

Understanding Gender Differences Among Medical Students When Choosing Radiology as a Medical Specialty

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Rationale and Objectives: Women continue to be under represented in diagnostic radiology. According to the Association of American Medical College's 2016 Physician Specialty Data Report, women made up only 25% of the field of diagnostic radiology in 2015. Our investigation centered on determining how factors influencing specialty choices differ for female medical students planning to pursue a residency in radiology versus other specialties. We also examined gender differences for male and female students choosing radiology.

Materials and Methods: Using deidentified 2011–2016 Graduation Questionnaire data from the Association of American Medical College's national survey of fourth-year medical students, we analyzed cross-sectional data from 71,941 respondents on career intentions, including factors influencing their choice of specialty such as mentor, salary, debt, family considerations, and fit with interests/skills. The 10 most common specialty choices were reported by gender. Women choosing radiology were compared to women choosing other specialties in terms of factors influencing choice of specialty. Women were also compared to men choosing radiology.

Results: Whereas 48% of all fourth-year medical students were women, only 26% of fourth-year medical students selecting radiology as a specialty were women. Radiology ranked fifth for men as the most common specialty choice, but 11th for women. Work/life balance, future family plans, salary, family expectations, high debt, and competitiveness of specialty were strong influencing factors for a significantly higher proportion of women selecting radiology than women selecting other specialties, but length of residency was a factor for a higher proportion of women in other specialties. Of students selecting radiology, a higher proportion of women than men said mentors were a strong factor (47% vs 37%).

Conclusion: To reduce the gender disparity in radiology, active engagement of mentors in the profession should be a priority in radiology departments. Other factors such as promoting radiology as an intellectual specialty with strong positive attributes such as work/life balance and salary should be highlighted as well.

INTRODUCTION

As with other specialties in medicine, the majority of physicians within the field of radiology are male. Study results of radiology workforce in 2014 showed that 22% were women, and 78% were men. This was in contrast to 18% women and 82% men who made up the radiology workforce from a survey in 2003 (1, 2).

Over the past few decades, the number of women entering the field of medicine has been increasing. In 2016, the number of females entering medical school was at a 10-year high, increasing by 6.2% from 2015.

Total medical school classes have now become much more evenly divided. The most recent Association of American Medical College's (AAMC) data show new enrollment in medical school evenly divided between women (49.8%) and men (50.2%) (3). Press Release Tuesday (November 01, 2016) given the influx of women into the field of medicine, the question has been raised as to why the numbers of women in radiology do not seem to be increasing accordingly.

Much research has been devoted to determining which factors influence medical students to choose a certain specialty. Specialties are often grouped into categories such as controllable lifestyle, surgical, and primary care. Based on its typically stable work hours and salary, radiology is often referred to as the “epitome of lifestyle-friendly careers” (4). However, even amid an overall trend toward lifestyle specialties, women continue to be underrepresented in diagnostic radiology. The most recent AAMC data report only 27% of applicants to radiology residency programs in the most recent match were female (5).

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Since 1978, the AAMC annually surveys fourth-year medical school students from all U.S. medical schools accredited by the Liaison Committee on Medical Education with the goal of benchmarking and improving medical education. The Graduation Questionnaire (GQ) collects data related to medical education and the well-being of students, including satisfaction with their program in preparing them for residency, career plans, education costs, and harmful experiences. Using self-reported answers from this national survey, the current study's objective is to identify factors that influence female medical students' decisions to pursue a career in radiology versus another specialty and to examine if influencing factors differ by gender for those choosing radiology.

METHODS

Study Cohort

Deidentified GQ data from 87,333 fourth-year medical students for years 2011–2016 was provided by the AAMC. The GQ survey has participation from approximately 80% of all Liaison Committee on Medical Education accredited medical school graduates with the response rate in 2016 being 80.5% (6).

Students are encouraged to voluntarily participate using a variety of means by their individual schools; the AAMC also e-mails monthly reminders to students. This analysis of deidentified survey data was determined to be exempt from review by the University of Arkansas for Medical Sciences Institutional Review Board.

VARIABLES

Our analyses focused on the Specialty and Career Plans sections of the GQ. Participants were asked "How influential were the following in helping you choose your specialty?" The 11 influencing factors are detailed in Table 1. The degree of influence was characterized on a four-point scale as no (0), minor (1), moderate (2), or strong (3) influence.

We limited analyses to those who provided answers to the question, "When thinking about your career, what is your intended area of practice?" (asked in 2015 and 2016); or "Are you planning to become certified in a specialty? [If yes]: Choice of specialty:" (asked prior to 2015). This resulted in 71,941 respondents for analysis. There were 31 specialty choices in the provided GQ data. Limited demographic data included gender, race/ethnicity, and year of survey.

STATISTICAL ANALYSIS

The distribution of the most common 10 specialty choices was calculated according to gender, as well as the proportion of males and females choosing radiology according to year of survey. The response categories were dichotomized into strong influence (highest response category) versus no to moderate influence since we were primarily interested in

TABLE 1. Influencing Factors for Specialty Choice

How influential were the following in helping you choose your specialty?

- | | |
|-----------------------------------|--|
| • Competitiveness of specialty | • Family expectations |
| • High level of educational debt | • My future family plans |
| • Mentor/role model influence | • Work/life balance |
| • Options for fellowship training | • Fit with personality, interests and skills |
| • Salary expectations | • Content of specialty |
| • Length of residency training | |

Note: Responses were no (0), minor (1), moderate (2), or strong (3) influence.

strong influencers across 11 factors and to simplify presentation of results. Of those students selecting radiology, the proportion stating a particular factor as a strong influence was compared according to gender using chi-square tests. Similarly, the proportion of women stating a particular factor as a strong influence was compared according to radiology versus all other specialty choices. We also analyzed trends over years using the Cochran–Armitage trend test. In order to examine the impact of dichotomizing the response, responses on the original scale were analyzed using the Mantel–Haenszel test for ordinal data. For two time periods, the proportion of males and females stating mentors were strong influences were examined using stratified Mantel–Haenszel tests with strata being gender and time period. Since the percentage of respondents with missing data was low for each of the 11 factors (range, 0.7%–0.9%), a complete case analysis was performed. To avoid very small differences being significant due to the large size of the data set and to adjust for the multiplicity of comparisons, a Bonferroni adjustment was made to an overall alpha level of 0.01 ($\alpha = 0.01/22$ for 11 gender comparisons within radiology plus 11 radiology vs other specialty comparisons for females) such that individual p values less than 0.0005 were deemed statistically significant. Analyses were performed using SAS 9.4 (SAS Institute Inc., Cary, North Carolina).

RESULTS

Of 71,941 fourth-year medical students, 34,561 (48%) were women. Of the 3516 students choosing radiology, 915 (26%) were women. Table 2 shows the demographics of our sample of fourth-year medical students. Across the 6 years of GQ surveys, the number of fourth-year medical students increased by year from 10,301 students in 2011 to 14,092 in 2016.

Among the top ten specialty choices, internal medicine, emergency medicine, pediatrics, anesthesiology, general surgery, family practice, and psychiatry were common to both male and female students (Fig 1). While radiology ranked as the fifth highest specialty for men, being selected by 7% of male students, it was not in the top 10 for women, ranking 11th with only 3% of female students choosing the specialty.

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