Background: Author-level metrics for assessing academic productivity have a significant impact on career advancement in academia. This study determined if 1-year growth rates in author-level metrics among New York (NY) metropolitan area academic neurosurgeons were comparable to academic rank and years since graduating residency.

Methods: H-index, document number, and citation number were recorded monthly from March 2018 to March 2019 for academic neurosurgeons from eight NY metropolitan area training programs using the Scopus® database and a custom database. Subjects with a decrease in any metric or an increase of ≤10 for h-index, 10 for document number, or ≤15% for citations between time points were excluded from the analysis. Differences in 1-year academic neurosurgeon growth rates (Assistant Professor, Associate Professor, Professor) were evaluated using ANOVA with Games-Howell post-hoc test. Differences in 1-year academic neurosurgeon growth rates between Assistant Professors with ≤10 and >10 years in practice were evaluated using two-tailed independent samples t-test.

Results: The final analysis included 80 subjects. Citation growth rates were significantly different between the academic ranks (F = 13.09, p = 0.0001). Assistant Professors and Associate Professors had a significantly higher 1-year increase in citations compared to Professors (p = 0.001 and p = 0.025 respectively). Assistant Professors with ≤10 years in practice had significantly higher 1-year increase in h-index (p = 0.001) and document (p = 0.016) than those with >10 years in practice.

Conclusion: Early-career Assistant Professors in academic neurosurgery may exhibit higher productivity than senior faculty, but this finding is qualified by the presence of significant irregularities in Scopus® bibliometric profiles.

Methods:

Eight neurosurgery residency training programs within a 30-mile radius of New York City were selected from a 2017 list of programs ranked by the Accreditation Council for Graduate Medical Education (ACGME). Neurosurgery faculty from each institution identified through department websites. Academic rank and years in practice since graduating residency were obtained for each faculty member from department websites. H-index, document number, and citation number for each neurosurgeon were obtained monthly from the Scopus® abstract and citation database between March 2018 and March 2019.

Average 1-year growth in each metric was calculated for each academic rank, for Assistant Professors with ≤10 years in practice, and for Assistant Professors with >10 years in practice. Significant differences in average metric values at baseline and average 1-year metric growth between the academic ranks were identified using ANOVA followed by Games-Howell post-hoc tests. Significant differences in average metric values at baseline and average 1-year metric growth between Assistant Professors with ≤10 years and >10 years in practice were identified using two-tailed independent samples t-test.

Results:

Table 1: Affiliated institutions and academic ranks of NY metropolitan area academic neurosurgeons included in the study sample.

Table 2: Average values of author-level metrics and 1-year metric growth rates (with standard error of the mean) for each academic rank. Analysis of variance (ANOVA) results for comparison of groups mean.

Figure 1: Average h-index by academic rank over 1-year period.

Figure 2: Average documents by academic rank over 1-year period.

Discussion:

At baseline, Assistant Professors and Associate Professors were found to have lower values than Professors for all three author-level metrics: h-index, document number, and citation number. This finding is expected given that, at any point in time, senior faculty members (e.g., Professors, Chairsmen) will likely have accrued more publications and citations than their junior counterparts (e.g., Assistant Professors, Associate Professors) by virtue of having many years of research experience and of having needed these publications to achieve their academic rank.

Over the 1-year period, Assistant Professors and Associate Professors exhibited higher growth in citations, but not h-index or documents, than Professors. The higher growth rate for citations, among junior faculty, can be explained by their need to accrue publications in order to be promoted within their department.

Over the 1-year period, Assistant Professors with ≤10 years in practice exhibited higher growth in h-index and document number than Assistant Professors with >10 years in practice. These findings likely stem from the fact that low-experience resident faculty have stronger incentives, than their senior counterparts, to publish their work in bibliometrically successful journals to improve productivity, which is an important determinant of career advancement in academia.

An bibliometric data was collected over the 1-year period from the Scopus® database. It was observed that many authors had unusual growth in the number of publications, which included rapid declines and increases in h-index, documents, and citations over time due to fluctuations resulting from variations in Scopus® bibliometric profiles potentially underlie the validity of the present study’s findings, their presence constitutes a major finding in and of itself.

Conclusions:

1. Assistant Professors and Associate Professors had significantly higher 1-year growth rates in publication number than Professors with >10 years in practice.
2. Assistant Professors with ≤10 years in practice had significantly higher h-index and document number than Assistant Professors with >10 years in practice.
3. Academic productivity is higher among low-experience resident faculty, specifically between Associate Professors and Professors. This finding is supported by the need for these authors to accrue publications for the purpose of recognition and career advancement.

References:


4. The effect of academic rank and years in practice on bibliometric profile growth rates among academic neurosurgeons in the New York metropolitan area.

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