

Quantifying the Research Productivity of Medical Students Matching into Neurosurgery

Ahmed Kashkoush BS; Arpan V Prabhu BS; Daniel Tonetti MD, MS; Nitin Agarwal MD University of Pittsburgh Department of Neurological Surgery, Pittsburgh, PA



Introduction

An important component of the residency application for Neurosurgery is research experience and the subsequent number of produced publications. Bibliometrics research has been developed to establish quantitative methods for the standardization of publishing impactful research. This study aims to quantify the research productivity of medical students who successfully matriculated into a Neurosurgery residency program.

Methods

We identified first-year Neurosurgery residents for the 2016-2017 academic year via institutional websites of all United States neurosurgical residency programs. The Scopus database was gueried for all articles published in the years 2006-2015 by first-year residents and bibliometric variables such as publication count, hindex, and first-authorship were subsequently extracted. Only publications prior to 2015 were utilized in order to ensure that search results were reflective of the original ERAS (Electronic Residency Application Service) submission. The main outcome measured was residency program name, tiered 1-5 by total departmental faculty research output, which was obtained from recently published bibliometric profiles [1].

Conclusions

H-index is a powerful research predictor of matching into a high-ranking Neurosurgical research institution. Students can improve their h-index by starting research early in their medical school careers, participating in original clinical and laboratory investigations, and targeting high-impact journals.

Results

Two hundred and six (206) Scopus records for first-year Neurosurgery residents were identified across 99 different programs nationwide. Median publication count and impact factor was 1.5 (interguartile range, 0.0-5.0) and 1.7 (0.0-2.9), respectively. Multivariate ordinal regression demonstrated that only h-index was independently associated with matriculating into a high-ranking research institution (p = 0.043). H-index was observed to strongly correlate with the number of original research articles (p=0.005), the years since first publication (p<0.0001), and journal impact factor (p=0.048) as assessed via multiple linear regression. Notably, h-index was observed to increase by approximately one point with every 3 original research articles (B=0.368) and 4 years since first publication (B=0.257).

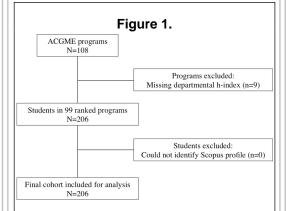


Figure 1. Flowchart of selection summary for final cohort of students included in our analysis.

Learning Objectives

Learning Objectives: By the conclusion of this session, participants should be able to:

- Understand tools for quantifying research output.
- Recognize effective methods for
- improving research productivity.
- Identify outlets for student research.

References

[1] Khan NR, Thompson CJ, Taylor DR, et al. An analysis of publication productivity for 1225 academic neurosurgeons and 99 departments in the United States. J Neurosurg. Mar 2014;120(3):746-755.

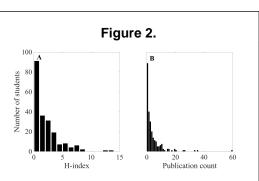


Figure 2. Right-tailed distribution of example variables, (A) h-index and (B) publication count.

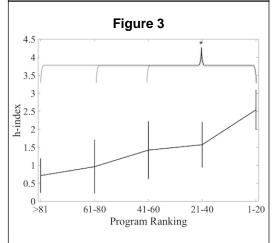


Figure 3. Mean h-index of Neurosurgery matriculants with respect to residency program tier. A post-hoc Bonferroni correction for multiple comparisons demonstrated that the h-index of applicants who matriculated into Tier 1 schools were significantly higher than those of applicants who matriculated into programs Tiers 3, 4, and 5, as denoted by (*).Vertical error bars represent the 95% confidence intervals at each data point.