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Review Article

Retracted Research Publications of Assisted Reproduction: A Review

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Abstract

Background and Objective: Retraction of published articles is global and is increasing. Data on retracted articles in assisted reproduction are limited. The objective of the study was to look into retracted publications in the field of assisted reproductive technology and infertility.

Methods: Scopus, www.pubmed.gov, Web of Science and the Retraction Watch website (www.retractionwatch.com) were searched for retracted articles published between 1996 and 2025, using the keywords Assisted reproductive technology, *in-vitro* fertilization, reproductive endocrinology, embryo transfer, infertility and intracytoplasmic sperm injection. The data extracted included journal, publication title, authors, co-authors, year of retraction and collaborating countries.

Results: Between 1996 and 2025, 184 publications were retracted and the number of retractions grew slowly reaching 41 (22.3%) in 2022. These articles were cited 2667 times by various researchers. The top three countries were Egypt, China and Iran making 113 (61.4%) and Saudi Arabia stood at 7th position with United Kingdom at 7 (3.8%). Three hundred and fifty-nine different institutions were the collaborating countries involved in the retractions. The United States of America had the highest, 16; Iran, 15 and Bangladesh, 12, are the top three countries. shows the number of authors in each publication retracted. Among 2-6 authors, 128 (69.5%) publications were retracted.

Conclusion: Researchers in assisted reproductive medicine are not immune to fraud, fabrication and data falsification in publications. This trend appears to have increased in the last few years. This behavior is observed even among senior physicians and researchers and institutions are not doing enough to curtail it by judicious oversight and increased supervision.

Keywords: Retraction; Fraud; Fabrication; Assisted Reproductive Technology; Misconduct

Introduction

Research and publications are vital for advancing knowledge, circulating findings to improve patient care and the quality of life [1,2]. Their publications are supposed to ensure honesty, transparency, reproducibility and access to new findings for the researchers and clinicians around the world. Research and publications also benefit the researchers in advancing their careers and personal prestige and honor [3]. In the midst of all this, researchers started producing publications based on fraud and manipulation of results. To combat these publications, editors and publishers began scrutinizing and retracting those deemed manipulated or spurious [4]. One report put over sixty-seven percent of retractions to misconduct, including fraud or suspected fraud (43.4%) and duplicate publication (14.2%) [5]. Khandemizadeh, et al., reported in their analysis of 840 retractions that the intentional errors were the most common reason of retraction, with China (438), the United States (130) and India (51) [6]. In medical literature, the most common retracted articles were in immunology, neurology, oncology, toxicology and gastroenterology, in that order [7]. It was reported that in one analysis 9.11% of the retractions from the Obstetrics and

Gynecology field of medicine [4]. In Obstetrics and Gynecology, plagiarism and data falsification were the most common grounds for retracted publications and Bennett, et al., studied 519 retractions from obstetrics and gynecology articles and found that materno-fetal physicians were responsible for misconduct in reporting in 23.5% [8,9]. Assisted Reproductive Technology (ART) is an important subspecialty within obstetrics and gynecology, with extensive research ongoing and essential for the future development and care of infertile couples. Any wrong and falsified data will be detrimental to the future of unborn children. There is limited literature on retracted articles in assisted reproductive technology and the aim of this review is to determine the prevalence, causes and countries involved in retracted publications in the field of assisted reproductive technology and infertility.

Methodology

We searched four databases, viz. Scopus, www.pubmed.gov, Web of Science and Retraction Watch website (www.retractionwatch.com), for retracted articles, specifically for ART for the period of 1996-2025, with keywords of Assisted reproductive technology or *in-vitro* fertilization or reproductive endocrinology or embryo transfer or infertility or intracytoplasmic sperm injection or was performed. All duplicate articles were removed after screening with www.EndNote.com. Previously retracted articles and those unrelated manuscripts to the keywords were also diligently removed.

Two investigators (HAT) and Measurement System Analysis (MSA) independently reviewed full-text articles and selected the studies. Any disagreements were discussed until a consensus was reached. There was no risk of bias as the review did not look at the quality of the publications.

Data Extraction

The extracted data included journal, publication title, authors' and co-authors' affiliations, study type, publication date, collaborating countries and year of retraction. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed in this review [10].

