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How to cite

SEBOE, Paul, SEBÖ, Melissa. Comparing the performance of Retraction Watch Database, PubMed, and Web of Science in identifying retracted publications in medicine. In: Accountability in research, 2025, p. 1–25. doi: 10.1080/08989621.2025.2484555

This publication URL: https://archive-ouverte.unige.ch/unige:184395
Publication DOI: 10.1080/08989621.2025.2484555

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ACCOUNTABILITY IN RESEARCH, 2025
https://doi.org/10.1080/08989621.2025.2484555

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Comparing the performance of Retraction Watch Database, PubMed, and Web of Science in identifying retracted publications in medicine

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ABSTRACT

Objective: To compare the performance of Retraction Watch Database (RWD), PubMed, and Web of Science (WoS) in identifying retracted publications (RP) in medicine.

Methods: This cross-sectional study analyzed RP in 131 high-impact journals spanning nine disciplines: anesthesiology, dermatology, general internal medicine, gynecology/obstetrics, neurology, oncology, pediatrics, psychiatry, and radiology. Using RWD, PubMed, and WoS, we retrieved all publications that were retracted in these journals. The total number of RP was defined as the combined count across the three databases. We calculated the proportion of RP retrieved by each database overall, by journal, and by discipline.

Results: A total of 878 RP were identified. Anesthesiology accounted for the most RP ($n = 382$), followed by general internal medicine ($n = 125$) and gynecology/obstetrics ($n = 116$). RWD retrieved the highest number (815; 92.8%), followed by PubMed (758; 86.3%) and WoS (734; 83.6%). Performance varied across disciplines: RWD captured 75–99%, PubMed 52–97%, and WoS 58–96%. RWD outperformed the others in eight of nine disciplines; the exception was gynecology/obstetrics, where PubMed performed better.

Conclusion: RWD demonstrated superior coverage compared to PubMed and WoS, though performance varied by discipline. Combining databases offers a more comprehensive approach to retraction identification.

ARTICLE HISTORY
Received 26 January 2025
Accepted 22 March 2025.

KEYWORDS
Performance; PubMed; retraction; Retraction Watch; Web of Science

Introduction

The integrity of scientific literature is essential for advancing knowledge and ensuring evidence-based medical practice. Retracted publications, which reflect flaws, errors, or misconduct in published work, pose significant challenges to this integrity by undermining trust in research findings. Efficient identification of such publications is crucial for maintaining the

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/08989621.2025.2484555

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credibility of biomedical research and fostering transparency in scholarly communication.

To facilitate the identification of retracted publications, researchers, practitioners, and librarians rely on databases such as the Retraction Watch Database (RWD) and PubMed, as well as platforms that provide access to multiple databases, such as Web of Science (WoS). While PubMed and WoS offer extensive bibliographic coverage and metadata indexing, RWD specializes in retractions and provides detailed contextual information (RWD 2018).

Historically, research on retracted publications has predominantly relied on PubMed (Amos 2014; Davis 2012; Decullier et al. 2013; Decullier, Huot, and Maisonneuve 2014; Fang, Steen, and Casadevall 2012; Foo 2011; Grieneisen and Zhang 2012; Rosenkrantz 2016; Steen 2011; Steen, Casadevall, and Fang 2013; Stretton et al. 2012) and WoS (Bilbrey, O'Dell, and Creamer 2014; Chen et al. 2013; Fanelli 2013; Grieneisen and Zhang 2012; He 2013; Lievore et al. 2021; Lu et al. 2013). For example, in a 2012 descriptive study, Grieneisen & Zhang analyzed 42 data sources – including PubMed and WoS – to identify 4,449 retracted publications spanning various disciplines between 1928 and 2011 (Grieneisen and Zhang 2012). That same year, Fang et al. examined biomedical and life sciences articles, retrieving 2,047 retracted publications exclusively from PubMed (Fang, Steen, and Casadevall 2012). More recently, Lievore et al. used WoS to study 330 retracted articles published between 2010 and 2019, focusing on authors affiliated with the top 20 universities listed in the 2020 Times Higher Education global ranking (Lievore et al. 2021).

In recent years, RWD has gained prominence as a valuable resource for retraction studies (Bell, Kingori, and Mills 2024; Kwee and Kwee 2023; Ribeiro and Vasconcelos 2018; Sebo 2023; Sebo et al. 2023; Shahraki-Mohammadi, Keikha, and Zahedi 2024; Shepperd and Yousefi 2023; Shi et al. 2024; Syed et al. 2023; Taros et al. 2023; Yang, Sun, and Song 2024) and is now considered the gold standard for aggregated retraction data (Candal-Pedreira et al. 2022). For instance, Ribeiro & Vasconcelos used RWD in their 2018 analysis to identify 1,623 publications retracted between 2013 and 2015, categorizing them by the authors' countries of affiliation (Ribeiro and Vasconcelos 2018). Our team has also used RWD in two recent studies: one analyzing gender disparities among authors of 438 retracted articles published between 2003 and 2022 in 134 medical journals (Sebo et al. 2023); the other examining seven retracted articles published between 2000 and 2022 in 15 leading primary care medicine journals (Sebo 2023). Both studies relied on PubMed for article retrieval and RWD for analyzing retraction reasons.

Although these resources are widely used, questions remain regarding their comprehensiveness (C. Bakker and Riegelman 2018; C. J. Bakker et al.

2024; Ortega and Delgado-Quirós 2024; Schmidt 2018; Schneider et al. 2023; Suelzer et al. 2021). Schneider et al. assessed the agreement of retraction indexing across four multidisciplinary sources – Crossref, RWD, Scopus, and WoS – and found that only 3% of retracted publications were consistently indexed across all sources (Schneider et al. 2023). The number of retracted publications was highest in RWD (39,301), followed by Scopus (21,515), WoS (16,434), and Crossref (14,745). Ortega & Delgado-Quiros compared retraction coverage in seven scholarly databases and showed that nonselective databases – Dimensions, OpenAlex, Scilit, and The Lens – tend to index more retracted literature than databases that rely on venue selection, such as PubMed, Scopus, and WoS (Ortega and Delgado-Quirós 2024). In both studies, the authors assessed the overall coverage of the databases, but their objective was not to compare the proportion of retracted publications retrieved by each source using a defined set of scientific journals indexed across all platforms.

