

Challenges in discovering the retracted status of an article

Elizabeth M. Suelzer, MLIS, AHIP¹, Jennifer Deal, MA, MLIS², Karen L. Hanus, MLIS, AHIP²

¹ Medical College of Wisconsin, Milwaukee, WI ² Advocate Aurora Health, Milwaukee, WI

The Workshop on Reducing the Inadvertent Spread of Retracted Science will be an opportunity to reflect on at least one question that is directly related to a study we conducted to identify barriers to citing retracted literature. Which gatekeepers can intervene in and/or disseminate retraction status?

Clearly, the publishers themselves can disseminate retraction status. Database producers have this ability as well. Our research team advocates for clear, consistent, and easily discoverable methods for disseminating that retraction status. Researchers are inundated with information and it is understandable that they might not take the time to thoroughly check articles they have discovered to ensure they have not been retracted. Therefore, we believe journal publishers and database producers have an obligation to make the retraction status of articles prominent. We recommend that journals and database producers use clear and consistent methods for labeling articles as being retracted and that all groups follow a similar style. Adding a prefix of “Retracted:” to the article title of a retracted publication and including a link to the notice of retraction under the article title is ideal.

We found it ironic that the only free database in our study, PubMed, was the one that most clearly and consistently indicated the retracted status of articles. We feel that taking care to ensure that retracted articles are accurately labeled and easily identified as being retracted should be a basic expectation of subscription databases. At a time when library budgets are dwindling and we need to take a close look at database performance to justify the expense, we expect databases to provide better oversight of article retraction identification.

Additionally, we have determined that citation management systems themselves can assist in the identification of the retracted status of articles. Zotero has partnered with Retraction Watch to automatically check a user’s database for documents that have been retracted. Retracted publications are flagged and when you try to cite one, Zotero will warn you so you can reflect on whether you should be building upon retracted science. Currently, this feature is limited to publications with DOI or PMID, but we believe it’s an innovation that more citation management systems should employ and expand upon. Citation management systems are used by many researchers and wide use of this type of mechanism could help to stop the spread of retracted science.

We base these recommendations off a 2019-2020 research project we conducted as a group of librarians in southeastern Wisconsin. The purpose of this study was to highlight the challenges of identifying the retracted status of an article.

Study on barriers to identifying the retracted status of a publication

The International Committee of Medical Journal Editors (ICMJE) provides recommendations for medical journal editors on how to retract an article. Publishers pass on retraction information to citation databases, and citation databases take steps to index retracted articles and notices of retractions to ensure that users are aware of the retracted status of an article. Despite the recommendations by the ICMJE and the steps

taken by citation databases, it can be challenging for users to discover the retracted status of an article. Publisher websites and citation databases are not always consistent in how they display retraction information on their websites. Thus, users may be unaware of an article’s retraction.

Methods

In our study, we performed an analysis of 150 retracted articles to investigate how journals and database publishers were labeling article retractions and notices of retraction. A search for the publication type “Retracted article” was conducted in PubMed on Oct. 20, 2019, which was limited to articles published in English since 2009. The 50 journals that contained the most retracted articles were chosen for analysis, and three articles from each journal were selected. We reviewed each article to document how the retraction information displayed on the journal publisher’s website.

Additionally, we searched the same set of 150 articles in six biomedical citation databases (PubMed, Ovid MEDLINE, EBSCO CINAHL, ProQuest PsycINFO, Scopus and Web of Science) to document how the retracted articles and notices of retractions were displayed.

Results

Publisher websites

Our analysis found that of the seven recommendations made by the ICMJE for retracting an article,¹ all seven recommendations were followed in only 47% (70 of 150) of the articles we looked at. (Figure 1)

