political, social, cultural, and defence-security institutions (Supreme Council of the Cultural Revolution, 2010).

Recently, scientific outputs have increased so that the Iranian Ministry of Science, Research and Technology and Ministry of Health and Medical Education, Treatment and Medical Education have paid particular attention to retracted articles and the determination of scientific misconduct. The present study investigates the retracted articles from Iran and OIC member countries from different perspectives to identify their scientific misconduct. The present study also intends to provide appropriate solutions and policies to researchers for reducing the retraction rate. This problem has received little attention. Besides, strategies and macro policies to improve research ethics can cause irreparable damage to the OIC member countries' international scientific rankings. So, the issue is investigated via the survey, assessment, and analysis of the retracted articles from the countries and indexed in the WoS.

Various studies have been conducted on scientific misconduct from different dimensions in different nations. Some have done little research on the causes of scientific misconduct, while others have studied the indicators and qualitative dimensions. Rajabzadeh Assarha and Abbasian (2016) categorized articles in Iran that had been retracted, classifying them into two categories: articles obtained from plagiarism and articles resulting from human and unintentional errors. They showed that, in some branches of science, such as medicine and pharmacy, a researcher might notice errors and misrepresentation in retesting and re-examination. As a rule, the account of this kind of elimination of abuse in science must be separate. On a global scale, Moradi, Janavi, & Kazemi (2017) introduced China as one of the most retracted articles in various fields and scientific fields. Besides, most of the retracted articles are in medical sciences. Janavi and Moradi (2018) examined the retracted articles in humanities, medical sciences, engineering, and basic sciences. The research findings indicate that the articles also received citations after the retraction in all four areas studied. Other fields had the largest share of the total citations received after retraction, except for engineering, with a high citation rate received before retraction. Among the countries with the most retracted articles on the WoS, all citations received by the United States, Iran, and Sweden were after retraction.

In their study titled "suspension of the validity of scientific journals: a case study of the citation database of journals during 2010-2014", Erfanmanesh, Hamzaei & Rajabzadeh Assarha (2019) examined 255 journals, arguing that journals from 117 research areas experienced records of suspensions, with the highest number of suspensions occurring in the electrical and electronic engineering, management, and artificial intelligence research areas. Janavi and Moradi (2018), Reviewed investigated the fate of Middle East health articles concerning the amount of before retraction citations and post retraction citations by countries.

Research findings indicate that Iran, Egypt, Turkey, Saudi Arabia, Israel, Lebanon, and the United Arab Emirates have published retracted articles in health science that, in the meantime, Iran, Egypt, and Turkey have the most articles, respectively. Also, except for Turkey, all citations received by all countries were posted retraction citations. More than half of these articles have been retracted in less than a year. Ghorbi and Fahimifar (2020), in their research, concluded that the production of retracted papers in Iran is on the rise. Besides, Iran is in the seventh rank, and the Islamic Azad University is in the first place among the organizations regarding the number of retracted papers. Cokol, Iossifov, Rodriguez-Esteban an d Rzhetsky (2007) reviewed medical papers in the PubMed and Medline databases. They presented two implications for world science: the first is the increase in competition within and among academic centers and pressure to produce more articles, thus reducing the quality of science; and the second, a favorable implication, is that identifying articles with scientific misconduct means correcting science. Singh, Mahendra, Yadav, Singh, Arora, & Arora (2014) reviewed medical papers in PubMed, finding that the quality of research has decreased despite the quantitative growth of scientific productions in Medline. They believed that the number of retracted papers is increasing, although their growth rate is undetermined.

Abritis (2015) examined the retracted articles as an indicator of research misconduct in healthcare. The results showed that considering retracted articles as an indicator of research misconduct has significant drawbacks. He emphasized that we still need criteria for determining the extent of research misconduct in the research and academic environment. The existence of accurate and precise statistics of this phenomenon can significantly help plan and deal with it. Cosentino & Veríssimo (2016) considered the citation of the retracted articles unscientific. The main reason for receiving the citation is researchers' interest and lack of fundamental research in selecting articles for citation. In this regard, the retracted articles are divided into two categories: the plagiarised article and articles caused by experimental errors (trial and error). Citing the data collection method in the second type is described as correct and scientific if the scientific process in the article is explained.