To our knowledge, only a few studies have compared the ability of multiple databases to comprehensively capture retracted publications across disciplines using a controlled set of publications indexed in all databases (C. Bakker and Riegelman 2018; C. J. Bakker et al. 2024), and no study has specifically evaluated RWD. However, understanding these differences is essential for improving database functionality and guiding users in selecting the most appropriate tools for their needs.

This study aimed to compare the performance of RWD, PubMed, and the WoS Core Collection in identifying retracted publications within 131 journals indexed by all three databases, across nine medical disciplines. Specifically, it sought to quantify the proportion of retracted publications captured by each database and assess performance variations by discipline and journal. We hypothesized that RWD would identify the highest proportion of retracted publications, given its specialized focus. We also expected performance to vary across disciplines, reflecting differences in indexing practices. Finally, we hypothesized that combining data from all three databases would provide a more comprehensive picture than relying on a single source.

Methods

Design

This cross-sectional study aimed to compare the performance of three databases – RWD, PubMed, and the WoS Core Collection – in identifying retracted publications across nine medical disciplines. For this study, performance was defined as the proportion of known retracted publications that each database successfully retrieved. The total number of retracted

publications was considered to be the unique sum of retracted publications identified across all three databases. This approach allowed us to assess the relative contribution of each database to the identification of retracted publications. This work forms part of a broader research project evaluating retracted publications in medicine.

Journal and database selection

We used Clarivate's Journal Citation Reports (JCR) to select the 15 journals with the highest 2023 impact factor in nine disciplines: anesthesiology, dermatology, general internal medicine, gynecology & obstetrics, neurology, oncology, pediatrics, psychiatry, and radiology. These nine disciplines were chosen based on their clinical relevance and their use in prior bibliometric studies, allowing for consistency with established research methodologies (Hart and Perlis 2019; Sebo et al. 2023).

JCR was selected as the data source because it provides widely recognized bibliometric indicators and is commonly used in journal ranking and impact evaluations. We used Journal Impact Factor as a selection criterion to ensure that we analyzed high-impact journals, where retracted publications are likely to have greater visibility and influence on clinical practice.

The decision to include the top 15 journals per discipline was made to ensure comparability across medical specialties while maintaining a feasible dataset for manual retraction verification. A proportional selection, such as including all Quartile 1 (Q1) journals, would have introduced variability in the number of journals per discipline, making cross-disciplinary comparisons less standardized. By selecting a fixed number of journals, we ensured balanced representation across fields.

Table 1 provides the list of selected journals along with their impact factors. The final list included 131 unique journals instead of 135 due to overlaps in discipline categorization, as four journals were assigned to two disciplines: *J Am Acad Child Adolesc Psychiatry* (pediatrics and psychiatry), *J Neurol Neurosurg Psychiatry* (neurology and psychiatry), *Neuro Oncol* (neurology and oncology), and *Ultrasound Obstet Gynecol* (gynecology & obstetrics and radiology).

For retraction retrieval, we used three bibliographic databases: RWD, PubMed, and the WoS Core Collection. All selected journals are indexed in both PubMed and the WoS Core Collection. We extracted all publications that were retracted in these journals without imposing any time or other restrictions, including all retracted publications indexed from each database's inception up to our search date (15 December 2024).

Table 1. List of journals included in the study, categorized by discipline and ranked by their 2023 Journal Citation Reports (JCR) impact factor.

Abbreviated journal name (PubMed)	ISSN	e-ISSN	Discipline	2023 JCR impact factor
Anesthesiology	0003–3022	1528–1175	ANESTHESIOLOGY	9.3
Br J Anaesth	0007–0912	1471–6771	ANESTHESIOLOGY	9.1
Anaesthesia	0003–2409	1365–2044	ANESTHESIOLOGY	7.5
Pain	0304–3959	1872–6623	ANESTHESIOLOGY	5.9
Reg Anesth Pain Med	1098–7339	1532–8651	ANESTHESIOLOGY	5.1
J Clin Anesth	0952–8180	1873–4529	ANESTHESIOLOGY	5.0
Best Pract Res Clin Anaesthesiol	1521–6896	1878–1608	ANESTHESIOLOGY	4.7
Anesth Analg	0003–2999	0003–2999	ANESTHESIOLOGY	4.6
Eur J Anaesthesiol	0265–0215	1365–2346	ANESTHESIOLOGY	4.2
Korean J Anesthesiol	2005–6419	2005–7563	ANESTHESIOLOGY	4.2
Anaesth Crit Care Pain Med	2352–5568	2352–5568	ANESTHESIOLOGY	3.7
Eur J Pain	1090–3801	1532–2149	ANESTHESIOLOGY	3.5
Can J Anaesth	0832-610X	1496–8975	ANESTHESIOLOGY	3.4
Pain Med	1526–2375	1526–4637	ANESTHESIOLOGY	2.9
Indian J Anaesth	0019–5049	0976–2817	ANESTHESIOLOGY	2.9
J Am Acad Dermatol	0190–9622	1097–6787	DERMATOLOGY	12.8
JAMA Dermatol	2168–6068	2168–6084	DERMATOLOGY	11.5
Br J Dermatol	0007–0963	1365–2133	DERMATOLOGY	11.0
Am J Clin Dermatol	1175–0561	1179–1888	DERMATOLOGY	8.6
J Eur Acad Dermatol Venereol	0926–9959	1468–3083	DERMATOLOGY	8.5
Burns Trauma	2321–3868	2321–3876	DERMATOLOGY	6.3
J Invest Dermatol	0022-202X	1523–1747	DERMATOLOGY	5.9
Adv Wound Care	2162–1918	2162–1934	DERMATOLOGY	5.8
J Dtsch Dermatol Ges	1610–0379	1610–0387	DERMATOLOGY	5.6
Psoriasis Targets Ther	N/A	2230-326X	DERMATOLOGY	5.2
Contact Dermatitis	0105–1873	1600–0536	DERMATOLOGY	4.8
Mycoses	0933–7407	1439–0507	DERMATOLOGY	4.1
Dermatitis	1710–3568	2162–5220	DERMATOLOGY	4.0
Pigment Cell Melanoma Res	1755–1471	1755-148X	DERMATOLOGY	3.9
J Dermatol Sci	0923–1811	1873-569X	DERMATOLOGY	3.8
Lancet	0140–6736	1474-547X	MEDICINE, GENERAL & INTERNAL	98.4
N Engl J Med	0028–4793	1533–4406	MEDICINE, GENERAL & INTERNAL	96.3
BMJ	0959-535X	1756–1833	MEDICINE, GENERAL & INTERNAL	93.7
Nat Rev Dis Primers	2056-676X	2056-676X	MEDICINE, GENERAL & INTERNAL	79.0
JAMA	0098–7484	1538–3598	MEDICINE, GENERAL & INTERNAL	63.5
Lancet Digit Health	N/A	2589–7500	MEDICINE, GENERAL & INTERNAL	23.8
JAMA Intern Med	2168–6106	2168–6114	MEDICINE, GENERAL & INTERNAL	22.3
Ann Intern Med	0003–4819	1539–3704	MEDICINE, GENERAL & INTERNAL	19.6
Mil Med Res	2095–7467	2054–9369	MEDICINE, GENERAL & INTERNAL	16.7
J R Soc Med	0141–0768	1758–1095	MEDICINE, GENERAL & INTERNAL	16.3
CMAJ	0820–3946	1488–2329	MEDICINE, GENERAL & INTERNAL	12.9
JAMA Netw Open	2574–3805	2574–3805	MEDICINE, GENERAL & INTERNAL	10.5
PLoS Med	1549–1277	1549–1676	MEDICINE, GENERAL & INTERNAL	10.5
BMJ Evid Based Med	2515-446X	2515–4478	MEDICINE, GENERAL & INTERNAL	9.8
EClinicalMedicine	N/A	2589–5370	MEDICINE, GENERAL & INTERNAL	9.6
Lancet Neurol	1474–4422	1474–4465	CLINICAL NEUROLOGY	46.6
Nat Rev Neurol	1759–4758	1759–4766	CLINICAL NEUROLOGY	28.2
JAMA Neurol	2168–6149	2168–6157	CLINICAL NEUROLOGY	20.9
Neuro Oncol	1522–8517	1523–5866	CLINICAL NEUROLOGY	16.4