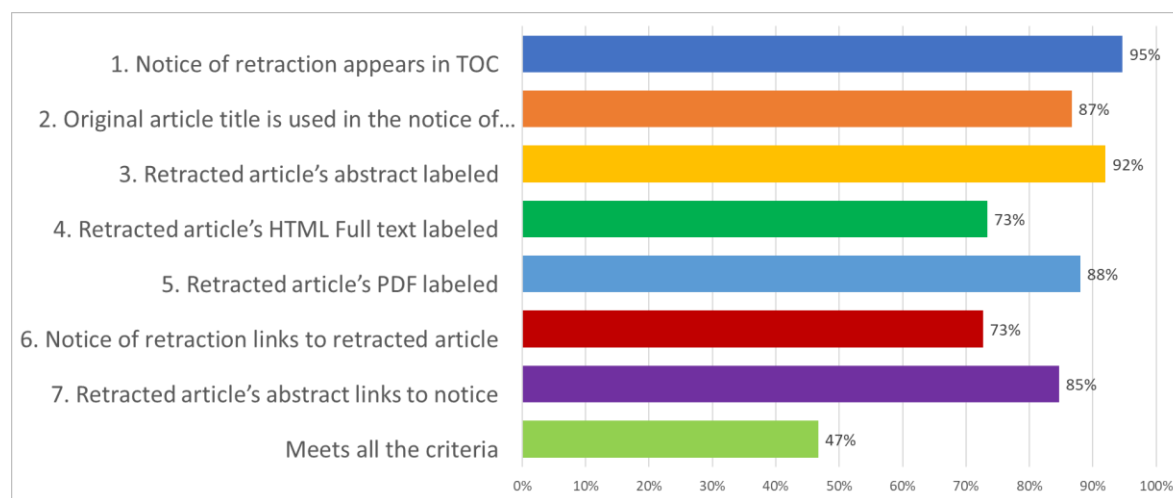


Figure 1: Positive performance of journals on adhering to the ICMJE’s recommendations for retracting articles. N=150.

Within a journal publisher’s website, there was not always consistency in the way that retracted articles were labeled as being retracted. Abstracts were consistently labeled as being retracted in the three examples we checked 78% (39 of 50) of the time, HTML versions were consistently labeled 70% (33 of 47) of the time, and PDFs on the publisher websites were consistently labeled 64% (32 of 49) of the time.

Some of the reasons for inconsistency included the fact that the links to the notice of retraction were not present on all three examples; different colors were used to show retraction watermarks or banners; or the journal failed to note the retracted status of the article on one or two of the examples we checked. We included screenshots that show the inconsistencies in labeling a retracted article on one publisher’s website in Appendix A.

There was a lot of variability on how publishers displayed the retraction information on their website. (Figure 2). Users may need to hunt around on a publisher’s webpage to discover if an article has been retracted.



Figure 2: Visual labels on publisher websites

Citation databases

Criteria for analyzing the citation databases were largely based on PubMed’s procedure for documenting retracted publications,² and there were five items that we checked:

1. Adds retraction label to the retracted article
2. Publication type changed to “retracted”
3. Retracted article links to retraction notice
4. Retraction notice links to retracted article
5. Title & authors consistent in both retraction notice and retracted article

We based the analysis on PubMed because the ICMJE recommends using PubMed to check the status of articles.³

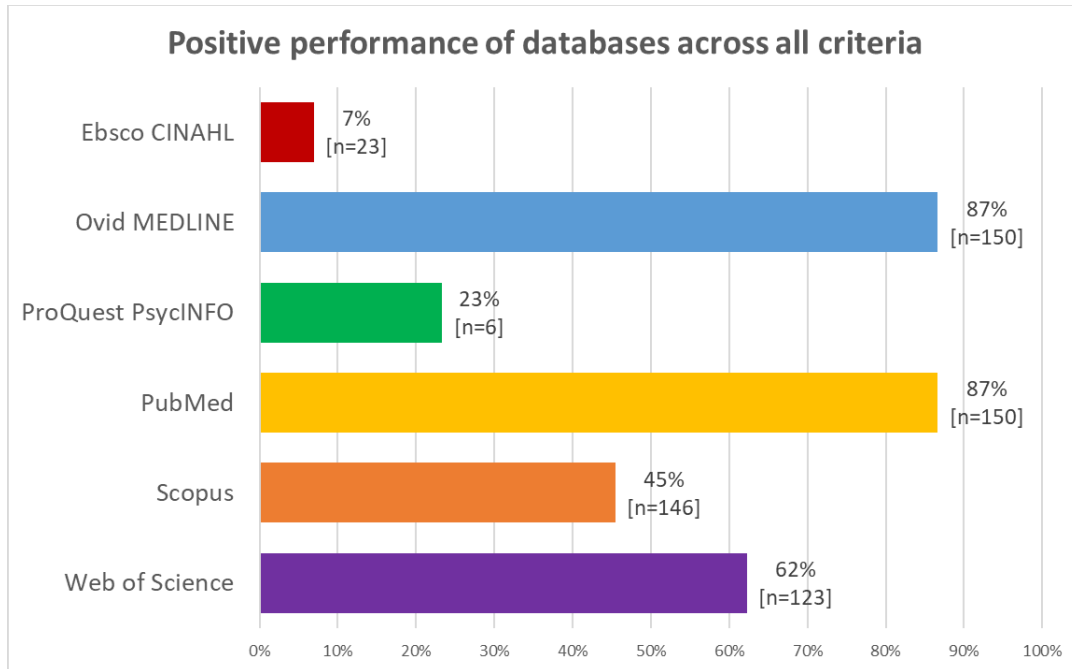


Figure 3: Positive performance of citation databases in following PubMed's procedure for documenting retracted articles.

