Scholarly Research Productivity Among Ophthalmology Residency Graduates

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Table 1. Characteristics of 2013, 2014, and 2015, ophthalmology residency graduates.

Characteristics	No. (%)
Graduation year	
2013	74, 31.3%
2014	77, 32.6%
2015	85, 36.0%
Degree	
MD	231
DO	4
MBBS/IMG	1
Gender†	
Male	137
Female	99
Fellowship	
Ophthalmic Genetics	1
Cornea and external disease	49
Glaucoma	30
Uveitis and medical retina/Immunology	26
Vitreoretinal Surgery	24
Oculofacial plastics and reconstructive	23
Pediatric and Strabismus	13
Global Ophthalmology	1
Neuro-ophthalmology	6
Pathology	1
Ocular Pathology	2
Ophthalmic Oncology	2
None	63
Post-residency Position	
Academic Medicine	70
Private Practice	166

† Gender determined by personal academic profiles

Table 2. Article characteristics of publications from included ophthalmology graduates

Characteristics	No. (%)
Mean Publications	
Before Residency Training	1.13, 15.4%
During Residency Training	2.16, 29.4%
After Residency Training	4.06, 55.2%
Total	7.35
Journal Article was Published	
Author Order	
First Author	523
Last Author (Senior Author)	142
Somewhere in between	859
Type of Publication	
Clinical Trial	105
Case Report/Case Series	439
Observational	505
Editorial	321
Systematic Review/Meta-analysis	18
Basic Science	345
Other	1
Total	1734

Table 3. Graduate research first author, h-index, or total publications by fellowship status, career path, and gender

	Mean Total Publications (SD)	t value, p Value	Mean First Author Publications (SD)	t value, p Value	Mean h-index (SD)	t value, p Value
Sample (n =238)						
Overall	7.35 (11.59)	-	2.5 (3.97)	-	3.06 (3.47)	-
Fellowship						
Yes	9.05 (12.95)	**-3.89, .0001**	3.08 (4.42)	**-3.87, .0001**	3.57 (3.74)	**-3.93, .0001**
No	3.23 (3.24)		0.87 (1.32)		1.61 (1.98)	
Career Path						
Academic Medicine	14.19 (18.21)	**-6.35, .0001**	4.46 (5.95)	**-5.17, .001**	4.67 (4.66)	**-4.84, .0001**
Private Practice	4.47 (4.96)		1.67 (2.32)		2.38 (2.56)	
Gender						
Male	8.01 (13.16)	**-1.02, .3078**	2.63 (4.41)	**-0.61, .5404**	3.45 (3.93)	**-2.06, .0406**
Female	6.44 (8.97)		2.31 (3.28)		2.52 (2.64)	

The Problem

The Accreditation Council for Graduate Medical Education (ACGME) requires that ophthalmology residents participate in scholarly activity during residency. However, to our knowledge it is unknown whether research publications during undergraduate, medical school, residency or fellowship training predict future academic publication performance among ophthalmologists. The aim of this study was to (1) measure scholarly research productivity (as measured by the h-index) among ophthalmology residency graduates, as measured by peer-reviewed publication output, and its relation to future publication output, and (2) evaluate whether scholarly impact of academic ophthalmologists is correlated with any specific characteristics.

Key Results

Graduates that had a higher mean total publication (M = 9.05, SD = 12.95) were significantly more likely to be in a fellowship than those that did not (M=3.23, SD=3.24) (t_{234}= -3.89, p = .0001). Graduates with more first person publications and higher H-index values were also significantly more likely to pursue fellowships (t_{234}= -3.87, p = 0.0001) (t_{234}= -3.93, p = 0.0001).

Graduates that had a higher mean total publication (M = 14.19, SD= 18.20) were more likely to be found in academic careers than those that did not (M=4.47, SD = 4.96) (t_{234}= -6.35, p = 0 .0001). Graduates with more first person publications and higher H-index values were also significantly more likely to pursue academic careers (t_{234}= -5.17, p = 0.001) (t_{234}= -4.84, p < 0.0001).

Gender proved to not be a significant determination of research pursuit in terms of publication or first person publication numbers (t_{234}= -1.02, p = .3078) (t_{234}= -0.61, p = .5404). However, H-index values for men (M = 3.45, SD= 3.93) and women (M = 2.52, SD=2.64) were significantly different (t_{234}= -2.06, p = 0.0406).

Methods

This study is cross-sectional in nature and included a random sample of 50 ophthalmology residency programs. From each program, a list of graduating residents from years 2013, 2014, and 2015 was compiled and each graduate was search on Scopus, PubMed, and Google Scholar. The publications of each graduate were then identified and data was extracted and collected in a double blind, duplicate fashion by 2 investigators. Research publication output was then stratified and analyzed.

The positive correlations between graduates' research productivity, career and future research outcomes could present an interesting aspect for residency program directors or education policy makers. Since research training and participation during residency may be critical to producing ophthalmologists who move the field forward through the research, efforts are needed to emphasize and encourage research participation during medical training.

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