Results

Between 1996 and 2025, 184 publications were retracted and the number of retractions grew slowly reaching to 41 (22.3%) in 2022. (Fig. 1,2). These articles were cited 2667 times by various researchers. The top three countries were Egypt, China and Iran, accounting for 113 (61.4%) and Saudi Arabia ranked 7th, with the United Kingdom at 7 (3.8%) (Fig. 3). Of 55 retractions from Egypt, the majority involved randomized controlled clinical trials. Three hundred and fifty-nine different institutions were the collaborating countries involved in the retractions (Fig. 4). The United States of America had the highest, with 16; Iran, 15 and Bangladesh, 12, as the top three countries. Fig. 5 shows the number of authors in each publication retracted. Among 2-6 authors, 128 (69.5%) publications were retracted. Fig. 6 provides details on the common high-index journals that retracted these publications. From Saudi Arabia, 7 (3.8%) publications were retracted and these were from the following institutions, viz.: Al-Hayat National Hospital, Khamis- Mushait, University of Taif, Umm Al-Qura University, Dr Samir Abbas IVF Center, King Fahd Medical City, Riyadh and Banoon Center, King Abdulaziz Airbase Hospital, Dhahran and Prince Sattam Bin Abdulaziz University.

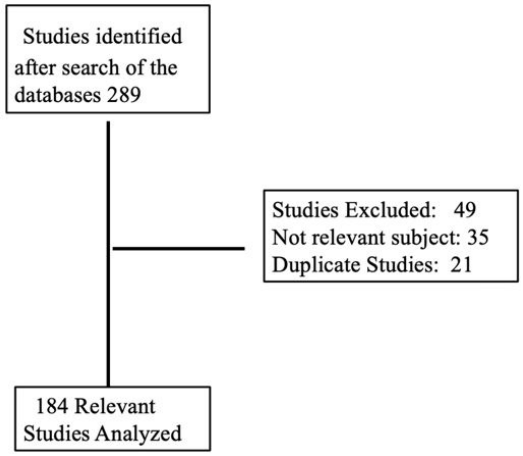

Figure 1: PRISMA flowchart showing the search and analysis.

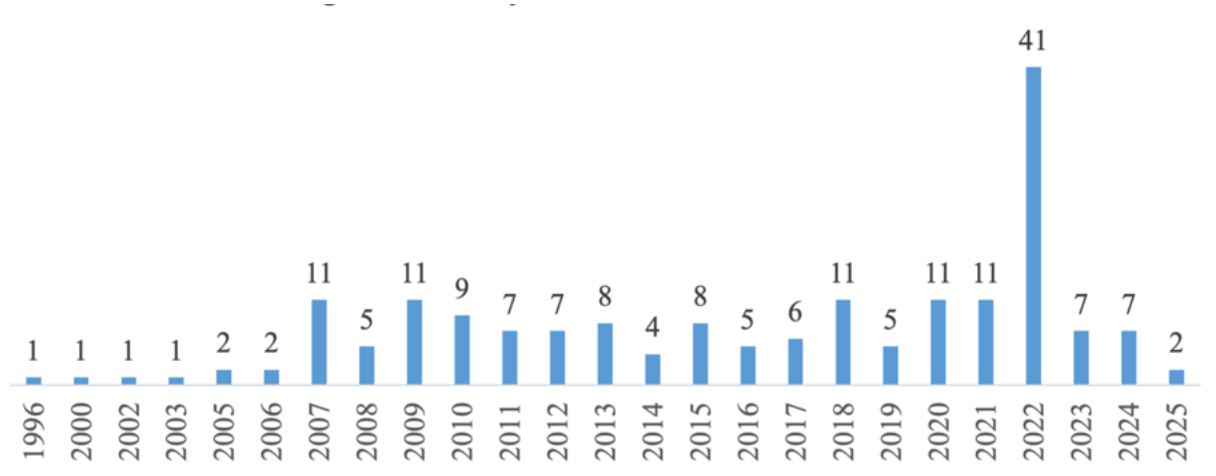

Figure 2: Yearly retracted publications.

Figure 3: Countries from where publications were retracted.