In a study conducted in PubMed, Sade (2016) concluded that two-thirds of the retracted articles in 2012 were those in biology and medicine. They stated that those articles were retracted due to their fraud and duplication of research findings. Bar-Ilan and Halevi (2017) reviewed the citations of 238 retracted articles in Elsevier's Science Direct. Despite the publishers' statements, they considered the number of citations to these articles growing because of publishing the same articles on the researchers' websites or websites other than the original citation.

A literature review shows that despite the significance of discussing retracted articles, some report studies have been conducted on Iranian retracted articles and even a few international articles. Nevertheless, no research has been done on the research community covering the retracted articles from OIC countries. In the first place, the present study seeks to clarify the credit and quantitative and qualitative assessment of articles, especially those published in 57 Muslim countries, as one of the missions of the ISC. Also, the research findings can be employed by those managing the scientific journals of the countries under study indexed in international databases to get acquainted with the status of retracted articles to prevent similar events for their journals.

Research objectives

The present study aims to review and study the retracted articles from Iran, Turkey, and

Egypt to determine the regional ranking of Iran in terms of retracted articles. It also aims at assessing the number of the retracted articles from the three OIC member countries, research areas of the retracted articles, the geographical distribution of the retracted articles based on their publication place, introduction, and expression of the quality of the journals in which the retracted articles are published, the citation status of the retracted articles, and finally a comparative comparison of Iranian retracted articles in terms of the quality of journals with the retracted articles from the other two countries.

Research questions

1. How many articles in Iran, Turkey, and Egypt have been retracted?

2. Which journals have been retracted?

3- What was the place of publication of the retracted articles based on geographical distribution?

4. Who are the authors of the retracted articles?

5- In terms of quality, in which journals have the retracted articles been published?

6. What is the status of the cumulative citation of journals in which retracted articles have been published?

7- How is the quality of Iranian retracted articles compared with others of Turkey and Egypt?

Methodology

The present study is an applied-descriptive approach using scientometric indicators. The research population consisted of the 394 retracted articles from Iran, Turkey, and Egypt. The list of retracted articles and journals in which these (retracted) articles were published was extracted from the WoS. In addition to its scientific validity, this database was reviewed because of its high accuracy in evaluating and selecting journals. After extracting the data, articles related to each journal were collected by referring to journals' WoS and citation reports and, finally, stored and analyzed in an Excel spreadsheet file. The present study seeks to show and analyze the highest statistics in subject matter, journals, authors, etc. Since the single-digit statistics of many documents are high, an attempt was made to avoid too much mentioning of the record. The WoS research area was determined by the content of the articles, while the WoS category terms were based on journals. In this study, both types of analysis were examined to determine the research area distribution of articles and the category terms distribution of journals. Documents that are not in the formal categorization of articles are in both categories. In the WoS Categories, the thematic categorization is based on journal topics, while in Research Areas, they are categorized based on articles.

Findings

Table 1 lists the top ten countries on the list of OIC member countries with scientific products, the number of retracted articles, and the retraction rate of their articles. The time of extracting the statistics was March 18, 2021. Iran with 248 retracted articles, Turkey with 82 ones, and Egypt with 64 were ranked first to third. There are 24 countries without retracted articles, seven countries with one retracted article, Jordan, Gabon, Senegal, Sudan with two retracted articles, and Cameroon and Kazakhstan with three retracted articles. The number of scientific productions of countries that have fewer retracted articles is less than other countries.

Table 1

Number of Retracted Articles from OIC Member Countries

Row	Country	Total production	Number of retracted articles	% of Total production
1	Iran	506570	248	0.05
2	Turkey	647236	82	0.01
3	Egypt	232607	64	0.03
4	Pakistan	161219	50	0.03
5	Saudi Arabia	203670	47	0.02
6	Malaysia	248232	46	0.02
7	Tunisia	86530	20	0.02
8	Algeria	64632	17	0.03
9	Lebanon	34639	10	0.03
10	Bangladesh	47896	8	0.02
11	Nigeria	95119	6	0.01
12	Indonesia	114025	6	0.01
13	Kuwait	28282	6	0.02
14	Iraq	29236	5	0.02
15	Morocco	60904	4	0.01
16	United Arab Emirates	50993	4	0.01
17	Qatar	28099	4	0.01
18	Oman	16628	4	0.02
19	Bahrain	6345	4	0.06
20	Cameroon	18342	3	0.02
21	Kazakhstan	23749	3	0.01
22	Jordan	37596	2	0.01
23	Gabon	3310	2	0.06
24	Senegal	11318	2	0.02
25	Sudan	11525	2	0.02
26	Uganda	20996	1	0.01
27	Azerbaijan	13799	1	0.01
28	Syria	7405	1	0.01
29	Burkina Faso	7264	1	0.01
30	Libya	6386	1	
31	Tajikistan	1718	1	0.06
32	Palestine	3500	1	0.00
33	Uzbekistan	13175	0	0.00
34	Cote Ivoire	8505	0	0.00
35	Benin	5814	0	0.00
36	Albania	5825	0	0.00
37	Mali	45,29	0	0.00
38	Mozambique	4721	0	0.00
39	Gambia	3333	0	0.00
40	Yemen	4367	0	0.00

