

Learning from retracted papers authored by the highly cited Iran-affiliated researchers: Revisiting research policies and a key message to Clarivate Analytics

Negin Kamali

Tarbiat Modares University

Farid Rahimi

Australian National University

Amin Talebi Bezmin Abadi (✉ amin.talebi@modares.ac.ir)

Tarbiat Modares University

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Abstract

Background The scientific literature is anticipated to self-correct with time. An integral part of this self-correction is the retraction notices identifying flawed scientific papers. Prevalence of retractions has been investigated in different countries and different scholarly disciplines, including surgery, biomedical sciences, and engineering. Reportedly retractions have increased with increasing number of papers from Iran. However, reasons underlying retractions of papers authored by the Iran-affiliated highly cited researchers (HCRs) have not been documented.

Result Here, we report that 229 of the Iran-affiliated researchers were listed by the Clarivate Analytics as HCRs. In total, 51 retracted papers were authored by the HCRs as documented by the Retraction Watch Database interrogated from 2006 to 2019. Twenty-three of the 229 HCRs (10%) had at least one paper retracted. One of the listed HCRs had 22 papers retracted; 14 of the 23 (60.8%) had only one paper retracted. Of the 51 papers, 43 (84%) had a single retraction reason, whereas eight had multiple reasons. Among the 43 papers, 23 (53%) were retracted due to fake peer-review, eight (19%) were duplications, six (14%) had errors, four (9%) had plagiarism, and two (5%) were labelled as “limited or no information.” Duplication of data, which is easily preventable, amounted to 27%. The time from publication to retraction of the 51 papers ranged from one to 2,483 (mean 856.6) days.

Conclusion Any publishing oversight committed by an HCR should not be tolerated because they represent the stakeholders of the scientific literature and stand as role-models for other peer researchers. Future policies supporting the Iranian academia should radically change by implementation of educational and awareness programs on publishing ethics to reduce the retraction rate.

Introduction

Each year, Clarivate Analytics (formerly called, “The Intellectual Property and Science Business of Thomson Reuters”) identifies those international researchers who have published multiple highly cited scientific papers ranking in the top 1% by having attracted citations in one of the 21 fields of research (1). The list of the “Highly Cited Researchers” (HCRs) is based on the bibliometric parameters used by the Web of Science (2). Becoming an HCR is a prestigious achievement for the researchers, their institutions, and their countries. For example, China and Australia have increased their HCR ranking by threefold from 2014 to 2019, a ranking that had not been achieved previously even by the United States (3). Moreover, affiliation of a number of HCRs to a single university likely leads to a higher ranking for their institutions according to the global system of university rankings, for instance, the Shanghai ranking (4). It has been recognized that universities and research institutions tend to appoint HCRs or confer them secondary affiliations so as to boost performance or ranking, and highly cited researchers are generally found to be leading the high-ranking universities (5, 6).

The Iranian universities and research institutions have produced a large number of papers over the past 35 years (7–10). Mindsets such as “*publish or perish*” among the Iran-affiliated researchers likely have

played a role in increasing the number of papers published per year. However, some damning 2016 reports published by *Nature* and *Science* raised ethical concerns pertaining to the burgeoning number of Iran-affiliated publications (11–14). Purportedly, a shady market of ghost-writers was helping the Iran-affiliated researchers to publish papers while 14 per 10,000 Iran-affiliated papers was retracted per year (12). Retraction of a published paper is an important means of identifying and excluding flaws from the scientific literature (15). Retraction causes include fake peer-review, plagiarism, data duplication, data falsification or fabrication, conflict of interest, authorship conflicts, and advertent or inadvertent errors (16–18). Although the rising number of retractions has alerted the publishers to identify the flawed papers (15), a large volume of retracted papers still is a serious concern (19, 20). Continually citing and treating retracted papers as legitimate sources of data (21) also are greatly concerning, not just in Iran, but globally. Subsequent nationally adopted strategies by the Iranian ministries of Science, Research and Technology; and Health and Medical Education have aimed to reduce and suppress publishing malpractices under a *zero-tolerance policy*.

Iranian HCRs have inevitably participated to increasing the number of Iran-affiliated papers (22, 23). We found that 229 Iran-affiliated researchers were listed as HCRs by the Clarivate Analytics, indicating an almost fivefold increase within a six-year period (24, 25). In parallel, the number of retractions of Iran-affiliated papers has also increased (12, 26). The increase in the retractions and their underlying reasons have been investigated in diverse scholarly disciplines, including surgery, biomedical sciences, and engineering. However, the most common retraction reasons attributed to papers published by HCRs, particularly Iran-affiliated HCRs, had not been documented. We aimed to reveal the most common reasons causing retractions of the papers authored by Iran-affiliated HCRs.

