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Research Article

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Osteopathic Physicians on Editorial Boards of Neurosurgical Journals: A Quantitative Analysis

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Abstract

Objective: The Accreditation Council for Graduate Medical Education and the American Osteopathic Association reached an agreement to form a single accreditation system for graduate medical education by 2020. As a result of this merger, new criteria may be established for academic endeavors within medical school as well as post-graduate curricula. In the present study, we analyze the number of osteopathic physicians serving on editorial boards of neurosurgical journals.

Methods: Editorial members of 50 neurosurgical journals were included in the analyses. The number of allopathic and osteopathic physicians as well as other healthcare professionals serving as editor-in-chief, associate editor, editor emeritus, other editor, and editorial board members were analyzed.

Results: Our data showed that of the 2826 editorial positions available, 2645 (93.6%) were held by allopathic physicians, 177 (6.3%) were held by non-physician healthcare professionals, and 4 (0.14%) were held by osteopathic physicians. Statistical significance was observed upon comparing the number of osteopathic physicians against the number of allopathic physicians serving editorial roles ($p<0.00001$). Osteopathic physicians held 1 (1.7%) of the 59 editor-in-chief positions and 3 (0.11%) of the 2114 editorial board member positions.

Conclusion: These data establish a significant disparity in representation of allopathic physicians and osteopathic physicians on editorial boards of neurosurgical journals. Future investigation should identify causative factors for the disparity of osteopathic physicians on these editorial boards.

Keywords

Neurosurgery; Medical education; Editorial boards; Osteopathic medical schools

Introduction

In 1892, Andrew Still founded osteopathic medicine in Kirksville, Missouri. 125 years later, the number of osteopathic physicians practicing in the United States has increased substantially [1]. In 2014, 62644 (7.4%) of the active US physician population were osteopathic physicians whereas 783982 (92.6%) were allopathic physicians [1]. Although 7.4% of the US physician population holds an osteopathic degree, recent research by Ashurst and Galuska reported that osteopathic physicians occupied 0.15% of 2058 editorial positions of 8 major medical journals [2]. However, there is no research addressing physician representation on editorial boards of any specific medical or surgical sub-specialty. Here, we sought to address the surgical sub-specialty of neurosurgery. In the present study, we investigated whether Ashurst and Galuska's findings were valid when examining osteopathic physician representation on editorial boards of neurosurgical journals.

Methods

All current continuing neurosurgical journals were found from two websites: (http://www.neurosurgic.com/index.php?option=com_content&view=category&layout=blog&id=101&Itemid=465, http://www.scimagojr.com/journalrank.php?category=2746). From these two websites fifty continuing neurosurgical journals were identified for analyses (Table 1).

For each journal, the editorial positions including editor-in-chief, associate editor, editor emeritus, "other" editor (e.g., section editor, deputy editor, consulting editor), and editorial board members were analyzed. The degree for each type of editor was acquired from the suffix after each member's last name. For journals that did not list their editorial members degrees, an Internet search was implemented to determine credentials. Advanced degrees besides MD and DO (e.g., PhD, DPT, *et cetera*) were listed as "other". Allopathic physicians who held additional advanced degrees (e.g., PhD, MS, MBA) were kept in the allopathic criteria for analyses and were only represented once. Editorial staff, such as office manager and social media manager, was excluded from the analyses. To analyze the collected data, descriptive statistics were performed with percentages to determine the number of allopathic, osteopathic, or "other" non-physician healthcare professional fulfilling each editorial role. Furthermore, a paired *t* test was performed to compare the number of osteopathic physicians against the number of allopathic physicians serving editorial roles on each of the neurosurgical journals.

Results

A total of 2826 individuals serving positions on editorial boards of 50 neurosurgical journals were included in the analyses. Of the 2826 editorial positions, 2645 (93.6%) were held by allopathic physicians, 177 (6.3%) were held by "other" non-physician healthcare professionals, and 4 (0.14%) were held by osteopathic physicians. Statistical significance was observed upon comparing the number of osteopathic physicians against the number of allopathic physicians serving editorial roles ($p<0.00001$). There were 2114 editorial board member positions with 3 (0.11%) positions held by osteopathic physicians (Table 2).

Moreover, there were 59 editor-in-chief positions with 1 (1.7%) position held by an osteopathic physician. Osteopathic physicians held a total of 4 editorial positions in 4 of the 50 neurosurgical journals including *Spine, Journal of Neurotrauma, Pediatric Neurosurgery,* and *Global Spine Journal*. An osteopathic orthopedic surgeon held the position of editor-in-chief of *Spine*. An osteopathic physiatrist,

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Table 1: List of neurosurgical journals analyzed.

