The relationship between altmetrics and retractions

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Peer-review is the gold standard of modern science and an integral part of the scholarly reward system. However, the process is not immune to criticism, such as accusations of bias and lack of inner reliability. Failure in peer review may cause retractions, whose number has grown in a rate far exceeding the rate of general growth in publications[1]. In certain fields (e.g. medicine) failure in peer review can cost lives. Unfortunately, traditional peer review is an opaque process, where authors are usually known to reviewers, but not vice-versa, and reviewers' reports are seen by the authors and editors alone. Unlike traditional peer review, Open Science emphasizes the need for transparency in scientific communication as one of its goals[2]. In the spirit of Open Science, a growing number of researchers use social media to publically discuss scholarly work, also critically, either in research-specific sites such as ResearchGate (4.5 million users) or in general platforms (e.g. Twitter, blogs)[3].

Scholarly discourse in social media has given rise to alternative practices of peer assessment, (e.g. discussions in the sites PubPeer and ResearchGate), which can be seen as post-publication peer review. Some of them are integrated into altmetric indices, such as the one by altmetric.com. Our main research question is: What are the characteristics of top retractions, altmetric-wise, and what are the differences between their characteristics and those of random retractions with an altmetric score?

To study this question, we used about 1700 retractions listed in PubMed between January 1st, 2012 and August 2nd, 2017, and extracted their altmetric data. 920 retractions had an altmetric record between the years 2012 – June 2016. Then, we compared the top 50 retractions and the random 50 retractions, altmetric-wise

The mean and median of Journal Impact Factor (JIF) and number of citations of the top 50 retractions were considerably higher than those of the random retractions. The median JIF was 7.215 for the journals from which the top 50 retractions came, but only 2.992 for the random retractions. Most of the retractions were due to misconduct (56% from the top 50 retractions, 72% of the 50 random retractions), such as plagiarism, compromised peer review, and fraudulent data. This is in line with the results in previous studies[4] [5]. Our results suggest a connection between the attention retractions gather in the social media and their bibliometric qualities, such as the publishing journal and the number of times they have been cited.

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