Row	Country	Total production	Number of retracted articles	% of Total production
41	Niger	2933	0	0.00
42	Brunei	3635	0	0.00
43	Kyrgyzstan	3007	0	0.00
44	Togo	2092	0	0.00
45	Sierra Leone	1898	0	0.00
46	Guinea	8528	0	0.00
47	Afghanistan	1457	0	0.00
48	Guyana	1032	0	0.00
49	Guinea Bissau	823	0	0.00
50	Mauritania	755	0	0.00
51	Chad	664	0	0.00
52	Turkmenistan	423	0	0.00
53	Somalia	459	0	0.00
54	Maldives	270	0	0.00
55	Djibouti	230	0	0.00
56	Comoros	151	0	0.00
57	Suriname	0	0	0.00
	Total	2903867	655	0.02

Review of retracted articles from Iran

Currently, tens of thousands of scientific articles in Persian and English are produced annually in Iran. Compared to the previous decade, the number of scientific-research journals and articles has multiplied. Based on statistics extraction on February 17, 2019, Iran's scientific output in the WoS was about 506,570, among which a significant number has been retracted. So, researchers and scholars should consider the first pillar, i.e., proper and correct scientific credibility, in their research practices so that the scientific quality of their articles grows in proportion to the increase in the number of Iranian scientific productions.

Table 2 shows the research areas of 248 retracted Iranian articles: multidisciplinary materials science tops the table with 35 records. Among them, the Chemistry physical with 23 documents, mechanics with 22 documents, oncology and pathology with 19 documents each, energy fuels with 15 documents, electricity and metallurgy engineering with 12 documents each, electronic engineering; composite science; and technology with 9 documents each, and mathematics and applied physics with 8 documents each, ranked the first to eighth.

Table 2

Categories of the Retracted Articles from Iran

Web of Science Categories	Record Count	%
Materials Science Multidisciplinary	35	0.14

Web of Science Categories	Record Count	%
Chemistry Physical	23	0.09
Mechanics	22	0.09
Oncology	19	0.08
Pathology	19	0.08
Energy Fuels	15	0.06
Electrochemistry	12	0.05
Metallurgy Metallurgical Engineering	12	0.05
Engineering Electrical Electronic	9	0.04
Materials Science Composites	9	0.04
Mathematics Applied	8	0.03
Physics Applied	8	0.03

Table 3 lists the document types of the retracted articles. Of the 248 records, 238 were research articles. Also, there were five review articles and three lectures. The other two published articles were in the editorial category.

Table 3
Document Types of the Retracted Articles from Iran

Document Types	Record Count	%
Retracted Publication	248	1.00
Article	238	0.96
Review	5	0.02
Letter	3	0.01
Proceedings Paper	1	0.01
Editorial Material	1	0.01

Table 4 lists the countries collaborating in the scientific production of retracted articles from Iran. Two hundred forty-eight retracted articles from Iran collaborated with 12 documents from Malaysia; the United Kingdom; Serbia; and the United States with 7 articles each, Singapore with 5 articles, Germany; India; and Italy with 4 articles each, Australia and Canada with 3 articles each, Turkey with 2 articles, and Bulgaria; Czech Republic; France; Ireland; Kazakhstan; Kuwait; Romania; Saudi Arabia; South Korea; Switzerland; and Thailand with one article each.

