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Letter

Why articles continue to be cited after they have been retracted: An audit of retraction notices

Dear Editor,

Retraction is an important part of the scientific method, a self-righting mechanism for expunging unsound—because of scientific misconduct or error—research from the scientific record. In clinical disciplines such as nursing, practice that is based on retracted research may result in patients being given (or conversely denied) effective treatments. In recent years there has been an exponential increase in the number of retracted articles across all disciplines. In 2013, 467 papers were retracted. This increased to 500 in 2014 and jumped even more dramatically to 684 in 2015 (https://retractionwatch.com/2016/03/24/retractions-rise-to-nearly-700-in-fiscal-year-2015-and-psst-this-is-our-3000th-post/). In part, growth in the number of retractions can be explained by a proliferation of and/or an increase in the rate of scientific misconduct and error (e.g. data fabrication, fraudulent peer review, duplicate publication).

Once the decision is made by a journal editor to retract a paper, for whatever reason, a retraction notice is published, and either the original manuscript will be removed from the journal website or watermarked "retracted". A retraction notice serves to alert readers that the work is unsound and should not be citied or used as the basis for scientific enquiry (Vaught et al., 2017). The Committee on Publication Ethics (COPE) is a group of editors, publishers and scholars established in 2009 with the aim of providing leadership in publication ethics and provide resources to educate and support members. COPE has published several core practices to support and assist the editors of scholarly journals. Additionally, they have produced guidelines about retraction, which includes the information that should be included in a retraction notice.

A systematic review by Al-Ghareeb et al. (2018) identified a modest 29 retracted manuscripts published in Journal Citation Report (JCR) nursing science journals. The authors observed that most papers continued to be cited even after the manuscripts had been retracted. On average, included papers were cited seven times post-retraction. One paper received 52 post-retraction citations. This is concerning; papers are retracted with the intent that they are removed from the scientific record and do not influence future research. Why then do authors continue to cite retracted papers? It is possible that readers are unaware that a study has been retracted due to poor communication of retraction (decision of retraction) by journal editors. Effective communication of retraction depends on how journals handle retraction—that is, whether the paper is watermarked, retraction notifications are published, or the full-text paper is removed from the database.

We sought to review retractions in nursing science journals by reviewing the notices associated with the 29 retracted papers included in the Al-Ghareeb et al (2018) review (a complete list of retracted papers can be accessed via this link https://figshare.com/s/8bcbb75d44e4fa13826e). COPE states that a retraction notice should: i. Be linked to the retracted article wherever possible, ii. Identify the retracted article, iii. Be clearly identified as a retraction (distinct from other types of correction or comment), iv. Be published promptly, v. Be freely available (not behind a paywall), vi. Specify who is retracting the paper, vii. State the reason for retraction, and viii. Avoid defamatory or libelous statements (https://publicationethics.org/files/retraction%20guidelines_0.pdf).

Retraction notices were retrieved by checking the PubMed citation and/or the journal website. Additionally, we reviewed the current status of the paper (removed from the journal website, watermarked retracted, or available in original format). Finally, we checked whether the URL of the retraction notices are available in the webpages of the retracted articles.

In summary, retracted papers (n = 29) were published across 19 journals. Twenty-four (86%) papers were still accessible on the journals' websites and were "watermarked" retracted. Of the remaining five, two were no longer accessible via the journal websites, two were available in the original format (i.e. not watermarked) and one was available in both an original and watermarked version. The webpages for 18 retracted articles included a URL link to the retraction notice. A further 10 retraction notices were identified by checking the article citation in MEDLINE. We could not identify a retraction notice for one retracted paper (published in the *Journal of Korean Academy in Nursing*).

The 10 retraction notices identified in MEDLINE were of concern and we investigated them in more depth. We found that the webpages for three retracted articles displayed links to retraction notices but, somewhat misleadingly, stated the link was to a "Correction for this article". The link (doi: https://doi.org/10.1111/j.1365-2702.2010.03368.x) demonstrates how the *Journal of Clinical Nursing* handles a retraction, which can be confusing for readers. The retraction notice is hidden under "Correction for this article"; although the paper is watermarked the notice must be visible for the reader.

If you click on the link (https://doi.org/10.1016/j.ijnurstu.2008.08.007) you will noticed that it is not clearly stated that the article has been retracted. The publisher's note was published separately (DOI can be accessed via https://doi.org/10.1016/j.ijnurstu.2009.01.001). However, if you click on the link (https://doi.org/10.1016/j.nedt.2011.03.013) for the webpage of the retracted study in the *Journal of Nurse Education Today*, you notice that the URL of the retracted notice is available on the top webpage of the retracted study.

https://doi.org/10.1016/j.ijnurstu.2018.10.003

In total, 28 retraction notices were retrieved. All notices clearly identified, and included details of, the retracted manuscript (title, issue, page numbers and doi (document object identifier)). Two notices (7.1%) did not include the author(s) names. None of the reviewed notices gave details about the time between the publication of a retraction notice and the time at which an issue was expressed about a paper. There was a paucity of detail in the notices about how the retraction decisions were made. All of the retraction notices were freely available.

Seven notices clearly stated who had made the decision to retract the paper (Editor-in-Chief n = 4, author(s) n = 2, the institution where the project was undertaken n = 1). Twenty-two (77%) of the reviewed notices reported reasons for retraction. Notices reviewed were generally brief (typically less than half a page) and contained relevant factual information.

The aim of this review was to check how well nursing science journals communicate retraction with their readership. To the best of our knowledge this is the first review to address this in nursing science. Overall, retraction notices complied with COPE guidelines with one notable exception; reviewed notices provided scant detail about the timeliness of retraction (e.g. date when issues about a paper were raised). This may be because journal editors and publishers do not recognize the importance of reporting this information. Alternatively, the omission of this information may provide evidence to suggest that concerns about papers were not handled in a timely manner. We recommend that in the future retracting editors report a timeline of the retraction process.

Two retracted articles were no longer publicly available (the paper could not be accessed from the journal website). Both the journal website and the PubMED entry for the manuscript were replaced by the retraction notification. COPE guidelines advocate journal editors do not remove retracted papers either from the printed copies of the journals (where these exist) or the web archive (journal website). They recommend that the paper should be watermarked “retracted” and should be visible to readers.

Three retracted papers were still available in their original format (i.e. without being watermarked). It may be possible, although perhaps unlikely, that this was an oversight by the journal editors. This is concerning because authors may inadvertently include retracted papers in their work. For example, the *Journal of Critical Care* kept the original format and published another watermarked version. It is likely the original paper will continue to be cited.

Our review has highlighted reasons of why retracted studies continue to be cited after they have been retracted. Readers could have been unaware of retractions because of poor communication of retraction decisions. Retracted papers were not watermarked, and the URLs of the retraction notices were not available in the webpages of the retracted studies. Alternatively, when available, it was not clearly obvious for the journals' readership. Additionally, there were issues with several of the published retraction notices (e.g. listing authors names, who made the decision to retract, reason for retraction).

The decision to retract a paper is an important one and we suggest that retracting editors should carefully check their retraction notices to ensure they provide full and transparent reporting. Most importantly, editors must clearly communicate retraction to limit post-retraction citation.

Conflict of interest

Professor Gray is the Editor of the Journal of Psychiatric and Mental Health Nursing. Professor McKenna is the Editor in Chief, Collegian. The others declare no conflicts of interest.

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