

Scoping Review Protocol

Analysis of Retraction Watch Database for Retractions Due to Errors in the Clinical Science Reproducible Research Pipeline

Review question(s)

What methodological issues contribute to publication retractions in clinical science?

What reproducible research practices (if any) were used in publications that were ultimately retracted?

Searches

- Retraction Watch

Records were retrieved from the Retraction Watch database, current to March 12, 2020. Each record includes publication information (title, journal, authors, publication date, DOI, URL, PubMed ID), retraction information (date, retraction DOI, reason), and coded subject lists.

Search Strategy (provide one, if available)

N/A

All records from the Retraction Watch database were retrieved.

Types of study to be included

We will include published, peer-reviewed articles which have been retracted within the past 10 years.

Inclusion Criteria:

- English language
- Human research, or if not human, intended application to human translational research pipeline
- Publication date within the last 10 years (2010 – 2020)
- Subject list contains terms related to clinical science (Appendix A)
- Retraction reason list contains terms related to the reproducible research pipeline (Appendix B)

Exclusion Criteria:

- Subject list contains terms unrelated to human subjects, medical or clinical research, or the practice of human subjects research (Appendix A)
- Retraction reason list contains terms indicating misconduct grossly unrelated to errors in analysis and reproducibility of results (Appendix B)

Condition or domain being studied

Retractions due to errors in analysis or reproducibility of research within human research papers or papers published within the domain of the human translational research pipeline.

Participants/ population

All publications from the Retraction Watch database will be included as candidates for this analysis.

Intervention(s), exposure(s)

Any

Comparator(s)/ control Comparison

Any

Context

Papers will be excluded based on language. No studies will be excluded based on location.

Outcome(s)

- Reasons for retraction
- Retraction reasons that could be overcome by use of reproducible research tools

Data extraction, (selection and coding)

Data were provided from the Retraction Watch team current to March 12, 2020.

Inclusion and exclusion criteria will be applied to the dataset based on date of publication, subject list, and reason list strings. Each abstract will be reviewed by 2 independent reviewers, all articles that are related to human subjects research or the human translational research pipeline which were retracted for reasons related to errors in analysis and reproducibility of results will be included. Conflicts will be resolved by discussion with additional authors as needed. Two reviewers will then screen full-text articles for inclusion; conflicts will be resolved by discussion with additional authors as needed.

Data extracted will include study information, reasons for retraction, information about the data sources, and information about the methods. When necessary, we will contact study authors to obtain additional information.

Data to be extracted is as follows at a minimum:

1) Study Characteristics (collected when available within the publication):

- Date of Publication
- Date of Retraction
- Number of Authors
- Number of Authors Responsible for Methods and Results
- Highest terminal degree of Authors Responsible for Methods and Results

2) Reasons for Retraction

- Verbatim from the retraction notice

3) Data (collected when available within the publication)

- Type of data used (de novo collected/existing records/repurposed/undefined/etc)
- Location/software where primary data was collected/stored for the publication (excel/REDCap/Access database/unknown/etc)
- Statement of data availability (publicly available/available upon request/unknown/etc)

4) Methods

- Study design
 - clinical trial/observational study/bench research/undefined
 - cross sectional/case-control/undefined/etc
- Study temporality (prospective/retrospective/undefined)
- Pre-publication of a statistical analysis plan (yes/no/unknown)
- Type of analysis completed (primary/secondary/undefined)
- Type of software used for analysis (SAS/R/Stata/python/SPSS/PRISM/undefined/etc)
- Acknowledgement of any reproducible research methods (yes/no/unknown)
 - If yes, verbatim information on use of reproducible research methods

Dissemination plans

We plan to present this work at conferences and in manuscript form.

Contact details for further information

TBD

Organizational affiliation of the review

Northwestern University – Feinberg School of Medicine

Review team

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Anticipated or actual start date

March 19, 2020

Anticipated completion date

March 19, 2021

Funding sources/sponsors

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Conflicts of interest

None

Language

English

Country

United States

Stage of Review

In Progress

Date of registration in DigitalHub

July 9, 2020

Appendix A. List of Unique Subjects and Database Frequencies.

