

Editorial

Discrimination against female surgeons is still alive: Where are the full professorships and chairs of departments?

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Abstract

Background: Although half of all medical students are now and women are increasingly filling surgical residency positions, few ascend the academic ladder to become chairman of their departments, much less full academic professors.

Methods: We queried PubMed to search for the number of women surgeons in different subspecialties, and asked how many were chairman or full academic professors?

Results: Data coming out of largely general or cardiothoracic surgery departments cited no substantial gains for women surgeons over the years; there were few chairmanships or full professorships. In one study of 54 female cardiothoracic surgeons, 60% of academic appointments were at the instructor or assistant professor level; only 18% were full professors. In another study looking at 12-year data from major academic medical institutions in the US, women constituted only 9.2% of chairs, only 14.7% of full professors, and just 9.3% of deans. In a third study, out of 270 female general surgeons, there were only three who were chairman, and just 12.4% were tenured professors. In Great Britain/Ireland, of 315 neurosurgeons (25 females), all 16 full professors were males. Two medical/surgical series speculated it would take until 2096 or 2136 for females to attain 50% of full professorships. The American Association of Neurological Surgery (U.S. 2017; personal communication) showed that of 287 Board-certified female neurosurgeons, there is just one female surgeons chairman.

Conclusions: Few female physicians/surgeons were chairs of departments or full professors at their academic institutions. Do women in medicine/surgery really need to wait until 2136 to achieve equality?

Key Words: Chairman, departments, full new professors, minorities, unequal treatment, women surgeons

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INTRODUCTION

How many times during our surgical residency training programs did our male chairman tell us that they tried to train women surgeons, but they just dropped out? When asked how many of their male trainees failed, they were at a loss for words. Now that half of the medical students are women, and many fill surgical residency training

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programs, we ask how many women are chairs of surgical departments or are full professors?

MATERIALS AND METHODS

In this study, we utilized PubMed to search for women in different surgical subspecialties. We assessed the numbers who were chairs or full professors of their departments, and whether they were treated equally (e.g. financially, administratively, academically). Additionally, through a personal communication (February 2017), data was obtained from the American Association of Neurological Surgery (AANS) regarding the number of board certified female neurosurgeons in the US.

RESULTS

Few women are full professors or chairs of cardiothoracic surgery

In two studies involving female cardiothoracic surgeons, few became full professors, even fewer were chairs of their departments, and they were also more likely to be underpaid.^[3,4] In 1996, Dresler *et al.* found that 27% of academic female and male cardiothoracic surgeons were assistant professors, but 27% men vs. just 13.6% of women were full professors [Table 1].^[4] Additionally, 58% of women but only 21% of men were

underpaid, while 32% of women 62% of men were adequately compensated. Donington *et al.* (2012) assessed 50 years of data regarding women cardiothoracic surgeons (boarded by the American Board of Thoracic Surgery (ABTS)); notably, >60% (33 of 54) of women with academic appointments were just instructors or assistant professors, while only 18% (10 of 54) were full professors [Table 1].^[3]

Few women are full professors or chairs of general surgery departments

Five studies documented how women in general surgery fell below their male counterparts in numbers of full professorships, chairman, and administrative appointments.^[1,2,7,8,11] In 2004, Schroen *et al.* surveyed 371 academic general surgeons, (e.g., members of the American College of Surgeons (ACS) (1998-1999)); they found that 150 of 168 (94%) men, but only 64 of 149 (42.9%) women were in tenure-track positions [Table 1].^[7] When Wyrzykowski *et al.* (2006) evaluated academic appointments for 270 female academic general surgeons (e.g., boarded/eligible for the American Board of Surgery), although full-time academic appointments were held by 86.7% of respondents, most were assistant professors or on a clinical track, and just 12.4% were tenured professors, while only three were chairman [Table 1].^[11] Using the Women in Medicine Annual Reports (American Association of Medical

