

LETTER

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Trends in scientific publishing: does quantity compromises quality in life sciences and medicine?

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Dear Editor,

The volume of research being undertaken across numerous fields is expanding, as seen by the recent spike of accepted scientific papers worldwide. This growth in global scientific output can be easily verified by checking the number of indexed scholarly publications in various databases, including PubMed, Scopus, or others [1, 2]. This trend is partially driven by the increasing accessibility of publishing platforms and the emergence of open-access publications. As a result, many journals are accepting more manuscripts to accommodate the influx of new research. In this context, some may claim that expanding publication volumes may lower the quality of papers and thus affect journals' reputation [3]. This expansion in publications can facilitate the dissemination of knowledge; however, it also raises concerns about maintaining rigorous peer review standards as well as research and article quality. For this reason, it has been reported that studies conducted over a longer

period are necessary to identify further evidence and confirm the exact effect on "prestigious journals" [4].

For the current analysis, the SJR data of the Life Sciences and Medicine journals falling under the following categories: biochemistry, genetics, molecular biology, immunology, microbiology, medicine, multidisciplinary, neuroscience, nursing, pharmacology, toxicology, and Pharmaceuticals journals from 2018 to 2023 were downloaded, merged and cleaned (<https://www.scimagojr.com/journalrank.php>). Data manipulation and analysis were performed using the Python library pandas, and the plots were generated using matplotlib and submodule pyplot. The correlation analysis between the total documents, SJR, and H index was performed using the Pearson correlation. The significance level was set at $p < 0.05$ for all statistical analyses.

We first analyzed the overall correlation between the total number of publications and SJR or H-index Metrics from 2018 to 2023. In Fig. 1A, a strong negative correlation ($r = -0.83$, $p = 0.0407$) was observed between the total publications and the SJR, suggesting that as the number of documents increases, the mean SJR tends to decrease. Figure 1B shows a negative correlation between the published documents and the journals' H index. However, the correlation was weak and did not reach significance ($r = -0.14$, $p = 0.791$), suggesting a less clear relationship between these metrics. These findings highlight the varying impact of increasing publication counts on SJR and H-index values.

One important contributor to this negative correlation is the COVID-19 pandemic, which has significantly impacted academic publishing. This has led to