Material And Methods

Two independent operators searched the Persian and English listings that identified the Iran-affiliated HCRs. The findings were double-checked by NK. Fifty percent of the results were randomly selected for double-checking by a second operator to increase the validity of the findings before statistical analyses were conducted. To search the retracted papers by the 229 HCRs, the Retraction Watch Database (RWD) version 1.0.5.5 (<http://retractiondatabase.org/RetractionSearch.aspx?>) and the affiliation term “Iran” were used. The search parameters were adjusted to cover all the papers and conference proceedings in contrast to PubMed or Medline, which list only the peer-reviewed papers in biomedical and life sciences. We identified, and confirmed the publication of, the papers in the corresponding journals. Retraction reasons categorized by RWD included data fabrication or falsification, errors (errors in analysis, unreliable data, or irreproducible data), fake peer-review, authorship disputes, limited or no information, duplicate publications (duplication of text, tables, or images), or errors by a publisher or a journal. The publication and retraction dates, type of papers, and retraction reasons were the variables we considered. The recent impact factor for all the corresponding journals were documented after referring to the 2019 Journal Citation Report. We used the Digital Object Identifier of the corresponding papers to document the mean time from publication to retraction. The Fisher’s exact test was used to examine the associations between

different retraction reasons and the retracted papers. $P < 0.05$ was deemed to represent the statistically significant differences. We used the GraphPad Prism 8 for statistics.

Results

We report that 229 Iran-affiliated researchers were listed as HCRs from 2006 to 2019. Among these, 23 (10%) published at least one paper which was retracted. The retraction rate has been rising from 2012 (Figure 1). The 23 HCRs collectively had 51 retracted papers. The total retractions included two reviews, two clinical studies, and 47 original-research papers. One of the researchers had 22 papers (43.1% of all the retracted papers by Iran-affiliated HCRs) retracted; however, 14 of the 23 (60.8%) HCRs authored only one paper which was retracted. We found that 708 papers authored by the Iran-affiliated researchers were retracted from 2006 to 2019. Therefore, HCRs' contribution was 7.2%. The shortest and longest times from publication to retraction were one and 2,483 days, averaging 856.6 days.

Of all the journals which published the 51 papers, six (11.7%) did not have a documented impact factor. The highest impact factor was 10.5 for a journal that had published a review paper; the mean impact factor was 2.75. Eighteen papers were published in a journal with an impact factor of 0–2, 17 papers 2–4, 14 papers 4–6, and only two papers to >6. Twenty-four retracted papers (47%) were published in journals with <2.73 average impact factor. Sixty-eight percent of the retracted papers were published in journals with an impact factor of <4 ($P < 0.05$). Twelve of 16 papers published in journals with an impact factor of ≥ 4 were retracted due to fake peer-review ($P > 0.05$). One researcher had 22 papers retracted, three researchers had five retracted papers, and two had four papers. Two (3.9%) papers were retracted due to journal or publisher errors.

Reasons causing retractions of the HCR papers

Of the 51 papers, 43 (84%) had a single retraction reason, whereas eight had multiple reasons. Fourteen (27.4%) papers were retracted due to duplication of either an image, table, or text. Among the papers retracted due to a single reason, 23 (53%) were due to fake peer-review, eight (18.6%) had duplication, six (13.9%) due to errors, four (9.3%) had plagiarism, and two (4.6%) with a “Notice – Limited or No Information” (Figure 2). Of the retractions due to multiple reasons, five (62.5%) were duplication of an image or text and one fake peer-review. More than two-thirds of the papers were retracted because of duplication and fake peer-review (Figure 2).

Discussion

An English-written paper titled “Treatise upon Electricity” was the first to be retracted in 1755 when *Philosophical Transactions* of the Royal Society of London discovered errors (27). Afterwards, paper retractions were purposed as a mechanism for self-correcting the scientific papers (28, 29). However, this self-correcting purpose had been arguably questioned and dubbed a “myth” (30). We may argue that retractions may also misguide the public about scientific discovery and the scientists. Nevertheless, the

total number of retracted papers has increased with time, reaching thousands in 2020. Recent advances in information technology allows the journals, their editors, or publishers to detect malpractices such as plagiarism or duplication (20, 31). From an ethical viewpoint, none, or low retraction numbers amongst a scientific community of a country may indicate ethical or responsible conduct of research. Because HCRs are beacons of the scientific knowledge in their respective fields, nations, and the world, expecting them to have no retractions is realistic.