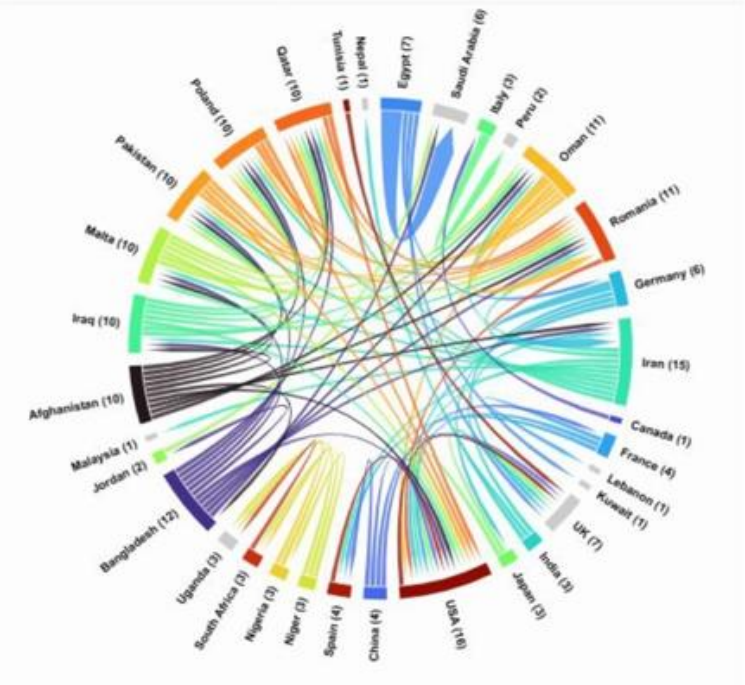

Figure 4: Collaborating countries from where publications are retracted.

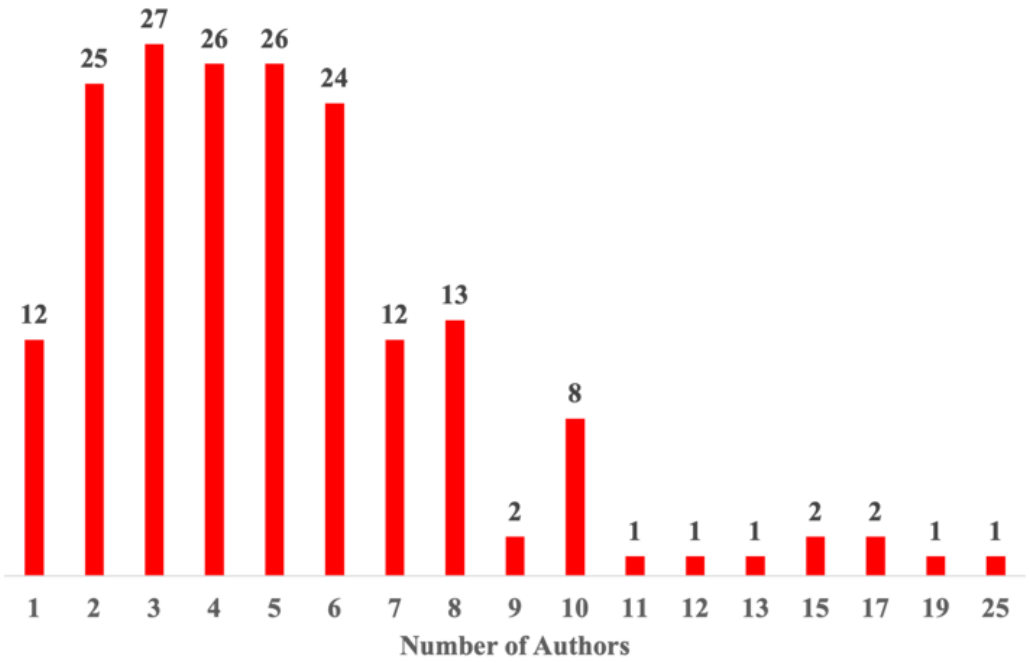

Figure 5: Number of authors in each retracted publication.

