

# Publication and Research Trends Among Neurological Residents



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## Introduction

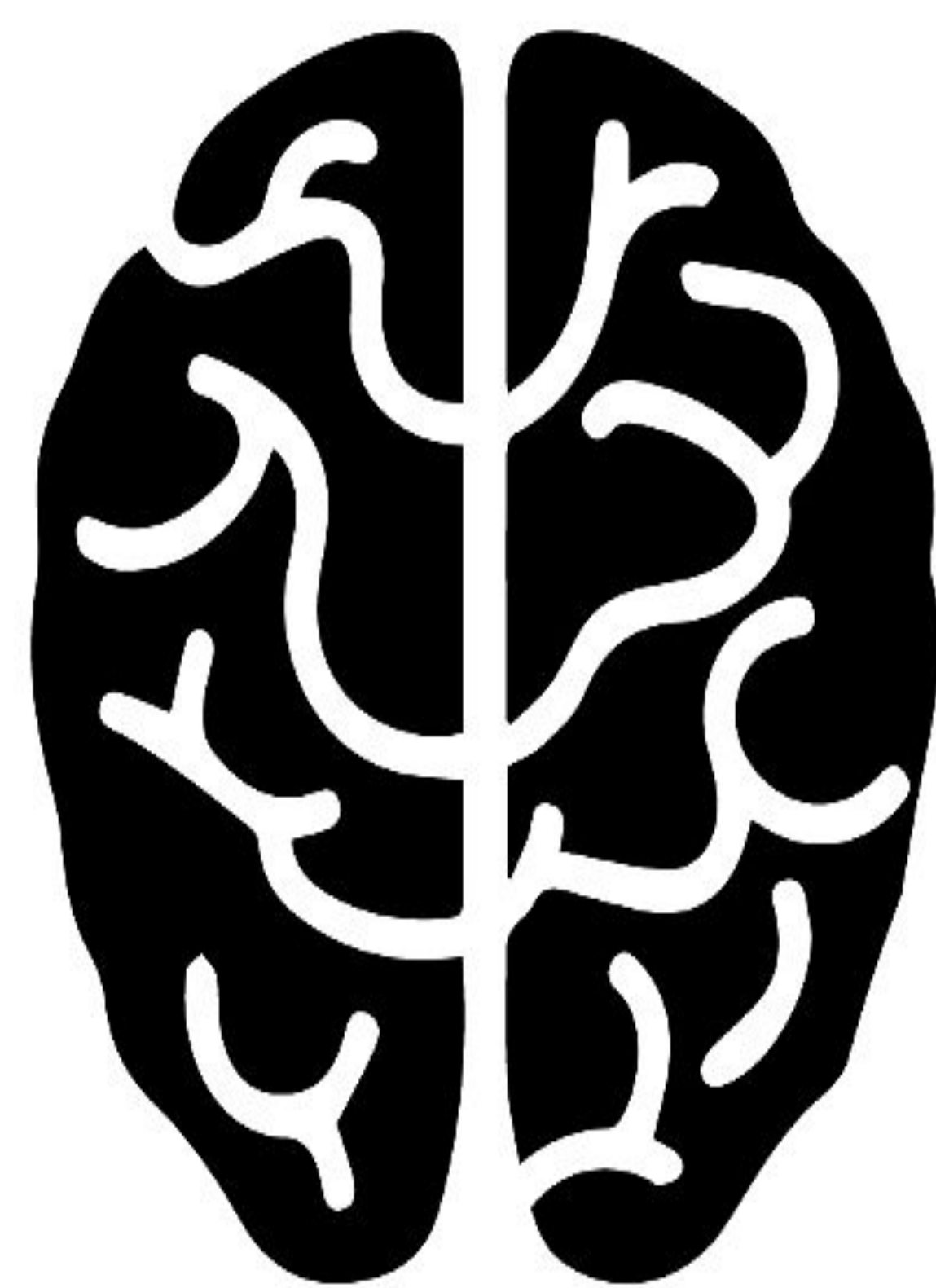
Research is a critical aspect of residency training, but many programs lack a robust research component in their curriculum. Research publications are one way that physicians can advance their career in academic medicine, and the number of publications is often used as a criterion for determining suitable fellowship applicants.<sup>1-3</sup> In this study, we evaluate the relationship between publications during and after residency in the field of neurology as well as analyze the relationship between number of publications and characteristics such as gender and career path.

## Methods

We randomly selected 50 ACGME Neurology residency programs from across the United States and recorded the number of publications, h-index, gender, fellowship choice, and career path for each graduate between 2013-2015 in a duplicate, double-blind extraction process. Each publication was sorted into time frames before residency, during residency, and after residency.