So far as we know, we are the first to report that 27% of the retracted papers written by Iran-affiliated HCRs had duplication of text, a figure, or a table, as investigated from 2006 to 2019. These are regrettable statistics, and urgent counteraction is needed to avoid this easily preventable malpractice. Moreover, none of the papers with duplication were retracted by the authors' request. Acting ethically and responsibly, the authors could have informed the respective journals about their errors. We conclude that lack of sufficient education on the ethics of scientific publishing could have led to such retractions.

We report that only two (3.9%) of the HCR papers were retracted due mainly to technical errors by a journal or a publisher. For example, the paper with the DOI 10.1016/j.saa.2005.04.013 was retracted by the journal, mentioning that "The Publisher regrets that this article is an *accidental duplication* of an article that has already been published in SAA, Volume 63, Issue 1, 1-252.

<http://dx.doi.org/10.1016/j.saa.2005.02.049>. The duplicate article has therefore been withdrawn." RWD however attributed "duplication" for this retraction; this attribution is incorrect—"accidental duplication by the publisher" should have been listed as the retraction reason. Given these findings, we suggest that RWD revises their procedures, so retraction reasons are listed correctly.

The recent rise of retractions may be attributable to two reasons. 1) Since 2005, the software programs to detect duplication or plagiarism have become available and used widely. For example, in the last 10 years, the number of retracted papers with duplication has slightly increased, regardless of their attribution to HCRs. 2). The journal editors are presently more aware of, and have implemented measures to prevent, fake peer-review. Fake peer-review is a global problem for every publisher although many may decline reporting them fearing damage to their reputation. Duplication and plagiarism were reported previously, each constituting approximately 26% of the retraction notices; however, we found that 27% and 9%, respectively (32). Similarly, Fang et al. reported 14% for the duplication and 9.8% for plagiarism (19). The two groups, however, did not specifically study the retractions attributed to HCRs.

Implications for the Iranian academia:

Establishing an overarching national body is necessary to revise and change the research practices in Iran. The relatively high rates of duplications and fake peer-reviews as the most common retraction causes are a serious sign of malpractice. We suggest improved and effective educational programs on publishing ethics should be established and promoted widely to reduce the alarming rate of paper retractions.

Implications for the role of the Clarivate Analytics:

Nominating HCRs should follow additional and strict selection criteria besides the present standards, which reflect the number of attracted citations. A Korean–US HCR was banned from joining the editorial board of the *Journal of Theoretical Biology* because of soliciting citations to their papers. Such practices highlight that publishing ethics are not upheld, even in some of the developed countries (33). Because we found that almost one-tenth of the Iran-affiliated HCRs had retracted papers, the unethical conduct by a researcher must be considered before being nominated as an HCR. Undertaking fake peer-review, manipulating any peer-review, or duplications are sufficient reasons to rescind a researcher’s HCR title. Soliciting citations to one’s work is another malpractice that should strip the HCR status.

