

The WTS Report on the Current Status of Women in Cardiothoracic Surgery

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Background. The purpose of this work was to assess career demographics, professional activities, and career satisfaction of board-certified female cardiothoracic surgeons in the United States, 50 years after certification of the first women diplomats by the American Board of Thoracic Surgery (ABTS).

Methods. All ABTS-certified women were surveyed anonymously in December 2010, using [surveymonkey.com](http://www.surveymonkey.com). Questions were in five categories: demographics, training, practice activities, activities of nonpracticing cardiothoracic surgeons, and career satisfaction. Respondents were grouped by year of certification: group 1 (1961 to 1999) and group 2 (2000 to 2010). Broad comparisons to the entire thoracic surgery workforce were based on The Society of Thoracic Surgeons and American Association for Thoracic Surgery 2009 practice survey.

Results. Of the 204 living female diplomats, 190 were surveyed, as 14 (7%) were unavailable owing to lack of contact information. Survey response rate was 64% (121 of 190). Mean respondent's age was 48 years (range, 35 to 74), with the majority being Caucasian (94 of 121). Women spent a mean of 9.1 years in training, and 56% (68 of 121) reported non-Accreditation Council for Graduate Medical Education training time. Duration of training and resultant debt has increased over time, as respondents in group 1 ($n = 52$) reported training for 8.5 years versus 9.5 years in group 2 ($n = 68$; $p = 0.01$), and a doubling of graduates with educational debt more than \$100,000 from 19% to 41%, respectively ($p = 0.003$). The

average number of years in practice was 8 (range, 1 to 30), with the majority working in urban setting (65 of 106), in group practices of 2 to 10 surgeons (82 of 106), and as the sole female surgeon in their group (84 of 106). Of the 54 women with academic appointments, more than 60% (33 of 54) are at the instructor or assistant professor level, but 18% (10 of 54) are full professors. Nearly a third (16 of 54) have secured research funding, and 20% (11 of 54) have protected research time. Job satisfaction is high, with 64% (76 of 118) reporting being always or almost always satisfied with their career, and fewer than 9% (11 of 118) would choose a different career. Although demand on time is the greatest source of dissatisfaction, workplace politics for group 1 and lack of support for group 2 are significant issues. Only 12 respondents are no longer practicing, with the majority leaving because of retirement, health issues, or career advancement.

Conclusions. Women represent a minority of cardiothoracic surgeons in the United States. The numbers in academic versus private practice are roughly equal, with high levels of job satisfaction in both. Importantly, 90% of surveyed women remain in practice and are academically productive; 50% entered the profession in the past 10 years. The exponential increase in the number of women in the field over the past 10 years provides optimism for continued recruitment.

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The American Board of Thoracic Surgery (ABTS) certified its first diplomat in 1948; however, it was not until 1961 that the first women, Nina Starr Braunwald, Ann S. McKiel, and Nermin D. Tutunji, were certified. By 1980, only 10 women had received ABTS certification. The year 2011 was the 50th anniversary of that event,

which coincided with the milestone of board certification of the 200th female cardiothoracic surgeon. Although women have achieved prominent leadership roles in cardiothoracic surgery over the past 50 years, they still represent a significant minority among the 5,400 male diplomats certified during that same time. The Women in Thoracic Surgery (WTS) was established as a professional organization in 1986 to provide mutual support and facilitate professional advancement for women in cardiothoracic surgery. As part of this mission, the WTS surveyed all ABTS-certified female cardiothoracic surgeons in an attempt to define the current professional status of women in cardiothoracic surgery to better understand and serve its membership and benefit the profession as a whole.

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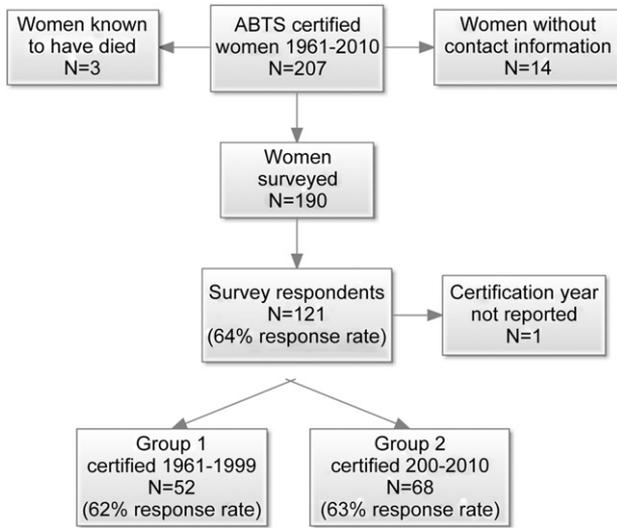


Fig 1. Flow chart demonstrating the number of American Board of Thoracic Surgery (ABTS)-certified women and their participation in survey and cohorts for analysis.

