Is Formal Research Training Associated With Academic Success in Oral and Maxillofacial Surgery?

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Purpose: Pursuing promotion in academic rank and seeking funded research opportunities are core elements of academic practice. Our purpose was to assess whether formal research training influences academic rank or National Institutes of Health (NIH) funding among full-time academic oral and maxillofacial surgeons (OMSs).

Materials and Methods: We performed a cross-sectional study of full-time academic OMSs in the United States. The primary predictor variable was completion of formal research training, defined as a research fellowship or advanced non–clinical doctoral research degree (PhD, DMSc, DPH, DPhil, ScD). The outcomes measures were current academic rank and successful acquisition of NIH funding (yes vs no). Other study variables included MD degree, clinical fellowship training, years since training completion, and Hirsch index (H-index), a measure of academic productivity. We computed the descriptive, bivariate, and multiple regression models and set $P \leq .05$ as significant.

Results: A total of 299 full-time academic OMSs were included in the study sample. Of the 299 OMSs, 81 (27.1%) had had formal research training. Surgeons with formal research training were less likely to have MD degrees ($P = .004$), had a greater mean interval since completion of training ($P = .01$), had a greater mean H-index ($P = .02$). Formal research training was not associated with academic rank ($P = .10$) but was associated with an increased likelihood of receiving NIH funding ($P = .001$). In a multiple logistic regression model, after adjusting for years since completing training and H-index, formal research training was associated with an increased likelihood of obtaining NIH funding (odds ratio, 3.22; 95% confidence interval, 1.15 to 9.00; $P = .03$).

Conclusions: Among academic OMSs, those with formal research training had greater success with obtaining NIH funding. However, formal research training did not appear to influence an OMS's current academic rank.

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Recent discourse surrounding academic oral and maxillofacial surgery relates to the shortage of full-time academic oral and maxillofacial surgeons (OMSs).[1-3] In an attempt to identify potential solutions to this problem, several studies have evaluated the characteristics and demographic data

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of trainees who enter academic versus private practice and attempted to identify the qualities of residency training programs that produce academic practitioners.[4-8] These studies have helped elucidate the reasons for the shortage of faculty in academic oral and maxillofacial surgery. A different inquiry emerging from academic oral and maxillofacial surgery has been the investigation of academic success and its contributing factors for full-time academic OMSs.[9,10] This endeavor is also meaningful to the specialty because its future relies on faculty longevity, productivity, and financial solvency.

The study of academic success within science and medicine has grown with the emergence of bibliometrics.[11,12] One widely adopted metric used to quantify academic productivity is the Hirsch index (H-index), defined as the number of publications, H, that have at least H citations each.[11,12] This metric allows for the consideration of the both quantity and the quality of publications from an author. It has been validated as a predictive measure of academic rank in an increasing number of specialties, including anesthesia, radiology, otolaryngology, plastic surgery, craniofacial surgery, and, more recently, pediatric dentistry and oral and maxillofacial surgery.[9,13-19] The H-index is now recognized across academic institutions as a consideration for promotion.[20-22]

Less explored as another possible predictive measure of academic success and rank is formal research training. Recent data from otolaryngology and plastic surgery studies have not revealed a positive correlation between formal research training and academic rank.[23,24] This correlation has not been, to the best of our knowledge, assessed in oral and maxillofacial surgery. Additionally, no studies have explored whether formal research training predicts procurement of National Institutes of Health (NIH) funding among full-time academic OMSs. Similar to other disciplines, it is in the interest of oral and maxillofacial surgery to identify which factors are predictive of academic productivity within the specialty for future advancement in research and education.

The study purpose was to address the following question: "Among full-time academic OMSs, do those who completed formal research training (research fellowship, research doctorate degree) compared with those who did not complete formal research training, achieve higher academic rank or compete more successfully for NIH funding?" Our hypothesis was that formal research training would be associated with higher academic rank and procurement of NIH funding. The specific aims of the present study were to *1)* identify a cohort of full-time academic OMSs, *2)* assess the demographic and academic factors for each surgeon, and *3)* identify whether formal research training resulted in academic success in oral and maxillofacial surgery, as defined by academic rank and successful NIH grant acquisition.

Materials and Methods

STUDY DESIGN

We performed a cross-sectional study that included a sample of full-time academic OMSs in the United States. To develop a comprehensive list of programs and associated department websites, we used the most up-to-date residency program directory published in 2016 by the American Association of Oral and Maxillofacial Surgeons (AAOMS). A total of 102 accredited OMS programs were identified. The inclusion criteria for faculty eligibility included *1)* appointment to a full-time academic faculty position in an oral and maxillofacial surgery department in an accredited training program; *2)* a complete faculty profile on a department website, including academic rank and educational background; and *3)* currently practicing as an OMS. Data collection occurred in May 2017. Potential subjects were excluded if they did not have a full-time academic appointment, were full-time faculty within oral and maxillofacial surgery departments but had not been trained in oral and maxillofacial surgery, were emeritus or nonactive faculty, or were not affiliated with a residency training program.

STUDY VARIABLES

Predictors

The primary predictor variable was formal research training, defined as completion of a postdoctoral research fellowship or completion of an advanced doctoral research degree (PhD, DMSc, DPH, DPhi, ScD).

Outcomes

The outcome variables of interest in the present study were *1)* academic rank and *2)* successful acquisition of NIH funding. Academic rank was recorded as an ordinal variable (ie, Instructor, Assistant Professor, Associate Professor, and Professor/Endowed Professor).

To determine NIH funding status, we searched the NIH Research Portfolio Online Reporting Tools Expenditures and Reports (RePORTER) website. Funded status was defined as a full-time academic OMS listed as the principal investigator, co-investigator, or collaborator with active or previous NIH funding from 1992 to 2017.

Other Variables

Potential confounders or effect modifiers of the relationship between formal research training and academic rank and NIH funding included the