Declarations

- Ethics approval and consent to participate: Not required.
- Consent for publication: Not required.
- Availability of data and materials: The datasets generated and/or analysed during the current study are available in the [Retraction Watch Database (RWD) version 1.0.5.5] repository, ISSN 2692-465X. [<http://retractiondatabase.org/RetractionSearch.aspx?>].
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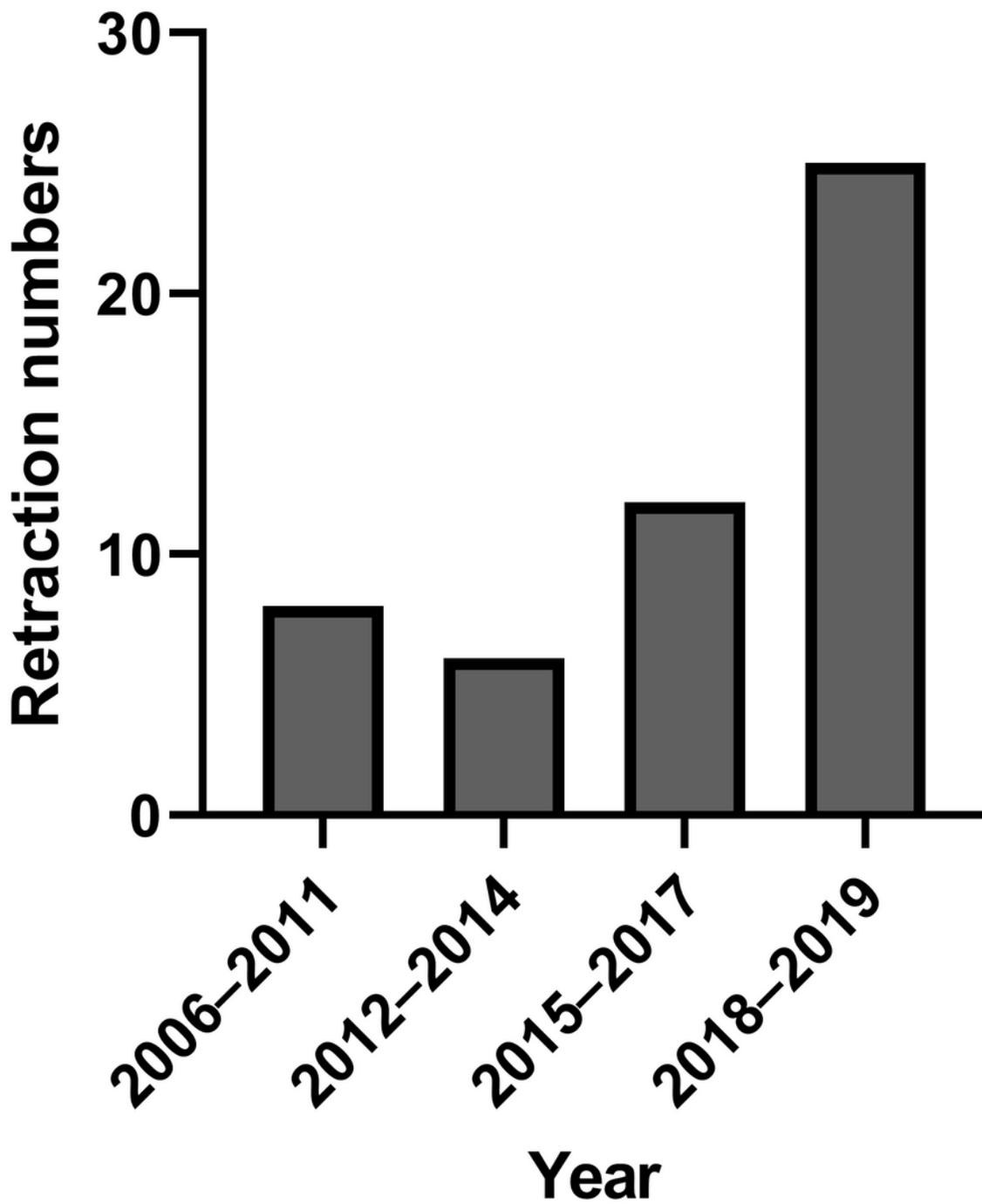