(*Continued*)

Table 1. (Continued).

Abbreviated journal name (PubMed)	ISSN	e-ISSN	Discipline	2023 JCR impact factor
Alzheimers Dement	1552–5260	1552–5279	CLINICAL NEUROLOGY	13.1
Brain	0006–8950	1460–2156	CLINICAL NEUROLOGY	11.9
Sleep Med Rev	1087–0792	1532–2955	CLINICAL NEUROLOGY	11.2
Acta Neuropathol	0001–6322	1432–0533	CLINICAL NEUROLOGY	9.3
J Neurol Neurosurg Psychiatry	0022–3050	1468-330X	CLINICAL NEUROLOGY	8.8
JPAD	2274–5807	2426–0266	CLINICAL NEUROLOGY	8.5
Neurology	0028–3878	1526-632X	CLINICAL NEUROLOGY	8.4
Neurol Neuroimmunol Neuroinflamm	2332–7812	2332–7812	CLINICAL NEUROLOGY	8.3
Ann Neurol	0364–5134	1531–8249	CLINICAL NEUROLOGY	8.1
Alzheimers Res Ther	N/A	1758–9193	CLINICAL NEUROLOGY	8.0
Stroke	0039–2499	1524–4628	CLINICAL NEUROLOGY	7.9
Hum Reprod Update	1355–4786	1460–2369	OBSTETRICS & GYNECOLOGY	14.8
Am J Obstet Gynecol	0002–9378	1097–6868	OBSTETRICS & GYNECOLOGY	8.7
Hum Reprod Open	N/A	2399–3529	OBSTETRICS & GYNECOLOGY	8.3
Fertil Steril	0015–0282	1556–5653	OBSTETRICS & GYNECOLOGY	6.6
Ultrasound Obstet Gynecol	0960–7692	1469–0705	OBSTETRICS & GYNECOLOGY	6.1
Hum Reprod	0268–1161	1460–2350	OBSTETRICS & GYNECOLOGY	6.0
Obstet Gynecol	0029–7844	0029–7844	OBSTETRICS & GYNECOLOGY	5.8
Breast	0960–9776	1532–3080	OBSTETRICS & GYNECOLOGY	5.7
Obstet Gynecol Surv	0029–7828	1533–9866	OBSTETRICS & GYNECOLOGY	5.2
BJOG	1470–0328	1471–0528	OBSTETRICS & GYNECOLOGY	4.8
Gynecol Oncol	0090–8258	1095–6859	OBSTETRICS & GYNECOLOGY	4.5
Update Int J Gynecol Cancer	1048-891X	1525–1438	OBSTETRICS & GYNECOLOGY	4.5
Women Birth	1871–5192	1878–1799	OBSTETRICS & GYNECOLOGY	4.4
Breast Cancer	1340–6868	1880–4233	OBSTETRICS & GYNECOLOGY	4.0
Best Pract Res Clin Obstet Gynaecol	1521–6934	1532–1932	OBSTETRICS & GYNECOLOGY	3.9
CA Cancer J Clin	0007–9235	1542–4863	ONCOLOGY	521.6
Nat Rev Clin Oncol	1759–4774	1759–4782	ONCOLOGY	81.1
Nat Rev Cancer	1474-175X	1474–1768	ONCOLOGY	72.5
Ann Oncol	0923–7534	1569–8041	ONCOLOGY	56.7
Cancer Cell	1535–6108	1878–3686	ONCOLOGY	48.8
J Clin Oncol	0732-183X	1527–7755	ONCOLOGY	42.1
Lancet Oncol	1470–2045	1474–5488	ONCOLOGY	41.6
Cancer Discov	2159–8274	2159–8290	ONCOLOGY	30.6
J Hematol Oncol	N/A	1756–8722	ONCOLOGY	29.9
Mol Cancer	N/A	1476–4598	ONCOLOGY	27.7
Nat Cancer	N/A	2662–1347	ONCOLOGY	23.5
JAMA Oncol	2374–2437	2374–2445	ONCOLOGY	22.3
J Thorac Oncol	1556–0864	1556–1380	ONCOLOGY	21.1
Cancer Commun	N/A	2523–3548	ONCOLOGY	20.1
Neuro Oncol	1522–8517	1523–5866	ONCOLOGY	16.4
JAMA Pediatr	2168–6203	2168–6211	PEDIATRICS	24.7
Lancet Child Adolesc Health	2352–4642	2352–4642	PEDIATRICS	19.9
J Am Acad Child Adolesc Psychiatry	0890–8567	1527–5418	PEDIATRICS	9.2
Child Adolesc Ment Health	1475-357X	1475–3588	PEDIATRICS	6.8
Pediatrics	0031–4005	1098–4275	PEDIATRICS	6.2

(*Continued*)

Table 1. (Continued).

