Workforce Analysis of Spine Surgeons Involved with Neurological and Orthopedic Surgery Residency Training

Alexander F. Post MD; Jennifer B Dai BS; Adam Y Li BS; Akbar Y Maniya BS; Syed Haider; Stanislaw Sobotka PhD; Isabelle M. Germano MD , MBA; Tanvir Choudhri MD

Department of Neurosurgery - Icahn School of Medicine at Mount Sinai

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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 spine-focused faculty at U.S. residency programs.

Learning Objectives

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

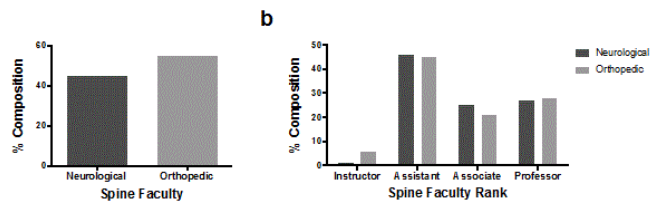
Methods

278 ACGME-training programs (110 neurosurgical, 168 orthopedic) were assessed to identify 923 full-time faculty with spinal surgery focus by fellowship or surgeon case volume >75% spine surgeries. Faculty were assessed by parent discipline (neurological or orthopedic surgery), years of fellowship training, academic rank, gender, and academic productivity (h-index).

Results

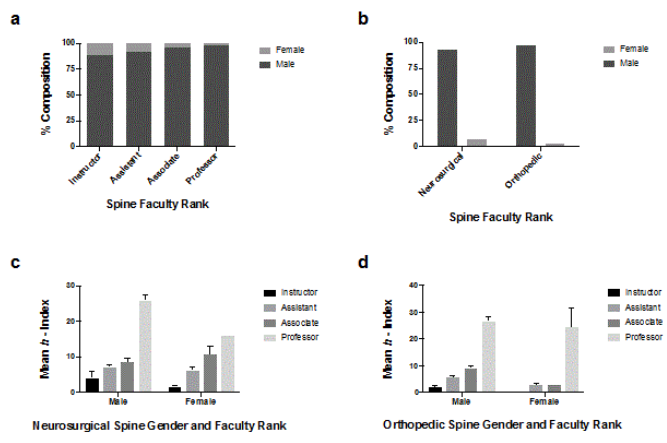
The existing workforce of spine-teaching faculty is comprised of 55% orthopedic surgeons and 45% neurosurgeons with a wide gender asymmetry present at all academic ranks of both specialties. The smaller percentage of female surgeons at instructor (0.5%), assistant professor (4.5%), associate professor (1.5%), and professor levels (0.2%) of academic neurosurgery (6.9% overall) was more pronounced at instructor (0.2%), assistant professor (1.7%), associate professor (0.2%) and professor levels (0.6%) of orthopedic surgery (2.9% overall). Of the female spine surgeons, those with neurosurgical training (64.44%) nearly doubled the number with not significantly affect h-indices. Addition of fellowship(s) conferred academic productivity benefit for orthopedic surgeons but not for neurosurgeons.

Figure 1: Academic Spine Surgeon by Discipline and Academic Rank



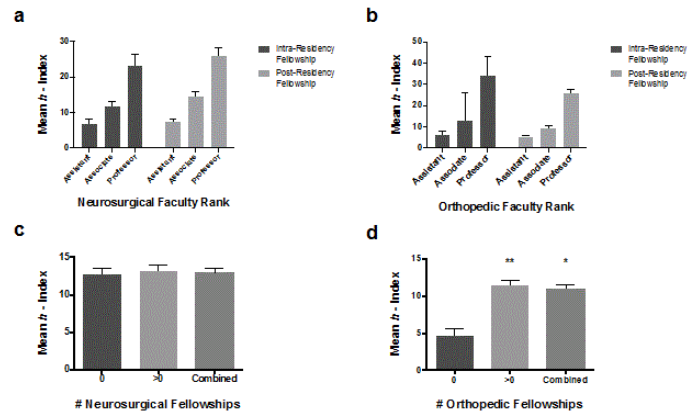
(**a**-**b**) Bar graphs denote breakdown of academic spine surgeons by (**a**) parent discipline or (**b**) academic rank.

Figure 2: Gender Disparity in Both Neurosurgery and Orthopedic Spine Surgery is Seen Across All Academic Ranks. h-index Correlates with Academic Rank.



(**a**-**b**) Bar graphs denote gender breakdown of academic spine surgeons across disciplines and academic rank. (**c**-**d**) Bar graphs compare mean (SEM) *h*-index with academic rank for neurosurgeons and orthopedic surgeons of both genders.

Figure 3: h-Index Correlates with Academic Rank but not with Fellowship Type



(**a**-**b**) Bar graphs compare mean *h*-index (SEM) between spine surgeons with intra-residency or post-residency fellowship training. Graphs *a* and *b* show neurosurgical and orthopedic surgeons respectively. (**c**-**d**) Bar graphs compare mean *h*-index (SEM) between spine surgeons with and without fellowships showing no difference among neurological surgeons but showing a statistically significant difference among orthopedic surgeons with and without fellowships.

Conclusions

Neurological and orthopedic spine surgery show similar patterns for faculty spread across academic ranks and trends in academic productivity. There is marked gender disparity in both neurosurgical and orthopedic surgery with fewer female spine surgeons at every academic rank. Orthopedic spine surgeons have a greater mean number of fellowships and lack of fellowship correlated with a lower academic productivity in orthopedic spine surgery but not neurological spine surgery.

Selected References

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