



Corbin Walters, BS<sup>1</sup>, J. Michael Anderson, BS<sup>1</sup>, Sydney Ferrell, BS<sup>1</sup>, Micah Kee, BS<sup>1</sup>, Austin L. Johnson, BS<sup>1</sup>, Matt Vassar PhD<sup>1</sup>

<sup>1</sup>Oklahoma State University Center for Health Sciences, Department of Psychiatry and Behavioral Sciences, Tulsa, Oklahoma, USA

Abstract

Research during medical training is widely considered to be an integral component of residency and fellowship match success, with many residency programs encouraging residents to engage in scholastic activities, such as serving as authors on peer-reviewed publications. However, the degree to which these scholarly practices continue beyond residency is unknown. Here, we report an investigation of publication trends among graduates of anesthesiology residency programs as part of a larger initiative to examine publication trends and academic achievement across medical specialties.

Methods

We employed a cross-sectional study design analyzing research output by graduates of anesthesiology residencies in relation to future publications and academic accomplishments from a random sample of 50 anesthesiology residency rosters using Doximity. For each graduate, we extracted from Scopus the number publications, H-index score, fellowship attainment, and post-graduate practice setting by two independent and blinded investigators.

Results

We identified 153 anesthesiology residency programs, of which 50 were randomly selected. Sixteen programs provided rosters, consisting of 390 graduates. The majority of graduates (197/390, 50.5%) had 1 or more publications, while 193 (49.5%) had zero publications, with an average of 2 publications per graduate and a median H-index score of 1.2. Most graduates pursued a fellowship (227/390, 58.2%), however, less than one-quarter (101/390, 25.9%) currently practice in an academic setting. Pearson correlation test demonstrated a positive correlation between the number of publications before residency and H-index (0.84), as well as during (0.33) and after residency (0.39). Graduates that had higher mean total publications were more likely to go into academic medicine (M = 3.8, SD 0.6) and pursue a fellowship after residency (M = 3.1, SD 0.4) than those that did not (M = 1.4, SD 0.3) (t390=-4.2, p <.001) and (M = 0.5, SD 0.1) (t390=-5.2, p <.001), respectively. Male graduates (M = 2.4, SD 0.4) had a higher mean publication total than female graduates (M = 1.3, SD 0.2) (t390=-2.0, p <.05).