Abbreviated journal name (PubMed)	ISSN	e-ISSN	Discipline	2023 JCR impact factor
Eur Child Adolesc Psychiatry	1018–8827	1435-165X	PEDIATRICS	6.0
J Adolesc Health	1054-139X	1879–1972	PEDIATRICS	5.5
Paediatr Respir Rev	1526–0542	1526–0550	PEDIATRICS	4.7
Arch Dis Child	0003–9888	1468–2044	PEDIATRICS	4.4
Pediatr Allergy Immunol	0905–6157	1399–3038	PEDIATRICS	4.3
Pediatr Crit Care Med	1529–7535	1947–3893	PEDIATRICS	4.1
Int J Neonatal Screen	N/A	2409-515X	PEDIATRICS	4.0
Arch Dis Child Fetal Neonatal Ed	1359–2998	1468–2052	PEDIATRICS	3.9
J Pediatr	0022–3476	1097–6833	PEDIATRICS	3.9
Pediatr Diabetes	1399-543X	1399–5448	PEDIATRICS	3.9
World Psychiatry	1723–8617	2051–5545	PSYCHIATRY	60.5
Lancet Psychiatry	2215–0374	N/A	PSYCHIATRY	30.8
JAMA Psychiatry	2168-622X	2168–6238	PSYCHIATRY	22.5
Psychother Psychosom	0033–3190	1423–0348	PSYCHIATRY	16.3
Am J Psychiatry	0002-953X	1535–7228	PSYCHIATRY	15.1
Mol Psychiatry	1359–4184	1476–5578	PSYCHIATRY	9.6
Biol Psychiatry	0006–3223	1873–2402	PSYCHIATRY	9.6
J Am Acad Child Adolesc Psychiatry	0890–8567	1527–5418	PSYCHIATRY	9.2
Ment Illn	2036–7457	2036–7465	PSYCHIATRY	9.0
J Neurol Neurosurg Psychiatry	0022–3050	1468-330X	PSYCHIATRY	8.8
Brain Behav Immun	0889–1591	1090–2139	PSYCHIATRY	8.8
Br J Psychiatry	0007–1250	1472–1465	PSYCHIATRY	8.8
Curr Opin Psychiatry	0951–7367	1473–6578	PSYCHIATRY	7.5
CNS Drugs	1172–7047	1179–1934	PSYCHIATRY	7.4
Eur Psychiatry	0924–9338	1778–3585	PSYCHIATRY	7.2
JACC Cardiovasc Imaging	1936-878X	1876–7591	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	12.8
Radiology	0033–8419	N/A	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	12.1
Med Image Anal	1361–8415	1361–8423	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	10.7
Clin Nucl Med	0363–9762	1536–0229	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	10.0
Radiol Med	0033–8362	1826–6983	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	9.7
J Nucl Med	0161–5505	1535–5667	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	9.1
IEEE Trans Med Imaging	0278–0062	1558-254X	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	8.9
Eur J Nucl Med Mol Imaging	1619–7070	1619–7089	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	8.6
Radiol Artif Intell	2638–6100	2638–6100	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	8.1
Photoacoustics	2213–5979	2213–5979	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	7.1
Invest Radiol	0020–9996	1536–0210	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	7.0
Eur Heart J Cardiovasc Imaging	2047–2404	2047–2412	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	6.7

(*Continued*)

Table 1. (Continued).

Abbreviated journal name (PubMed)	ISSN	e-ISSN	Discipline	2023 JCR impact factor
Circ Cardiovasc Imaging	1941–9651	1942–0080	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	6.5
Int J Radiat Oncol Biol Phys	0360–3016	1879-355X	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	6.4
Ultrasound Obstet Gynecol	0960–7692	1469–0705	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	6.1

Retraction Watch Database (RWD)

The RWD, launched in 2018, is a structured repository dedicated to tracking retracted scientific articles across various disciplines, including biomedicine (RWD 2018). It was developed as an extension of the Retraction Watch blog, which has been covering retracted publications and issues in research integrity since 2010.

RWD relies on a combination of systematic searching, manual verification, and community contributions to track retractions. While specific details of automated detection methods are not publicly disclosed, RWD has outlined its data collection process in its online documentation (https://retractionwatch.com/wp-content/uploads/2023/12/Building-The-Database.pdf).

The database was initially built by systematically searching PubMed, WoS, and Scopus using publication types such as "retracted publication" and "retraction of publication", as well as keywords such as "retracted", "withdrawn", and "retraction notice". Additional sources, including publisher websites, public databases (e.g., Google Scholar), institutional misconduct reports, and tips from readers, are routinely used to identify retracted articles. Each identified retraction is then manually verified by Retraction Watch staff. This process includes assessing the accuracy of retraction notices, categorizing the type of notice (retraction, expression of concern, or correction), and supplementing entries with contextual details, including reasons for retraction.

The database, now freely available via Crossref (https://www.crossref.org/), was downloaded in CSV format. We filtered the data to include only retracted publications (excluding corrections and expressions of concern) from journals in our study.

PubMed

PubMed, maintained by the National Center for Biotechnology Information (NCBI), is a widely used database for biomedical literature. For this study, we used the "PubMed Advanced Search Builder" to extract retracted

publications by specifying "retracted publication" as the publication type. Searches were performed using journal names as well as their International Standard Serial Number (ISSN) and electronic ISSN (e-ISSN), given potential naming inconsistencies. Table 1 lists the ISSN and e-ISSN for the included journals. It is important to note that the exact date when PubMed began indexing retracted publications is not clearly documented.

Web of Science (WoS)

WoS, managed by Clarivate Analytics, provides extensive access to scholarly literature. In this study, we used the WoS Core Collection (hereafter referred to as WoS) and employed its "Advanced Search Query Builder" to identify retracted publications by specifying "retracted publication" as the document type (field tag = DT). Searches were conducted using journal names, ISSNs, and e-ISSNs. As with PubMed, the exact date when WoS began indexing retracted publications is also not clearly documented.

Data collection

We conducted searches in RWD, PubMed, and WoS on 15 December 2024. Each database search retrieved a separate set of retracted publications, which were analyzed independently to determine the percentage of coverage for each database. The datasets were not merged. The retrieved records, sorted by PubMed Unique Identifier (PMID), are included as supplementary material.

