

Modern Perspectives on Radiation Oncology Residency Expansion, Fellowship Evolution, and Employment Satisfaction

Karna Sura, MD^a, Jonathan W. Lischalk, MD^b, Inga S. Grills, MD^a, Arno J. Mundt, MD^c, Lynn D. Wilson, MD, MPH^d, Neha Vapiwala, MD^e

Abstract

Purpose: In an effort to better characterize the extent and impact of residency expansion and job placement, the authors conducted a multilevel survey of radiation oncologists exploring the current state of the radiation oncology employment market.

Methods: A multilevel survey was conducted using the Qualtrics platform in the spring of 2017. Survey participants were categorized into five groups within radiation oncology: (1) chairpersons, (2) program directors, (3) new practitioners (at least 1 year out of residency), (4) new residency graduates (radiation oncology postgraduate year 5 graduates with new jobs), and (5) medical students. The Wilcoxon-Mann-Whitney test was used to compare Likert scale scores.

Results: A total of 752 participants were surveyed, with an overall response rate among all five groups of 31% and 92% of those completing the entire survey. Chairpersons were more likely to consider expanding their residency programs compared with program directors. Fellowship remained low on the job search, with less than 10% of new graduates and new practitioners interested in fellowship positions. Job satisfaction was high with 85% of new graduates, and 78% of new practitioners moderately to very satisfied with their future or current employment. The vast majority of both new practitioners (85%) and new graduates (81%) was moderately to very satisfied with their location of practice.

Conclusions: Resident job satisfaction remains high, whereas interest in radiation oncology fellowships remains low. Conflicting perception regarding the job market and residency expansion could have downstream impacts, such as deterring potential applicants.

Key Words: Residency expansion, job satisfaction, fellowships

J Am Coll Radiol 2019;■:■-■. Copyright © 2018 American College of Radiology

INTRODUCTION

The field of radiation oncology is currently experiencing a period of employment ambiguity. As the smallest categorical field in medicine, radiation oncology is acutely

sensitive to even small absolute changes in the number of practitioners entering the field. The early 2000s heralded what was thought to be a period of increased demand for radiation oncologists, which was highlighted by predictions made by Smith et al [1] in 2010. These forecasts were accompanied by a 50% increase in available residency positions over the subsequent 10 years [2]. However, in ensuing years, concerns arose regarding the accuracy of these economic predictions, beginning with a 2013 publication by Shah [3] and culminating with revised projections by Smith's group [4] in 2016. The new update revealed that although demand will increase by 19%, it will be overshadowed by a 27% increase in the supply of radiation oncologists, thus leading to an oversupply from 2015 to 2025. Falit et al [5] conducted an employment economic analysis that further supported this hypothesized oversupply of radiation oncologists. The authors asserted that the ACGME cannot be

^aDepartment of Radiation Oncology, Upstate Medical University, Syracuse, New York.

^bDepartment of Radiation Medicine, Georgetown University Hospital, Washington, District of Columbia.

^cDepartment of Radiation Medicine and Applied Sciences, University of California, San Diego, San Diego, California.

^dDepartment of Therapeutic Radiology, Yale University School of Medicine, New Haven, Connecticut.

^eDepartment of Radiation Oncology, University of Pennsylvania, Philadelphia, Pennsylvania.

Corresponding author and reprints: Karna Sura, MD, Department of Radiation Oncology, Upstate Medical University, 750 E Adams Street, Syracuse, NY 13210; e-mail: surak@upstate.edu.

This study was funded by the American College of Radiation Oncology Education Grant. The authors state that they have no conflict of interest related to the material discussed in this article.

responsible for regulating the job market, but nevertheless, residency expansion could have a negative impact on the radiation oncology workforce. In an effort to better characterize the extent and impact of residency expansion and job placement, we conducted a multilevel survey of radiation oncologists exploring the current state of the radiation oncology employment market.

