Author-level metrics

The endeavor to mathematically quantify the impact of individual clinicians and researchers on their respective fields has led to the creation of several authors- and institute-level metrics. The “traditional” author-level metrics include the number of papers published by an author [number of publications (NP)], the number of citations (NC) accrued by an author, and metrics that combine the preceding two, such as the author H-index (AHi), G-index, and i10-Index. Several academic databases such as Web of Science, Google Scholar (GS), Scopus (Sc), Publons, and ResearchGate (RG) provide the traditional metrics at the individual author level, and they have become widely used. However, the major limitation of the entire class of citation-based metrics has always been their inability to capture the real-world impact of a body of research, which may not necessarily be reflected by the NC received by a paper or an author [1) 2) 3)]

Kalvapudi et al. aimed to assess the congruence between traditional metrics reported across Google Scholar (GS), Scopus (Sc), and ResearchGate (RG). They also aimed to establish the mathematical correlation between traditional metrics and alternative metrics provided by ResearchGate.

Author names listed on papers published in the Journal of Neurosurgery (JNS) in 2019 were collated. Traditional metrics number of publications (NP), number of citations (NC), and author H-indices (AHi)] and alternative metrics (RG score, Research Interest score, etc. from RG and the GS i10-index) were also collected from publicly searchable author profiles. The concordance between the traditional metrics across the three databases was assessed using the intraclass correlation coefficient and Bland-Altman (BA) plots. The mathematical relation between the traditional and alternative metrics was analyzed. Results The AHi showed excellent agreement across the three databases studied. The level of agreement for NP and NC was good at lower median counts. At higher median counts, we found an increase in disagreement, especially for NP. The RG score, number of followers on RG, and Research Interest score independently predicted NC and AHi with a reasonable degree of accuracy. Conclusions A composite author-level matrix with AHi, RG score, Research Interest score, and the number of RG followers could be used to generate an “Impact Matrix” to describe the scholarly and real-world impact of a clinician's work. [4)]

2: Grogan D, Reddy V, Gupta A, Chang YF, Fields D, Agarwal N. Trends in Academic Spine Neurosurgeon Productivity as Measured by the Relative Citation Ratio. World Neurosurg. 2021 Mar;147:e40-e46. doi: 10.1016/j.wneu.2020.11.097. Epub 2020 Nov 26. PMID: 33248304.

1)
Google Scholar, Scopus and the Web of Science: a longitudinal and cross-disciplinary comparison. Harzing AW, Alakangas S. Scientometrics. 2016;106:787–804.

2)
Three options for citation tracking: Google Scholar, Scopus and Web of Science. Bakkalbasi N, Bauer K, Glover J, Wang L. Biomed Digit Libr. 2006;3:7.

3)
The h-index is no longer an effective correlate of scientific reputation. Koltun V, Hafner D. PLoS One. 2021;16:0.

4)
Kalvapudi S, Venkatesan S, Belavadi R, Anand V, Madhugiri VS. The Author- Level Metrics Study: An Analysis of the Traditional and Alternative Metrics of Scholarly Impact for Neurosurgical Authors. Cureus. 2022 Jul 21;14(7):e27111. doi: 10.7759/cureus.27111. PMID: 36004033; PMCID: PMC9392480.