

Scientific Letter

Female Representation in the Academic Oncology Physician Workforce: Radiation Oncology Losing Ground to Hematology Oncology



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Summary

This analysis reveals that female representation has significantly increased over time in the academic oncology workforce for full-time faculty and trainees; however, radiation oncology is lagging behind hematology oncology, with female trainee representation declining in recent years in radiation oncology. It is underexplored whether such issues as delayed or insufficient exposure, inadequate mentorship, or specialty

Purpose: Our purpose was to assess comparative female representation trends for trainees and full-time faculty in the academic radiation oncology and hematology oncology workforce of the United States over 3 decades.

Methods and Materials: Simple linear regression models with year as the independent variable were used to determine changes in female percentage representation per year and associated 95% confidence intervals for trainees and full-time faculty in each specialty.

Results: Peak representation was 48.4% (801/1654) in 2013 for hematology oncology trainees, 39.0% (585/1499) in 2014 for hematology oncology full-time faculty, 34.8% (202/581) in 2007 for radiation oncology trainees, and 27.7% (439/1584) in 2015 for radiation oncology full-time faculty. Representation significantly increased for trainees and full-time faculty in both specialties at approximately 1% per year for hematology oncology trainees and full-time faculty and 0.3% per year for radiation oncology trainees and full-time faculty. Compared with radiation oncology, the rates were 3.84 and 2.94 times greater for hematology oncology trainees and full-time faculty, respectively.

Conclusion: Despite increased female trainee and full-time faculty representation over time in the academic oncology physician workforce, radiation oncology is lagging behind hematology oncology, with trainees declining in recent years in radiation oncology; this

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competitiveness disparately affect female representation in radiation oncology compared to hematology oncology. These issues require continued investigation to ensure that the future oncologic physician workforce reflects the diversity of the population it serves.

suggests a de facto ceiling in female representation. Whether such issues as delayed or insufficient exposure, inadequate mentorship, or specialty competitiveness disparately affect female representation in radiation oncology compared to hematology oncology are underexplored and require continued investigation to ensure that the future oncologic physician workforce reflects the diversity of the population it serves. © 2017 Elsevier Inc. All rights reserved.

Introduction

Diversification of the physician workforce in the United States is an ongoing goal (1-3), and improved patient outcomes have been noted in certain health care settings for female physicians compared with their male counterparts (4). Although our understanding of the historical representation of female faculty in the academic oncologic workforce is limited, recent analyses suggest greater female proportional representation within hematology oncology than in radiation oncology (5, 6). Our purpose was to assess comparative female representation trends for trainees and full-time faculty in the academic radiation oncology and hematology oncology workforce of the United States over three decades.

Methods and Materials

Accreditation Council for Graduate Medical Education trainee data for radiation oncology and hematology

oncology were assessed for trends in female representation from 1986 to 2014, using actual trainee numbers from published supplements as previously reported (6). Full-time faculty data provided from the Association of American Medical Colleges were assessed from 1986 to 2015 (7). Changes in female percentage representation per year and associated 95% confidence intervals for each specialty were estimated using simple linear regression models with year as the independent variable.

Results

Figure 1 shows the percentage of female representation in radiation oncology and hematology oncology for trainees and full-time faculty. Peak representation was 48.4% (801/1654) in 2013 for hematology oncology trainees, 39.0% (585/1499) in 2014 for hematology oncology faculty, 34.8% (202/581) in 2007 for radiation oncology trainees, and 27.7% (439/1584) in 2015 for radiation oncology faculty. When trends over the entire study period were examined,

