Academic Productivity of Spine Surgeons at United States Neurological Surgery and Orthopedic Surgery Training Programs

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Introduction

Spinal surgery has the distinction of being a subspecialty taught and practiced within two different surgical disciplines: neurological and orthopedic surgery. This article provides a unified analysis of academic productivity attributable to spine-focused faculty at U.S. residency programs.

Learning Objectives

Participants should be able to identify similarities and differences between the academic productivity of spine-focused faculty at neurosurgical and orthopedic residency training programs.

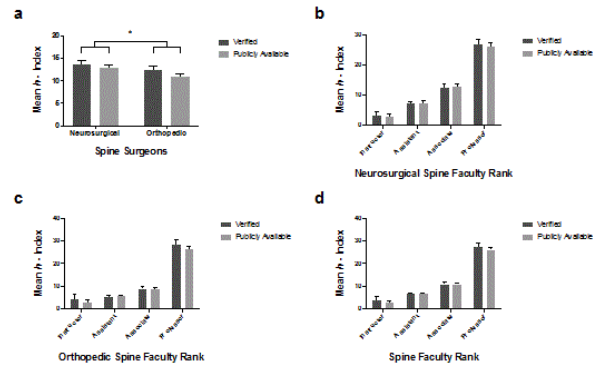
Methods

278 ACGME-training programs (110 neurosurgical, 168 orthopedic) were assessed, identifying 923 full-time faculty members with spinal surgery designation by spine fellowship training or surgeon case volume >75% spine surgeries. Faculty were assessed with respect to academic rank, years in practice, and academic productivity (h-index determined by Scopus).

Results

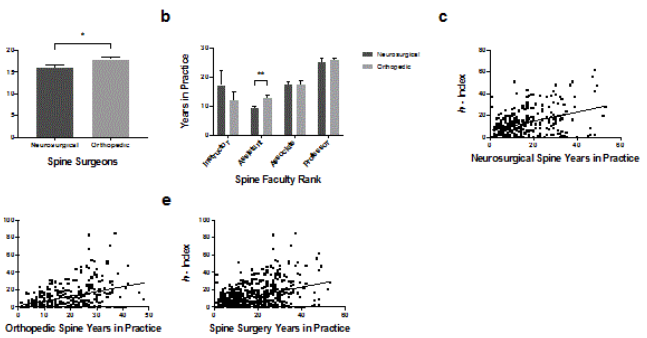
Mean h-index was significantly higher for neurological spine surgeons and mean h-index for neurological and orthopedic spine surgeons increased significantly with faculty rank. Comparison within academic ranks showed neurological spine surgeons with assistant and associate professor ranks having significantly higher mean h-indices and no significant differences at the instructor and professor ranks. Statistical results were identical using either publicly available data or data verified by individual ACGME-training programs. Neurological spine surgeons had significantly lower mean years in practice. Controlling for faculty rank, mean years in practice was not statistically different between neurological or orthopedic spine surgeons at any rank except assistant professor. A positive correlation between h-index and years in practice was found for both spine disciplines. Proportional odds models for neurological, orthopedic, and combined spine surgeons were moderately successful at predicting faculty rank based on h-index.

Figure 1: h - Index for both Publicly Available and Verified Data



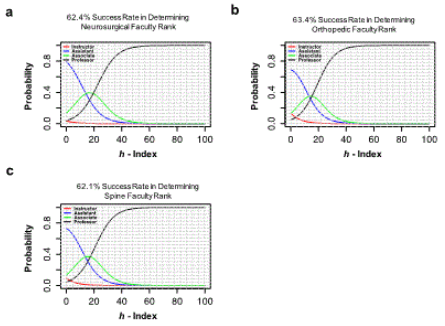
(**a**) Bar graph shows mean (SEM) *h*-index values for neurological and orthopedic spine surgeons calculated using verified or publicly available data. (**b**-**d**) Bar graphs show mean (SEM) *h*-index values calculated for spine surgeons verified by individual departments as well as spine surgeons listed on department websites. Surgeons were separated by faculty rank and residency training. Graphs (**b**) and (**c**) show neurosurgical and orthopedic groups, respectively, while graph (**d**) shows the combination of both sets of faculty.

Figure 2: h - Index correlates to Years in Practice



(**a**) Bar graph shows mean (SEM) years in practice for neurosurgical and orthopedic spine surgeons (**b**) Bar graph shows mean (SEM) years in practice for neurological and orthopedic spine surgeons with different faculty ranks. (**c**-**e**) Scatter plots with linear regression show *h*-index as a function of years in practice for (**c**) neurosurgical, (**d**) orthopedic, and (**e**) combined groups of faculty.

Figure 3: h - Index Success Rates in Predicting Faculty Rank for Spine Surgical Disciplines



(**a**-**c**) Proportional odds models for estimating probability of having a specific faculty rank based on *h*-index values. Graphs a, b, and c show model success rate of the *h*-index for neurosurgery, orthopedic, and combined, respectively

Conclusions

A unified picture of academic productivity among spine faculty shows many similarities between neurosurgical and orthopedic surgery residency faculty and some notable differences. Neurological spine surgeons showed a slightly higher mean h-index with similar patterns of increasing h-index through all academic ranks in both disciplines. Years in practice increased as faculty rank increased from assistant professor through professor levels. Publicly available and independently verified data were essentially identical for both specialties at all academic ranks.

Selected References

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