Table 1: Women medical/surgeon data in the US 1996-2012

Author Date	Type of Surgery Specialty	Numbers M vs. F Practices	Variables Academic Titles	Variables Academic Titles	% Full Professors % Chairs Institute of Health
Dresler ^[4] 1996	Surveyed F CTS Members ABTS Academic Practices	Equal Number Assistant Professors 27% M 27% F	More Male Full Professors: 27% M 13.6% F	Underpaid: 58% F 21% M	Adequately Compensated: 62% M 32% F
Schroen ^[7] 2004	Survey GS 1076 F 2152 M ACS Data 1998–1999 168 M 149 F	Tenure track 86 M 64 F	Females < rank, tenure, Income, advancement	Average Articles: 10 F 25 M	29% F Think about leaving academia vs. 10-20% M
Wyrzykowski ^[11] 2006	Academic GS 270 W (age range 32–70) Boarded or Board eligible	82.3% Fellowships-Most Critical Care	Most did breast surgery 86.7% Full-time academic appointments	Most Assistant Prof. clinical track	Only 12.4% tenured Prof. Only 3 chairs
Sexton ^[8] 2012	Pipeline Busted for F Academic Surgeons: Data 1995-2009	Medical students Surgery resident Full Prof. Surgery	Based on Women in Medicine Annual Reports AAMC	Slope Full F Prof. much less vs. F medical students or residents	Will take until 2096 to have equity with M: 50% Full Prof. surgery 2096
Donington ^[3] 2012	Thoracic Surgery Average Years in practice 8 (1-30) CTS Surgeons Responded 121 (64%)	16/54 Research Funding 20% Research time	Mean age 48 (35-74) Caucasian 94/121	Group 1 (1961-1999); 8.5 years training Group 2: 2000-2010 9.5 years training	54 Academic Titles 60% Instructor or assistant Prof. 18% (10/54) Full Prof.

AAMC: American Association of Medical Colleges, ABTS: American Board of Thoracic Surgery, ABS: American Board of Surgery, ACS: American College of Surgeons, CBI-R: Career Barriers Inventory-Revised, CTS: Cardiothoracic Surgery, FACTS: Faculty Administrative Management Online User System, GB: Great Britain, KYU: Kyoto University Hospital, NIH: National Institute of Health, SBNS: Society of British Neurological Surgeons, Prof.: Professors, F: Females, M: Males, GS: General Surgery

Colleges (AAMC)), Sexton *et al.* (2012) documented that 50% of women filled medical school classes (50%), and large numbers were in residency training programs, but few became full professors of surgery [Table 1].^[8] They also calculated that at this rate, it will take until around 2096 for 50% of full professorships to go to women. As of 2013, Cochran *et al.* emphasized that women comprise 50% of US medical students and one third of US surgical residents, but rarely have senior academic or administrative titles [Table 2].^[2] Using a modified Career Barriers Inventory-Revised (CBI-R) given to senior surgical residents and early-career surgical faculty at 8 academic medical centers (70 women and 84 men), they documented that women perceived active discrimination and sexual bias that negatively impacted their aspirations to become female surgeons.^[2] Additionally, utilizing the Association of American Medical Colleges FACTS and Faculty Administrative Management Online User System,

Abelson *et al.* (2016) confirmed the “glass ceiling” in surgery for women (1994 to 2015) is still alive; they confirmed that women made up less than 10% of all full professors, and calculated they would not achieve gender parity until 2136 [Table 2].^[11]

Few minorities are full professors or chairs of academic departments

Women, along with Asians, African Americans, and Hispanics (e.g., minorities) hold few academic or administrative positions in medicine/surgery.^[5,9,12] Southwick in 1999 was one of the first to initiate pioneering efforts to bring African Americans and other minorities into the Yale University Orthopedic Surgical Residency Training Program [Table 1].^[9] In 2013, Yu *et al.* looked at the number of minorities found in academic medicine over a 12-year period utilizing the Association of American Medical Colleges’ data (1997 to 2008) [Table 2].^[12] Women represented 9.2% of chairman