Table 4
 Countries Collaborating in Retracted Articles from Iran

Countries	Record Count	%
Iran	248	1.00
Malaysia	12	0.05
England	7	0.03
Serbia	7	0.03
Usa	7	0.03
Singapore	5	0.02
Germany	4	0.02
India	4	0.02
Italy	4	0.02
Australia	3	0.01
Canada	3	0.01

Table 5 lists the research areas of 248 retracted articles. The three research areas in which the most documents are retracted are materials science with 53 documents, chemistry with 38 documents, and engineering with 32 documents. In this statistic, mechanics with 22 documents, physics with 20 documents, oncology and pathology with 19 documents, energy fuels with 15 documents, science technology with 13 documents, and electronic and metallurgy engineering with 12 documents were ranked first to tenth.

Table 5
Research Area of Retracted Articles in Iran

Research Areas	Record Count	%
Materials Science	53	0.21
Chemistry	38	0.15
Engineering	32	0.13
Mechanics	22	0.09
Physics	20	0.08
Oncology	19	0.08
Pathology	19	0.08
Energy Fuels	15	0.06
Science, Technology Other Topics	13	0.05

Table 6 lists the publication year of retracted articles from Iran. The highest statistic was for 2015 when 44 articles were retracted. From 2008 to 2017, growth in this category of articles can be observed. However, from 2018 to 2020, this statistic decreased.

Table 6
Publication Year of the Retracted Articles from Iran

Publication Years	Record Count	%
2020	1	1
2019	1	1
2018	4	4
2017	16	16
2016	30	30
2015	44	44
2014	41	41
2013	16	16
2012	36	36
2011	14	14
2010	18	18
2009	14	14
2008	2	2
2007	4	4
2006	5	5
2005	2	2

Table 7 shows the organizations affiliated with the retracted articles. Islamic Azad University tops the table with 117 records. Tehran University has 39 documents in the second rank, and in the third rank, Tehran University of Medical Sciences with 18 documents can be seen.

Table 7
Organizations Affiliated With Retracted Articles from Iran

Organizations-Enhanced	Record Count	%
Islamic Azad University	117	0.47
University of Tehran	39	0.16
Tehran University of Medical Sciences	19	0.08
Aja Univ Med Sci	18	0.07
Baqiyatallah University of Medical Sciences Bmsu	17	0.07
Shahid Beheshti University Medical Sciences	16	0.06
Urmia University	11	0.04
Kurdistan University of Medical Sciences	10	0.04
Universiti Malaya	10	0.04

Table 8 shows the title, citation status, quality, and publication place of the retracted articles from Iran. Meanwhile, the number of journals published in the UK was the highest, with the

first and second quartiles. As the statistics show, there are three journals without quartile, one journal with the third quartile, and the other journals with the first and second quartiles. The Journal of Composite Materials from the UK with the third quartile received the highest cumulative citation as 124368.

Table 8
Title, Citation Status, Quality, and Place of Publication Of Journals Publishing Retracted Articles From Iran

Source Titles	Record Count	%	Sum of Times Cited	Q	country
Diagnostic Pathology	16	0.07	19669	Q2	ENGLAND
Tumor Biology	14	0.06	101201	-	SWITZERLAND
International Journal Of Damage Mechanics	13	0.05	9194	Q2	ENGLAND
International Journal Of Hydrogen Energy	9	0.04	19121	Q2	ENGLAND
Journal Of Composite Materials	8	0.03	124368	Q3	ENGLAND
Communications In Nonlinear Science And Numerical Simulation	4	0.02	86648	Q1	NETHERLANDS
Materials Science And Engineering A Structural Materials Properties Microstructure And Processing	4	0.02	41820	Q	NETHERLANDS
Metals And Materials International	4	0.02	18842	Q2/Q3	SOUTH KOREA

Investigating the retracted articles from Turkey

With 647236 scientific products, Turkey has the highest ranking in OIC member countries regarding the quantity of science production. Of this quantity, 82 articles are retracted discussed separately regarding the research area, field, year of publication, etc. According to Table 9, in terms of the research area of the retracted articles, surgery with six records is ranked first, and electronic engineering, mathematics, and mechanics, each with 5 records, are in the second rank. Energy fuels; general medicine; obstetrics and gynaecology with four documents each, sustainable green technology; experimental medical research; neurology; orthopaedics; and communications with three documents each are among the primary research retracted from Turkey.

