

Research Letter

Integrating a Grassroots Well-Being Curriculum into a Radiation Oncology Residency Program



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Abstract

Purpose: The burnout rate among US radiation oncology residents was 33% in 2016. To our knowledge there are no published interventions addressing burnout among radiation oncology residents. We describe the implementation of a well-being curriculum, cocreated by a psychologist, a medical humanities professional, and radiation oncology attending and resident physicians.

Methods and Materials: Radiation oncology residents at our institution were surveyed to determine themes that induced burnout. A curriculum was developed, with monthly small group sessions focused on 1 identified topic. Sessions alternated between psychological tool-focused approaches and humanities exercises. These were led by a psychologist or medical humanities professional. Residents were given protected time to attend sessions during business hours. Participation was optional. Participants were assigned a random identifier, and the Stanford Professional Fulfillment Index (PFI) was assessed at baseline and 3-month intervals. PFI trends were analyzed after 1 year. At the end of the year, a focus group was held to evaluate work satisfaction and self-reported interactions with patients and coworkers. This information was used to improve the curriculum.

Results: All 12 residents in the radiation oncology program participated in the curriculum. There was an equal number of residents of postgraduate years 2 through 5. Six of the participants were female. Of the participants, 11 completed the PFI. At baseline, 80% of residents met criteria for burnout. This decreased to 67%, 50%, and 33% at 3, 6, and 9 months, respectively. The proportion of residents meeting criteria for very good professional fulfillment was 30%, 56%, 38%, and 22% at baseline and 3, 6, and 9 months, respectively. On average, 9 of 12 residents attended each session.

Conclusions: Our experience demonstrates the feasibility of collaborating with residents in the development of a well-being curriculum to cater programming to their needs, which we believe led to excellent engagement and attendance at each session.

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Crises in public health and social unrest have heightened the need to support trainee well-being. External factors coupled with oncology-specific factors, such as regularly facing mortality, balancing palliation with toxicity, the rapid pace of treatment advances, and engaging in emotionally charged conversations with patients, can lead to burnout.¹ Burnout is characterized by emotional exhaustion, depersonalization,

and a sense of reduced personal accomplishment; it affects physicians and physicians-in-training at greater rates than the general population.² Emotional exhaustion, depersonalization, and burnout affected 28%, 17%, and 33% of radiation oncology residents, respectively, in the United States in 2016.³ Consequences may include inadequate patient care, ineffectiveness professionally, and physician harm, including substance abuse, clinical depression, and suicidality.⁴ Although physician burnout is widely documented, little is published on interventions.

In the largest comparative study to date, both individual-focused (eg, mindfulness training, stress reduction approaches) and structural or organization interventions (eg, change in duty hour requirements, modifications to clinical work processes) resulted in significant reductions in burnout.⁴ Limited interventions have been reported specific to the challenges within oncology. A single-institution pilot study reported the utility of a humanities curriculum for oncology trainees. Qualitative feedback revealed 91% endorsed improved interactions with patients and found the curriculum was useful.⁵ Similarly, 90% of pediatric hematology-oncology fellows participating in a humanism and professionalism curriculum reported the sessions were valuable.⁶

To our knowledge there are no published interventions specifically addressing burnout among radiation oncology residents. We describe a single institution's experience implementing a well-being curriculum for radiation oncology residents, co-created by a psychologist, a medical humanities professional, and radiation oncology attending and resident physicians.

Creation and Implementation

A clinical psychologist facilitated a session within our residency program on the topic of isolation in medicine. This session was perceived to be valuable, with enthusiasm for further development. Subsequently, an informal needs assessment was performed among the residents, and a need for dedicated well-being programming was identified. Existing institutional resources were evaluated but found inadequate as offerings were during hours conflicting with clinical duties.