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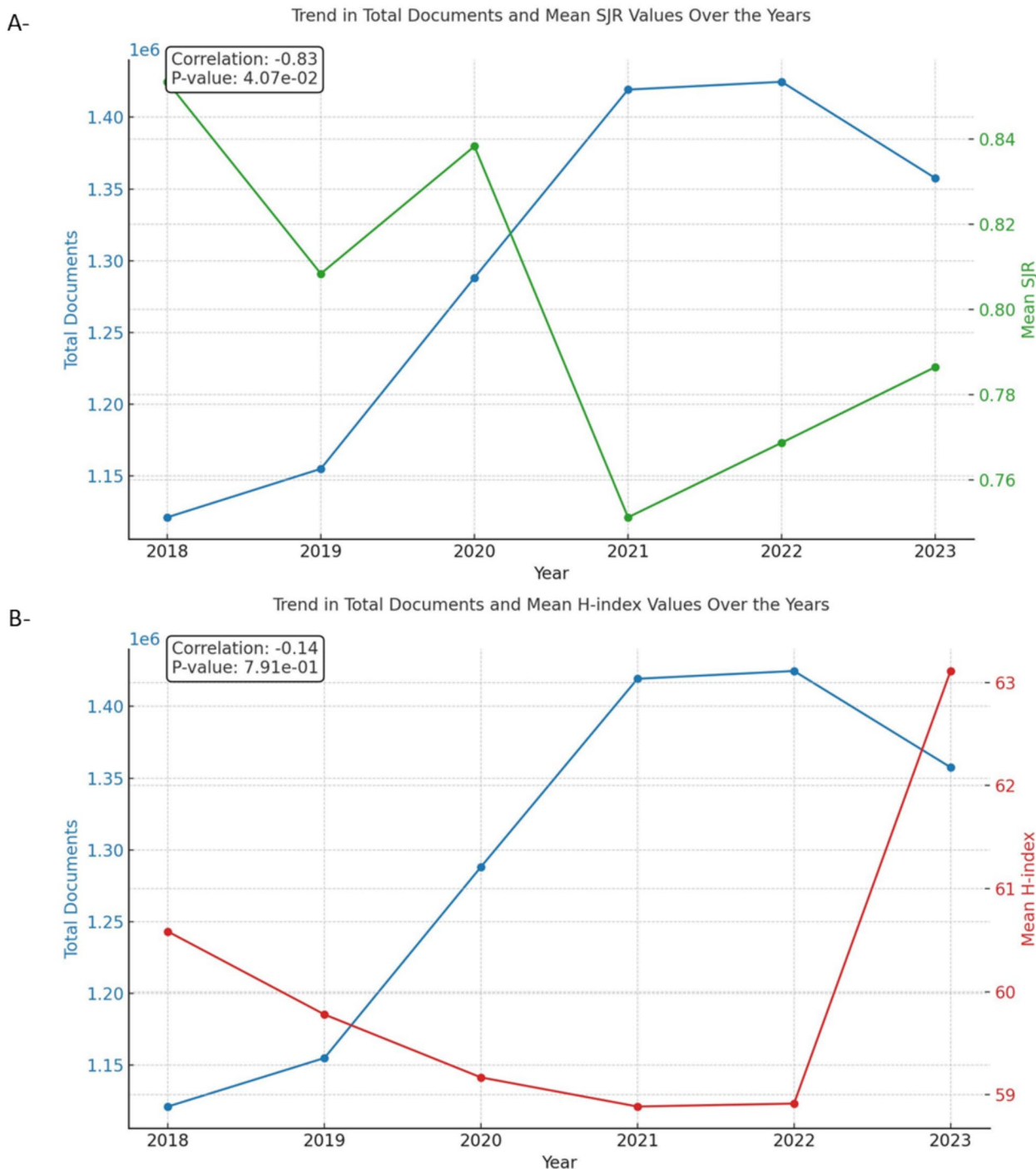


Fig. 1 Correlation analysis Between Total Document Trends with SJR and H-index Metrics from 2018 to 2023 in Life Sciences and Medicine. The mean SJR and mean H index were calculated. SJR: Scimago Journal ranks (<https://www.scimagojr.com/>)

an increase in the number of research papers, particularly in fields related to the virus [5, 6]. This surge has raised concerns about the standards of published research [5, 6]. To go further, explored the publishers' trends in terms of publications. Thus, we first analyzed

the top 10 publishers in Life Sciences and Medicine journals regarding the number of documents published from 2018 to 2023 (Fig. 2A). Elsevier maintains a consistently high volume of publications, highlighting its significant contribution to the academic community