Material and Methods

The survey population was limited to all women receiving ABTS certification. The ABTS does not collect sex information, and therefore, the assumption of sex was based upon name recognition. A total of 207 female diplomats were identified from a list of all diplomats receiving certification since 1961. Three were known to have died.

The survey was approved by the WTS executive committee and consisted of 26 questions in five categories: demographics, training, current practice activities, activities of those not practicing thoracic surgery, and professional satisfaction. The survey was conducted from November 2010 through January 2011, using tools from *surveymonkey.com*. All responses were voluntary and anonymous. The survey was sent to 190 of the living 204 female diplomats. Contact information was collected from the WTS membership database, CTSNet, Google, and the most recent institution of known employment. The majority (167) were contacted by electronic mail, with up to three reminders. Paper surveys with a cover letter and postage-paid envelopes were mailed to an additional 23 female diplomats without available e-mail addresses. Contact information was not available for 14 women.

Respondents were placed into two cohorts based upon the year of ABTS certification. The early cohort (group 1) was composed of the first 100 female diplomats, who were certified between 1961 and 1999. Group 2 represented the next 107 diplomats, all of whom were certified between 2000 and 2010. Comparisons between groups were made using independent *t* tests using SPSS-19 (IBM, Armonk, NY). One respondent is excluded from those comparisons because year of certification was not indicated (Fig 1). Broader comparisons between female cardiothoracic surgeons and the entire thoracic surgery

workforce were based on the recent report by The Society of Thoracic Surgeons (STS) and the American Association for Thoracic Surgery (AATS) Thoracic Surgery Workforce, the 2010 snapshot [1].

Results

A total of 121 women completed the survey for a response rate of 64%, which exceeded the response rates for the 2000, 2005, and 2009 STS/AATS practice surveys [1, 2]. Response rates were not significantly different between groups 1 and 2, at 62% (52 of 83) and 63% (68 of 107), respectively ($p = 0.34$).

Demographics

The median age of all respondents was 48.2 years (range, 35 to 74), nearly 5 years younger than the median for the entire thoracic surgery workforce [1]. This difference is likely because the majority of female diplomats (52%) were certified in the past decade (Fig 2). Seventy-eight percent of respondents (94 of 121) describe themselves as Caucasian, 17% (21 of 121) as Asian, 3% (4 of 121) as black, and less than 2% (2 of 121) as Latino/Hispanic.

Training

The majority of respondents had 7 to 10 years of training after medical school; the mean was 9.1 years, similar to that reported by the workforce as a whole at 8.7 years [1]. Thirty-one percent (37 of 121) of women report residency training for more than 9 years. Training was shorter for group 1 than for group 2, at 8.5 versus 9.5 years, respectively ($p = 0.01$).

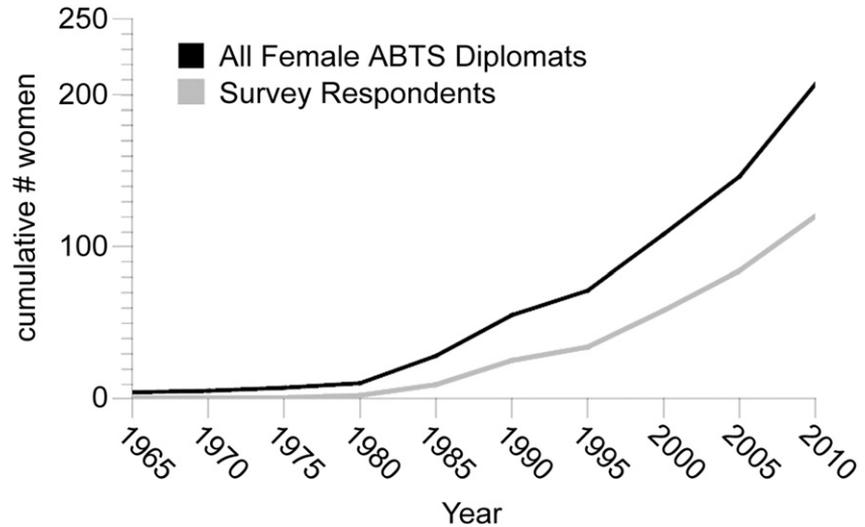
The earlier cohort incurred significantly less educational debt than the subsequent group ($p = 0.003$; Fig 3). Nineteen percent of women certified before 2000 (10 of 52) reported educational debt exceeding \$100,000, compared with 41% (28 of 68) of women certified in the last decade. This pattern is similar to that reported by the entire thoracic surgery workforce, but the percent of female surgeons in the last decade with debt more than \$100,000 is greater than the general STS or AATS cohort graduating in the same time period, 41% versus 33% [1].

