

## CORRECTING MISTAKES: PROTECTING MEDICAL EDUCATION FROM PUBLISHING BARRIERS

### ISPRAVLJANJE GREŠAKA: ZAŠTITA MEDICINSKOG OBRAZOVANJA OD BARIJERA U IZDAVAŠTVU

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#### Summary

Medical education is increasingly shifting from traditional textbooks toward research and review articles and electronic textbooks. Research articles and reviews are preferred, especially in postgraduate education and medical lectures. Research articles and reviews play an important role in postgraduate education by helping students, assistants, and educators learn novel scientific developments. Therefore, maintaining the accuracy of research articles is essential. Scientific mistakes are generally found in articles that were previously published using outdated technology and written with limited internet access before online publications. If a journal refuses to correct a biological error, the incorrect information may continue to be cited, contributing to the spread of misinformation that affects future meta-analyses and clinical guidelines. Such situations may negatively affect the reliability of scientific literature. In this comment paper, we propose a Correction Integrity Score (CIS) that journals' editorial systems can use to support the transparent correction of verified errors. Correction mechanisms should be accessible, transparent, and independent from various factors. The score could serve as a journal's impact factor, and using a correction score makes the publisher more reliable, ethical, and economical for future research.

**Keywords:** post-publication correction, academic publishing, medical education

#### Kratak sadržaj

Medicinsko obrazovanje se sve više pomera sa tradicionalnih udžbenika ka istraživačkim i preglednim radovima, kao i elektronskim udžbenicima. Istraživački članci i pregledi imaju prioritet, naročito u postdiplomskom obrazovanju i medicinskim predavanjima. Ovi radovi igraju ključnu ulogu u kontinuiranoj edukaciji pomažući studentima, asistentima i edukatorima da prate najsavremenija naučna dostignuća. Stoga je očuvanje tačnosti istraživačkih članaka od suštinskog značaja. Naučne greške se uglavnom nalaze u radovima koji su ranije objavljeni korišćenjem zastarelih tehnologija i pisani su uz ograničen pristup internetu pre ere »onlajn« izdavaštva. Ako časopis odbije da ispravi biološku grešku, netačna informacija može nastaviti da se citira, doprinoseći širenju dezinformacija koje utiču na buduće meta-analize i kliničke smernice. Takve situacije mogu negativno da utiču na pouzdanost naučne literature. U ovom radu predlažemo Indeks integriteta ispravke (Correction Integrity Score – CIS), koji bi urednički sistemi časopisa mogli koristiti kao podršku transparentnom ispravljanju potvrđenih grešaka. Mehanizmi korekcije treba da budu dostupni, transparentni i nezavisni od različitih faktora. Ovaj indeks bi mogao da se koristi slično faktoru uticaja (Impact Factor) časopisa, a primena ovakvog bodovanja čini izdavača pouzdanijim, etičnijim i ekonomičnijim za buduća istraživanja.

**Ključne reči:** postpublikaciona ispravka, akademsko izdavaštvo, medicinsko obrazovanje

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## Introduction

Textbooks have a crucial role in medical education (1). Scientific publications are more than just career milestones (2). Medical education is undergoing an important transformation due to rapid technological development (3), deep learning (Varghese et al. (5), and artificial intelligence (AI). Scientific knowledge continues to increase rapidly via using novel methods, simulation-based training (6) and novel applications in succession planning facilities and leadership (7) On the other hand, most medical schools describe themselves as ‘stagnant curricula,’ but other medical schools say the education must be a 6D-approach and the didactic teaching techniques need to be augmented by innovative student-centric pedagogical strategies in undergraduate medical education (8). Traditional medical education has changed (9), and the pandemic increased the pressure on these scientists, researchers, and trainees to turn a crisis into an academic opportunity (10). The core knowledge that medical graduates must know is continually expanding (1). The education of educators, students, and residents relies on distance learning with electronic resources, including online research articles, electronic health, telehealth, telematics, telemedicine, and teleeducation (11). Unlike traditional textbooks, electronic textbooks are of the same quality (12).

Nowadays, an important part of medical education relies on academic papers and reviews. Therefore, these sources must not contain mistakes. This study highlights the importance of transparency in post-publication corrections and the use of a score to assess the correction system’s impact.

### Main text

Scientific experimental results or conclusions are affected by the capabilities and limitations of the methods and technologies used, as well as the author’s or authors’ knowledge background and current background. As analytical tools and laboratory equipment evolved and became more precise, new data may reveal errors (13). This evolution means that what was investigated a decade ago may now be incorrect due to increased technical standards. Therefore, scientific knowledge must be updated and remain dynamic. The results reported in the papers must be reproducible and replicable (14, 15). When new instruments prove that previous results are no longer valid, the literature must be updated promptly to prevent the continued use of obsolete information (16). Authors also make mistakes even in their names (17). Error is a part of the scientific process. Timely correction of errors would increase the quality and reliability of scientific publishing in the long term.