Table 2: Women medical/surgeon data in the US 2013-2016

Author Date	Type of Surgery Specialty	Numbers M vs. F Practices	Variables Academic Titles	Variables Academic Titles	% Full Professors %Chairs Institute of Health
Cochran ^[2] 2013	50% F Medical Students 1/3 F US Surgery Residents	Study of CBI-R Survey 8 Academic MC	70 F 44 residents 26 faculty 84 M 41 residents 43 faculty	Women cited; Discrimination: Treated differently Negative comments regarding sex	Overt and implied bias Felt excluded
Yu ^[12] 2013	12 Year study Academic Institutions US- AAMC Database 1997-2008	% Minorities: Professors Chairs Deans	Whites 84.76%; 88.26% 91.28% Asians: 6.6%, 3.52%, 0%	Blacks 1.25%, 2.69%, 4.94% Hispanics: 2.76%, 3.37%, 2.91%	Women 14.7% Prof. 9.2% Chairs 9.3% Deans
Okoshi ^[6] 2014	Over 30 years Women in Medicine in Japan 10.6% to 19.7% (2012) of Physicians	Few F Top Tiers Academia Fewest in Surgery	Kyoto U Hospital 2009-2013: 281 M temporary and 242 Tenure track	108 F Temporary Only 1/5 F (n-24) tenure track 3 F Associate Prof. medicine 8.1%	No F associate or full professor surgery
Jena ^[5] 2015	Sex differences 91,073 US NIH Database	Variables: Sex Age Specialty Papers NIH Funding	30,464 F vs. 60,609 M NIH Grants 6.8% F 10.3% M (Total 9.1% with NIH grants)	Full professors 11.9% F (3623) 28.6% M (17,354) Fewer F Full Prof. In all specialties	Fewer F Publications 11.6 F 24.8 M
Wilkes ^[10] 2015	Neurosurgeon publications GB, Ireland	SNS Database in GB	315 neurosurgeons (25 females)	Publications for functional neurosurgery	16 British Prof. Neurosurgery No F
Abelson ^[11] 2016	Glass ceiling Surgery for Women 1994-2015 AAMC FACTS	Female Graduates increased avg 0.5% per year 1994-2014	F in GS: number doubled but only 38.% of general surgery trainees in 2014 were F	F Full Prof. Increased average 0.3% from 1994-2015; less than 10% of full professors	Little over 20 years will take until 2136 for 50% of Full Prof to be F

AAMC: American Association of Medical Colleges, ABTS: American Board of Thoracic Surgery, ABS: American Board of Surgery, ACS: American College of Surgeons, CBI-R: Career Barriers Inventory-Revised, CTS: Cardiothoracic Surgery, FACTS: Faculty Administrative Management Online User System, GB: Great Britain, KYU: Kyoto University Hospital, NIH: National Institute of Health, SBNS: Society of British Neurological Surgeons, Prof.: Professors, F: Females, M: Males, GS: General Surgery, MC: Medical Centers

14.7% of full professors, and 9.3% of deans. They also noted that “at the current rate, it would take nearly 1000 years for the proportion of Black physicians to catch up to the percentage of African Americans in the general population”. Analyzing a database of US physicians with medical school faculty appointments in 2014 (91,073 physicians; 9.1% of all US physicians), Jena *et al.* (2015) documented that although there were 30,464 women vs. 60,609 men, many fewer women were full professors; 3623 women (11.9%) vs. 17,354 men (28.6%) [Table 2].^[5]

International inequity (Japan, Great Britain/Ireland) in the treatment of women in medicine/surgery