The geographic distribution of training sites for female cardiothoracic surgeons is interesting, with a distinct "lake effect" reported for the first 100 females—the majority of women training in programs bordering the Great Lakes [3]. This effect has dissipated over the past decade, with good representation in all geographic regions (Fig 4). Only 19 of the current 72 cardiothoracic training programs were not cited by survey respondents as a training location. The Brigham and Women's Hospital, Mayo Clinic, Medical College of Wisconsin, Montefiore Medical Center, University of Pittsburgh Medical Center, and the University of Washington were each reported as cardiothoracic training site by 4 or more women.

Practice Profile

Female cardiothoracic surgeons reported practicing in 30 different states, 3 foreign countries, and the District of Columbia. New York and California were each reported

Fig 2. Demonstration of increasing numbers of women entering cardiothoracic surgery in the past decade. Population of survey respondents (gray line) mirrors the entire female American Board of Thoracic Surgery (ABTS) certification group (black line).



by more than 10 women each, but all geographic regions were well represented (Fig 5).

Ninety percent (109 of 121) of the respondents were still practicing as cardiothoracic surgeons, with the majority working in an urban setting (61%, 65 of 106), similar to that reported by the entire thoracic surgery workforce at 55.5% [1]. The mode of practice is academic for 51% (54 of 106), private for 25% (27 of 106), large multispecialty group for 8.5% (9 of 106), hospital employee for 8.5% (9 of 106), and Veterans Administration or government for 4% (4 of 106). There was a greater proportion in academic practice and decreased rates of private or multispecialty group practice among women compared with the entire thoracic surgery workforce [1] ($p = 0.03$). The majority of women report being part of a surgical group containing 2 to 10 surgeons, a range similar to the entire workforce, for which mean group size was reported as 5.7 [1]. Eighty percent of respondents (87 of 109) report being the only female surgeon in their practice, with less than 3% (3 of 109) in groups having more than 2 women. Only 5% report being in a private solo practice, which is half the national average for that practice type [1].

The distribution of reported subspecialties is demonstrated in Table 1. The percent of women who identify themselves as general thoracic surgeons is 35.6% (42 of

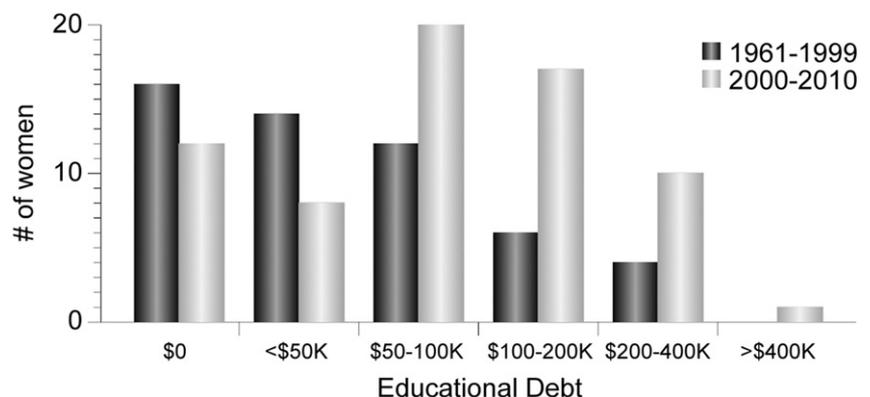
118), higher than the 18% reported by the entire thoracic surgery workforce [1]. The percentage of women who identified themselves as general thoracic surgeons more than doubled in the second cohort of diplomats as compared with the first. Group 2 also contains women who report transplant or critical care as their primary specialty, and a decrease in women who report a mixed practice between cardiac and thoracic or with other surgical specialty.

