

University of Massachusetts Medical School  
**eScholarship@UMMS**

---

Population and Quantitative Health Sciences  
Publications

Population and Quantitative Health Sciences

---

2018-06-01


## Resident Wellness in US Ophthalmic Graduate Medical Education: The Resident Perspective

Elaine M. Tran  
*Brown University*

*Et al.*

**Let us know how access to this document benefits you.**

Follow this and additional works at: [https://escholarship.umassmed.edu/qhs\\_pp](https://escholarship.umassmed.edu/qhs_pp)

 Part of the [Medical Education Commons](#), [Mental and Social Health Commons](#), [Ophthalmology Commons](#), and the [Psychiatry and Psychology Commons](#)

---

### Repository Citation

Tran EM, Scott IU, Clark MA, Greenberg PB. (2018). Resident Wellness in US Ophthalmic Graduate Medical Education: The Resident Perspective. Population and Quantitative Health Sciences Publications. <https://doi.org/10.1001/jamaophthalmol.2018.1383>. Retrieved from [https://escholarship.umassmed.edu/qhs\\_pp/1197](https://escholarship.umassmed.edu/qhs_pp/1197)

This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in Population and Quantitative Health Sciences Publications by an authorized administrator of eScholarship@UMMS. For more information, please contact [Lisa.Palmer@umassmed.edu](mailto:Lisa.Palmer@umassmed.edu).

# Resident Wellness in US Ophthalmic Graduate Medical Education

## The Resident Perspective

Elaine M. Tran, BS; Ingrid U. Scott, MD, MPH; Melissa A. Clark, PhD; Paul B. Greenberg, MD, MPH

**IMPORTANCE** Wellness programs have become important strategies to combat burnout and depression among residents. However, the resident perspective on wellness in ophthalmic graduate medical education has not been solicited on a national level.

**OBJECTIVES** To report on residents' views of wellness initiatives in ophthalmic graduate medical education and identify potential strategies for promoting resident wellness.

**DESIGN, SETTING, AND PARTICIPANTS** In this national survey of ophthalmology residents in the United States, conducted from September 21 to November 3, 2017, all 1048 ophthalmology residents listed on the websites of ophthalmology residency programs accredited by the Accreditation Council for Graduate Medical Education were emailed an anonymous online survey consisting of 12 multiple-choice questions with options for free-text answers. Residents also received a mailed letter with a survey link and a \$1 incentive, as well as 2 reminder emails. Survey responses were analyzed using descriptive statistics, and the free-text answers were categorized.

**MAIN OUTCOMES AND MEASURES** Main outcomes include residents' reports regarding their personal experiences with wellness during residency, support systems provided by their programs, and opportunities for improving wellness in ophthalmic graduate medical education.

**RESULTS** Of 1048 residents, 241 (23.0%) responded to the survey. Most respondents (121 of 177 [68.4%]) reported that their programs faced an issue involving depression, burnout, or suicide among residents within the past year; 26.3% of respondents (61 of 232) reported being involved in a case when resident fatigue, burnout, or depression adversely affected a medical outcome or judgment. Fewer than half of the respondents (110 of 241 [45.6%]) reported that their residency programs placed moderate or major emphasis on promoting a culture of resident wellness, and only 26.7% (63 of 236) reported that their department had a formal resident wellness program. The most commonly cited barrier to resident wellness (59 of 236 [25.0%]) was a lack of time to attend wellness programs.

**CONCLUSIONS AND RELEVANCE** These results suggest that there is a substantial burden of burnout and depression among US ophthalmology residents and that there are opportunities to boost wellness in ophthalmic graduate medical education by making wellness curricula more accessible to residents and ensuring that residents have time to attend wellness programs.

JAMA Ophthalmol. 2018;136(6):695-701. doi:10.1001/jamaophthalmol.2018.1383  
Published online May 3, 2018.

**Author Affiliations:** Author affiliations are listed at the end of this article.

**Corresponding Author:** Paul B. Greenberg, MD, MPH, Division of Ophthalmology, Warren Alpert Medical School, Brown University, One Hoppin St, Coro Center W, Ste 200, Providence, RI 02903 (paul\_greenberg@brown.edu).