Table 9
Research Areas of the Retracted Articles from Turkey

Web of Science Categories	Record Count	%
Surgery	6	0.07
Engineering Electrical Electronic	5	0.06
Mathematics Applied	5	0.06
Mechanics	5	0.06
Energy Fuels	4	0.05

Web of Science Categories	Record Count	%
Medicine General Internal	4	0.05
Obstetrics Gynecology	4	0.05
Green Sustainable Science Technology	3	0.04
Medicine Research Experimental	3	0.04
Neurosciences	3	0.04
Orthopedics	3	0.04
Telecommunications	3	0.04

As Table 10 shows, of the 82 retracted documents, 70 are research articles, while others are review, editorial, lecture, and conference papers.

Table 10

Document Types of the Retracted Articles from Turkey

Document Types	Record Count	%
Retracted Publication	82	1.00
Article	70	0.86
Review	6	0.07
Editorial Material	2	0.02
Correction	1	0.01
Letter	1	0.01
Meeting Abstract	1	0.01
Proceedings Paper	1	0.01

Table 11 shows the countries collaborating in the retracted articles from Turkey. Iran and the United States each have two records, and Azerbaijan, Belarus, Belgium, the United Kingdom, the Netherlands, Romania, Saudi Arabia, and Sweden have each collaborated in one document.

Table 11
Contributing Countries in Turkey in Retracted Articles

Countries	Record Count	%
Turkey	82	1.00
Iran	2	0.02
Usa	2	0.02
Azerbaijan	1	0.01
Belarus	1	0.01
Belgium	1	0.01
England	1	0.01
Netherlands	1	0.01
Romania	1	0.01
Saudi Arabia	1	0.01
Sweden	1	0.01

According to Table 12 in the retracted articles from Turkey, the highest research areas are engineering and surgery, with 8 and 6 records. Mathematics; mechanics; and physics with five documents each, computer science; energy fuels; general internal medicine; brain and neurology; obstetrics and gynaecology; and psychology with four documents each are among the primary research areas retracted articles from Turkey.

Table 12
Research Areas of the Retracted Articles from Turkey

Research Areas	Record Count	%
Engineering	8	0.10
Surgery	6	0.07
Mathematics	5	0.06
Mechanics	5	0.06
Physics	5	0.06
Computer Science	4	0.05
Energy Fuels	4	0.05
General Internal Medicine	4	0.05
Neurosciences Neurology	4	0.05
Obstetrics Gynecology	4	0.05
Psychology	4	0.05

From 2003 to 2016, a growing trend of the retracted articles from Turkey can be observed so that the highest publication number of these articles are in 2015 and 2016, although it has dropped since 2017.

Table 13
Publication Year of the Retracted Articles from Turkey

Publication Years	Record Count	%
2019	1	0.01
2018	2	0.02
2017	3	0.04
2016	8	0.10
2015	9	0.11
2014	5	0.06
2013	7	0.09
2012	7	0.09
2011	3	0.04
2010	7	0.09
2009	2	0.02
2008	7	0.09
2006	6	0.07
2005	3	0.04
2004	5	0.06
2003	3	0.04
2001	1	0.01
2000	1	0.01
1996	1	0.01

Table 14 shows the organizations affiliated with the retracted articles from Turkey. Hacettepe University has 6 records, and Ataturk and Istanbul Universities with 5 records are ranked first to third. Then, 4 institutions and universities with 4 documents, 7 organizational affiliations with 3 documents, and 11 organizations with 2 documents are in the next ranks.

Table 14
Organizations Affiliated With the Retracted Articles from Turkey

Organizations-Enhanced	Record Count	%
Hacettepe University	6	0.07
Ataturk University	5	0.06
Istanbul University	5	0.06
Erzurum Bolge Training Research Hospital	4	0.05
Erzurum Numune Egitim Ve Arastirma Hastanesi	4	0.05
Gulhane Military Medical Academy	4	0.05
Karadeniz Teknik University	4	0.05
Afyon Kocatepe University	3	0.04
Aksaray University	3	0.04

Organizations-Enhanced	Record Count	%
Cankaya University	3	0.04
Istanbul Technical University	3	0.04
Omer Halis Demir University	3	0.04
Ondokuz Mayis University	3	0.04
Pamukkale University	3	0.04

Table 15 lists the title, citation status, quality, and publication place of the journals publishing the retracted articles from Turkey. Journal of Plastic Surgery occupies the first rank regarding the number of retracted articles with 4 records. However, the citation status of journals is very variable, and the quartile of the journals with retracted articles fluctuates between the first, second, and third quartiles. There are three journals with no quartile and five journals with the fifth quartile. The rest of the journals fluctuate in the first three quartiles. Among publisher countries, the United States has the highest number. The Journal of Clinical Biochemistry, published in Canada, has the highest number with 120,230 citations in terms of cumulative citation.