Two international studies from Japan and Great Britain/Ireland also confirmed how few women were full professors or chairs of medical/surgical departments.^[6,10] Okoshi *et al.* (2014) noted that the number of women in medicine in Japan had increased from 10.6% in 1986 to 19.7% in 2012, but they were underrepresented regarding academic appointments, particularly in surgery [Table 2].^[6] Furthermore, a review of data from Kyoto University Hospital (KYU) (2009–2013), revealed there were no female associate or full professors in surgery. Wilkes *et al.* used the Society of British Neurological Surgeons (SBNS) database (e.g., including Great Britain and Ireland: 2015) to identify 315 neurosurgeons, 25 of whom were females; they found all 16 full professors were men [Table 2].^[10]

Personal communication with American Association of Neurological Surgeons (February 22, 2017: Chris Ann Philips, Director, AANS Member Services) for U.S. data on board certification of women in neurosurgery

Presently, there are 287 board certified female neurosurgeons in the US [Table 3]. Of these, 216 are practicing, two are in the military, 33 have retired, and 34 are board certified but non members of the AANS (e.g., aware numbers do not completely add up) [Table 3]. Of these, there is only one female chairman of a neurosurgical department. There are also 51 female neurosurgeons who are now board eligible, another 123 who have an “unknown” certification status, and 246 who are residents (226) or fellows (20). Perhaps the high numbers in the pipeline will increase the number of female chairman in the future, as well as full professors.

CONCLUSIONS

Although we wish women were making more forward strides in becoming full professors and chairman of medical/surgical academic departments, the data simply do not support this notion. In fact, few women in academic centers have appointments beyond the instructor or assistant professors levels; even fewer

Table 3: Gender = Female Neurosurgeons with USA Address

Number	Category	AANS Membership Breakdown
287	Board Certified	AANS=216 Practicing 2 Military 33 Retired Non-Member=34 (Recognized numbers not add up)
51	Board Eligible	AANS=50 Practicing 1 Military
123	Certification Status Unknown	Non-Member=123
246	Residents or Fellows	AANS=20 Fellows 226 Residents

Data From American Association of Neurological Surgeons (AANS) February 22, 2017 (Personal Communication: Chris Ann Philips, Director, AANS Member Services)

are full professors (14.7% to 18%) or chairman (3 of 270 = 1.1%). In neurosurgery (February 22, 2017: Personal Communication, Chris Ann Philips, Director, AANS Member Services), there are 287 board-certified female neurosurgeons in the US., but only one chair of neurosurgery [Table 3]. Two other non-neurosurgical medical/surgical series speculated that it would take until 2096 or 2136 for women to achieve equity (e.g., 50% of full professorships) in medical/surgical departments; do we women really need to wait that long?

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Commentary

I am not sure amusing is the emotion I experience when reading this. I remember talking with Mary Louise Spencer nearly 29 years ago and wondering why there were so few women in practice and in training at that time. There are definitely more women now, but certainly not at the 50% level seen in medical schools. That doesn't bother me, not everyone has the ability to rise to the level of a neurosurgeon nor does every medical student want to. When my son was in medical school and his friends would be at our house they'd talk about going into cardiovascular surgery, pediatric oncology, and even neurosurgery but when they finished their 4 years and matched they went into anesthesiology, family practice, and emergency medicine (the direction my son went). I don't know of any of his classmates who went into neurosurgery (graduating class of about 120). Is that OK? I think so, regardless of gender, not everyone is the best of the best.

The politics of academic rank is a whole other thing. Not every gifted neurosurgeon has the business or political

acumen nor desire to go the academic route. I'm OK with that, too.

Just because I'm OK with these things or understand them, doesn't mean that if one of my grand-daughters wants to become a neurosurgeon and chairman of her department that I wouldn't do everything I can to make that happen (not that I have any influence or will even be around when they get to that age). I think it's really sad that they project equality so far in the future but then I'm not much inclined to believe that global warming is all the fault of mankind.

Interesting to think about, but I'll get off my soapbox now. Although my opinion is valid based on my experience, I'm not in the trenches and seeing it firsthand so I appreciate the opinion of those who are.

Chris Ann Philips

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