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Guest Editorial

In the Wake of Wakefield: Establishing Consequences for Journal Failure to Recognize Retracted Research Articles

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ABSTRACT

The global dissemination of scientific knowledge stimulates advancements in science and medicine. The ability to share research across international boundaries has been credited with contributing to the eradication of small pox, slowing the spread of HIV, and lessoning the burden of communicable diseases. The international exchange of scientific research mainly occurs through journal publications. Publications grounded in fraudulent research practices including fabrication, falsification, or plagiarism of research findings have always occurred throughout history, however; publication of research studies subsequently retracted for research misconduct, including fraudulent data has increased tenfold since the early 1980s. Even though article retraction rates are on the rise, sufficient warning is not being given to the scientific community when articles are retracted.

Currently, there is no enforcement mechanism in any country which requires journals to publish article retraction notifications. The failure of the scientific community to implement policies to encourage public notice of retracted articles has resulted in 31.8% of retracted articles not being noted by the publishing journals, and subsequently being cited as good research thousands of times. Failure to warn the scientific community of retracted research studies can result in a plethora of negative consequences, including: harm to research participants, harm to patients, loss and waste of research funding, and depletion of scientific integrity and the process of evidence based medicine. In an effort to preserve the process of evidence based science, this article offers policy solutions for how to sufficiently warn the scientific community about article retractions due to fraudulent research.

KEYWORDS: Article Retraction, Research Ethics, Research Policy.

INTRODUCTION

The global dissemination of scientific knowledge stimulates advancements in science and medicine. The ability to share research across international boundaries has been credited with contributing to the eradication of small pox, slowing the spread of HIV, and lessoning the burden of communicable diseases.[1] The importance of information sharing is evidenced by the creation of multi-national organizations such as the Research Data Alliance (RDA), with the sole purpose of perpetuating the exchange of scientific data.[2]

The international exchange of scientific research mainly occurs through journal publications. For instance, the New England Journal of Medicine (NEJM), which has the top impact factor among medicinal journals, is read by more than 600,000 people in 177 countries around the world each week.[3] The widespread readership of the NEJM demonstrates that scientific research has the potential to influence research studies and medical practice globally, regardless of the researcher's country of origin. The global dissemination of medical research has the ability to positively impact and stimulate research; however, it can alternatively result in harm to both research participants and patients worldwide. Publications grounded in fraudulent research practices including fabrication, falsification or plagiarism of research findings have been surfacing since the publication of the first science journal, *Le Journal des Sçavans* in 1665.[4] Although research misconduct has occurred throughout history, publication of research studies subsequently retracted for research misconduct has increased tenfold since the early 1980s.[5]

Even though article retraction rates are on the rise, sufficient warning is not being given to the scientific community when articles are retracted. A recent study found that 31.8% of retracted papers were not noted as being retracted in any way by the publishing journal.[6] Even when a retraction is recognized by a journal, a study tracking the citation of 235 retracted articles revealed that the retracted articles were still cited a total of 2034 times after the retraction notice.[7] Additionally,

this study found that 280 articles from a random sample of 299 citing retracted articles either implicitly (n=263) or explicitly (n=17) treated the retracted article as valid research.[7]

Failure to warn the scientific community of retracted research studies can result in a plethora of negative consequences, including: harm to research participants, harm to patients, loss and waste of research funding and depletion of scientific integrity and the process of evidence based medicine. In an effort to preserve the process of evidence based science, this article offers policy solutions for how to sufficiently warn the scientific community about article retractions due to fraudulent research.

CONSEQUENCES OF FAILURE TO PUBLISH NOTICES OF ARTICLE RETRACTION

A prime example of fraudulent research which posed harm to both research subjects and patients occurred in 1998; however, the harmful effects are still apparent today. In 1998, an article entitled "Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children" was published in the Lancet by Andrew Wakefield.[8] Retrieving data from a sample size of only twelve children, Wakefield's paper hypothesized that the MMR vaccination can be linked to the development of autism in children.[8]

The flaws in Wakefiled's study were immediately apparent to the scientific community; however, Wakefield's paper received worldwide recognition and an anti-vaccination epidemic quickly ensued. After numerous studies failed at replicating Wakefield's results, the Lancet made a public statement in 2004 that it should not have published the paper due to a "fatal conflict of interest [that occurred] when conducting the research".[9] Subsequent investigations of the study revealed the study was fraudulent and unethical.[10] Although the Lancet was aware of the studies numerous flaws as early as 2004, it did not publically retract the article until 2010.[9,10]

The long term effects of the Lancet's failure to retract Wakefield's article sooner are still apparent today. At the time Wakefield's paper was published, approximately 90% of children in England received the MMR vaccination; however, due to the ensuing hype of Wakefield's article, the MMR vaccination rate dropped to 79.9% by 2003.[11]

As a result of the sharp decline in MMR vaccination rates, England has experienced several measles epidemics in the years since the Wakefield study was published. In 2012, 2,016 cases of measles were reported in England and Wales, with one in every 15 children experiencing serious complications.[11] Despite the measles epidemics in the United Kingdom, it took nearly sixteen years for vaccination rates in England to return to their 1998 levels.[12]

JOURNAL RETRACTION POLICIES

Although publication of scientific research has an international reach, retraction of articles due to research misconduct occurs within the country the article is published.

Currently, there are no international standards requiring journals to retract articles when they are found to involve research misconduct.[13] Additionally, very few countries have policies outlining how journal editors should handle article retraction notifications.[14] One of the only countries to have a federal policy involving article retraction is the United States.

In the US, federal agencies and research institutions "share responsibility for the research process"; however, the individual research institutions are charged with the primary responsibility of preventing and detecting research misconduct.[15] Several federal rules and regulations guide research institutions on how to prevent, detect, and report research misconduct; however, none of these regulations require journals to make public notifications of article retractions.