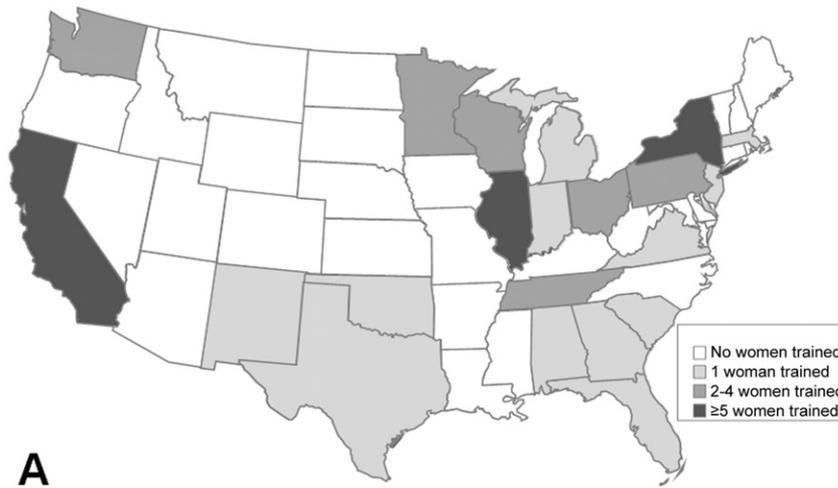
For the 54 women in academics, more than half (33 of 54) are at the instructor or assistant level, 20% (11 of 54) are at the associate level, and 18% (10 of 54) have reached the full professor level. Only 20% (11 of 54) of women report protected research time, but 29% (16 of 54) have secured external research funding.

Leaving Practice

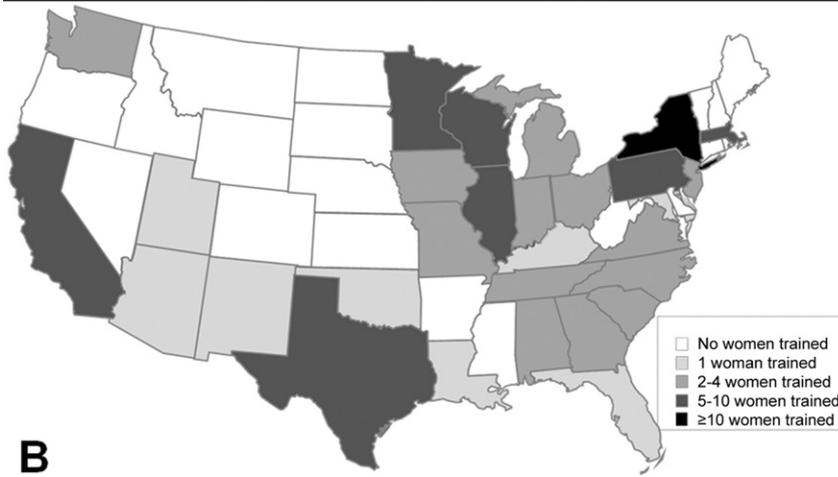
Twelve of the survey respondents are no longer practicing cardiothoracic surgery, and they are all in group 1. They reported a mean of 17.8 years in practice (range, 4 to 30), and retired from cardiothoracic surgery a mean of 8 years ago. The mean age of this subset is 61 years. The reasons for leaving cardiothoracic surgery include workplace politics (3), disability (3), retirement (2), military commitment (1), research (1), academic administration

Fig 3. Bar graph depicts reported educational debt stratified by year of American Board of Thoracic Surgery (ABTS) certification: group 1 certified 1961 to 1999 (black bars) and group 2 certified 2000 to 2010 (gray bars). Women certified in the most recent cohort incurred significantly more educational debt.





A



B

Fig 4. Map demonstrates the location of thoracic surgery training for (A) group 1, certified 1961 to 1999 (white = no women trained; light gray = 1 woman trained; medium gray = 2 to 4 women trained; dark gray = ≥ 5 women trained); and (B) for the entire surveyed cohort (white = no women trained; light gray = 1 woman trained; medium gray = 2 to 4 women trained; dark gray = 5 to 10 women trained; black = ≥ 10 women trained.).

(1), and changing surgical specialty (1). Overall, these 12 women report a high degree of professional satisfaction, with 75% (8 of 12) stating that they were almost always satisfied with their career as a cardiothoracic surgeon.

Professional Satisfaction

Job satisfaction was high among all respondents, with 64.5% (76 of 118) report being always or almost always satisfied with their career as a cardiothoracic surgeon. Rates of