Acta Neurochirurgica	Journal of Neuroscience in Rural Practice
Annals of Neurosurgery	Journal of Neurosurgery
Asian Journal of Neurosurgery	Journal of Neurosurgery Imaging and Techniques
Austin Neurosurgery	Journal of Neurosurgery: Pediatrics
Brain Injury	Journal of Neurosurgery: Spine
British Journal of Neurosurgery	Journal of Neurosurgical Sciences
Child's Nervous System	Journal of Neurotrauma
Clinical Neurology and Neurosurgery	Journal of Spine and Neurosurgery
Clinical Spine Surgery	Neurologia Medico-Chirurgica
Contemporary Neurosurgery	Neurosurgery
Edorium Journal of Advances in Neurosurgery	Neurosurgery Clinics of North America
Egyptian Journal of Neurological Surgery	Neurosurgery Quarterly
European Spine Journal	Neurosurgical Focus
Global Journal of Neurology and Neurosurgery	Neurosurgical Review
Global Spine Journal	Open Journal of Modern Neurosurgery
Indian Journal of Neurosurgery	Operative Techniques in Neurosurgery
Insights in Neurosurgery	Pediatric Neurosurgery
Interdisciplinary Neurosurgery	Polish Journal of Neurology and Neurosurgery
International Journal of Spine Surgery	Spinal Cord
Journal of Clinical Neuroscience	Spine
Journal of Korean Neurosurgical Society	Stereotactic and Functional Neurosurgery
Journal of Neurointerventional Surgery	Surgical Neurology International
Journal of Neurological Surgery Part A	The Internet Journal of Neurosurgery
Journal of Neurological Surgery Part B	Turkish Neurosurgery
Journal of Neurology, Neurosurgery & Psychiatry	World Neurosurgery

Legend: List of the neurosurgical journals analyzed in the present study.

Table 2: Editorial positions of neurosurgical journals held by physicians and researchers.

Editorial Positions	Allopathic	Osteopathic	Other
Editor-in-chief (n=59)	53 (89.8)	1 (1.7)	5 (8.5)
Associate Editor (n=209)	194 (92.8)	0	15 (7.2)
Editor Emeritus (n=45)	45 (100)	0	0
Other Editor (n=273)	239 (87.5)	0	34 (12.5)
Editorial Board (n=2240)	2114 (94.4)	3 (0.1)	123 (5.5)

Legend: Number outside parenthesis indicates actual number. Parenthesis indicates percentage. n represents total number per position.

neurosurgeon, and orthopedic surgeon held positions on the editorial boards of *Journal of Neurotrauma, Pediatric Neurosurgery,* and *Global Spine Journal*, respectively.

Discussion

The present study, to our knowledge, is the first to analyze the number of osteopathic physicians serving on editorial boards of neurosurgical journals. Although osteopathic physicians comprise 7.4% of the US physician population, we report that they only represent 0.14% of the 2826 editorial positions of the 50 neurosurgical journals included in our study. Ashurst and Galuska previously reported that osteopathic physicians occupied 0.15% of 2058 editorial positions of 8 major medical journals [2]. Therefore, our study confirms the inadequate representation of osteopathic physicians on editorial boards by Ashurst and Galuska when applied to the specialty of neurosurgery.

The underrepresentation of osteopathic physicians on editorial boards of neurosurgical journal may be attributed to numerous factors. Neurosurgeons hold the majority of positions of editorial positions of neurosurgical journals; thus, the population of allopathic and osteopathic neurosurgeons in the US may be considered. The number of practicing osteopathic neurosurgeons is substantially less than that of practicing allopathic neurosurgeons in the US [3]. As of 2013, there were 5047 allopathic neurosurgeons and 90 osteopathic neurosurgeons practicing in the US [3]. Osteopathic neurosurgeons comprise 1.7% of the US neurosurgeon population; however, our data indicates that they only represent 0.04% of editorial positions in neurosurgical journals. These data indicate a lack of proportional representation between the number of osteopathic neurosurgeons and editorial positions fulfilled by these physicians.

Another considerable factor that may account for the under representation of osteopathic physicians on the editorial boards of neurosurgical journals is that of research training and opportunities provided in osteopathic medical schools. Relative to osteopathic medical schools, allopathic medical schools receive more funding towards basic science research from the National Institute of Health [4]. Therefore, allopathic medical students may have more opportunities in becoming acquainted with research earlier in their career and have more of a chance in gaining positions on editorial boards of such journals. In a study by American Association of Colleges of Osteopathic Medicine, 47% of graduating osteopathic medical students surveyed indicated that an inadequate amount of time was dedicated to learning research methodologies in their

medical curriculum [5]. Lastly, fewer osteopathic medical students graduate with a dual degree (e.g., PhD, MPH, MS) relative to their allopathic colleagues [6]. Dual-degree programs, especially MD/PhD and DO/PhD, allow medical students to spend additional years in the research laboratory, which is likely to result in multiple publications [6]. Moreover, graduating dual-degree medical students are more likely to pursue an academic career, which may open the opportunity for editorial board membership in the future.

Conclusion

In the present study, we established a significant disparity between the number of allopathic physicians and osteopathic physicians on editorial boards of neurosurgical journals. Future studies should aim to identify causative factors for underrepresentation of osteopathic physicians on the editorial boards of neurosurgical journals. Furthermore, analysis of osteopathic physicians on editorial boards of other medical and surgical specialties may be warranted.

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Ethical Approval

None to report

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