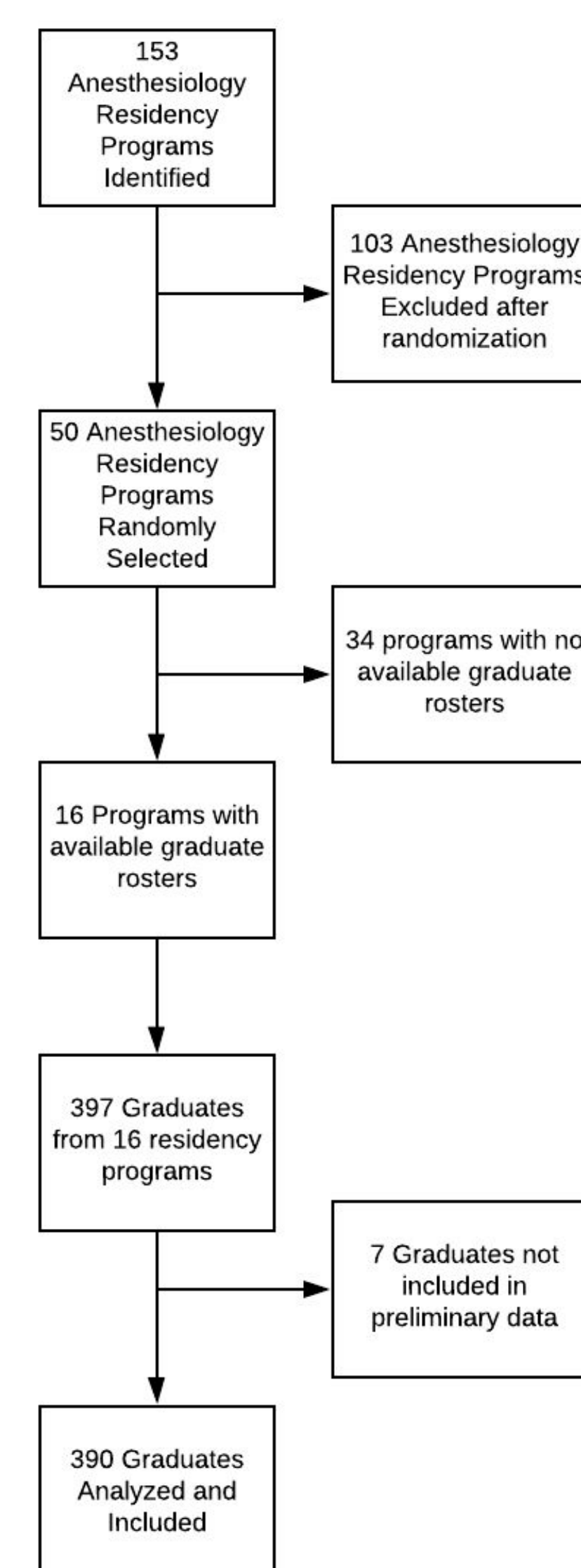


Figure 1. Flowchart of Included Anesthesiology Programs and Graduates

**Table 1. Characteristics of anesthesiology residency graduates.**

Characteristics of graduates	No. (%)
<i>Graduation year (n=390)</i>	
2013	99 (25.4)
2014	119 (30.5)
2015	172 (44.1)
<i>Degree (n=390)</i>	
MD	191 (87.7)
DO	44 (11.2)
MBBS	4 (0.01)
<i>Gender (n=390)</i>	
Male	255 (65.4)
Female	135 (34.6)
<i>Fellowship (n=227)</i>	
Ambulatory	1 (0.5)
Ambulatory	1 (0.5)
Quality/Safety	52 (22.9)
Cardiothoracic	24 (10.5)
Critical Care	1 (0.5)
Perioperative Management	6 (2.6)
Neuroanesthesiology	
Obstetric	10 (4.4)
Pain Medicine	65 (28.6) 40 (17.6)
Pediatric	26 (11.4)
Regional	1 (0.5)
Transplant	
<i>Post-residency Position (n=390)</i>	
Academic Medicine	101 (25.9)
Private Practice	289 (74.1)

Summary

Despite scholastic activity being a requirement of graduate medical education, few graduates of anesthesiology residency programs are publishing research. We believe that promoting greater physician involvement in the research process will strengthen confidence in the interpretation and application of research findings to clinical practice

**Table 2. 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 Total First Author Publications (SD)	t value, p Value	Mean h-index (SD)	t value, p Value
<i>Sample (n=390)</i>						
Overall	2.0 (5.0)	-	0.2 (1.0)	-	1.2 (2.9)	-
<i>Fellowship (n=390)</i>						
Yes	3.1 (0.4)	t=-5.2 p<0.001*	1.1 (0.2)	t=-4.5 p<0.001*	1.7 (0.2)	t=-4.6 p<0.001*
No	0.5 (0.1)		0.2 (0.03)		0.4 (0.1)	
<i>Career Path (n=390)</i>						
Academic Medicine	3.8 (0.6)	t=-4.2 p<0.001*	1.3 (0.3)	t=-3.8 p<0.001*	1.7 (0.3)	t=-2.1 p=0.05*
Private Practice	1.4 (0.3)		0.5 (0.1)		1.0 (0.2)	
<i>Gender (n=390)</i>						
Male	2.4 (0.4)	t=-2.0 p<0.05*	0.8 (0.1)	t=-0.9 p=0.15	1.4 (0.2)	t=-1.7 p=0.078
Female	1.3 (0.2)		0.5 (0.1)		0.8 (0.1)	