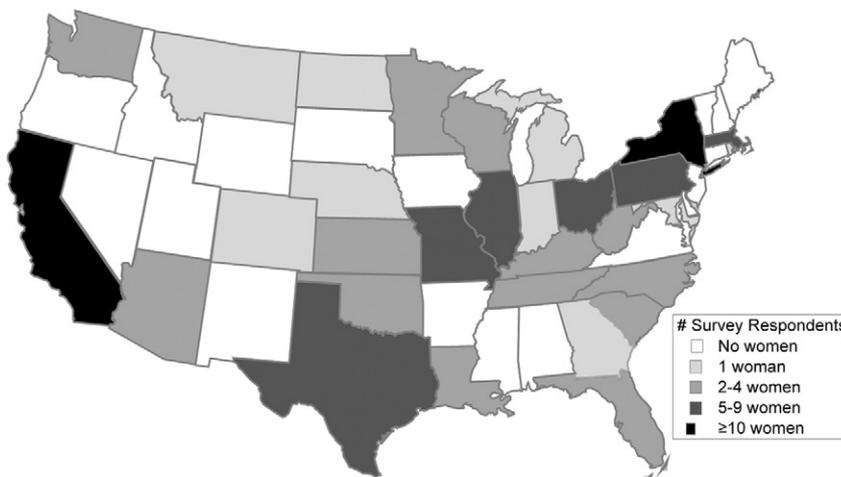


Fig 5. Map demonstrates the reported geographic distribution of women practicing cardiothoracic surgery in the United States. Women also report practices in Nicaragua, Canada, and Australia. (White = no women; light gray = 1 woman; medium gray = 2 to 4 women; dark gray = 5 to 9 women; black = ≥ 10 women.)

Table 1. Distribution of Subspecialty Interest Reported by Entire Cohort of Female Cardiothoracic Surgeons and by First and Second 100 Certified Women

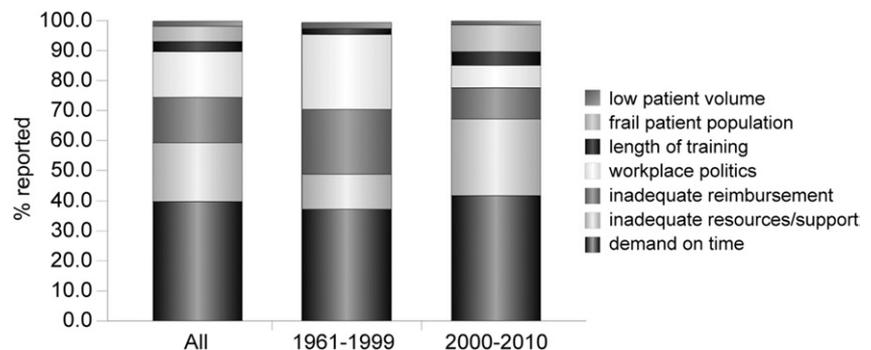
Subspecialty	All Women (n = 118)	Group 1 (n = 51)	Group 2 (n = 67)
Adult cardiac	33 (28.0%)	10 (19.6%)	23 (34.3%)
Congenital cardiac	10 (8.5%)	4 (7.8%)	6 (8.9%)
General thoracic	42 (35.6%)	11 (21.6%)	31 (46.3%)
Critical care	4 (3.8%)	0 (0%)	4 (6.0%)
Heart/lung transplant	1 (0.9%)	0 (0%)	1 (1.5%)
Mixed	16 (13.6%)	14 (27.5%)	2 (3.0%)
Not currently practicing cardiothoracic surgery	12 (10.2%)	12 (23.5%)	0 (0%)

Primary subspecialty interest defined as more than 60% of time.

satisfaction were similar between the first and second certification cohorts (60% versus 67%). The majority of women (64 of 118) report helping the sick as their greatest source of satisfaction, followed by technical skill and operating time by 33% (39 of 118). Financial reward was reported by less than 1%. There was no difference in this response between groups. Career satisfaction was lowest among the women certified before 2000 who were still in practice; 15% (6 of 40) in this group reported being sometimes or rarely satisfied. The greatest source of professional dissatisfaction for all women was demand on time at 40% (47 of 118), and this was consistent in both groups. The second most commonly reported source of professional dissatisfaction was workplace politics for women in group 1 at 25% (13 of 51) compared with only 7.5% (5 of 67) in group 2. Lack of support and resources was the second most commonly reported area of dissatisfaction in the second group (17 of 67), likely reflecting different issues faced at early and later career stages. Length of training was reported as greatest source of dissatisfaction by only 4 women (Fig 6).

When asked if they had the opportunity to change career choices, would they pursue cardiothoracic surgery again, 51% (60 of 118) reported definitely and another 29% (34 of 118) reported probably. Only 9% (11 of 118) of women stated they would probably or definitely not pursue cardiothoracic surgery again. These responses were similar between groups. Of those women, 27% (3 of 11) stated they would probably not choose medicine as a career.

Fig 6. Bar graph demonstrating reported source of greatest professional dissatisfaction, for all women and by group 1 (certified 1961 to 1999) and group 2 (certified 2000 to 2010). Demand on time was the most commonly cited source of professional dissatisfaction for all women, followed by workplace politics for group 1 and by inadequate support and resources for group 2.