Persistent evidence of depression and burnout associated with residency training has driven the development of institutional guidelines and symposia intended to boost support for wellness among residents.<sup>1-3</sup> However, more information is needed on the effect of these efforts in US graduate medical education. Obtaining the resident perspective on a national level is critical to achieving this goal.

To our knowledge, a national survey of ophthalmology residents on wellness has not been undertaken. One study surveyed 21 residents at a single institution; 3 of the 5 respondents (60.0%) reported experiencing burnout.<sup>4</sup> We invited all residents from ophthalmology residency programs accredited by the Accreditation Council for Graduate Medical Education to participate in an anonymous, web-based survey on the status and sentiments regarding resident wellness initiatives in ophthalmic graduate medical education and opportunities for improvement.

## Methods

We developed a 12-question survey using information from a parallel survey of US ophthalmology residency program directors (PDs),<sup>5</sup> the Accreditation Council for Graduate Medical Education's Clinical Learning Environment Review,<sup>3</sup> and previous studies on wellness initiatives in medical education.<sup>6,7</sup> We used Qualtrics Survey software (Qualtrics) and revised the survey with input from 10 ophthalmology residents. We defined resident wellness as the state in which good medical, mental, and social health contribute to resident well-being, enable residents to achieve balanced lifestyles, and provide outstanding patient care.<sup>8</sup> The Brown University institutional review board determined that this study did not need formal review because it did not meet the definition of human participants research.

From September 1 to 21, 2017, we used residency websites and the emails of ophthalmology residency program coordinators from the American Medical Association's Fellowship and Residency Electronic Interactive Database to compile the names of 1391 US ophthalmology residents in postgraduate years (PGYs) 2 to 4.<sup>9</sup> On September 21, 2017, we emailed all 111 coordinators about the study and asked them to forward the survey to their residents. In addition, we mailed all residents a letter with the survey link and a \$1 incentive.<sup>5</sup> After 2 weeks, we sent 2 reminder emails, 1 week apart. We closed the survey after 6 weeks on November 3, 2017. We analyzed the responses using descriptive statistics and categorized the free-text answers. To investigate whether the results were affected by nonresponse based on training year, we compared unweighted results with weighted results by PGY. The weights (PGY 2, 0.90; PGY 3, 0.98; and PGY 4, 1.14) were calculated based on the number of PGY positions listed on the ophthalmology resident matching website (<https://www.sfmarch.org>)<sup>10</sup> and the number of respondents for each PGY.

## Results

Of 1048 residents, 241 (23.0%) responded to the survey. The Table displays the unweighted and weighted results; the un-

### Key Points

**Question** What is the status of resident wellness in US ophthalmic graduate education?

**Findings** In this survey of US ophthalmology residents, 68.4% of respondents reported that their programs faced an issue involving depression, burnout, or suicide among residents within the past year. The most commonly cited barrier to resident wellness (25.0%) was lack of time to attend wellness programs.

**Meaning** There may be a substantial burden of burnout and depression among US ophthalmology residents, and there are opportunities to boost wellness in ophthalmic graduate education by making wellness curricula more accessible to residents.

weighted results are presented here. Most respondents (121 of 177 [68.4%]) reported that their programs faced an issue involving depression, burnout, or suicide among residents within the past year; 26.3% of respondents (61 of 232) reported being involved in a case when resident fatigue, burnout, or depression adversely affected a medical outcome or judgment. Of 236 respondents, 63 (26.7%) reported that their department had a resident wellness program.

The most commonly cited barrier to resident wellness was a lack of time to attend wellness programs (59 of 236 [25.0%]). Of 233 residents, 117 (50.2%) noted that the issue of how to handle clinical responsibilities would be best addressed by ophthalmology-specific wellness programs, and 113 (48.5%) said that the issue of faculty expectations of residents related to skills-building in the clinic and operating room would be best addressed by ophthalmology-specific wellness programs. One-third of respondents (92 of 241 [38.2%]) did not know if they had access to free counseling services in their program. Among those who were aware of such services, 26.3% (36 of 137) were unaware of how to access them. Of 241 respondents, 110 (45.6%) reported that their programs placed moderate or major emphasis on promoting a culture of resident wellness; of 233 respondents, 98 (42.1%) chose "improving shift schedules" as a structural change to improve resident wellness.