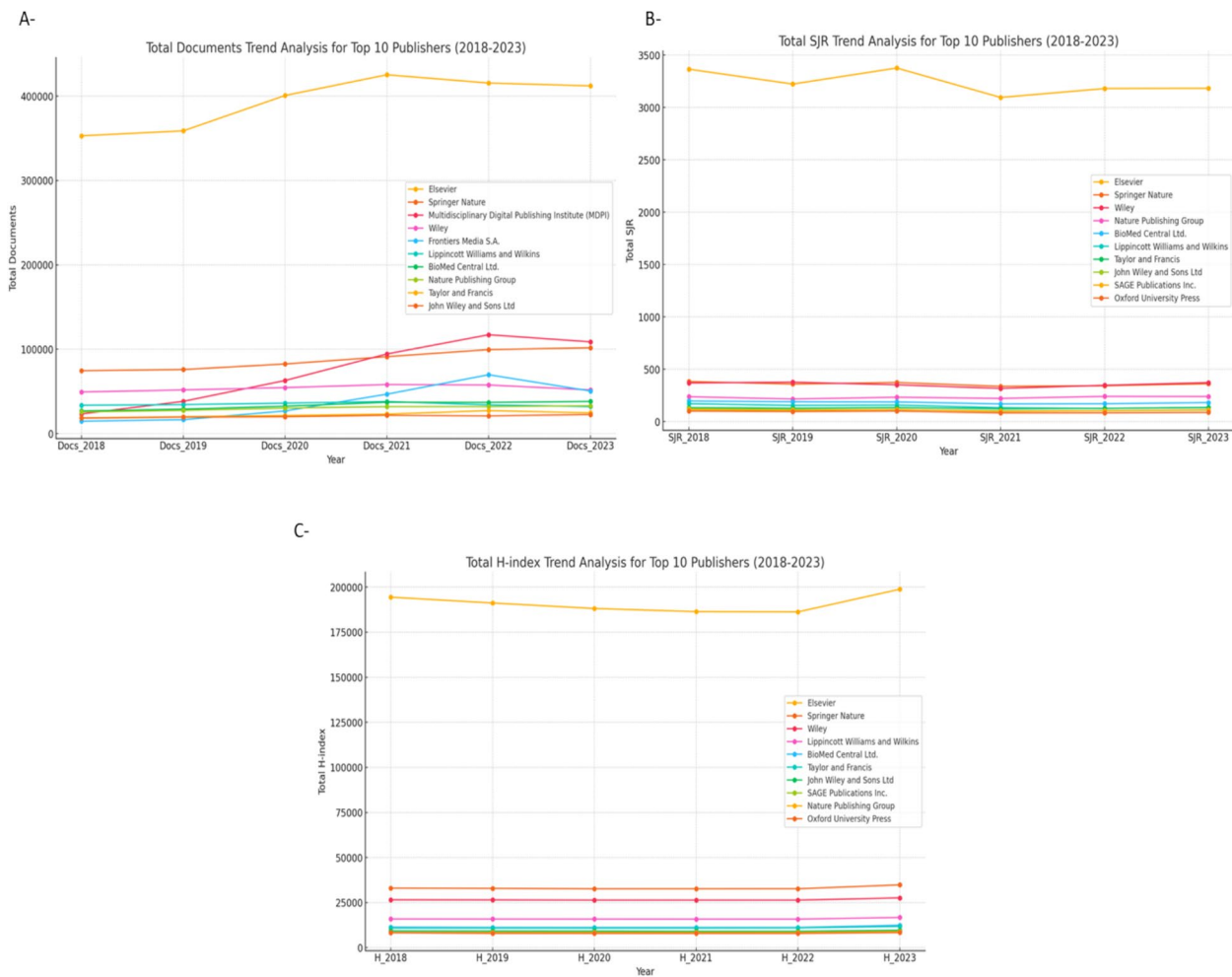


Fig. 2 Trend Analysis of Total Documents, SJR, and H-index for the Top 10 Publishers from 2018 to 2023 in Life Science and Medicine. The top ten publishers in each analysis were plotted for the total published documents (A), total scimago journal ranks (B) and the total H-index (C). SJR: Scimago journal ranks (<https://www.scimagojr.com/>)

(Fig. 2A). MDPI shows a marked increase in total documents, indicating rapid growth in publication output (peaking in 2022, Fig. 2A). Other publishers, such as Springer Nature and Wiley-Blackwell, exhibit stable or increasing publication trends, underscoring their sustained presence and influence in these fields (Fig. 2A). We also analyzed the trends in SJR and the journals' H index values for the top publishers from 2018 to 2023 (Fig. 2B and C). The total H-index and total SJR trend analyses show similar profiles for the top publishers from 2018 to 2023, with both metrics highlighting the Massachusetts Medical Society and Elsevier as leading entities with significant academic influence (Fig. 2B and C). Both analyses demonstrate stable trends for publishers like the American Association for

the Advancement of Science (AAAS) and the National Academy of Sciences, reflecting their steady performance and impact (Fig. 2B and C).

In conclusion, our observations regarding the total number of publications and SJR suggest that increasing the number of published documents might dilute the average quality of a journal. In addition to the COVID-19 pandemic, this increase can be due to the strain on editorial resources or the acceptance of lower-quality papers just to meet publication targets. In contrast, the more consistent publication strategies of the top publishers that maintain higher SJR and H-index values underscore the significance of a balanced approach.

Authors' contributions

S.E.S. performed the analysis. A.C. and S.E.S wrote the manuscript. Both authors contributed equally to this work.

Declarations

Competing interests

The authors declare that they have no competing interests.

Received: 30 August 2024 Accepted: 24 September 2024

Published online: 01 October 2024

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