In the U.S., claims of research misconduct are investigated by the Office of Research Integrity (ORI). While the ORI has the ability to determine whether research involves misconduct and require that the author inform the journal of the ORI finding, the "ORI does not have authority to require the journal to publish the retraction or correction".[15]

In an effort to establish a uniform code of conduct for journal publishers, the Committee on Publication Ethics (COPE) was established by a small group of United Kingdom medical journal editors in 1997.

In order to offer journal editors guidance, COPE publishes "Retraction Guidelines".[16] While COPE has grown to include international membership, COPE has no legal or regulatory authority and thus functions only as an advisory organization.[16]

Even though journals are not required to retract articles, several journal databases, such as PubMed and Web of Science, offer notices of article retraction when retracted articles are accessed in a search.[17]

Additionally, several retraction 'watch dog' sites such as "retraction watch" place retraction notices in a public forum in an effort to inform the scientific community. However, these databases can only place a notification that the article has been retracted when notification of retraction is made publicly available by either the author or publishing journal.

As there are no countries which require that journals give notification of article retraction, identifying retracted articles merely through notifications given on research databases is only as accurate as the author and journal publishers of fraudulent research are honest about their fraudulent research.

COMBATING ARTICLE RETRACTION THROUGH IMPACT FACTOR

A well-defined ethical duty to warn of article retraction has already been established. Due to the potential harm that fraudulent research poses to the scientific community, human research subjects and patients, journals have an ethical duty to warn of article retractions. Various codes adhered to throughout the world, such as COPE and ORI discussed *supra*, offer guidelines for journal editors which explain when articles should be retracted and for what reasons. The COPE, Code of Conduct states "Editors should be responsible for everything published in their journals' and therefore should always be willing to publish corrections, clarifications, retractions and apologies when needed."[13] Although these guidelines purport that journals are ethically obligated to retract articles when researchers have been found to have engaged in research misconduct, they offer no remedies for holding journals responsible for publishing article retractions.

Journals should not have protective privilege to choose when they publish article retractions because failure to warn the scientific community can result in public harm, such as the anti-vaccination campaigns that resulted from the Wakefield article. The scientific community should hold journals responsible for not publishing notification of article retractions. In order for the scientific community to hold journals responsible for publishing article retractions, journals must incur a penalty for not promoting and protecting ethical research practices.

One way in which journals can be penalized for failing to publish article retractions is through journal impact factor. Journal impact factor provides "quantitative tools for ranking, evaluating, categorizing, and comparing journals."[18] Impact factor is calculated as a "ratio between citations and recent citable items published."[18]

Journals strive to reach the highest possible impact factor as it contributes to the journals reputation and readership numbers. In order to hold journals ethically responsible for publishing notification of article retractions, impact factor should be amended to include a calculation for reducing impact factor when a journal fails to publish known article retraction notifications. Conversely, a separate research fraud impact factor score could be computed for each journal so that the scientific community will be aware of journals policies and practices on publishing article retractions. The fraudulent research impact factor score could include the number of times a journal received notice that an article was under review or retracted, and the number of times that journals actually flagged articles under review and posted public retraction notices.

The majority of retracted articles are published in journals with the highest impact factors. Additionally, papers published in journals with high impact factors inspire more secondary studies and are cited more frequently than papers cited in low impact journals.[19] Reducing a journal's impact factor for failure to publish notification of article retraction would provide a way to hold journals accountable for notifying the scientific community. In order to avoid a negative mark in impact factor, journals should publish notice of known article retractions that occur from both mistake and fraud. Retractions are not necessary for articles that simply choose the wrong side of a scientific debate as this is an inevitable part of the scientific process.

It is important to note that journals should only be held responsible for article retractions that are substantiated and known to the journal. Journals become aware of potential article retractions due to mistake and fraud through three main mechanisms: 1) the admission of the author, usually due to a mistake which is caught after the article is published; 2) National Institutes of Health (NIH) mandatory letters from authors to the journal when articles published by researchers who receive NIH funding are found to contain fraudulent data or information; and 3) members of the scientific community who are unable to replicate study results.

In the event that an article undergoes an investigation to substantiate its claims, journals should not be required to immediately retract the article, but rather place an editorial comment warning readers that while the article has not officially been unsubstantiated, it is under investigation.

Once a journal is officially notified of a mistake or fraud, the journal should not just remove the article from its database (as is the current practice of many journals), but publish a notice of retraction to the scientific community. In order to preserve sound evidence-based science from being ignored or diminished, it is important to not jump to conclusions and remove an article simply because it is under investigation; however, it is important to provide notice of the investigation to the scientific community so that they can best choose how to use the results of the study while it is under review.

In addition to holding journals responsible for publishing retraction notices, the scientific community should be held responsible for ensuring that ethical publication of research is promoted and practiced. This can be attained by holding researchers responsible for providing evidence in their publications that they exercised their due diligence and checked all articles they cite for evidence of retraction.

In order to ensure that authors check their citations for retraction notices, authors could provide a footnote or addendum at the end of their article which states that they have checked their cited articles for notices of retraction. This addendum could even be included in the author's conflict of interest disclosure.

CONCLUSION

There is currently no enforcement mechanism in any country which requires journals to publish article retraction notifications. The failure of the scientific community to implement policies to encourage public notice of retracted articles has resulted in 31.8% of retracted articles not being noted by the publishing journals, and subsequently being cited as good research thousands of times. Fraudulent research has the potential to result in harm to patients and human research subjects, as well as result in lost money and time. In order to safeguard the integrity of scientific research and the evidence based process, it is imperative to implement a mechanism to encourage journals to publish article retraction notices.

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