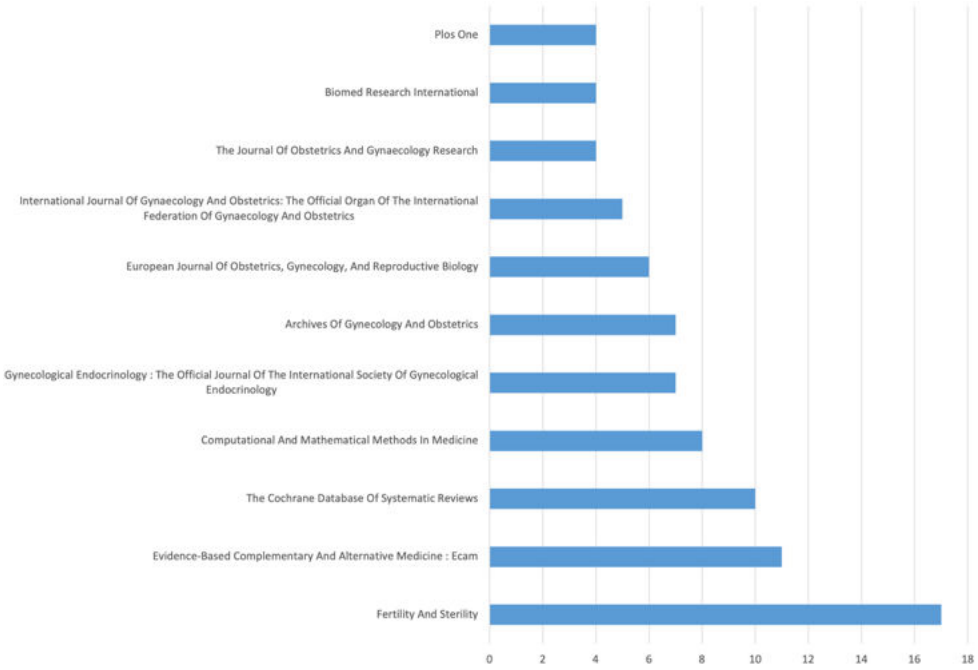

Figure 6: Common journals which retracted the publications.

Discussion

Retraction of a published article is a serious issue that indicates the article is untrustworthy regarding the data presented. This apart from other disciplines is quite important in assisted reproductive technology where patients experience significant psychological distress, anxiety, depression and emotional issues. If untrustworthy, manipulated data is used to treat such patients, it will cause great harm, damage or suffering. Our study shows that 184 publications were retracted, which were cited 2667 times by various researchers and that management of infertility was undertaken, taking a cue from research found to be fraudulent and untrustworthy. We do not know how many patients had to endure wrong treatment due to inaccurate data and suffered harm.

The trend, unfortunately, of retraction in general and, in particular, obstetrics and gynecology has increased in the past few years specifically from the subspeciality of maternal-fetal medicine and obstetrics [11-13]. In the context of different countries for retraction, Egypt stands out, where 50% of their retraction of publications comes from one institute and in the field of Obstetrics and Gynecology [14]. Minetto, et al., reported that 41% of the retracted articles from the field of medically assisted reproduction were Randomized Controlled Trials (RCTs) [15]. The publishers retracted the article based on unreliable results resulting from FFP (fabrication, falsification and plagiarism) and duplicate publication. It is scary that if RCT can be manipulated, then standardized future treatments will be at risk and may cause more harm than benefit [16,17].

It was underestimated that assisted reproductive technology and the infertility field are off the books in retractions, but for the one single year, retractions from this field accounted for 22.3% and the rest 77.7% were for 28 years. The treatment of infertility is a serious issue and its treatment involves substantial financial, physical and emotional commitments. In such a treatment, wrong protocols are followed based on falsified data, which could be quite detrimental.

Getting research published in a reputable journal benefits both the researchers and the institution where it is published, but a retraction of an article for any reason also brings disrepute to the institution, which can be repaired. Recently, 14 universities were identified that used questionable authorship practices to increase their publication numbers, to the extent that one such university from the Middle East saw a 1,200% increase in published articles in 2023 [18]. If institutions condone such a practice, it will affect patients' long-term health and well-being.

This study has limitations we did not include, such as retractions across all databases. Secondly, as a minimum of nearly 2 years is needed for retractions to come into force, it is possible that retractions from 2024 and 2025 are included in our analysis [19-21].

Conclusion

In conclusion, the retractions of the dishonest and fabricated publications have increased over time and such a practice needs to be put a stop to. Researchers need to be honest and transparent and the institutions should take preemptive steps to stop such practices. The institutional pressure on researchers to publish more often should stop, as it would, intentionally or unintentionally, push them towards wrongdoing. To combat the increasing tendency toward dishonest and fabricated publications, the editors and publishers are doing their part, but the unethical practices rest with the researchers.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Data Availability Statement

Not applicable.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore, was exempt.

Informed Consent Statement

Informed consent was taken for this study.

Authors' Contributions

All authors contributed equally to this paper.

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