## Results

The study included a total of 379 neurology residents from 25 different residency programs. Residents who pursued academic medicine had a significantly higher mean total publications (M = 10.1, SD 16.4) than those who pursued private practice (M = 4.2, SD 9.0) (t377 = -4.5, p < 0.000). The mean total publications for male residents (M = 8.6, SD 16.5) was significantly higher than female residents (M = 4.1, SD 5.6) (t377 = -3.6, p < 0.0002). Pearson correlation also revealed a correlation between publications during residency and publications after residency, with a Pearson product moment correlation of 0.61.



**Table 1: Sample Characteristics**

Characteristics	Total N=379 (%)
<b>Sex</b>	
Male	190 (50.1)
Female	189 (49.9)
<b>Medical Degree Obtained</b>	
MD	336 (88.7)
DO	32 (8.4)
MBBS	11 (2.9)
<b>H-Index</b>	
0	136 (35.8)
1-5	191 (50.4)
6-10	41 (10.8)
11-15	6 (1.6)
16-20	3 (0.8)
21-25	1 (0.3)
31-35	1 (0.3)
<b>Publications</b>	
0	106 (30.0)
1-10	205 (54.1)
11-20	44 (11.6)
21-30	15 (4.0)
31-40	3 (0.8)
41-50	2 (0.5)
51-60	1 (0.3)
61-70	1 (0.3)
71-80	1 (0.3)
81-90	1 (0.3)
111-120	2 (0.5)
<b>Fellowships</b>	
Clinical Neurophysiology	46 (12.1)
Vascular Neurology (stroke)	43 (11.3)
Movement Disorders	38 (10.0)
Neurocritical Care	34 (9.0)
Neuromuscular Medicine	29 (7.7)
Multiple Fellowships	25 (6.6)
Neurophysiology	24 (6.3)
Epilepsy	24 (6.3)
Neuro-Oncology	14 (3.7)
Neuroimmunology (Multiple Sclerosis)	14 (3.7)
Headache Medicine	13 (3.4)
Sleep Medicine	7 (1.8)
Other	36 (9.5)

## Summary

The positive trend between number of publications during residency and publications after residency, demonstrates the significance of implementing a curriculum with strong research principles and practices. A research component has the potential to cultivate critical-thinking skills and encourage residents to remain current with medical innovations while in practice. We also report a higher number of mean total publications by those who pursued academic medicine than those who pursued private practice. In addition, the results show an underrepresentation of females in neurology research, indicating a need to encourage more females to engage in neurological research and possibly STEM fields in general at an earlier stage in their educational career.

**Table 2: Resident total publications, first author publications, or h-index by fellowship status, career path, and gender**

	Mean Total Publications (SD)	t value, p value	Mean Total First Author Publications (SD)	t value, p value	Mean H-index (SD)	t value, p value
<b>Overall Sample (n= 379)</b>						
	6.3 (12.5)	-	2.5 (5.8)	-	2.4 (3.6)	-
<b>Fellowship (n= 379)</b>						
<b>Yes</b>	6.6 (12.5)	t = -1.3, p < 0.100	2.6 (5.9)	t = -0.71, p = 0.238	2.5 (3.6)	t = -1.7, p = 0.046
<b>No</b>	3.4 (11.8)		1.8 (4.4)		1.3 (2.5)	
<b>Career Path (n= 379)</b>						
<b>Academic Medicine</b>	10.1 (16.4)	t = -4.5, p < 0.000	4.0 (8.3)	t = -3.8, p < 0.0001	3.4 (3.7)	t = -4.2, p < 0.000
<b>Private Practice</b>	4.2 (9.0)		1.7 (3.6)		1.8 (3.3)	
<b>Gender (n= 379)</b>						
<b>Male</b>	8.6 (16.5)	t = -3.6, p < 0.0002	3.5 (7.7)	t = -3.3, p < 0.0005	2.9 (4.2)	t = -2.6, p < 0.005
<b>Female</b>	4.1 (5.6)		1.5 (2.7)		1.9 (2.6)	

## REFERENCES OR ACKNOWLEDGEMENTS

- McDermott M, Gelb DJ, Wilson K, et al. Sex Differences in Academic Rank and Publication Rate at Top-Ranked US Neurology Programs. *JAMA Neurol.* 2018;75(8):956-961.
- Campbell PG, Lee YH, Bell RD, et al. Medical school and residency influence on choice of an academic career and academic productivity among US neurology faculty. *Arch Neurol.* 2011;68(8):999-1004.
- Prasad V, Rho J, Selvaraj S, Cheung M, Vandross A, Ho N. Can a resident's publication record predict fellowship publications? *PLoS One.* 2014;9(3):e90140.