The PGY distribution of respondents closely matched that of the overall resident population, so the magnitude of influence of each PGY on the results was proportional to the percentage of positions in each PGY. Hence, the unweighted and weighted results were similar (Table).

## Discussion

The survey results suggest that there is a substantial burden of depression and burnout among US ophthalmology residents. Of 177 respondents, 121 (68.4%) reported that their programs faced depression, burnout, or suicide among residents within the past year. This rate is comparable with the 69% rate of burnout reported in a 2017 study of 566 general surgery residents.<sup>11</sup> The novelty of ophthalmic examination and procedures compared with training during internship, the rapid

Table. Survey Results on US Resident Wellness Programs in Ophthalmology

Question	Residents, No.	Unweighted, %	Weighted by Postgraduate Year, % <sup>a</sup>
1. As a resident, do you have access to free counseling and behavioral health services in your ophthalmology program? (n = 241)			
Yes	138	57.3	55.6
No	11	4.6	4.6
Do not know	92	38.2	39.8
a. If yes (to question 1): Have you been educated on how, specifically, to access counseling and behavioral health services? (n = 137)			
Yes	101	73.7	71.7
No	36	26.3	25.3
b. If yes (to question 1): If residents participate in such counseling or services, does their participation remain confidential with respect to: (Check all that apply)			
The faculty (n = 94)	91	96.8	96.7
The ophthalmology department chair (n = 84)	83	98.8	98.8
The PD (n = 80)	78	97.5	97.4
c. If yes (to question 1): Do you believe residents' participation in such counseling or services should remain confidential with respect to: (Check all that apply)			
The faculty (n = 137)	137	100	100
The ophthalmology department chair (n = 133)	132	99.2	98.4
The PD (n = 121)	116	95.9	94.9
2. How much emphasis does your residency program place on promoting a culture of resident wellness? (n = 241)			
None	35	14.5	14.8
Minor	95	39.4	37.7
Moderate	87	36.1	37.5
Major	24	10.0	10.0
3. What is the main hindrance to resident wellness in your residency program? (Please mark one) (n = 236)			
Lack of wellness programming	15	6.4	6.3
Lack of time to attend wellness programming	59	25.0	24.7
Lack of access to free and confidential counseling and behavioral health services	3	1.3	1.3
Academic stressors	31	13.1	13.2
Shift times	12	5.1	5.0
Shift duration	25	10.6	10.7
Understaffing at clinical sites	22	9.3	9.2
Paperwork and administrative requirements	25	10.6	11.2
Fear of making errors that result in patient injury	5	2.1	2.0
Substance abuse concerns (for yourself or co-residents)	1	0.4	0.5
Sexism or racism in the culture of medicine	0	0	0
There are no hindrances	23	9.7	9.9
Other (please describe): Call schedule (n = 5); lack of support from administration, PD, or attending physicians (n = 4); lack of time (n = 2); workload (n = 2); wellness is high (n = 2)	15	6.4	5.9
4. In the past 12 mo, have you or any of your ophthalmology co-residents faced any issues involving resident depression, burnout, or suicide? (n = 236)			
Yes	121	51.3	51.3
No	56	23.7	22.0
Do not know	59	25.0	26.7

(continued)

Table. Survey Results on US Resident Wellness Programs in Ophthalmology (continued)