To ensure accuracy in database coverage calculations, both authors (PS and MS) worked on the same datasets and independently verified in which database(s) each retracted publication was found. The verification process involved checking the PMID (available for most articles) and the title of the paper. If the PMID was not available, full citation details (authors, journal name, volume, issue, and year) were used. The verification was performed manually because title formatting varied across databases. Titles sometimes appeared in uppercase or lowercase, contained punctuation inconsistencies, or included additional words such as "retracted" at the beginning or "retracted article" at the end. These variations prevented automated matching, requiring careful manual cross-checking to ensure accuracy.

During this process, three discrepancies were identified where PS and MS initially recorded different databases as having indexed a retracted publication. These discrepancies did not result from differences in search results but rather from minor mismatches in database assignment during manual verification. They were resolved by reviewing the original records and reaching a consensus.

Risk of misclassification of retracted publications

We acknowledge that the risk of false negatives (missed retracted publications) is a real issue, as highlighted by previous studies (C. Bakker and Riegelman 2018; C. J. Bakker et al. 2024; Schmidt 2018; Suelzer et al. 2021). However, we aimed to mitigate this by combining three major databases, reducing the likelihood of missing retracted publications. Additionally, the risk of false negatives is further reduced by the inclusion of RWD, which is specifically dedicated to retracted publications and compiles data from multiple sources.

False positives (articles incorrectly labeled as retracted) are also possible, as reported in the literature (Schmidt 2018; Schneider et al. 2023). To assess the accuracy of retraction classification in these databases, we followed an approach similar to Schneider et al. and randomly sampled 33 publications from each database file (RWD, PubMed, and WoS), totaling 99 publications (Schneider et al. 2023). Among these, only two were found not to be retracted publications. This suggests that the false positive rate in our dataset is low. However, as our study focused on high-impact journals, the false positive rate may differ for lower-impact journals, where metadata accuracy might vary. Additionally, in our previous small study assessing the accuracy of metadata for the same three databases ($n = 35$ retracted publications), we did not find any false positives (Sebo and Sebo 2025). These findings further support the reliability of retraction classification in RWD, PubMed, and WoS, at least within the scope of our study.

Statistical analyses

Descriptive statistics were used to summarize the data. We calculated proportions of retracted publications identified by each database, both overall and stratified by journal and discipline. The total number of retracted publications was defined as the total number of unique retracted publications across all three databases. This study adheres to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for cross-sectional studies. Analyses were conducted using STATA 15.1.

Ethical approval

This study did not involve human participants or personal health-related data and, therefore, did not require ethical approval under Swiss legislation.

Results

A total of 878 retracted publications were identified in the study. Table 2 presents the number of these publications by journal, as well as the counts retrieved from RWD, PubMed, and WoS. This paper briefly outlines their characteristics, as its primary aim is to compare the performance of the three databases in identifying them. A forthcoming paper will provide a more detailed analysis of their characteristics and patterns.

The number of retracted publications per journal ranged from 0 to 119, with 47 journals having none, 22 with one, and 13 with two. The remaining journals had more than two. Among the five journals with the highest number of retracted publications, four were in anesthesiology: *J Clin Anesth* ($n = 119$), *Anesth Analg* ($n = 83$), *Obstet Gynecol* ($n = 47$), *Br J Anaesth* ($n = 46$), and *Can J Anaesth* ($n = 44$).

RWD identified 815 of the 878 retracted publications (93%), PubMed found 758 (86%), and WoS retrieved 734 (84%). Table 3 and Figure 1 show the number of retracted publications by discipline. The five disciplines with the highest counts were anesthesiology ($n = 382$), general internal medicine ($n = 125$), gynecology & obstetrics ($n = 116$), oncology ($n = 92$), and neurology ($n = 62$). RWD identified between 75% and 99% of retracted publications depending on the discipline, compared to 52–97% for PubMed and 58–96% for WoS. RWD outperformed PubMed and WoS in eight of the nine disciplines. The exception was gynecology & obstetrics, where PubMed identified 83% of retracted publications compared to 75% for RWD, primarily due to one journal, *Obstet Gynecol*. For this journal, RWD identified 22 of 47, while PubMed retrieved 42 and WoS 15.

Among the 63 retracted publications not indexed in RWD, 24 were guidelines, 21 were research articles, 16 were letters or commentaries, 1 was a review, and 1 was a conference abstract. The years of publication were well distributed across different time periods, suggesting no systematic bias toward older or newer articles. The missed guidelines were ACOG committee opinions or ACOG practice bulletins, which are publications from the American College of Obstetricians and Gynecologists (ACOG). These findings indicate that while RWD captures most research articles and reviews, additional databases may be necessary for other types of articles, such as guidelines, letters, or commentaries.

Discussion

Summary of the findings

This study identified 878 retracted publications across nine medical disciplines using three databases: RWD, PubMed, and WoS. RWD retrieved the highest number of retracted publications (93% of the total), followed by

Table 2. Total and database-specific retracted publications by journal, sorted alphabetically.

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
Acta Neuropathol	CLINICAL NEUROLOGY	0	0	0	0
Adv Wound Care	DERMATOLOGY	0	0	0	0
Alzheimers Dement	CLINICAL NEUROLOGY	3	2	2	0
Alzheimers Res Ther	CLINICAL NEUROLOGY	3	3	3	3
Am J Clin Dermatol	DERMATOLOGY	0	0	0	0
Am J Obstet Gynecol	OBSTETRICS & GYNECOLOGY	12	10	7	7
Am J Psychiatry	PSYCHIATRY	2	2	2	2
Anaesthesia	ANESTHESIOLOGY	22	21	20	22
Anaesth Crit Care Pain Med	ANESTHESIOLOGY	0	0	0	0
Anesth Analg	ANESTHESIOLOGY	83	83	80	81
Anesthesiology	ANESTHESIOLOGY	20	19	17	17
Ann Intern Med	MEDICINE, GENERAL & INTERNAL	10	10	10	7
Ann Neurol	CLINICAL NEUROLOGY	5	5	3	2
Ann Oncol	ONCOLOGY	8	5	4	3
Arch Dis Child	PEDIATRICS	3	3	1	2
Arch Dis Child Fetal Neonatal Ed	PEDIATRICS	1	1	1	0
Best Pract Res Clin Obstet Gynaecol	OBSTETRICS & GYNECOLOGY	1	1	1	1
Best Pract Res Clin Anaesthesiol	ANESTHESIOLOGY	0	0	0	0
Biol Psychiatry	PSYCHIATRY	15	14	14	12
BJOG	OBSTETRICS & GYNECOLOGY	7	7	3	2
BMJ Evid Based Med	MEDICINE, GENERAL & INTERNAL	0	0	0	0
BMJ	MEDICINE, GENERAL & INTERNAL	13	12	11	6
Brain	CLINICAL NEUROLOGY	4	4	4	3
Brain Behav Immun	PSYCHIATRY	2	1	2	2
Breast	OBSTETRICS & GYNECOLOGY	0	0	0	0
Breast Cancer	OBSTETRICS & GYNECOLOGY	2	2	2	1

(*Continued*)

Table 2. (Continued).