We performed a formal needs assessment among residents via survey to determine themes that induced burnout. Topics identified included imposter syndrome, depersonalization, work-life balance, financial strain, second victim phenomenon, and coping with anxiety and depression. For the 2019 to 2020 academic year, a curriculum was developed, with monthly small group sessions focused on 1 identified topic. Each session was an hour long during protected didactic time; however, all sessions were optional to reduce the risk of further contributing to learner burden. Sessions alternated between a psychological tool-focused approach and humanities exercises.

These were led respectively by a psychologist or medical humanities professional (Table E1).

A psychology-focused session would open with a 5-minute icebreaker and then introduce the session's theme using relevant literature, case examples, and pop culture references. A clinical psychologist developed the content and facilitated the session. The group divided into cohorts of approximately 3 residents, to create a safe environment and enable sharing, before reconvening for further dialogue. Key points regarding coping mechanisms for the specific topic were reviewed at the conclusion.

Humanities sessions incorporated works of art or literature related to the session's theme. The group was again divided into small cohorts, and a medical humanities professional facilitated discussion, creative writing, or a hands-on activity. Sessions were designed to provide a healthy, creative outlet for emotions.

Analyzing Efficacy

The Stanford Professional Fulfillment Index (PFI) is a validated well-being instrument. It assesses professional fulfillment, work exhaustion, and professional disengagement domains over the previous 2 weeks, making it suitable to measure change due to an intervention.⁷ A professional fulfillment domain score of 3 or greater is reflective of very good professional fulfillment. A work exhaustion domain score, an interpersonal disengagement domain score, or the average of the work exhaustion and interpersonal domain scores of 1.33 or greater is indicative of burnout. To assess the efficacy of this curriculum, participants were assigned a random identifier. Baseline demographic information was obtained, and the PFI was assessed at baseline and at 3-month intervals (Table E2). Trends in the PFI were analyzed after 1 year. Due to small sample sizes, *P* values were not assessed. At the end of the year, a focus group was held to evaluate work satisfaction and self-reported interactions with patients and coworkers. This information was used to improve the curriculum.

Results

All 12 residents in the radiation oncology residency program participated in the curriculum. There was an equal number of residents of postgraduate years 2 through 5. Six of the participants were female. Of the participants, 11 completed the PFI.

At baseline, 80% of residents (8 of 10 who completed the baseline survey) met criteria for burnout, based on the PFI definition. Eight residents were considered to meet criteria for burnout based on a work exhaustion domain score ≥ 1.33 ; 6 of these residents also met criteria for burnout based on an interpersonal disengagement domain score and an average of the work exhaustion and

interpersonal disengagement domain scores greater than or equal to 1.33. This decreased to 67% of residents (6 of 9 who completed the 3-month survey) meeting criteria for burnout at 3 months, 4 residents meeting criteria based on work exhaustion domain score (all of whom also met criteria for burnout based on interpersonal disengagement and the average of work exhaustion and interpersonal disengagement domain scores), and an additional 2 residents meeting criteria for burnout based on interpersonal disengagement domain score alone. At 6 months, 50% of residents (4 of 8 who completed the 6-month survey) met criteria for burnout, with 4 meeting burnout criteria based on work exhaustion domain score, all of whom also met criteria based on interpersonal disengagement and the average of work exhaustion and interpersonal disengagement domain scores. This rate further decreased to 33% of residents (3 of 9 who completed the 9-month survey) meeting criteria for burnout at 9 months, all of whom met criteria based on work exhaustion domains, 1 of whom met criteria for burnout based on all 3 definitions, and 1 of whom met criteria based on both work exhaustion and the average of work exhaustion and interpersonal disengagement domains. The proportion of residents meeting criteria for very good professional fulfillment was 30%, 56%, 38%, and 22% at baseline and 3, 6, and 9 months, respectively.