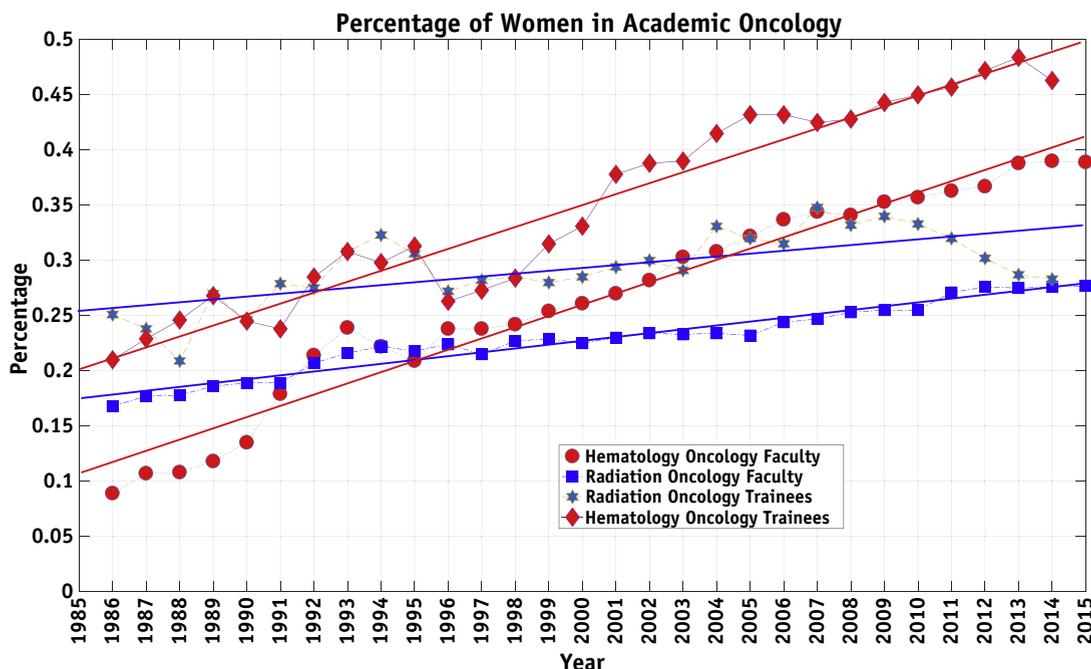


Fig. 1. Percentage of female trainees and full-time faculty in hematology oncology and radiation oncology from 1986 to 2015, and the average change in percentage per year (fitted lines).

Table 1 Trends in female representation in academic oncology

Variable	Trainees (1986-2014)	Full-time faculty (1986-2015)
Hematology oncology	0.992% (0.887-1.096), <.001	1.018% (0.957-1.079), <.001
Radiation oncology	0.258% (0.153-0.362), <.001	0.346% (0.285-0.407), <.001
Rate of change (HO/RO)	3.84	2.94

Abbreviations: HO = hematology oncology; RO = radiation oncology.

Represented as averaged change per year (95% confidence interval), *P* value.

representation was found to be significantly increasing for trainees and full-time faculty in both specialties at approximately 1% per year for hematology oncology trainees and full-time faculty and 0.3% per year for radiation oncology trainees and faculty (Table 1); the rates of increase were 3.84 and 2.94 times greater for hematology oncology trainees and full-time faculty, respectively.

Discussion

We examined comparative trends in radiation oncology and hematology oncology academic physician workforce gender diversity, finding that both specialties show significant increases in female representation over time. However, the rates of improvement differ dramatically between the specialties, with hematology oncology far outpacing radiation oncology. Hematology oncology trainee representation has steadily increased—similar to the total graduate medical education pool—and continues to do so, which suggests that female medical students' and internal medicine residents' interest in oncology in general is not a barrier to oncology specialty training. However, this general interest in oncology does not appear to be translating to radiation oncology in the same way it has for hematology oncology. Whereas 7 of the 20 largest training specialties now have greater female trainee representation than male, radiation oncology continues to rank near the bottom relative to other primary care, surgical, and nonsurgical specialties (8).

It is ominous that whereas female representation among hematology oncology trainees peaked near gender parity in 2013, radiation oncology's female representation among trainees peaked in 2007 (Fig. 1) at just over one-third female and has since generally declined, which will inevitably limit downstream representation at the faculty and practicing physician level.

Determining the factors that motivate internal medicine trainees to pursue hematology oncology fellowships may aid in the recruitment and appropriate faculty mentorship of female (and other underrepresented) medical students toward radiation oncology. Medical student exposure to hematology oncology may stem from its close relationship to internal medicine, a required medical school rotation. By contrast, most medical students have minimal required exposure to radiation oncology, and, for many, exposure to the field, elective time in the field, or both are usually toward the end of the third year or beginning of the fourth

year, leaving these students little time to explore pursuing radiation oncology as a career. Regarding full-time faculty representation, historical and comparative trends in academic oncology have not been previously well characterized. It has been generally noted that women are substantially less likely than men to be full professors, after age, experience, specialty, and measures of research productivity are accounted for (9). Whether such gender disparities are greater in radiation oncology than in hematology oncology and limit female faculty representation in radiation oncology are unclear. Although female representation among radiation oncology full-time faculty has increased over time, these increases are modest when compared with patterns observed in hematology oncology full-time faculty. These observed trends are inevitably affected by patterns at the trainee level.

It is underexplored whether such issues as delayed or insufficient exposure, inadequate mentorship, or specialty competitiveness disparately affect female representation in radiation oncology compared to hematology oncology (5). These issues require continued investigation to ensure that the future oncologic physician workforce reflects the diversity of the population it serves.

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