Subject	Frequency	Subject to Include	Subject to Exclude
(B/T) Business - Accounting	250		
(B/T) Business - Economics	1975		
(B/T) Business - General	877		
(B/T) Business - Management	1696		
(B/T) Business - Manufacturing	76		
(B/T) Business - Marketing	335		
(B/T) Business - Public Relations	82		
(B/T) Computer Science	1875		
(B/T) Foreign Aid	5		Yes
(B/T) Government	616		Yes
(B/T) International Relations	188		Yes
(B/T) Technology	2681		
(B/T) Transportation	389		
(B/T) Urban Planning	261		
(BLS) Agriculture	335		Yes
(BLS) Anatomy/Physiology	532	Yes	
(BLS) Anthropology	27	Yes	
(BLS) Archeology	24		Yes
(BLS) Biochemistry	2280	Yes	
(BLS) Biology - Cancer	1315	Yes	
(BLS) Biology - Cellular	3487	Yes	
(BLS) Biology - General	636	Yes	
(BLS) Biology - Molecular	2290	Yes	
(BLS) Forensic Sciences	6		Yes
(BLS) Genetics	1893	Yes	
(BLS) Microbiology	698	Yes	
(BLS) Neuroscience	551	Yes	
(BLS) Nutrition	140	Yes	
(BLS) Parasitology	63	Yes	
(BLS) Plant Biology/Botany	550		
(BLS) Toxicology	492	Yes	
(BLS) Zoology	381		
(ENV) Climate Change	48		
(ENV) Climatology	69		
(ENV) Ecology	415		
(ENV) Environmental Sciences	792		
(ENV) Food Science	107		
(ENV) Ground/Surface Water	299		
(HSC) Biostatistics/Epidemiology	254	Yes	
(HSC) Medicine - Alternative	115	Yes	
(HSC) Medicine - Anesthesia/Anaesthesia	365	Yes	

(HSC) Medicine - Cardiology	412	Yes	
(HSC) Medicine - Cardiovascular	605	Yes	
(HSC) Medicine - Dentistry	170	Yes	
(HSC) Medicine - Dermatology	114	Yes	
(HSC) Medicine - Diabetes	215	Yes	
(HSC) Medicine - Drug Design	358	Yes	
(HSC) Medicine - Endocrinology	229	Yes	
(HSC) Medicine - Gastroenterology	434	Yes	
(HSC) Medicine - General	229	Yes	
(HSC) Medicine - Geriatric	103	Yes	
(HSC) Medicine - Immunology	593	Yes	
(HSC) Medicine - Infectious Disease	329	Yes	
(HSC) Medicine - Internal	62	Yes	
(HSC) Medicine - Neurology	550	Yes	
(HSC) Medicine - Nursing	50	Yes	
(HSC) Medicine - Obstetrics/Gynecology	475	Yes	
(HSC) Medicine - Oncology	1063	Yes	
(HSC) Medicine - Ophthalmology	125	Yes	
(HSC) Medicine - Orthopedics	368	Yes	
(HSC) Medicine - Otorhinolaryngology	146	Yes	
(HSC) Medicine - Pathology	411	Yes	
(HSC) Medicine - Pediatrics	268	Yes	
(HSC) Medicine - Pharm	1	Yes	
(HSC) Medicine - Pharmacology	788	Yes	
(HSC) Medicine - Psychiatry	140	Yes	
(HSC) Medicine - Pulmonology	254	Yes	
(HSC) Medicine - Rehabilitation/Therapy	476	Yes	
(HSC) Medicine - Sports	73	Yes	
(HSC) Medicine - Surgery	790	Yes	
(HSC) Medicine - Transplantation	33	Yes	
(HSC) Medicine - Urology/Nephrology	260	Yes	
(HSC) Nutrition	58	Yes	
(HSC) Occupational Health and Safety	93	Yes	
(HSC) Public Health and Safety	423	Yes	
(HSC) Radiology/Imaging	257	Yes	
(HSC) Sports Science	17	Yes	
(HSC) Veterinary Science	118		Yes
(HUM) Architecture	92		Yes
(HUM) Arts - Biography	1		Yes
(HUM) Arts - Film Studies	11		Yes
(HUM) Arts - General	72		Yes
(HUM) Arts - Music	8		
(HUM) Arts -Literature/Poetry	70		
(HUM) Cartography	14		Yes

(HUM) History - Africa	2		Yes
(HUM) History - Asia	25		Yes
(HUM) History - Europe	26		Yes
(HUM) History - General	21		Yes
(HUM) History - North America	5		Yes
(HUM) History - South America	4		Yes
(HUM) History - United States	2		Yes
(HUM) Journalism	6		Yes
(HUM) Philosophy	41		Yes
(HUM) Religion	69		Yes
(PHY) Astronomy	13		Yes
(PHY) Astrophysics	52		Yes
(PHY) Chemistry	1176		
(PHY) Cosmology	15		Yes
(PHY) Crystallography/Spectroscopy	318		Yes
(PHY) Energy	279		Yes
(PHY) Engineering - Chemical	424		Yes
(PHY) Engineering - Electrical	713		Yes
(PHY) Engineering - General	501		Yes
(PHY) Engineering - Mechanical	619		Yes
(PHY) Engineering - Structural	313		Yes
(PHY) Forensic Sciences	3		Yes
(PHY) Geology	306		Yes
(PHY) Hydrology	110		Yes
(PHY) Materials Science	1042		Yes
(PHY) Mathematics	3074		Yes
(PHY) Nanotechnology	229		
(PHY) Physics	663		
(PHY) Statistics	128		
(PUB) Institutional Journals	100		
(PUB) Society/Association Journals	4094		
(SOC) Communications	205		
(SOC) Criminology	36		
(SOC) Education	1612		
(SOC) Ethics/Bioethics	71		Yes
(SOC) Forensics	9		Yes
(SOC) Law/Legal Issues	144		Yes
(SOC) Linguistics	65		
(SOC) Military/Naval Studies	56		Yes
(SOC) Philosophy	20		Yes
(SOC) Political Science	49		Yes
(SOC) Psychology	574	Yes	
(SOC) Sexual And Marital Therapy	21		
(SOC) Sociology	441	Yes	

Appendix B. List of Reasons for Retraction of 12555 Publications in BLS, HSC, or SOC.