On average, 9 of 12 residents attended each session. Qualitative feedback from the focus group identified that sessions focused on imposter syndrome, work-life balance, competition among colleagues, professionalism, coping with anxiety and depression, learning a patient's firsthand experience with treatment, and financial well-being were the most impactful. In response to the question, "What are your overall feelings and takeaways from the well-being curriculum?," residents stated:

"The focus on wellness within our group made me feel less alone. . . I appreciated the time to step away from clinical/research responsibilities and spend time reflecting on how I was doing. . . I enjoyed getting to connect with my co-residents, know them on a deeper level, and acknowledge that we all are going through similar (but also different!) experiences and can and should be a source of support for each other."

"It made me closer with my coresidents and helped me to connect better with my patients. I feel like I grew as a person and that I wasn't so alone going through residency."

"The well-being sessions provided dedicated time for residents to gather together, which in and of itself is therapeutic... It also allowed us to share our hopes, fears, happiness, sadness together through sessions of a variety of topics. It's definitely a highlight of the year for our resident life."

In addition to the qualitative feedback, residents have integrated instruments introduced in these sessions into

their lives. Some now employ reflective writing, origami, or art to practice expression of emotions.

Discussion

Burnout among practicing and resident physicians has reached epidemic levels, and consequences include negative effects on patient care, professionalism, physicians' own health, and the viability of health care systems.⁴ The prevalence of burnout among resident and fellow physicians is greater than that among medical students, attending physicians, or college graduates of similar age. Prevalence rates among residents range between 30% and 80%, depending on the specialty.^{3,8,9} Radiation oncology residents surveyed in 2016 reported emotional exhaustion, depersonalization, and burnout rates of 28%, 17%, and 33%, respectively.³ The response rate of this survey was 32%, bringing into question whether the actual rates of burnout were higher than reported.

Medical educators and residency program leadership struggle with finding effective interventions to address burnout. Many studies on resident burnout have been published; however, in a systematic review by Busireddy et al, only 19 of reviewed studies presented original data, enrolled residents, had identifiable intervention with follow-up results, and were published in English-language, peer-reviewed medical journals, thus meeting criteria for inclusion.⁸ Of the included studies, none included radiation oncology residents. At least one-third of radiation oncology residents in the United States are experiencing burnout, hence the inspiration for our program in an effort to improve professional fulfillment and decrease burnout among radiation oncology residents.

In our study, the rate of burnout was found to be 80% at baseline, based on the PFI definition. This rate is higher than that reported in 2016 by Ramey et al, who used the Maslach Burnout Index definition.³ As our study did not use the same survey instrument as Ramey et al, the rates cannot be directly compared. We chose to use the PFI instead of the Maslach Burnout Index because the Maslach Burnout Index is not sensitive to changes at less than 1 year, whereas the PFI is sensitive to changes of greater than or equal to 2 weeks, making it more appropriate for a 1-year intervention. In addition, radiation oncology residencies are heterogeneous with respect to workload, including patient volume and complexity, work hours, number of residents, departmental culture, and external environment, including but not limited to weather, which may all contribute to burnout. This heterogeneity may in part explain our high baseline burnout rate.

The Accreditation Council for Graduate Medical Education Common Program Requirements include that programs have the same responsibility to address well-being as other aspects of resident competence, and programs are asked to develop and strengthen their own well-being

initiatives.¹⁰ To our knowledge, a well-being curriculum has not been created by the American Society for Radiation Oncology. Providing a list of well-being resources puts the burden on the learner, and many resources are not available on a schedule accessible by residents, which was part of the impetus to create this program.

We developed a small group curriculum by combining a psychological tool-focused approach with humanities exercises because these have been successful in other well-being interventions.^{4,5} By incorporating both psychology and humanities, we believe we were able to have an impact on more residents. Some residents felt comfortable sharing in the psychology-based sessions, whereas others preferred learning and practicing outlets taught in the humanities sessions. We integrated these sessions into protected education time to allow for full participation and to not take away from already scarce time outside of work. In addition, these sessions were optional. Autonomy is associated with greater well-being, and optional attendance allowed more independence within their day.¹¹ An average of 75% of residents attended each session, and qualitative feedback was uniformly positive, indicating this programming was an effective use of time. We hypothesize that resident engagement throughout program development was instrumental for achieving the high participation.