Question	Residents, No.	Unweighted, %	Weighted by Postgraduate Year, % <sup>a</sup>
5. Does your ophthalmology program provide access to a formal wellness program intended to reduce resident stress, burnout, and depression? (n = 236)			
Yes	63	26.7	26.1
No	81	34.3	34.0
Do not know	92	39.0	39.8
a. If yes (to question 5): What are the components of your resident wellness program? (Check all that apply) (n = 63)			
Screening for burnout or depression	15	23.8	22.0
Tracking of burnout or depression prevalence	6	9.5	9.3
Education in fatigue and stress management	47	74.6	74.8
Debriefing or support groups sessions	14	22.2	22.3
Self-care, mindfulness, or meditation training	27	42.9	43.9
Cognitive behavioral therapy (web-based or in person)	4	6.3	6.0
Other (please describe): Psychiatry (n = 1), group physical activity (eg, ultimate Frisbee) (n = 1), scheduled outings with attending physicians (n = 1), wellness day (n = 1), blank response (n = 2)	6	9.5	7.4
b. If yes (to question 5): Which of the following does your resident wellness program actively promote? (Check all that apply) (n = 63)			
Psychological wellness (eg, meetings with a professional who teaches skills that improve resilience and stress management)	32	50.8	51.2
Social wellness (eg, casual gatherings that foster camaraderie)	41	65.1	65.7
Physical wellness (eg, making healthy food regularly available, including exercise as a part of the residency schedule)	14	22.2	22.0
Professional wellness (eg, mentorship pairs or teams between junior and senior residents that facilitate open dialogue about personal or work-related concerns, training to improve doctor-patient relationships)	34	54.0	54.3
Other (please describe): Activities and mentorship (n = 1); nominal wellness program provided, but it does not actively promote any of the above (n = 1); blank response (n = 1)	3	4.8	4.2
None of the above; residency does not actively promote any wellness programs	6	9.5	8.9
c. If yes (to question 5): How much has the wellness program improved your residency experience? (n = 61)			
No improvement at all	11	18.0	17.2
Minor improvement	24	39.3	40.3
Moderate improvement	14	23.0	23.3
Major improvement	6	9.8	10.0
Other (please describe): Have not taken advantage of wellness program offerings (n = 4), have not taken advantage of wellness program offerings owing to lack of time (n = 1), blank response (n = 1)	6	9.8	9.1
6. Which aspect of resident wellness programs do you think is most important? (Please mark one) (n = 233)			
Screening for burnout or depression	55	23.6	24.5
Tracking of burnout or depression prevalence	17	7.3	7.4
Education in fatigue and stress management	32	13.7	13.4
Debriefing or support groups sessions	29	12.4	12.9
Self-care, mindfulness, or meditation training	60	25.8	24.9
Cognitive behavioral therapy (web-based or in person)	9	3.9	4.0

(continued)

Table. Survey Results on US Resident Wellness Programs in Ophthalmology (continued)

Question	Residents, No.	Unweighted, %	Weighted by Postgraduate Year, % <sup>a</sup>
Other (please describe): Root causes of depression or burnout (overwork, understaffing, administrative workload) (n = 8), general protected time to dedicate to wellness (eg, time to attend doctor appointments) (n = 7), exercise (n = 3), retreat days (n = 4), faculty support and improvement of camaraderie (n = 2), time off (n = 2), other (n = 5)	31	13.3	12.9
7. If one structural change could be made that could improve the wellness of you and your peers, which structural change would you suggest should be made? (Please mark one) (n = 233)			
Improve shift schedules	98	42.1	41.2
Faculty attitude toward mental health issues	25	10.7	10.9
Availability of free and confidential counseling and behavioral health services	16	6.9	7.5
Additional professional counseling	5	2.1	2.4
Introduction or improvement of wellness programs	56	24.0	24.4
Other (please describe): Decrease administrative burden (n = 6); boost support from attending physicians, PD, and institution (n = 6); decrease demands on resident time (morning or nighttime lectures, after hours responsibilities) to allow for more study time and happiness (n = 5); provide protected time for wellness (n = 5); arrange social or exercise activities (n = 4); increase access to counseling that is offered only during clinic hours (n = 1); address understaffing (n = 1); make counseling sessions mandatory once per month (n = 1); none needed (n = 3)	31	13.3	13.6
8. Which of the following issues do you think are unique to ophthalmology residents and would best be addressed by ophthalmology-specific wellness programs? (Check all that apply) (n = 233)			
Curriculum design	60	25.8	25.1
Examination preparation	93	39.9	39.7
Faculty expectations of residents related to skills building	113	48.5	48.0
Clinical responsibilities	117	50.2	49.7
Surgical difficulty	93	39.9	40.0
None of the above; ophthalmology residents do not need wellness programs specific to ophthalmology	20	8.6	8.2
Other (please describe): Need more support easing into ophthalmology residency after intern year, which is very different than ophthalmology practice (n = 4); reduce administrative burden and duties outside of clinical or surgical responsibilities (eg, lecture load) (n = 2); reduce expectation to work after home call (n = 2)	8	3.4	4.0
9. How can the Accreditation Council for Graduate Medical Education better promote resident wellness? (Check all that apply) (n = 233)			
Fund research on wellness interventions	65	27.9	28.0
Provide resources for burnout or depression screening	105	45.1	45.5
Provide resources for training in resilience skills	67	28.8	28.3
Offer strategies for developing wellness programs	90	38.6	38.0
Mandate the inclusion of a resident wellness program in ophthalmology residency training programs	104	44.6	44.5