METHODS

Methods of the survey were previously published in a separate editorial [6]. In general, a multilevel survey was conducted using the Qualtrics platform in the spring of 2017. Survey participants were categorized into five groups within radiation oncology: (1) chairpersons, (2) program directors, (3) new practitioners (at least 1 year out of residency), (4) new residency graduates (radiation oncology postgraduate year 5 graduates with new jobs), and (5) medical students. These surveys were given institutional review board exemption status by the corresponding author's research institution. Surveys focused on reviewing critical topics in the radiation oncology community tailored specifically to the aforementioned respondents. For example, survey questions included the current status of the job market, residency expansion, and fellowship development. A complete list of survey questions is provided in [Appendix 1](#). Survey questions were compiled and reviewed before distribution by a total of five radiation oncologists, comprising residents, residency program directors, and chairpersons, before survey implementation. This multilevel review was an effort to mitigate questionnaire bias.

Survey participants were recruited in the following ways: (1) major academic center program directors, (2) current American College of Radiation Oncology residents and attending members, (3) global e-mails to the US radiation oncology community, and (4) personal outreach to local faculty members. In an effort to maximize participation in the survey, gift card incentives were offered to those who participated at the outset of the study, and gift cards were distributed to a total of 100 participants upon survey completion. In this report, we review the results separated by subject matter to compare and contrast the differing perspectives of the five surveyed groups. This publication represents the final report of the entire survey results.

Statistical analysis was completed using SPSS Statistics for Windows version 24.0 (IBM, Armonk, New York). The Wilcoxon-Mann-Whitney test was used to compare Likert scale scores. Chi-square tests were used to compare survey demographics. *P* values < .05 were considered statistical significance.

RESULTS

Survey Participant Demographics

A total of 752 participants were surveyed, with an overall response rate among all five groups of 31% and 92% of those completing the entire survey (5.4% margin of error with a 95% confidence interval). Medical students and new practitioners were the two largest groups surveyed (203 and 197 persons surveyed, respectively), and survey completion was highest among medical students (36.1%) and new residency graduates (41.7%). The complete survey response rates for new practitioners, program directors, and chairpersons were 19.0%, 22.5%, and 14.1%, respectively. The vast majority of respondents were male (76.4%), Caucasian (63.2%), and practicing in the Midwest (30.8%) or Northeast (27.0%). Nearly one-third of new graduates and one-quarter of new practitioners had PhDs in addition to medical degrees. Details of survey participation and demographics are listed in [Appendix 2](#).

Residency Expansion

Surveyed chairpersons and program directors had a median of 10 years of chair experience and 4 years of program director experience, respectively. The majority of chairs and program directors (41% and 38%, respectively) led residency programs of two residents per year, which were categorized as "medium-sized" programs. Two-thirds of residency positions available at these programs were funded using federal dollars, with the remainder being funded using departmental or institutional dollars. Overall, slightly more (47% versus 33%, *P* = .51) chairpersons had considered expanding their residency programs in the near future. Chair responses were in clear contrast with program director responses; the majority of program directors (57% versus 29%, *P* = .27) reported no plans to expand their residency classes ([Table 1](#)).

Fellowship Expansion

Participants were surveyed regarding their evolving perspectives on the role of fellowships in radiation oncology. Forty-one percent of surveyed chairpersons noted an increase in resident interest in academic fellowship opportunities over the preceding years, and the majority (41%) also believed that fellowships will become standard in radiation oncology ([Table 1](#)). Within the chairperson cohort, approximately 30% offered fellowship programs at their institutions, with a median of two positions per program. In contrast, among surveyed program directors, the majority (43%) identified no change in resident interest in fellowships, and the majority (62%) did not believe that fellowships would become a standard aspect of radiation oncology training. Furthermore, less than 10% of both

Table 1. Chairpersons and program directors' attitudes on residency expansion and radiation oncology fellowships

