Differential Motivations for Pursuing Diagnostic Radiology by Gender: Implications for Residency Recruitment

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Rationale and Objectives: The purpose of this study is to determine how the motivations to pursue a career in radiology differ by gender. In addition, the influence of medical school radiology education will be assessed.

Materials and Methods: Radiology applicants to our institution from the 2015–2016 interview season were offered an online survey in February 2016. Respondents scored the influence of 24 aspects of radiology on their decision to pursue radiology. Comparisons were made between male and female respondents. Respondents were also asked the type of medical school radiology education they received and to score the influence this experience had on their decision to pursue radiology.

Results: There were 202 total respondents (202/657) including 47 women and 155 men. Compared to men, the following factors had a more negative impact on women: flexible work hours ($P = 0.04$), work environment ($P = 0.04$), lifestyle ($P = 0.04$), impact on patient care ($P = 0.05$), high current debt load ($P = 0.02$), gender distribution of the field ($P = 0.04$), and use of emerging/advanced technology ($P = 0.02$). In contrast, women felt more favorably about the opportunities for leadership ($P = 0.04$) and research ($P < 0.01$).

Dedicated radiology exposure was as follows: 20% ($n = 20$) none, 48% ($n = 96$) preclinical exposure, 55% ($n = 111$) elective rotation, and 18% ($n = 37$) core rotation. More intensive radiology exposure via a core rotation had a significantly positive impact on the decision to pursue radiology ($P < 0.01$).

Conclusions: Male and female radiology applicants are motivated by different aspects of radiology, which may influence residency recruitment practices. In addition, more intensive radiology exposure has a net positive impact on the decision to pursue radiology.

Key Words: Gender; medical students; residency; education; recruitment.

INTRODUCTION

There is a marked disparity in the number of women vs men in diagnostic radiology that has not appreciably changed over time, despite a now equal number of women and men graduating from medical schools in the United States (1). In 2013, women made up 45.9% of all resident physicians in the United States, but only 26.8% of radiology residents were women (2). Furthermore, from 2003 to 2013 the percentage of female radiology residents has fallen by approximately 10%, while the percentage of female residents in traditionally male dominant specialties such as general, plastic, and thoracic surgeries has increased by at least 10% (2). Under-representation of women in radiology is problematic because female patients may not connect as well with male providers and research in women's health may not receive as much attention (3). In addition, it has been shown that teams with more women have greater group intelligence, which can lead to greater innovation and scientific discovery (4,5). Although gender discrepancy in radiology is a long-standing issue, the reasons behind the static under-representation of women are poorly understood.

Over the past two decades, several researchers have investigated the motivations of medical students to pursue radiology, but the results have been conflicting. Lack of patient contact in comparison to other specialties has been reported as both a positive (6) and a negative factor in why women choose not to pursue radiology (7,8). The competitive nature of radiology has been found to dissuade female applicants; however, this has not dissuaded applicants from pursuing dermatology, which has some of the highest female representation (62.4%) and the lowest match rates of all residencies (76%) (1,2,6,8). Mentorship has been deemed a motivating factor for female medical students (3,6,9,10), but the gender discrepancy in academic medical centers and especially positions of leadership limit the opportunities for mentorship (11,12). The most consistently reported finding is that a controllable lifestyle is attractive to female applicants (7,8,13). While these prior studies have investigated why women choose radiology, they have included residency applicants to all specialties with only few radiology applicants (6–9). This allows comparisons between specialties, but limits differentiation between male and female radiology applicants. For radiology residency programs that

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wish to increase their recruitment of women, understanding the differential motivations of men and women could have implications for how programs conduct interviews, market their departments, and organize the structure of their residency programs.

Therefore, the purpose of this study was to survey current radiology residency applicants in order to understand how the motivations to pursue radiology differ by gender. In addition, since medical school curriculums continue to evolve, applicants were queried about their exposure to radiology education and the influence it had on their decision to pursue the specialty.