PubMed had the best performance of the databases we analyzed, but even this database complied with all criteria in only 87% (131 of 150) of the articles we checked. PubMed’s most common reason for non-compliance was not having consistent article titles and authors in both the notice of retraction and the retracted article. Ovid MEDLINE showed the same level of performance. We verified through email correspondence with Ovid MEDLINE that they ingest information directly from PubMed and do not do any further modification of the item records. CINAHL’s poor performance included a failure to add some sort of retraction label to retracted publications and a failure to provide links between the notice of retraction and retracted publications. Some examples of ProQuest PsycINFO’s poor performance include the failure to change the document types of the retracted articles to “retracted” and inconsistency between the article titles and authors in the retracted publication and notice of retraction. Screen shots from three of the six databases are included in Appendix B to show how the same article appears in different databases.

Conclusion

Users who seek out authoritative, scholarly information are instructed to perform literature searches in citation databases and to turn to peer reviewed journal articles to find the best evidence. Publisher websites that use inconsistent methods to label an article as being retracted are doing a disservice to the users who rely on their websites for accurate, up-to-date information. The onus should not be on the user to hunt around a website to see if an article could potentially be retracted. We recommend that journal and database publishers use clear and consistent methods for labeling articles as being retracted and that these

groups follow a similar style. We also recommend that citation managers follow Zotero’s lead in alerting users when publications in their database have been retracted.

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References

1. International Committee of Medical Journal Editors. Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals. Published online December 2019. Accessed May 14, 2020. <http://www.icmje.org/recommendations/>
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3. International Committee of Medical Journal Editors. Preparing a Manuscript for Submission to a Medical Journal. Accessed May 20, 2020. <http://www.icmje.org/recommendations/browse/manuscript-preparation/preparing-for-submission.html#g>

Appendix A: Abstracts from three retracted articles in Scientific Reports

SCIENTIFIC REPORTS

Article | Open Access | Published: 01 July 2019

RETRACTED ARTICLE: Doubled haploid production in alfalfa (*Medicago sativa* L.) through isolated microspore culture

Dengxia Yi, Jifeng Sun, Yanbin Su, Zongyong Tong, Tiejun Zhang & Zan Wang

Scientific Reports 9, Article number: 9458 (2019) | Cite this article

1470 Accesses | 1 Citations | Metrics

⚠ This article was retracted on 13 September 2019

ℹ This article has been updated

Example 1: Title changed, red text box around the retraction notice information. DOI: 10.1038/s41598-019-45946-x

SCIENTIFIC REPORTS

Open Access | Published: 21 February 2012

A therapeutic method for the direct reprogramming of human liver cancer cells with only chemicals

Hisashi Moriguchi, Yue Zhang, Makoto Mihara & Chifumi Sato

Scientific Reports 2, Article number: 280 (2012) | Cite this article

197 Accesses | 5 Citations | 75 Altmetric | Metrics

ℹ An Addendum to this article was published on 18 October 2012

ℹ An Addendum to this article was published on 18 October 2012

⚠ A Retraction to this article was published on 09 November 2012

ℹ This article has been updated

Example 2: Blue text box around the retraction notice information. DOI: 10.1038/srep00280

SCIENTIFIC REPORTS

Open Access | Published: 28 August 2015

Mathematical Modelling and Prediction of the Effect of Chemotherapy on Cancer Cells

Hamidreza Namazi, Vladimir V. Kulish & Albert Wong

Scientific Reports 5, Article number: 13583 (2015) | Cite this article

2355 Accesses | 23 Citations | 172 Altmetric | Metrics

ℹ A Retraction to this article was published on 01 June 2018

⚠ This article was retracted on 01 June 2018


ℹ This article has been updated

Example 3: Blue and red text boxes around the retraction notice information. DOI: 10.1038/srep13583 (2015).

Appendix B: Screenshots of the same article in three different databases.