Topic	Scale (%)							
	Strongly Disagree	Somewhat Disagree	Disagree	Neither Disagree nor Agree	Somewhat Agree	Strongly Agree	Unknown	
Question: Your program is looking to expand the residency program.								
Chairpersons	11.8	5.9	5.9	5.9	17.6	17.6	11.8	23.5
Program directors	19	4.8	33.3	4.8	14.3	0	19	4.3
Question: Fellowships will become standard in radiation oncology.								
Chairpersons	11.8	0	17.6	5.9	17.6	17.6	5.9	23.5
Program directors	14.3	19	28.6	0	14.3	19	0	4.8
Question: The number of residents looking for fellowship has increased in the past couple of years.								
Chairpersons	0	5.9	5.9	23.5	11.8	23.5	5.9	23.5
Program directors	0	4.8	4.9	42.9	23.8	19	0	4.8

current graduates and new practitioners expressed an interest in postgraduate fellowships. Among current graduates and new practitioners surveyed, only a single radiation oncologist in each group pursued a fellowship (one fellowship focused on hospice care and the other on proton therapy). Reasons given for fellowship enrollment by the two fellowship graduates included: (1) inability to find an academic position in lieu of a fellowship and (2) application improvement for future employment. Finally, the vast majority (>70%) of both recent graduates and new practitioners agreed that the ACGME should regulate radiation oncology fellowships. Conversely, less than half (43%) of program directors and even fewer (29%) chairpersons felt ACGME regulation was necessary (Fig. 1). For currently applying medical students, 55.8% felt that they would not be required to do a fellowship, whereas 18.2% thought a fellowship would be required after residency (Fig. 2).

Job Satisfaction

The distribution of job types amid recent graduates included private practice (51%), academic (35%), academic satellite (9%), other (4%), locum tenens (0%), and fellowship (1%). Job types among new practitioners followed a similar distribution, although with a lower percentage of physicians in private practice. Interestingly, the vast majority of new graduates desired jobs in private practice (67%), with only a minority demonstrating interest in full-time academic positions (17%). Overall, 85% of new graduates were moderately to very satisfied with their future employment, and 78% of new practitioners were moderately to very satisfied with their current employment (Fig. 3). Nearly half of new practitioners and 60% of new graduates stated that

their employment search was restricted to a single city, state, or region. Within the new graduate cohort, the most sought after employment locations were in the Northeast (40%) and South (40%). Regardless, the vast majority of both new practitioners (85%) and new graduates (81%) were moderately to very satisfied with their locations of practice. Interestingly, chairpersons identified lower perceived job satisfaction, with 65% of surveyed chairpersons stating that graduating residents were moderately to extremely satisfied with their future employment. However, surveyed program directors described higher perceived graduating resident job satisfaction, which was more consistent with that observed in the new graduate cohort. Approximately 50% of both new graduates and new practitioners believed that resident job satisfaction should be considered an ACGME requirement for accreditation. In stark contrast, more than 80% of both program directors and chairpersons did not

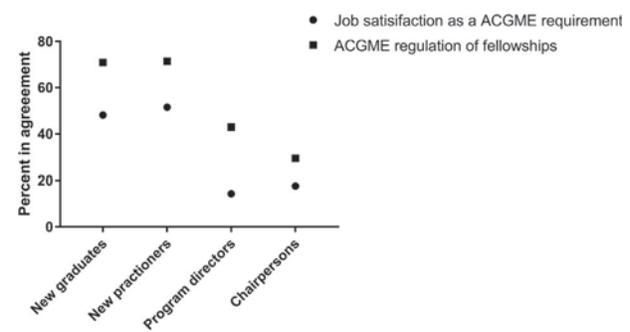


Fig 1. Percentage in agreement for each cohort with the following statements: (1) Resident job satisfaction should be considered an ACGME requirement for accreditation; and (2) The ACGME should regulate radiation oncology fellowships.