Comment

The recent STS/AATS practice survey estimates the current size of the cardiothoracic workforce to be in excess of 5,200 surgeons, only 4.6% of whom are women [1]. Since 2006, women have comprised 50% of medical students and 30% of physicians, but they remain concentrated in a small number of specialties [4]. Women and men choose different medical specialties because they inherently have different interests and because they face different circumstances and external pressures [4]. These factors may carry significant impact in career advancement and long-term satisfaction. The recruitment and retention of women in cardiothoracic surgery has important implications for the profession and the community it serves. Women provide diversity and a fresh outlook to the field and are crucial in ensuring that women's health issues remain an active priority. This is particularly important in cardiothoracic surgery where significant sex-based issues are recognized in lung cancer [5], esophageal cancer [6], ischemic heart disease [7], and aortic pathologies [8]. It is imperative for women to secure advanced and policymaking positions in biomedical professions and all medical specialties [9].

Professional workforce surveys provide a snap shot of broad demographics, practice trends and attitudes. It is important to separate out select cohorts within the general population in an attempt to better understand their attitudes and needs. Despite subtle differences in reporting scales, this survey demonstrates that overall career satisfaction among female surgeons appears to be better than that of the thoracic surgical workforce as a whole. The 2010 STS/AATS snapshot reports 46% of surgeons were extremely or very satisfied with their careers [1], compared with 64% of female surgeons as reported in this study. Similar to the larger work force, women who report primarily adult cardiac surgery also reported lower rates of career satisfaction. It is of significant interest that despite the many demands on their time, nearly two thirds of all women respondents were pleased with their career choice.

Even more encouraging is that despite the obvious challenges faced by female cardiothoracic surgeons, only 12 of the 121 women who responded to the survey were no longer practicing cardiothoracic surgery. We recognize the potential for a selection bias, with nonpracticing surgeons being less likely to respond to the survey, although the response rate to this survey was much

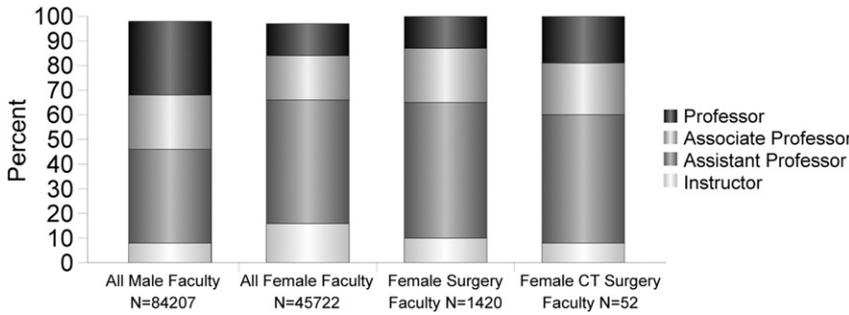


Fig 7. Faculty distribution by rank for all male medical school clinical faculty, all female medical school clinical faculty, and all female surgical faculty as reported by the Association of American Medical Colleges, and faculty distribution by rank for academic female cardiothoracic surgeons in this survey.

higher than the comparative 2009 STS/AATS practice survey. Women reported leaving cardiothoracic surgery largely because of retirement or disability, similar to the reasons reported by the entire thoracic surgery workforce [1]. The projected retirement age for the entire thoracic surgery workforce is 65 years, similar to what was reported for the retirees in this survey. This nullifies the concern that women would leave cardiothoracic surgery to raise a family or would not be able to compete in such a strenuous career. Nearly half of retired surgeons in the STS/AATS practice survey reporting retiring earlier than planned. Finances and lack of satisfaction were commonly reported as reasons for retiring early and may be the equivalent of the demands on time, lack of support, and workplace politics that were cited as sources that threaten professional satisfaction in this survey.

One of the most striking features of the current female cardiothoracic workforce is its youth. More than half of the female cardiothoracic surgeons in this country have entered the workforce in the last decade. These women are in the early part of their careers; they report a higher percent of subspecialization, longer training, and greater educational debt; and demand on time and inadequate institutional support are their greatest sources of professional dissatisfaction. Of interest is the high proportion of general thoracic surgeons among female cardiothoracic surgeons, particularly in the more recent cohort. In the STS/AATS practice survey, 18% of respondents were primarily general thoracic surgeons, whereas 35% of women in our survey report practicing primarily general thoracic surgery, and that rate increased to 46% in the cohort certified after the year 2000. The two most obvious explanations for this growing predominance of general thoracic surgery are (1) the real or perceived flexibility of general thoracic surgery in lifestyle balance and the responsibilities of raising a family, and (2) the impact of mentoring. Information was not collected in either survey with regard to how subspecialization choices were made. We noted nearly twice as many senior academic female surgeons were general thoracic surgeons as compared with adult cardiac or congenital heart surgeons, and this group may have fostered the increasing numbers of general thoracic surgeons in the next generation both by being visible role models and through direct encouragement through a growing support network.