PubMed

- ✓ Adds retraction label to the retracted article
- ✓ Publication type changed to “retracted”
- ✓ Retracted article links to retraction notice
- ✓ Retraction notice links to retracted article
- ✗ Title & authors consistent in both retraction notice and retracted article

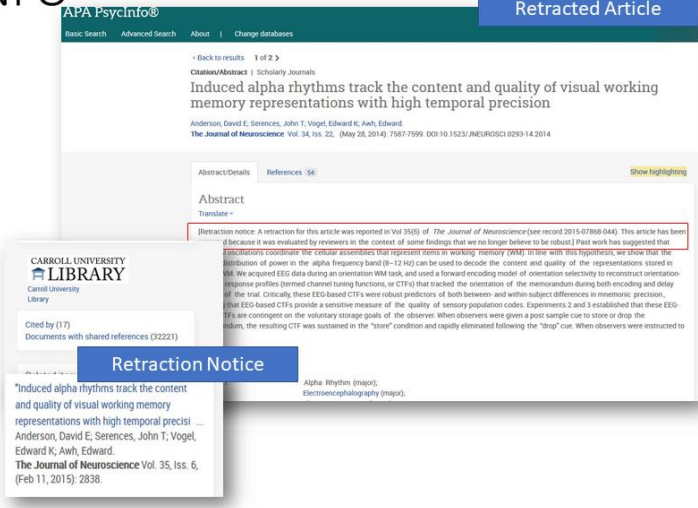


The screenshot shows the PubMed interface for a retracted article. At the top, a red banner reads 'Retracted article' with a sub-link 'See the retraction notice'. Below this, the article title 'Induced α Rhythms Track the Content and Quality of Visual Working Memory Representations With High Temporal Precision' is displayed. The authors listed are David E Anderson, John T Serences, Edward K Vogel, and Edward Awh. A blue box labeled 'Retraction Notice' is overlaid on the right side of the page, containing the text: 'Author-initiated Retraction: Anderson Et Al, Induced Alpha Rhythms Track the Content and Quality of Visual Working Memory Representations With High Temporal Precision'. The notice also includes the authors' names and the original publication details.

PubMed. DOI: 10.1523/JNEUROSCI.0293-14.2014.

ProQuest PsycINFO

- ✗ Adds retraction label to the retracted article
- ✗ Publication type changed to “retracted”
- ✗ Retracted article links to retraction notice
- ✗ Retraction notice links to retracted article
- ✗ Title & authors consistent in both retraction notice and retracted article



The screenshot shows the ProQuest PsycINFO interface for a retracted article. At the top, a blue banner reads 'Retracted Article'. The article title 'Induced alpha rhythms track the content and quality of visual working memory representations with high temporal precision' is displayed. The authors listed are Anderson, David E, Serences, John T, Vogel, Edward K, and Awh, Edward. A blue box labeled 'Retraction Notice' is overlaid on the right side of the page, containing the text: 'Induced alpha rhythms track the content and quality of visual working memory representations with high temporal precision'. The notice also includes the authors' names and the original publication details.

ProQuest PsycINFO. DOI: 10.1523/JNEUROSCI.0293-14.2014.

Web of Science

- ✓ Adds retraction label to the retracted article
- ✓ Publication type changed to “retracted”
- ✗ Retracted article links to retraction notice
- ✗ Retraction notice links to retracted article
- ✓ Title & authors consistent in both retraction notice and retracted article

Retracted Article

RETRACTED: Induced Alpha Rhythms Track the Content and Quality of Visual Working Memory Representations with High Temporal Precision (Retracted article. See vol. 35, pg. 2838, 2015)

By: [Anderson, DE](#) (Anderson, David E.)^[1,2]; [Serences, JT](#) (Serences, John T.)^[3,4]; [Vogel, EK](#) (Vogel, Edward K.)^[1,2]; [Awh, E](#) (Awh, Edward)^[1,2]

[View Web of Science ResearcherID and ORCID](#)

JOURNAL OF NEUROSCIENCE
Volume: 34 Issue: 22 Pages: 7587-7599
DOI: 10.1523/JNEUROSCI.0293-14.2014
Published: MAY 28 2014
Document Type: Article; Retracted Publication

Retraction Notice

Induced Alpha Rhythms Track the Content and Quality of Visual Working Memory Representations with High Temporal Precision (Retraction of May, pg 7587, 2014)

By: [Anderson, DE](#) (Anderson, David E.); [Serences, JT](#) (Serences, John T.); [Vogel, EK](#) (Vogel, Edward K.); [Awh, E](#) (Awh, Edward)

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