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
Br J Anaesth	ANESTHESIOLOGY	46	46	45	45
Br J Dermatol	DERMATOLOGY	1	1	1	1
Br J Psychiatry	PSYCHIATRY	5	4	4	5
Burns Trauma	DERMATOLOGY	0	0	0	0
CA Cancer J Clin	ONCOLOGY	0	0	0	0
Can J Anaesth	ANESTHESIOLOGY	44	44	44	44
CMAJ	MEDICINE, GENERAL & INTERNAL	4	4	4	2
Cancer Cell	ONCOLOGY	5	5	4	4
Cancer Commun	ONCOLOGY	0	0	0	0
Cancer Discov	ONCOLOGY	1	1	1	1
Child Adolesc Ment Health	PEDIATRICS	1	1	0	1
Circ Cardiovasc Imaging	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	0	0	0	0
Clin Nucl Med	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	0	0	0	0
CNS Drugs	PSYCHIATRY	0	0	0	0
Contact Dermatitis	DERMATOLOGY	0	0	0	0
Curr Opin Psychiatry	PSYCHIATRY	0	0	0	0
Dermatitis	DERMATOLOGY	1	1	1	1
EClinicalMedicine	MEDICINE, GENERAL & INTERNAL	1	1	1	1
Eur Child Adolesc Psychiatry	PEDIATRICS	1	1	1	1
Eur Heart J Cardiovasc Imaging	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	6	6	2	2
Eur J Anaesthesiol	ANESTHESIOLOGY	34	34	32	30

(*Continued*)

Table 2. (Continued).

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
Eur J Nucl Med Mol Imaging	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	2	2	2	1
Eur J Pain	ANESTHESIOLOGY	0	0	0	0
Eur Psychiatry	PSYCHIATRY	1	1	0	1
Fertil Steril	OBSTETRICS & GYNECOLOGY	26	25	23	22
Gynecol Oncol	OBSTETRICS & GYNECOLOGY	11	11	11	11
Hum Reprod	OBSTETRICS & GYNECOLOGY	3	2	2	3
Hum Reprod Open	OBSTETRICS & GYNECOLOGY	0	0	0	0
Hum Reprod Update	OBSTETRICS & GYNECOLOGY	0	0	0	0
IEEE Trans Med Imaging	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	1	0	0	1
Indian J Anaesth	ANESTHESIOLOGY	1	1	1	0
Int J Gynecol Cancer	OBSTETRICS & GYNECOLOGY	5	5	4	5
Int J Neonatal Screen	PEDIATRICS	0	0	0	0
Int J Radiat Oncol Biol Phys	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	7	6	5	6
Invest Radiol	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	2	2	2	2
JACC Cardiovasc Imaging	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	1	1	0	0
JAMA Dermatol	DERMATOLOGY	2	2	1	2
JAMA Intern Med	MEDICINE, GENERAL & INTERNAL	10	8	4	9
JAMA Netw Open	MEDICINE, GENERAL & INTERNAL	4	2	4	3

(*Continued*)

Table 2. (Continued).

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
JAMA Neurol	CLINICAL NEUROLOGY	0	0	0	0
JAMA Oncol	ONCOLOGY	2	2	1	2
JAMA Pediatr	PEDIATRICS	6	6	3	3
JAMA Psychiatry	PSYCHIATRY	9	8	6	6
JAMA	MEDICINE, GENERAL & INTERNAL	21	19	12	17
J Dtsch Dermatol Ges	DERMATOLOGY	1	1	1	0
J Adolesc Health	PEDIATRICS	0	0	0	0
J Clin Anesth	ANESTHESIOLOGY	119	117	119	117
J Clin Oncol	ONCOLOGY	17	17	14	16
J Dermatol Sci	DERMATOLOGY	1	1	1	1
J Hematol Oncol	ONCOLOGY	8	7	8	7
J Invest Dermatol	DERMATOLOGY	2	1	1	1
J Neurol Neurosurg Psychiatry	CLINICAL NEUROLOGY	5	5	4	5
J Neurol Neurosurg Psychiatry	PSYCHIATRY	5	5	4	5
J Nucl Med	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	2	1	0	1
J Pediatr	PEDIATRICS	1	1	1	1
J Am Acad Child Adolesc Psychiatry	PEDIATRICS	0	0	0	0
J Am Acad Child Adolesc Psychiatry	PSYCHIATRY	0	0	0	0
J Am Acad Dermatol	DERMATOLOGY	10	10	4	5
J Eur Acad Dermatol Venereol	DERMATOLOGY	0	0	0	0
J R Soc Med	MEDICINE, GENERAL & INTERNAL	1	1	1	1
J Thorac Oncol	ONCOLOGY	2	2	1	1
J Prev Alzheimers Dis	CLINICAL NEUROLOGY	0	0	0	0
Korean J Anesthesiol	ANESTHESIOLOGY	2	2	2	2

(*Continued*)

Table 2. (Continued).

