EDITORIAL

Retracted articles continue to do harm

More and more articles are being retracted by their authors or by scientific journals as a result of errors or fraud discovered post-publication (1-3). Particularly noteworthy examples include a paper by a Marseille-based group of researchers on the effects of using *hydroxychloroquine* in combination with *azithromycin* to treat covid-19. With nearly 3200 citations, it is the second most highly cited retracted article in the world (4).

A recent analysis identified 61 systematic reviews with meta-analyses, incorporating at least one retracted study, which were published between January 2013 and April 2024 in one of the 25 scientific journals most cited in the medical literature. Only 11 of these systematic reviews had been either corrected or retracted. For the 50 other reviews, the conclusions of which were based on 166 separate meta-analyses, the authors of the analysis recalculated the meta-analyses after excluding the retracted trials. The statistical significance of the results changed in 18 meta-analyses (11%). The effect size for the primary endpoint changed by at least 10% in 27 meta-analyses, by at least 30% in 16 meta-analyses, and by at least 50% in 12 meta-analyses. 13 of these 50 systematic reviews were published after the retraction, raising questions about the quality of the literature selection by authors and the checks performed by editors. 36 of the 50 systematic reviews affected were produced by a Cochrane Review Group (3).

In another analysis based on the Retraction Watch database up to November 2024, researchers identified 847 systematic reviews including 3902 different meta-analyses that incorporated at least one retracted trial. In 218 cases, excluding the retracted trials altered the conclusions of the meta-analysis, with an impact on 68 systematic reviews and 157 clinical practice guidelines. In about 25% of the meta-analyses concerned, either the direction of effect was reversed between treatment and control, or the statistical significance changed. In 659 cases, the effect size for the primary endpoint changed by over 50%. Again, the authors found that 324 of the 847 systematic reviews were published after the retraction. 19 of the 68 systematic reviews impacted by a retracted trial had been conducted by a Cochrane Review Group (5).

Various tools are available to identify retracted articles, including the most widely known database, Retraction Watch, which is automatically checked by reference managers such as EndNote° and Zotero° (1,2). Nevertheless, systematic review authors, journal editors, general literature databases and clinical practice guideline developers do not always run checks for retracted articles. Yet, in order to avoid distorting the results of meta-analyses and contaminating clinical guidelines, they have a responsibility to do so, and then to correct their affected publications, highlighting any resulting changes to their conclusions.

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References **1-** Prescrire Editorial Staff "Queries and Comments - Retraction of a published article: what are the consequences for evaluation data?" *Prescrire Int* 2023; 32 (247): 108-110. **2-** Prescrire Editorial Staff "Too many scientific articles continue to be cited after their retraction" *Prescrire Int* 2025; 34 (266): 27. **3-** Grana Possamai C et al. "Inclusion of retracted studies in systematic reviews and meta-analyses of interventions. A systematic review and meta-analysis" *JAMA Intern Med* 2025; online: 8 pages. **4-** "Top 10 most highly cited retracted papers". www.retractionwatch.com accessed 8 July 2025: 1 page. **5-** Xu C et al. "Investigating the impact of trial retractions on the healthcare evidence ecosystem (VITALITY Study I): retrospective cohort study" BMJ 2025; online: 13 pages.