METHODS

Survey Development

To test the differential motivations between men and women who chose to pursue radiology, a questionnaire was developed to test the positive or negative views of various aspects of radiology. To select factors for inclusion, a review of the prior published literature on gender in radiology was performed and factors identified as significant or near significant were chosen for inclusion (6,7,14). Although prior work has focused on slightly different survey populations, the same factors addressed in prior studies were deemed to be of interest to the current survey population. The survey was then administered to recent residency applicants as well as members of the residency admissions committee. Revisions to the language, length, and content were made based on feedback. The final survey included 24 different factors (Appendix 1).

Survey Administration

In February 2016, an e-mail invitation to participate in a voluntary, anonymous survey was sent to the 657 Diagnostic Radiology applicants from the 2015–2016 interview season to our institution administered via Survey Monkey (Palo Alto, CA). Respondents were asked for demographic variables including age, gender, and race/ethnicity. Applicants were asked to assess the influence of the 24 radiology factors with the same root question: "How impactful were the following factors when deciding on a career in radiology?" A Likert rating scale from −2 (negative impact) to 0 (neutral) to +2 (positive impact) was provided. Finally, applicants were asked to provide the type of dedicated radiology training they had during medical school (core rotation, elective rotation, radiology teaching during the preclinical years, or none). The influence this experience had on the applicant's decision to pursue radiology was also recorded using the Likert scale.

Statistical Analysis

Factors associated with the impact to pursue a career in radiology were analyzed between genders with Likert scale responses categorized as ordinal variables. In addition, the impact of medical school radiology exposure on the decision to pursue radiology was analyzed between exposure groups. Exposure to radiology training was categorized as an ordinal variable with the following hierarchy: core rotation, elective rotation, preclinical exposure, and none. A Fisher's exact test was used to test for differences between groups for both analyses. A P value of 0.05 was considered statistically significant. All statistical analyses were performed in JMP Pro (version 9.0.1; SAS Institute Inc., Cary, NC).

RESULTS

There were 202 respondents for an overall response rate of 30.7%. The average age of respondents was 28.6 years. The gender breakdown was 23.3% ($n = 47$) female and 76.7% ($n = 155$) male. The race/ethnicity distribution was as follows: 55.9% ($n = 113$) White, 22.8% ($n = 46$) Asian/Pacific Islander, 9.4% ($n = 19$) other, 6.9% ($n = 14$) Hispanic or Latino, 4.0% ($n = 8$) Black or African American, and 1.0% ($n = 2$) Native American or American Indian.

Among the 24 questions included in the survey, there were nine questions that reached statistical significance. The distribution of male and female responses to these nine questions is shown in Table 1. Compared to men, female respondents rated the following aspects of radiology more negatively: flexible work hours (ability to work part-time) ($P = 0.04$); gender distribution in the field ($P = 0.04$); use of emerging/advanced technology ($P = 0.02$); high current debt load ($P = 0.02$); impact on patient care ($P = 0.05$); lifestyle ($P = 0.04$); and work environment ($P = 0.04$). In contrast, female respondents rated opportunities for leadership ($P = 0.04$) and opportunities for research ($P < 0.01$) more favorably. There were no significant differences ($P > 0.05$) in the responses to the remaining factors and the decision to pursue a career in radiology. Notably, there was no difference between men and women in response to limited patient contact ($P = 0.08$), competitiveness of application process ($P = 0.16$), and the influence of mentors or colleagues ($P = 0.17$).

Independent of gender, applicants were asked about their dedicated radiology exposure during medical schools (applicants could select all that applied) and the responses were as follows: 20% ($n = 20$) none, 48% ($n = 96$) preclinical exposure, 55% ($n = 111$) elective rotation, and 18% ($n = 37$) core rotation. More intensive radiology exposure during medical school (e.g., core rotation considered more intensive than elective rotation) was strongly associated ($P < 0.01$) with the decision to pursue a radiology residency (Fig 1). Of respondents who participated in a core rotation, 96% indicated the rotation itself had a positive or somewhat positive impact on their decision. The impact progressively declined with less intense exposures during medical school: 90% for elective rotation, 57% for preclinical exposure, and 9% without dedicated exposure.