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
Lancet	MEDICINE, GENERAL & INTERNAL	32	32	27	26
Lancet Child Adolesc Health	PEDIATRICS	0	0	0	0
Lancet Digit Health	MEDICINE, GENERAL & INTERNAL	0	0	0	0
Lancet Neurol	CLINICAL NEUROLOGY	1	0	0	1
Lancet Oncol	ONCOLOGY	4	3	3	3
Lancet Psychiatry	PSYCHIATRY	0	0	0	0
Med Image Anal	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	0	0	0	0
Ment Illn	PSYCHIATRY	0	0	0	0
Mil Med Res	MEDICINE, GENERAL & INTERNAL	0	0	0	0
Mol Cancer	ONCOLOGY	36	35	34	33
Mol Psychiatry	PSYCHIATRY	5	5	5	5
Mycoses	DERMATOLOGY	0	0	0	0
Nat Cancer	ONCOLOGY	0	0	0	0
Nat Rev Cancer	ONCOLOGY	1	1	0	1
Nat Rev Clin Oncol	ONCOLOGY	1	1	1	1
Nat Rev Dis Primers	MEDICINE, GENERAL & INTERNAL	0	0	0	0
Nat Rev Neurol	CLINICAL NEUROLOGY	0	0	0	0
Neurology	CLINICAL NEUROLOGY	21	20	14	19
Neurol Neuroimmunol Neuroinflamm	CLINICAL NEUROLOGY	0	0	0	0
Neuro Oncol	CLINICAL NEUROLOGY	7	6	7	6
Neuro Oncol	ONCOLOGY	7	6	7	6
N Engl J Med	MEDICINE, GENERAL & INTERNAL	28	26	25	26

(*Continued*)

Table 2. (Continued).

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
Obstet Gynecol Surv	OBSTETRICS & GYNECOLOGY	0	0	0	0
Obstet Gynecol	OBSTETRICS & GYNECOLOGY	47	22	42	15
Paediatr Respir Rev	PEDIATRICS	0	0	0	0
Pain	ANESTHESIOLOGY	0	0	0	0
Pain Med	ANESTHESIOLOGY	4	4	3	3
Pediatr Allergy Immunol	PEDIATRICS	1	0	1	0
Pediatr Crit Care Med	PEDIATRICS	2	2	2	1
Pediatr Diabetes	PEDIATRICS	0	0	0	0
Pediatrics	PEDIATRICS	4	4	4	4
Photoacoustics	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	1	0	0	1
Pigment Cell Melanoma Res	DERMATOLOGY	0	0	0	0
PLoS Med	MEDICINE, GENERAL & INTERNAL	1	1	1	1
Psoriasis Targets Ther	DERMATOLOGY	0	0	0	0
Psychother Psychosom	PSYCHIATRY	0	0	0	0
Radiol Med	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	0	0	0	0
Radiology	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	9	8	5	8
Radiol Artif Intell	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	0	0	0	0
Reg Anesth Pain Med	ANESTHESIOLOGY	7	7	6	5

(*Continued*)

Table 2. (Continued).

Abbreviated journal name (PubMed)	Discipline	Total number of retracted publications	Number of retracted publications in Retraction Watch Database	Number of retracted publications in PubMed	Number of retracted publications in Web of Science
Sleep Med Rev	CLINICAL NEUROLOGY	0	0	0	0
Stroke	CLINICAL NEUROLOGY	13	13	12	12
Ultrasound Obstet Gynecol	OBSTETRICS & GYNECOLOGY	2	2	1	0
Ultrasound Obstet Gynecol	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	2	2	1	0
Women Birth	OBSTETRICS & GYNECOLOGY	0	0	0	0
World Psychiatry	PSYCHIATRY	0	0	0	0

Table 3. Total and database-specific retracted publications by discipline, sorted by total number of retracted publications.

Discipline	Total number of retracted publications, n	Number of retracted publications in Retraction Watch Database, n (%)	Number of retracted publications in PubMed, n (%)	Number of retracted publications in Web of Science, n (%)
ANESTHESIOLOGY	382	378 (99.0)	369 (96.6)	366 (95.8)
MEDICINE, GENERAL & INTERNAL	125	116 (92.8)	100 (80.0)	99 (79.2)
OBSTETRICS & GYNECOLOGY	116	87 (75.0)	96 (82.8)	67 (57.8)
ONCOLOGY	92	85 (92.4)	78 (84.8)	78 (84.8)
CLINICAL NEUROLOGY	62	58 (93.5)	49 (79.0)	51 (82.3)
PSYCHIATRY	44	40 (90.9)	37 (84.1)	38 (86.4)
RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	33	28 (84.8)	17 (51.5)	22 (66.7)
PEDIATRICS	20	19 (95.0)	14 (70.0)	13 (65.0)
DERMATOLOGY	18	17 (94.4)	10 (55.6)	11 (61.1)

The total number of retracted publications sums to 892, not 878, because four journals were assigned to two disciplines: *J Am Acad Child Adolesc Psychiatry* (PEDIATRICS and PSYCHIATRY), *J Neurol Neurosurg Psychiatry* (CLINICAL NEUROLOGY and PSYCHIATRY), *Neuro Oncol* (CLINICAL NEUROLOGY and ONCOLOGY), and *Ultrasound Obstet Gynecol* (OBSTETRICS & GYNECOLOGY and RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING).

PubMed (86%) and WoS (84%). Performance varied by discipline, with RWD capturing 75–99% of retracted publications, PubMed 52–97%, and WoS 58–96%. RWD consistently outperformed the other databases except in gynecology & obstetrics, where PubMed identified a higher proportion of retracted publications. RWD was less performant in this discipline primarily due to the high number of ACOG committee opinions and ACOG practice bulletins, which were not well indexed in RWD.

Comparison with existing literature

Few studies have evaluated the accuracy or comprehensiveness of tools used in retraction research (C. Bakker and Riegelman 2018; C. J. Bakker et al. 2024; Ortega and Delgado-Quirós 2024; Schmidt 2018; Schneider et al. 2023; Sebo and Sebo 2025; Suelzer et al. 2021). Our results align with previous findings by Schneider et al. and Ortega & Delgado-Quiros, which highlight inconsistencies in retraction indexing and coverage among different scholarly databases (Ortega and Delgado-Quirós 2024; Schneider et al. 2023). Schneider et al. showed that agreement in retraction indexing is often low, with significant gaps in database coverage, while Ortega & Delgado-Quiros found that nonselective databases provide broader coverage of retracted