It is of interest that despite the significant sex-based difference in distribution of trainees across surgical subspe-

cialties, that when surveyed, male and female surgical residents were quite similar in assessing factors important in specialty choice. The only striking difference was women's concerns with how maternity leave would fit into training, and decreased interest in strength of job market, job security, and future income potential compared with male residents [10]. Mentors play a very important role in specialty choice for all residents: 67% of residents with mentors go into the same field as their mentor [11]. The majority of residents with mentors consider their mentors to be role models on how to balance work and home life [10], and this is particularly important for women entering a time-demanding profession such as cardiothoracic surgery. Although the majority of mentors for general surgery residents are male, female residents are more likely than male residents to have female mentors [10].

There is a perceived need for more female mentors in cardiothoracic surgery, which is contingent on increased numbers of satisfied women in the field and especially in academics, where there is increased exposure to medical students and residents. Despite the small number of female cardiothoracic surgeons and their relatively late introduction into the specialty, female cardiothoracic surgeons have advanced in academia at least as well as women in other specialties. Eighteen percent of women in academic practices in the survey reported being at the level of full professor; that compares very favorably with Association of American Medical Colleges (AAMC) data regarding sex and academic rank. Only 13% of all female medical school faculty are professors, and 12.4% of women in academic surgery are full professors (Fig 7). Women are outnumbered by men at senior academic positions in all specialties, with only 16% of full professors being female, but this discrepancy is most pronounced in surgery for which AAMC data indicate only 7% of full professors are women [12]. Women currently represent fewer than 5% of practicing cardiothoracic surgeons, but the landscape is changing with increasing numbers of women entering the field each year. The Accreditation Council for Graduate Medical Education reports that in the 2010 and 2011 academic year, 17% of thoracic surgery trainees were female [13]. This finding mirrors data from the Thoracic Surgery Directors Association, which indicate a steady rise in the number of women in cardiothoracic surgery training, and that 21% of the residents finishing in 2012 will be women, repre-

senting the largest proportion of graduating women ever in cardiothoracic surgery.

A recognized limitation of this analysis is that it represents only a subset of female cardiothoracic surgeons in the United States. Information from non-ABTS certified female cardiothoracic surgeons, those without contact information, and those who did not reply to survey were not included. There exists inherent bias toward greater career success and satisfaction among women more easily located, and among women who responded versus women who did not. That being said, the response rate of 64%, which was consistent between cohorts, provides a fair overview of national trends and evolving demographics.

The landscape for women in cardiothoracic surgery has changed dramatically since 1961, when Nina Braunwald, Ann McKiel, and Nermin Tutunji became the first women certified by the ABTS. It required significant perseverance, strength, and courage for these early pioneers to join a workforce in which they were an obvious minority in their practice. Nevertheless, it is evident from our analysis that cardiothoracic surgery is a field where women have demonstrated significant professional success and satisfaction. The results of this survey should dispel concerns with regard to career advancement and longevity for women in cardiothoracic surgery and improve efforts to recruit the next generation of female cardiothoracic surgeons.

We would like to thank Nancy Puckett and Beth Winer for providing sex-based data from the STS and Thoracic Surgery Directors Association, and to the AATS/STS Task Force on Practice and Access for providing us access to the data from the 2009 STS/AATS practice survey.

DISCUSSION

DR EDWARD VERRIER (Seattle, WA): Obviously, this is an important topic, and it is good to see that 50% of the medical school graduates are women. And I think the last number I heard was almost 50% of even general surgery programs are now with women. That, at least in the last 10 years, we've gone up, although percentagewise maybe not to the same degree.

DR JENNIFER LAWTON (St. Louis, MO): I was happy to see in your abstract that you had a high rate of research funding for women.

DR DONINGTON: Yes, I am sorry that I didn't include that in the presentation. Of the women surveyed, 30% of those in academics have acquired external research funding, which is an impressive number. Similar data were not collected in the STS/AATS Workforce Survey, so it's hard for me to make a comparison to the general cardiothoracic population.

DR VERRIER: Could you compare, there is this notion that women go into something like a surgical specialty and then drop out. And this would demystify that myth. Is there something about why—can you have identified in looking at these data—or is that, just a myth? Are there actual data that women in other surgical specialties do drop out at a higher rate than men, and we don't? And is there a reason for that, or is that just a perception?

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DR DONINGTON: This perception was just made obvious to me within the last week or so. I blissfully didn't recognize that such a perception was out there. So I will have to go back and look more closely into data from the AAMC and the ACGME. There are several extensive reports with regard to sex from these organizations where we can pursue information on that for surgery as a whole. I think our data really nullify that perception within cardiothoracic surgery. It just does not seem to exist at all.