Over our 1-year period, we observed a decline in burnout, with fluctuation in professional fulfillment. Interpretation of results is difficult, given the small sample size and the timeframe of 1 year. Additionally, results were likely confounded by the COVID-19 pandemic, which developed after the second survey time point. At our institution, patient volume was steady during COVID-19, and residents continued to work on site, with safety precautions in place, as opposed to working from home. The COVID-19 pandemic has caused unprecedented challenges for health care workers, including oncologists. The MD Anderson Cancer Center reported 56% of radiation oncology staff endorsed high levels of stress because of COVID-19.¹² With this additional stressor, our established programming was much appreciated.

Conclusions

Additional research is required to identify individuals at risk for burnout and best practices for reducing burnout in radiation oncology residents and attendings. The European Society for Radiotherapy and Oncology recently found that the personality trait alexithymia, which is a difficulty in emotion processing and awareness, was associated with burnout in a large cross-sectional study.¹³ These are intriguing data, and further work is required to determine effective interventions for burnout.

Our well-being programming continues with monthly sessions, and residents remain at the center of its

advancement to ensure adaptability to changing needs. We have collaborated with additional training programs within our institution, including our medical physics residency, to implement similar curricula and are hopeful to expand beyond our institution.

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Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.adro.2021.100837](https://doi.org/10.1016/j.adro.2021.100837).

References

- Shanafelt T, Dyrbye L. Oncologist burnout: Causes, consequences, and responses. *J Clin Oncol*. 2012;30:1235–1241.
- Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med*. 2012;172:1377–1385.
- Ramey SJ, Ahmed AA, Takita C, et al. Burnout evaluation of radiation residents nationwide: Results of a survey of United States residents. *Int J Radiat Oncol Biol Phys*. 2017;99:530–538.
- West CP, Dyrbye LN, Erwin PJ, Shanafelt TD. Interventions to prevent and reduce physician burnout: A systematic review and meta-analysis. *Lancet*. 2016;388:2272–2281.
- Khorana AA, Shayne M, Korones DN. Can literature enhance oncology training? A pilot humanities curriculum. *J Clin Oncol*. 2011;29:468–471.
- Kesselheim JC, Atlas M, Adams D, et al. Humanism and professionalism education for pediatric hematology-oncology fellows: A model for pediatric subspecialty training. *Pediatr Blood Cancer*. 2015;62:335–340.
- Trockel M, Bohman B, Lesure E, et al. A brief instrument to assess both burnout and professional fulfillment in physicians: Reliability and validity, including correlation with self-reported medical errors, in a sample of resident and practicing physicians. *Acad Psychiatry*. 2018;42:11–24.
- Busireddy KR, Miller JA, Ellison K, Ren V, Qayyum R, Panda M. Efficacy of interventions to reduce resident physician burnout: A systematic review. *J Grad Med Educ*. 2017;9:294–301.
- Dyrbye LN, West CP, Satele D, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Acad Med*. 2014;89:443–451.
- ACGME Common Program Requirements (Residency). Chicago, IL: Accreditation Council for Graduate Medical Education; 2020.
- Raj KS. Well-being in residency: A systematic review. *J Grad Med Educ*. 2016;8:674–684.
- Hoffman KE, Garner D, Koong AC, Woodward WA. Understanding the intersection of working from home and burnout to optimize post-COVID19 work arrangements in radiation oncology. *Int J Radiat Oncol Biol Phys*. 2020;108:370–373.
- Franco P, Tesio V, Bertholet J, et al. Professional quality of life and burnout amongst radiation oncologists: The impact of alexithymia and empathy. *Radiother Oncol*. 2020;147:162–168.