Reason	Frequency	Reason to Include	Reason to Exclude
Author Unresponsive;	124		
Breach of Policy by Author;	275		
Breach of Policy by Third Party;	3		
Cites Prior Retracted Work;	60		
Civil Proceedings;	19		
Complaints about Author;	30		
Complaints about Company/Institution;	2		
Complaints about Third Party;	6		
Concerns/Issues About Authorship;	262		
Concerns/Issues About Data;	778	Yes	
Concerns/Issues About Image;	178		
Concerns/Issues about Referencing/Attributions;	164		
Concerns/Issues About Results;	263	Yes	
Concerns/Issues about Third Party Involvement;	38		
Conflict of Interest;	76		
Contamination of Cell Lines/Tissues;	48		
Contamination of Materials (General);	26		
Contamination of Reagents;	9		
Copyright Claims;	162		
Criminal Proceedings;	48		Yes
Date of Retraction/Other Unknown;	299		
Doing the Right Thing;	51	Yes	
Duplication of Article;	1041		
Duplication of Data;	250		
Duplication of Image;	804		
Duplication of Text;	206		
Error by Journal/Publisher;	423		
Error by Third Party;	26		
Error in Analyses;	416	Yes	
Error in Cell Lines/Tissues;	45		
Error in Data;	787	Yes	
Error in Image;	347		
Error in Image;Notice - No/Limited Information;	1		
Error in Materials (General);	83		
Error in Methods;	448		
Error in Results and/or Conclusions;	454	Yes	
Error in Text;	93	Yes	
Ethical Violations by Author;	305		Yes
Ethical Violations by Third Party;	23		Yes
Euphemisms for Duplication;	242		Yes
Euphemisms for Misconduct;	19		Yes

Euphemisms for Misconduct;Notice - No/Limited Info	1		Yes
Euphemisms for Plagiarism;	438		Yes
Fake Peer Review;	419		Yes
Falsification/Fabrication of Data;	892		Yes
Falsification/Fabrication of Image;	324		
Falsification/Fabrication of Results;	80		
Forged Authorship;	204		Yes
Hoax Paper;	6		Yes
Informed/Patient Consent - None/Withdrawn;	90		
Investigation by Company/Institution;	1548		
Investigation by Journal/Publisher;	1162		
Investigation by ORI;	211		
Investigation by Third Party;	345		
Lack of Approval from Author;	181		
Lack of Approval from Company/Institution;	88		
Lack of Approval from Third Party;	98		
Lack Of Balance/Bias Issues;	30		
Lack of IRB/IACUC Approval;	247		
Legal Reasons/Legal Threats;	45		Yes
Manipulation of Images;	525		
Manipulation of Results;	27		
Miscommunication by Author;	55		
Miscommunication by Author;Notice - No/Limited Inf	1		
Miscommunication by Company/Institution;	5		
Miscommunication by Journal/Publisher;	10		
Miscommunication by Third Party;	8		
Misconduct - Official Investigation/Finding;	861		Yes
Misconduct by Author;	1034		Yes
Misconduct by Company/Institution;	5		Yes
Misconduct by Third Party;	20		Yes
No Further Action;	2		
Nonpayment of Fees/Refusal to Pay;	7		
Not Presented at Conference;	6		
Notice - Lack of;	156	Limitation	
Notice - Limited or No Information;	1245	Limitation	
Notice - No/Limited Information;	29	Limitation	
Notice - Unable to Access via current resources;	129	Limitation	
Objections by Author(s);	210		
Objections by Company/Institution;	20		
Objections by Third Party;	190		
Plagiarism of Article;	617		Yes
Plagiarism of Data;	132		Yes

Plagiarism of Image;	111		Yes
Plagiarism of Text;	437		Yes
Publishing Ban;	31		
Results Not Reproducible;	365	Yes	
Retract and Replace;	137		
Sabotage of Materials;	1		Yes
Salami Slicing;	10		
Taken from Dissertation/Thesis;	5		
Taken via Peer Review;	3		
Temporary Removal;	58		
Unreliable Data;	384		
Unreliable Image;	120		
Unreliable Results;	762	Yes	
Updated to Retraction;	2		
Upgrade/Update of Prior Notice;	165		
Withdrawal;	681		
Withdrawal;Notice - No/Limited Information;	2		
Withdrawn to Publish in Different Journal;	126		
