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How academically productive are endocrine surgeons in the United States?

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ABSTRACT

Background: Many surgical departments in the United States lack endocrine surgery faculty. Although endocrine surgeons can provide worthwhile clinical services, it is unclear how they contribute to the overall academic mission of the department. The present study aims to evaluate the academic productivity of endocrine surgeons, as defined by the American Association of Endocrine Surgeons (AAES) membership, when compared with other academic surgical faculty.

Materials and methods: An established database of 4081 surgical department faculty was used for this study. This database includes surgical faculty of the top 50 National Institutes of Health (NIH) funded universities and faculty from five outstanding hospital-based surgical departments. Academic metrics including publication, citations, H-index, and NIH funding were obtained using publically available data from websites. The AAES membership status was gathered from the online membership registry.

Results: A total of 110 AAES members were identified in this database, accounting for 2.7% of this population. Overall, the AAES members outperformed other academic surgical faculty with respect to publications (66 ± 94 *versus* 28 ± 91, $P < 0.001$), publication citations (1430 ± 3432 *versus* 495 ± 2955, $P < 0.001$), and H-index (19 ± 18 *versus* 10 ± 13, $P < 0.001$). In addition, the AAES members were more likely to have former/current NIH funding and hold divisional or departmental leadership positions than their non-AAES member colleagues.

Conclusions: Based on these data, the AAES members excelled with respect to publications, citations, and research funding compared with nonendocrine surgical faculty. These results demonstrate that endocrine surgeons can contribute enormously to the overall academic mission. Therefore, more surgical departments in the United States should consider establishing an endocrine surgery program.

Introduction

In addition to their clinical duties, academic surgeons have educational, administrative, and research obligations. Research productivity as measured by publications, citations, H-index, and extramural research funding can be an important factor in the promotion of academic clinicians.[1-3] These metrics have been shown to be valuable measures of

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individual academic success and have been used for purposes of hiring, promotion, tenure, grant funding, and entry into academic organizations.[4-10] Furthermore, these metrics allow for comparison of academic productivity between faculty across multiple institutions.[11] In addition to the number of an author's publications and citations, the H-index is a bibliometric statistic created by Jorge Hirsch in 2005 as a means of characterizing the scientific output of a researcher.[12,13] The H-index is defined as the number of publications, *h*, which has been cited at least *h* times.[12] For example, if an author has an H-index of 20, he or she has twenty publications that have been referenced at least 20 times. The H-index, therefore, accounts for the amount of citations per publication. Despite its limitations, the H-index is a well-established metric for defining the quantity and significance of an individual's academic contributions.[8]

Recently, there has been a desire to quantify the academic productivity within surgical specialties.[14-16] We know that certain surgical disciplines, such as transplant surgery and urology, contribute more to departmental academic productivity than others.[3,17] Endocrine surgery has evolved as a subspecialty of general surgery over the past several decades.[18] In 1980, the American Association of Endocrine Surgeons (AAES) was formed as the first surgical society dedicated specifically to endocrine surgery.[19] Recent studies have demonstrated that higher surgeon volume is associated with improved outcomes in many surgical specialties, including endocrine surgery.[20,21] Due to the increasing incidence of endocrine disorders and the shift toward high-volume surgeons, there appears to be a demand for the clinical contributions of endocrine surgeons.[22-24] While endocrine surgeons can provide worthwhile clinical services, it is unclear how they contribute to the overall academic mission of the department. The aim of the present study is to evaluate the academic productivity of endocrine surgeons, as defined by AAES membership, when compared with other academic surgical faculty.

Materials and methods

Institutions selected

An established database of 4081 surgical department faculty was used for this study.[3,6] The top 50 university-based programs based on the current NIH funding was determined using data from the Blue Ridge Institute for Medical Research.[25] An additional five hospital-based surgical departments not identified on the NIH funding rank list were also included based on their significant impact. These departments were identified by a Medline search and review of current meetings.[6] All data were collected from September 1, 2014 to October 21, 2015.

Faculty demographics and metrics

Demographic and metric data were collected using online sources. The department of surgery website for each institution was used to collect the following demographic variables: sex, academic degrees, career track (clinical versus research), academic rank, division, and specialty. The Scopus database (www.scopus.com), the NIH Research Portfolio Online Reporting Tools (RePORT; https://report.nih.gov), and the Grantome database (http://grantome.com) were used to collect bibliometric and funding data, including number of publications, number of citations, H-index, and type and number of NIH awards for each faculty.

AAES membership

In addition to the previously collected data, the American Association of Endocrine Surgeons (AAES) membership was determined using the membership roster (www.endocrinesurgery.org).

Statistical analysis

Descriptive statistics were performed to summarize data. Medians, standard deviations, and ranges were calculated for the continuous variables, including total number of publications, total career citations, 3-year citations, and H-indices. Group comparisons of these variables were performed across the categorical variables of AAES membership and academic rank. Two-sided Wilcoxon rank-sum tests were used for comparison between groups. Differences between categorical variables were determined using χ^2 tests. Statistical analysis was performed using IBM SPSS Statistics for Macintosh, version 24.0 (Armonk, NY: IBM Corp) to evaluate differences between groups. Statistical significance was defined as $P < 0.05$.

Institutional Review Board exemption

We only used publically available data gathered online as described previously. This study was submitted to the Institutional Review Board at the University of Alabama-Birmingham, and qualified as exempt from review.

Results

Faculty characteristics of AAES members and nonmembers

A total of 4081 surgical department faculty were evaluated. A total of 110 AAES members were identified (2.7%). Table 1 summarizes the faculty characteristics. Overall, 21.8% of faculty members were women. The AAES members were more likely to be female (30%) than non-AAES members (21.6%) ($P = 0.036$). There were 11.7% instructors, 32.0% assistant, 23.6% associate, and 32.6% full professors.

We also evaluated the distribution of degrees held by AAES members and nonmembers; 93.6% of AAES members held the degree of MD compared with 89.0% of nonmembers, 4.5% of members held the degree of MD/PhD compared with 5.0%, and 1.8% of members held PhDs alone compared with 6.0% of nonmembers. There was no statistical difference in the distribution of degrees between members and nonmembers.

The AAES members were more likely to be more advanced in their careers. Differences in the distribution of academic ranks were noted between AAES members and non-AAES