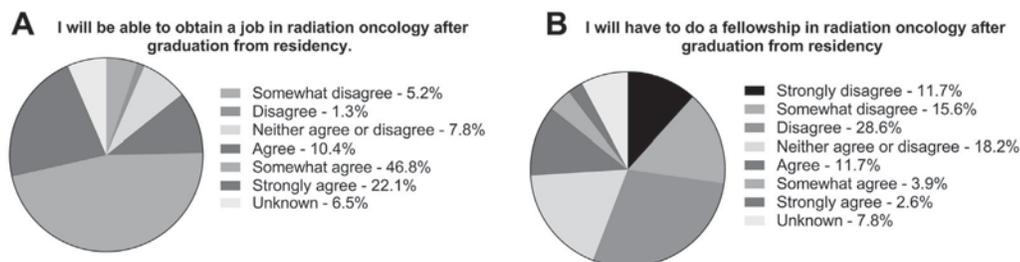


Fig 2. Medical student applicants for radiation oncology attitudes on (A) obtaining a job after radiation oncology residency and (B) requiring fellowships after radiation oncology residency.

think job satisfaction was relevant for residency program ACGME accreditation (Fig. 1). In terms of medical students, a majority sought academic or pseudoacademic practice (88.9% versus 11.1%). The distribution of desired location was fairly equal: 20.8% wanted the Northeast, 23.4% wanted the Midwest, 11.7% wanted the South, 19.5% wanted the West, and 24.7% had unknown or no location preference. Finally, a majority of medical student applicants felt confident that they would obtain jobs after residency (79.2% versus 6.5%; Fig. 2).

DISCUSSION

This study highlights three critical subjects facing the field of radiation oncology in the modern era. In this research, we explore perspectives regarding residency expansion, fellowship expansion, and postresidency employment satisfaction. We highlight these subjects from a number of different perspectives, from chairpersons and program directors to recent residency graduates and new practitioners and even medical student applicants to radiation oncology. We identified interesting differences in residency expansion perspectives between program directors and chairpersons, with the former demonstrating less interest in increasing their own institutional residency size. Program directors likely have a more intricate understanding of residency programs,

particularly with respect to overall ACGME requirements, residents' needs, and the importance of resident education. In contrast, chairpersons focus on general departmental growth and expansion.

Although limiting the size of residency programs solely or directly in response to future employment concerns would be technically illegal, maintaining standards and ensuring a high quality of educational experience at accredited programs seeking growth in resident complement is critical [5]. For instance, increasing minimum requirements in crucial procedural skills, such as stereotactic body radiation and brachytherapy, could help ensure that all residents have adequate training for future employment.

Our survey identified very little interest in the pursuit of postresidency fellowships among new graduates and new practitioners. Nevertheless, both chairpersons and program directors noted increased interest by radiation oncology candidates in fellowship opportunities. This discordance could be a manifestation of fellowships being viewed as a "backup plan" for graduates who do not find ideal employment upon completion of residency. In 2014, 11 residency graduates entered fellowship, 5 of whom opted for fellowships because of an inability to secure employment [7]. There was a notable difference in perspective on the future of fellowships between program directors, who did not believe fellowships would become a standard portion of training, and chairpersons, who did. Moreover, the vast majority of new graduates and new practitioners felt that third-party regulation of radiation oncology fellowships was necessary, whereas the vast majority of program directors and chairpersons did not.

Encouragingly, results from our survey demonstrated largely positive perspectives on postresidency employment and geographic satisfaction. This is in sharp contrast to a study in 1995 in which only 42.8% of graduates were satisfied with job opportunities available to them [8]. Our results are similar to a recent report by Brower et al [9], which demonstrated only a 6% radiation oncology job



Fig 3. Job satisfaction of each cohort using the question "On average, how satisfied are your graduating residents (or you) with their (or your) future jobs?"

dissatisfaction rate with respect to both employment and location of employment. Furthermore, in our cohort, program directors and chairpersons rarely noted residents who were dissatisfied with their postresidency employment. Although we did not track individual graduates, previous studies have demonstrated that the unemployment rate has actually improved from 11.9% in 1995 to 7.9% in 2004 [7,8]. Our study demonstrated that fewer than 10% of surveyed individuals were dissatisfied with their current positions. Future studies are necessary to determine mobility of employment after board certification. Furthermore, the concept of underemployment may be interesting to explore in future research, though it is hard to quantify in a field in which most individuals make more than \$100,000 per year.