Uncorrected errors in the literature waste research funds and result in new studies based on false information (18). In this context, applying structured corrections for publication errors does not reduce prestige. Still, it may strengthen the publishing house’s long-term trustworthiness. On the other hand, it is easy to correct or retract electronic papers, and this must be one of the primary goals of academic journals (19). Another scientist may notice the mistake in the published material and write to the current editor of the journal. However, most of the editors are not willing to publish the correction and reject the correction paper, written in their mail, as out of scope.

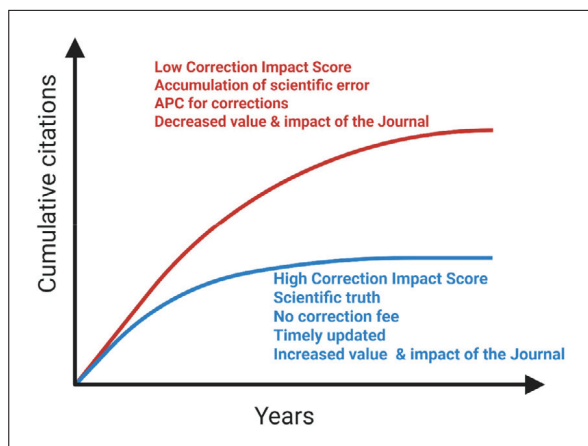
### Comment

I propose that journals and publishing houses adopt a score as part of a structured framework for post-publication responsibility. When a published article is identified as containing a confirmed error, journals should publish the correction. If not, this approach has many negative effects that may affect the experimental design of future research; if it is cited in a paper, it may cause rejection of the submitted paper; or if it is used in a talk, it may affect the speaker’s academic credibility.

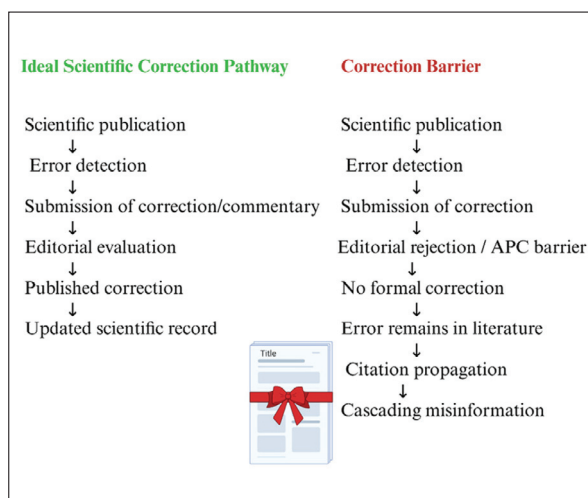
We recommend using a scoring system to encourage editors to publish correction papers. The name is the Correction Integrity Score (CIS), which may be presented as a percentage. The calculation is shown in equation 1.

$$\text{CIS} = \frac{\text{Published corrections} / \text{Valid correction rate}}{\text{Average response time (months or years)}}$$

This score measures how quickly journals correct their mistakes after they are confirmed, which helps increase their prestige. It may be calculated by dividing the number of published corrections by the number of verified correction requests, and then adjusting this figure by the average time the journal takes to respond. A higher CIS means the journal corrects errors more often and more quickly. A lower CIS may indicate slower or less frequent correction processes. An important paradox exists in current publishing: journals might feel that leaving errors uncorrected is not important and that doing so keeps their citation numbers high, but, as shown in *Figure 1*, over time, the impact, quartiles, and the quality of the journal may fall.



**Figure 1** ROC curve analysis.



**Figure 2** By introducing a CIS, journals can overcome these barriers and correct a measurable indicator of editorial accountability.

Red line: Journals with high fees and low correction rates.

Blue line: Journals that fix errors quickly and for free, which increases the journal’s long-term value and trust.

Uncorrected errors do not remain static; they grow through citation networks and amplify over time (20). This phenomenon creates articles that persistently contain fatal errors, yet remain influential in the literature. As shown in *Figure 2*, structured correction systems may improve transparency and post-publication accountability.

*The hidden cost of uncorrected errors in scientific publishing*

The increasing availability of online publication platforms has expanded opportunities for post-pub-

lication evaluation of scientific work (21). Platforms such as post-publication commentary or correction systems, without paying Article Processing Charges (APC), would take science one step further. The proposed score, or a similar score that would encourage the correction of publications, helps build the future of science, medicine, and technology without mistakes. Scientific progress depends on true knowledge.

*Limitations*

This study presents a theoretical score for scientific publishers and editorial systems based on their correction policies and post-publication review procedures. Journals may not use this score due to the potential loss of academic prestige. The main limitation of the CIS is the transparency paradox, where journals may not use it.

**Conclusion**

The credibility of scientific publishing depends on its ability to self-correct. Uncorrected errors damage research quality, may lead to wrong decisions, and decrease the quality of medical education. CIS may promote transparency and serve as an indicator of honesty.

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*Data availability*

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*Declarations*

The figures included in the manuscript were created using BioRender.

*Ethics statement*

This study did not involve human participants or animal subjects; therefore, ethical approval is not required.

**Conflict of interest statement**

All the authors declare that they have no conflict of interest in this work.

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