Table 15

Title, Citation Status, Quality, and Publication Place of the Retracted Articles from Turkey

Source Titles	Record Count	%	Sum of Times Cited	Q	country
Aesthetic Plastic Surgery	4	0.05	44954	Q3	USA
Renewable Sustainable Energy Reviews	3	0.04	47244	-	NETHERLANDS
Acta Orthopaedica Et Traumatologica Turcica	2	0.02	5148	Q4	TURKEY
Journal of Obstetrics And Gynaecology Research	2	0.02	28671	Q4	JAPAN
American Journal of Neuroradiology	1	0.01	62067	Q2	USA
Andrologia	1	0.01	41824	Q3	GERMANY (FED REP GER)

Investigating the retracted articles from Egypt

Egypt is one of the most important countries in the Arab world and the Middle East from political and cultural perspectives. In terms of scientific production, with 232,607 research productions, it is among the top five countries in the region. In the statistics extracted from this country, among the scientific products mentioned, 64 documents were retracted. Regarding the research areas of the retracted articles, surgery is seen at the top of the table with 6 records. Environmental sciences are in the second rank with 5 documents. Then chemical analysis and chemical drugs are each in the third rank of the statistics table with 4 documents. Molecular biology, cell biology, physical chemistry, oncology, and toxicology, each with 3 documents, are in the next ranks.

Table 16

Categories of the Retracted Articles from Egypt

Web of Science Categories	Record Count	%
Surgery	6	0.10
Environmental Sciences	5	0.08
Chemistry Analytical	4	0.06
Chemistry Medicinal	4	0.06
Biochemistry Molecular Biology	3	0.05
Cell Biology	3	0.05
Chemistry Physical	3	0.05
Oncology	3	0.05
Toxicology	3	0.05

In examining Egypt's type of retracted documents, 59 research articles, 4 review articles, and 1 editorial article were retracted out of 64 documents.

Table 17
Type of Retracted Documents from Egypt

Document Types	Record Count	%
Retracted Publication	64	1.00
Article	59	0.94
Review	4	0.06
Proceedings Paper	1	0.02

The authors of the retracted articles from Egypt collaborated with Saudi Arabian authors in 16 documents, with Japanese authors in four documents, and with the US; German; and Kuwaiti authors in two documents each, and with Egyptian authors in 64 documents; with Belgian, Canadian, Cyprian, Czech, and British authors in one document each.

Table 18
Countries Collaborating in Retracted Articles from Egypt

Countries/Regions	Record Count	%
Egypt	64	1.00
Saudi Arabia	16	0.25
Japan	4	0.06
Usa	4	0.06
Germany	2	0.03
Kuwait	2	0.03

Among the research areas of the retracted articles from Egypt, chemistry with 11 documents accounts for 17%. Pharmacy and surgery each rank first to second with six records. Environment and mathematics are in the third rank with five documents each. Molecular

biology, biochemistry, cell biology, computer, metabolism, endocrinology, engineering, oncology, physics, and science-technology, each with three documents, can be seen in the following ranks.

Table 19

Research Areas of the Retracted Articles from Egypt

Research Areas	Record Count	%
Chemistry	11	0.17
Pharmacology Pharmacy	6	0.10
Surgery	6	0.10
Environmental Sciences Ecology	5	0.08
Mathematics	5	0.08
Biochemistry Molecular Biology	3	0.05
Cell Biology	3	0.05
Computer Science	3	0.05
Endocrinology Metabolism	3	0.05
Engineering	3	0.05
Oncology	3	0.05
Physics	3	0.05
Science Technology Other Topics	3	0.05
Toxicology	3	0.05

The highest number of retracted articles from Egypt was in 2010 with eleven articles, followed by seven in 2013. The number has been declining from 2017 onwards.

Table 20

Publication Year of the Retracted Articles from Egypt

Publication Years	Record Count	%
2019	1	0.02
2018	1	0.02
2017	2	0.03
2016	6	0.10
2015	4	0.06
2014	5	0.08
2013	7	0.11
2012	4	0.06
2011	6	0.10
2010	11	0.17
2009	3	0.05
2008	4	0.06
2007	1	0.02
2006	1	0.02

Publication Years	Record Count	%
2005	5	0.08
2004	1	0.02
1999	1	0.02

The two Cairo and Mansoura Universities are affiliated with the retracted articles from Egypt with 16% and 14% of affiliation, respectively. The universities of Ain al-Shams, Alexandra, and King Saud are in the second rank, with eight retracted articles each.