Geographic location remains a very important aspect of the job search and employment satisfaction. In fact, in our study, 70% of new practitioners and 78% of new graduates endorsed having location restrictions, and approximately 20% of those surveyed endorsed being restricted to a single city or state. Correspondingly, a 1995 survey found that 62% of graduates had geographic restrictions [8]. Despite what seems to be relatively strict geographic constraints among the majority of the graduating residents, the vast preponderance of new practitioners and new graduates were satisfied with the location of their employment. There seems to be conflicting perceptions regarding the job market and residency expansion. This study demonstrates that a majority of job-seeking residents are content with their positions after residency. Anecdotal stories posted on online community sites, potentially representing a minority viewpoint, have placed radiation oncology in the spotlight with respect to future employment concerns. Applicants considering our specialty may be exposed to and confused by some of these perceptions and confusing job projections, potentially leading them away from radiation oncology. The data collected in our study demonstrates that a majority of job-seeking residents are content with their positions after residency. Ongoing assessment of satisfaction with career opportunities in radiation oncology will be important to ensure that facts rather than fear guide medical student specialty selection.

CONCLUSIONS

Resident job satisfaction remains high, whereas interest in radiation oncology fellowships remains low. Conflicting perceptions regarding the job market and residency expansion could have downstream impacts, such as deterring potential applicants.

TAKE-HOME POINTS

- Resident job satisfaction remains high at 85% of new graduates and 78% of new practitioners who were moderately to very satisfied with their future and/or current employment.
- Geographic location remains an important consideration in the job hunt, with a majority content with their current locations.
- New graduates and practitioners have very little interest in the pursuit of postresidency fellowships in radiation oncology, but chairpersons and program directors have seen a greater interest from prospective residents.
- There is conflicting perception regarding the job market and residency expansion, which could have downstream impacts, such as deterring potential applicants.

ACKNOWLEDGMENTS

James Leckie and Robert Hay provided administrative coordination for this survey.

ADDITIONAL RESOURCES

Additional resources can be found online at: <https://doi.org/10.1016/j.jacr.2018.11.020>.

REFERENCES

1. Smith BD, Haffty BG, Wilson LD, Smith GL, Patel AN, Buchholz TA. The future of radiation oncology in the United States from 2010 to 2020: will supply keep pace with demand? *J Clin Oncol* 2010;28:5160-5.
2. Ahmed AA, Holliday EB, Deville C, Jaggi R, Haffty BG, Wilson LD. Attracting future radiation oncologists: an analysis of the National Resident Matching Program data trends from 2004 to 2015. *Int J Radiat Oncol Biol Phys* 2015;93:965-7.
3. Shah C. Expanding the number of trainees in radiation oncology: has the pendulum swung too far? *Int J Radiat Oncol Biol Phys* 2013;85:1157-8.
4. Pan HY, Haffty BG, Falit BP, et al. Supply and demand for radiation oncology in the United States: updated projections for 2015 to 2025. *Int J Radiat Oncol Biol Phys* 2016;96:493-500.
5. Falit BP, Pan HY, Smith BD, Alexander BM, Zietman AL. The radiation oncology job market: the economics and policy of workforce regulation. *Int J Radiat Oncol Biol Phys* 2016;96:501-10.
6. Sura K, Lischalk JW, Grills IS, Mundt AJ, Wilson LD, Vapiwala N. Contemporary analysis of the prevalence of illegal match questions during medical student residency interviews. *Int J Radiat Oncol Biol Phys* 2018;100:1075-8.
7. Bland RE, Hodges JC, Folkert MR, Iyengar P, Meyer JJ. Employment after radiation oncology residency: a survey of the class of 2014. *Int J Radiat Oncol Biol Phys* 2015;92:969-70.
8. Flynn DF, Kresl JJ, Sheldon JM. The employment status of 1995 graduates from radiation oncology training programs in the United States. *Int J Radiat Oncol Biol Phys* 1999;43:1075-81.
9. Brower JV, Liauw SL, Reddy AV, Golden DW. Radiation oncology residency selection: a postgraduate evaluation of factor importance and survey of variables associated with job securement. *Pract Radiat Oncol* 2017;7:425-32.