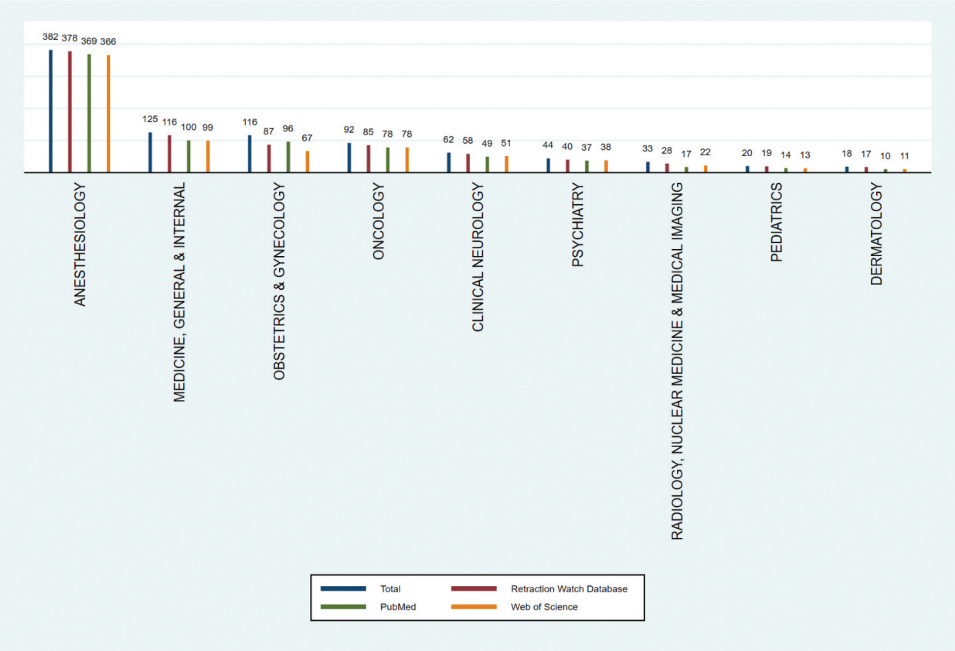

Figure 1. Total and database-specific retracted publications by discipline, sorted by total number of retracted publications.

publications than those relying on venue-based selection criteria. Our findings also align with a preliminary study by our team involving 35 retracted publications, which showed that RWD offers the most comprehensive data, although metadata errors were frequently observed (Sebo and Sebo 2025). In contrast, PubMed and WoS offered more reliable metadata but lacked RWD's comprehensiveness. Finally, our results echo those of Schmidt, who analyzed database inconsistencies and their impact on the completeness and accuracy of retraction data in PubMed and WoS (Schmidt 2018), and those of Donner, who assessed the accuracy of document type assignments in WoS and noted discrepancies that could affect the retrieval of specific publication types, including "retracted publications" (Donner 2017). Collectively, these findings reinforce our conclusion that relying on a single database may lead to incomplete retraction detection.

Limitations of PubMed and WoS in retracted publication indexing

Our findings highlight the challenges associated with retraction indexing in PubMed and WoS. At least two factors may explain why these sources retrieved fewer retracted publications than RWD. First, they rely on publisher-provided metadata, which may not always be promptly updated or

consistently labeled. In contrast, RWD systematically tracks retracted publications through a combination of automated and manual curation, allowing for more comprehensive coverage. Second, PubMed and WoS use predefined indexing categories (e.g., "retracted publication" as a document type), but these labels are sometimes missing or inconsistently applied across journals (Donner 2017; Schmidt 2018).

To enhance retraction identification, several improvements could be implemented in PubMed and WoS. First, they should adopt more standardized metadata practices to ensure that retracted publications are consistently flagged. Second, integrating automated cross-referencing with external retraction databases, such as RWD, could provide an additional verification layer and improve retraction coverage. Third, stronger collaboration between indexing databases and publishers is needed to ensure that retraction notices are promptly and uniformly updated across all platforms.

Implications for practice and research

While RWD emerged as the most comprehensive resource for identifying retracted publications, PubMed and WoS provide valuable supplementary data, offering critical validation and additional metadata. These findings highlight the importance of a multi-database approach to ensure thorough and accurate retraction research, particularly when analyzing trends or conducting bibliometric studies. However, the necessity of using multiple databases depends on the scope of the research. RWD alone may be sufficient for identifying research articles and reviews, while additional databases are recommended for retrieving other types of articles, such as guidelines, letters, or commentaries.

For researchers, librarians, and healthcare practitioners, combining these databases can enhance the reliability of retraction studies by mitigating the limitations of any single resource. Efforts to improve the functionality, coverage, and metadata accuracy of these databases are essential for strengthening their role in tracking and analyzing retracted publications. Future research should prioritize strategies for integrating data across platforms and developing unified tools to streamline retraction identification and analysis, ultimately supporting more effective research on integrity and scientific misconduct.

Limitations

Several limitations should be noted. Our reliance on database searches may have excluded retracted publications not indexed by these platforms (false negatives). However, the use of three databases, including RWD – which is specifically dedicated to retracted publications and compiles data from

multiple sources – likely minimized this risk. Our study did not comprehensively assess false positives (publications incorrectly labeled as retracted). However, we tested 99 publications across the three databases and found only two that were not retracted publications, suggesting that the false positive rate in our dataset is low. Future research should include a systematic validation step to ensure the accuracy of retrieved retracted publications. The focus on high-impact journals limits the generalizability of our findings to lower-impact or non-indexed journals. The indexing of retracted publications may have changed over time, and it is unclear whether PubMed, WoS, and RWD systematically applied retrospective indexing for older retracted publications. This may partly explain variations in database performance, particularly for earlier publications. Finally, the descriptive nature of this study precludes causal inferences regarding database performance.

Conclusion

This study evaluated the performance of three databases – Retraction Watch Database (RWD), PubMed, and the Web of Science Core Collection (WoS) – in identifying retracted publications across nine medical disciplines. RWD retrieved the highest proportion of retracted publications (93%), followed by PubMed (86%) and WoS (84%). While RWD demonstrated superior overall coverage, its completeness varied by discipline and publication type. RWD alone may be sufficient for identifying research articles and reviews. However, for studies requiring broader coverage – particularly those including specialized publication types such as guidelines or position statements – supplementing RWD with PubMed and WoS is recommended.

Future efforts should prioritize improving interoperability across databases, standardizing indexing practices, and ensuring timely and accurate labeling of retracted publications. Addressing these challenges will strengthen the reliability of retraction tracking, ultimately supporting research integrity and reducing the risk of continued citation of retracted work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The author(s) reported there is no funding associated with the work featured in this article.

Author's contribution

Conceptualization: PS and MS; Project administration: PS and MS; Formal analysis: PS; Writing-original draft: PS.

Data availability statement

The data associated with this article are available as supplementary material.

Ethical approval

As this study did not involve the collection of personal health-related data, it did not require ethical review in accordance with current Swiss legislation.

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