Figure 1

Rising trend of retraction

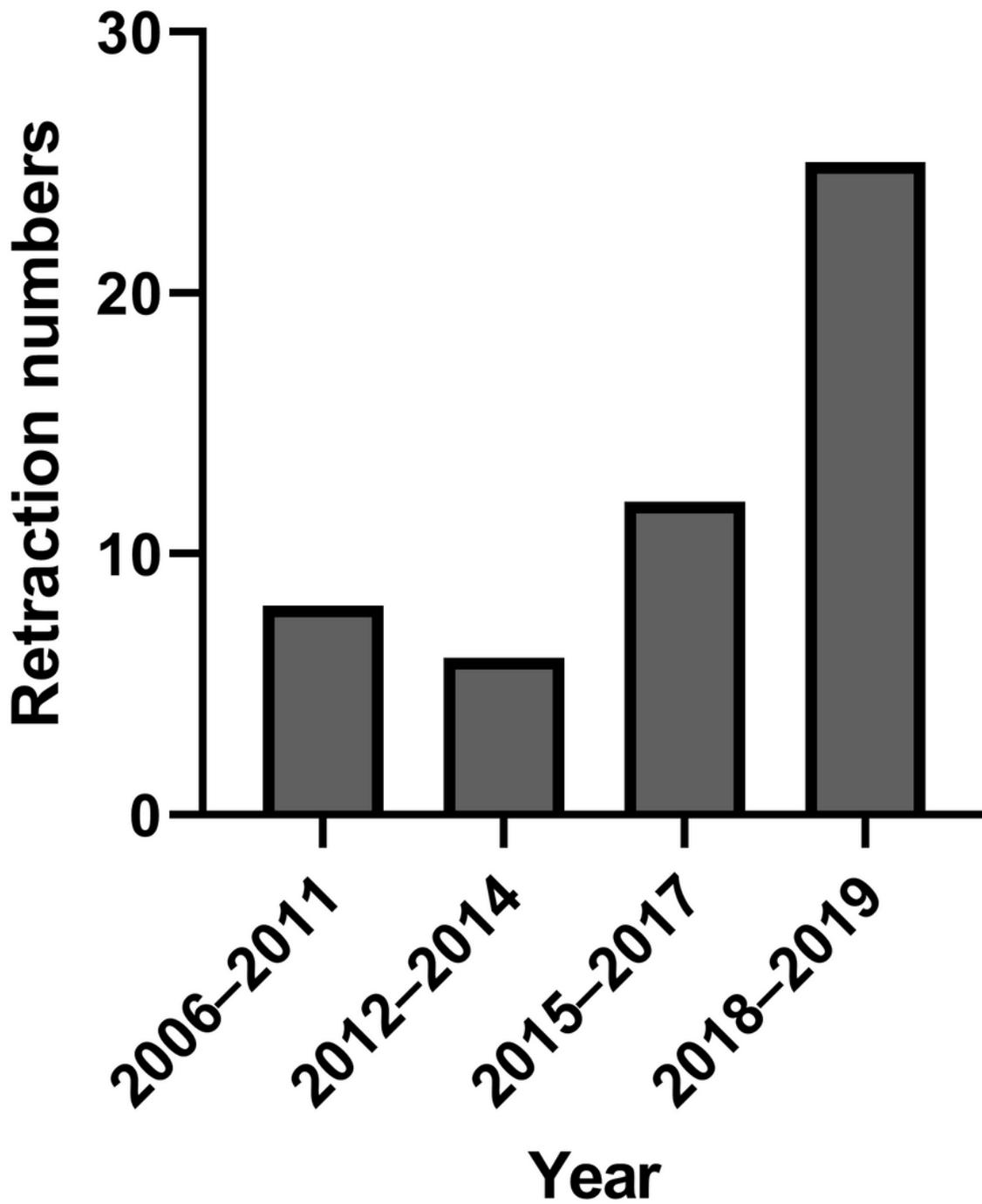
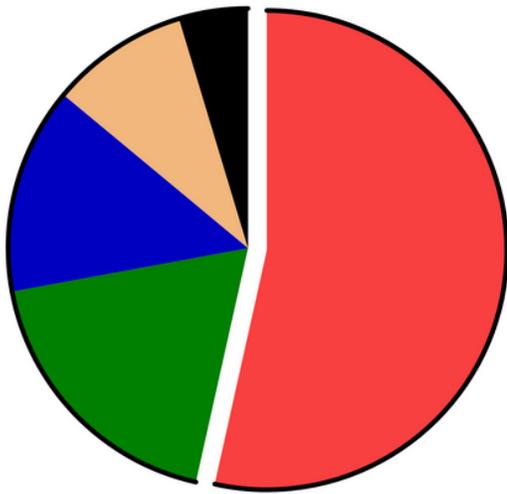


Figure 1

Rising trend of retraction

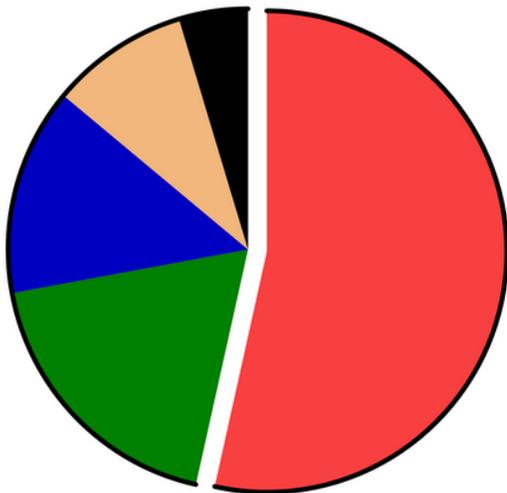


- 53.49% 23 Fake peer-review
- 18.60% 8 Duplication
- 13.95% 6 Errors
- 9.30% 4 Plagiarism
- 4.65% 2 Notice – Limited or no information

Total = 43

Figure 2

Reasons for retractions



- 53.49% 23 Fake peer-review
- 18.60% 8 Duplication
- 13.95% 6 Errors
- 9.30% 4 Plagiarism
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Total = 43

Figure 2

Reasons for retractions