Table 21
Organizations Affiliated With the Retracted Articles from Egypt

Organizations-Enhanced	Record Count	%
Cairo University	10	0.16
Mansoura University	9	0.14
Ain Shams University	8	0.13
Alexandria University	8	0.13
King Saud University	8	0.13

According to the statistics in Table 22, six journals in which the retracted articles were published do not have the first quartile. About 60% of the journals belong to the UK, and the United States is the second country where the retracted articles from Egypt have been published in its journals. The highest cumulative citation belongs to the European Spine Journal, with the second quartile published in the United States.

Table 22
Title, Citation Status, Quality, and Publication Place of the Journals Publishing the Retracted Articles from Egypt

Source Titles	Record Count	%	Sum of Times Cited	Q	country
Ejso	2	0.03	66,897	-	ENGLAND
Environmental Monitoring And Assessment	2	0.03	12050	Q3	NETHERLANDS
Talanta	2	0.03	46111	Q1	ENGLAND
Anaesthesia	1	0.02	14924	Q1	ENGLAND
Angiology	1	0.02	70,665	Q3	USA
Applied Mathematical Modelling	1	0.02	124,939	Q1	USA
Applied Mathematics And Computation	1	0.02	19362	Q1	USA

Discussion

Iran has 248 retracted documents out of 506,570 scientific products, including 238 research articles and ten review, editorial, and conference ones. Today, the number of retracted articles worldwide has increased dramatically (Stein, 2011). Moylan and Kavalzok (2016) believed that such articles had increased since 2015. These results can be a reason for dealing with journals and publishers for their scientific misconduct and investigating the retracted articles from OIC

member countries. Turkey has 647236 articles, 82 retracted documents, Egypt with 232607 articles, and 64 retracted are top OIC member countries. Considering the retraction of scientific products, they are a case of scientific misconduct. In the extracted statistics, the ratio of Iran to other IOC countries and even two other countries is very high. In other words, about 38% of the total production from Iran has been retracted.

In terms of organizations affiliated with the retracted articles, Islamic Azad University with 117 documents and then the University of Tehran and the University of Medical Sciences with 39 and 18 documents are among the top three organizations. Also, in terms of the authors' collaboration in scientific productions, the highest collaboration in Iran's retracted articles is with Malaysia in 12 documents. Iran, according to the research of Sade (2016), Singh et al. (2014), Cokol et al. (2007) had the most scientific misconduct in basic sciences and medical sciences. Statistics show that the journals published in the United Kingdom with the first and second quartiles have the highest statistics for retracted articles from Iran. Also, the Journal of Composite Materials from the United Kingdom with the third quartile and cumulative citation 124368 received the highest citation in terms of cumulative citation. With 647236 scientific products, Turkey has the highest rank in OIC member countries regarding the quantity of scientific production. From this statistic, 81 retracted documents were observed.

Categorization of Turkish retracted articles, surgery with six records was at the top of the table, and electronic engineering, mathematics, and mechanics with five records were in the next ranks. A growing trend of retracted articles in Turkey was observed from 2003 to 2016. The highest publication statistics of this category of articles were in 2015 and 2016, but this statistic decreased in 2017. Egypt is one of the top five countries in scientific production, with 232,607 and 63 retracted articles. In the thematic categorization of Egyptian retracted articles, surgery was seen at the top of the table with six records. Environmental sciences are in the second rank with 5 degrees. The highest number of retracted articles in Egypt was in 2010 with eleven articles, followed by seven in 2013. This statistic is descending from 2017 onwards. These results are consistent with Janavi and Moradi (2018). In analyzing the journals publishing the retracted articles from Iran and the two OIC member countries, the United States and the UK were seen as the publishers of most of these journals.