DR WALTER MERRILL (Jackson, MS): I think these data are really terrific and interesting and very important, and thank you for bringing them to our attention. My question is: What do we need to do to make the field more attractive to get more women in the field?

DR DONINGTON: Let's see, so since I'm in the early part of my career and received ABTS certification within the past 10 years, so according to all of the data I presented, you're supposed to give me more support.

This project provided me an opportunity to look closely at the literature and information on how medical specialties are chosen. This is likely the crucial step, because once women are in the field, I think we've demonstrated that women can succeed and are very satisfied in the field.

How do we, as cardiothoracic surgeons become more attractive to young women? I think that we've all heard it before. It's mentoring, mentoring, and more mentoring. While there are

inherent differences as to why men and women choose careers, mentors are critical to how residents choose careers. Do I think that women might ever represent 50% of cardiothoracic surgeons? The bulk of the data says no. But do I think that women likely could have a bigger role? I think, yes, and I think mentoring make all that difference.

DR LAWTON: And perhaps also the time management issue in both groups, making it obvious that the time management is possible, it's difficult, and maybe we can publicize ways to help with it.

DR DONINGTON: Correct, work from Carolyn Reed and Ara Vaporciyan on general surgery residents career decisions was very clear that the best mentors are those who demonstrate lifestyle balance. This is incredibly important to the next generation, and not just for women, it is important for men and women.

DR COLSON: Jessica, please point out what you found out about the number of women entering thoracic surgery, as there is a disproportionate number, and can you then comment on your thoughts about the role of mentoring. Thank you.

DR DONINGTON: Yes. I think one of the most striking things about our survey results was how many general thoracic surgeons there were, and we therefore spent some time trying to tease out why. We didn't ask in our survey, how women choose their subspecialty, and neither did the STS/AATS workforce survey.

We can apply two important concepts on specialty decision from the resident survey from Carolyn Reed and Ara Vaporciyan. One is the real or perceived flexibility of a general thoracic surgery career and that it may better suited for balancing family responsibilities, which female residents state is important. The second and I think equally importantly factor is mentoring. The senior female academic faculty in general thoracic surgery outnumber those cardiac or congenital heart surgeons by 2 to 1. I believe that that generation has fostered the next generation, both as visible role models and by direct encouragement. I think it is important that we recognize this and continue this type of mentoring.

DR KATHLEEN FENTON (Memphis, TN): I actually have kind of a related question. I think the most common comment or perception that I pick up from students and residents about why they don't want to go into surgery or cardiothoracic surgery—I'm talking about women in particular—is because of a perception that we don't have happy personal lives, that we sacrifice our personal life for our career. And so I filled out the survey, but I'm sorry I don't remember, whether or not you asked about personal satisfaction. Because you didn't present any data about personal satisfaction. Do you have a feeling for that?

DR DONINGTON: I do not. We remained very professional in the scope of our questions, our survey paralleling, many of the same topics as in the STS/AATS Workforce Survey. We did not ask any questions about personal life, family life, or any of those things. As an organization we have talked about moving forward into these types of questions next. It is a much more difficult project and we may need to identify a cohort of males to survey also.

DR PYONGSOO YOON (Memphis, TN): I have a question for you. Were you able to look at other parts of the world, such as Asian countries and European countries, as far as they compare to the United States?

DR DONINGTON: We did not. Actually, since our survey list was from ABTS-certified females, there was a large subset of women who were not surveyed and those were women who were trained and certified in other countries, many of which are in the STS. We did not look abroad to see whether differences vary in different regions of the world.

DR YOON: And I also second what Dr Verrier stated, in that you really need to get these data out there so people who are recruiting do not have prejudice toward the female surgeons.

DR DONINGTON: I agree. Thank you.

DR LORI SONI (New York, NY): Thank you for this presentation. It's very encouraging.

I was wondering, why do you think it is that there tends to be a higher proportion of women cardiothoracic surgeons in academia or who have achieved full professorship?

DR DONINGTON: I think it might be the strong personal attributes needed to be a pioneer and enter a field where you are clearly a minority. All of the full professors in our survey were from group 1. I think by definition those were very strong, very intelligent, very determined women, and that is why they have had so much academic success.

DR STEFANO SCHENA (St. Louis, MO): Congratulations on this very interesting wealth of information. Do you think that in your study or in the next future study you might gather more information about how this exponential increase in women in thoracic surgery is perceived by patients?

DR DONINGTON: That's an excellent idea. I hadn't thought of it from that standpoint. It's going to be a harder survey to write, and to identify the correct population but it's worth looking into. I believe female surgeons are perceived very differently from male surgeons by patients.