As the survey shows, many investigations have been done on the retracted articles. The results indicate that the extraction of examples of scientific misconduct, methodological faults, retraction of the articles by the authors themselves, and violations of the review stage was among the cases observed in the population but not were mentioned in Enago and the Committee on Publication Ethics (COPE). So they can be added to this list for further studies and future projects. In some cases, the retraction was done by the authors themselves at the request of the authors for reasons such as reprinting of the article, fraud or self-citation, incorrect data, and corrections. The violations of the review stage were related to the articles that any scientific misconduct occurred in the review stage by either party, whether the author or the review committee. The miscalculation of the scientific fields showed that the disciplines of basic sciences had the most scientific misconduct. These results are consistent with the research of Moradi, Janavi and Kazemi (2017). Then there are the fields of medical sciences and engineering. Based on the information received from the Web of Science website, the number of indexed articles in the field of humanities was much less than in other fields and, consequently, the number of rejected articles was lower. Since the growth of retracted articles grew in different countries during 2010-2018, it is suggested that the trustees of scientific

journals check the plagiarism of the submitted articles with the relevant software before accepting scientific articles and even before reviewing. Also, if possible, publishing authorities should ensure all authors' precision for enhancing the quality of their articles. Also, to reduce the trend of scientific misconduct, generally done unknowingly, especially in terms of plagiarism, those in charge of education and research can hold workshops related to the correct scientific writing method, preparation and submission of articles to reputable scientific and international journals, and the correct way to communicate with international scientific institutions and journals.

To measure and compare organizations, in addition to calculating the number of articles and journals, as an important indicator, calculating and comparing the ratio of retracted articles can also change their position relative to each other. Considering the somewhat unfavorable situation of Iran in terms of the number of retracted articles compared to other OIC countries, some reasons for this can be mentioned as follows:

1- Human error (error in data collection and analysis and summarising of results);

2- Intentional scientific misconduct (submitting an article to several journals at the same time, inconsistency in goals, data creation or manipulation of data, non-compliance with the rules of research and data distortion, manipulation of images, and plagiarism); and

3- Coercion of students to write articles to defend their dissertations, and coercion of university professors to get promotions and similar cases.

It is suggested that researchers become familiar with the examples of article retraction and that responsible units, such as the research deputy of organizations, consider fines for retraction of defective and low-quality articles. These preventive measures can effectively reduce the retraction of articles and the production of such low-quality works.

Today, various journals are looking for policies that can well identify and retract such articles. Multiple workshops are held around the world, research is conducted, and articles are written about it. Different workshops consider different aspects of this phenomenon for editors.

Journals seek to keep their reputation as far away from such cases as possible. Many reputable journals have made their judging criteria more difficult than before. Thus, they force authors to go further when they submit their papers to reduce the possibility of fraud or prevent false reviews by constantly updating the reviewers' email addresses. In some journals, groups have been formed focusing solely on reviewing the validity of articles. However, the efforts of these organizations (whatever and at whatever level) are only in their interests, and they do not do anything fundamental.

Preventing the withdraw of articles does not mean stopping the process with strict review or vigilance of the editors, but it is better to avoid such issues by properly educating people during the study period to not even go to such things. In principle, the foundation of scientific ethics should be done from a young age and at lower levels. If such cases are institutionalized in people from a young age, we can hope that this will not happen again.

Conclusion

Based on the research results, it seems necessary to provide a Conclusion for reducing or sometimes eliminating the retraction of articles, and finally, suggestions are made for presenting future studies.

 - Holding workshops to inform researchers and all people who work in the field of research and provide explanations about the examples and reasons for article retraction;

- Sending emails to violating researchers to remove unauthorized effects from their

LinkedIn and ResearchGate profiles, to prevent further citation of those works;

- Examining the negative effects of researchers instead of scoring the number of research works;

- Paying attention to the number of retracted works from universities for their ranking;

- Identifying authors who have a large number of retracted works to examine their works more closely; and

- Considering cash and non-cash fines for offending authors, especially those whose works have been retracted due to data processing and manipulation.

Suggestions for future research

It is suggested that research projects and articles be reviewed and written alternately to reduce the retracted articles and the awareness of authors and publishers of these articles. The following are some suggestions for further research:

- A study entitled "comparative evaluation of accredited articles of Iran and D8 countries and determining Iran's regional position regarding retracted articles" can be conducted;

- A study titled "comparative evaluation of retracted articles of the top five countries in terms of scientific production in various databases, including Scopus, Google Scholar, and WoS" can be conducted;

- A study titled "comparative evaluation of retracted articles in various databases including Scopus, Google Scholar, and WoS" can be done; and

- Some in-depth and qualitative research can be conducted on the pathology of retracting research articles and scientific misconduct as an essential issue.

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