(continued)

evolution of ophthalmic technology and pharmacotherapeutics, and the technical difficulty of ophthalmic surgery are all potential stressors for ophthalmology residents.<sup>12</sup>

The survey results indicate opportunities to improve the culture of wellness in ophthalmic graduate medical education. Most respondents reported that their programs faced an issue involving depression, burnout, or suicide among resi-

dents within the past year. In comparison, in a prior survey of ophthalmic PDs, only 25% of respondents reported facing a resident wellness issue.<sup>5</sup> Potential sources for this discrepancy include the following: (1) residents were more forthcoming than PDs when reporting issues concerning depression, burnout, and suicide; (2) residents who experienced or witnessed depression, burnout, or suicide were more likely to

Table. Survey Results on US Resident Wellness Programs in Ophthalmology (continued)

Question	Residents, No.	Unweighted, %	Weighted by Postgraduate Year, % <sup>a</sup>
Other (please describe): Address overwork due to increased clinical volume and administrative responsibilities without increased training spots (n = 5), improve work hours and limitations on call and duty hours (specific recommendation made by 2 respondents: include home call in duty hours) (n = 5), create incentives and punishments for programs based on anonymous resident evaluations of their own programs (n = 2), offer resident retreats (n = 2), require monthly counseling sessions (n = 1), provide funding support to identify barriers to wellness (n = 1), lobby for better resident salaries (n = 1), provide protected time for wellness (n = 3), improve the culture of residency (n = 1), require programs to cover wellness center or gym costs (n = 1), involvement not necessary (n = 5)	27	11.6	11.3
10. Have you been involved in a case when resident fatigue, burnout, or depression adversely affected a medical outcome or judgment? (n = 232)			
Yes	61	26.3	26.3
No	168	72.4	72.0
Other (please describe): Poor triage on part of primary call resident (n = 1), blank response (n = 2)	3	1.3	0.9
11. Which postgraduate year are you enrolled in? (n = 231)			
2	90	39.0	35.3
3	74	32.0	32.6
4	67	29.0	33.1
12. How many total residents are in your residency program? (n = 233)			
≤9	59	25.3	25.3
10-15	112	48.1	48.0
≥16	60	25.8	25.4
If you have any additional comments you would like to share, please list them here			
Summary of responses: The stigma of getting help is the greatest barrier to wellness (n = 1), residents are overextended and overworked (n = 3), more programs should have post-call days as it is unfair for clinic patients to be evaluated by someone who had little to no rest and is prone to making mistakes (n = 2), stressors come from peers and faculty (n = 2), wellness is a systemic problem (n = 2), need protected time to utilize wellness resources (n = 1), overall wellness is pretty good (n = 3), thank you for doing this survey (n = 2)			

Abbreviation: PD, program director.  
<sup>a</sup> Postgraduate years 2 to 4.

participate in the survey; or (3) PDs were unaware of a sizable proportion of wellness issues among residents. Consistent with the third explanation, only 39% of respondents in a survey of ophthalmic PDs reported that their programs screened for burnout or depression among residents.<sup>5</sup> One-fourth of residents who participated in our survey also reported being involved in a case when fatigue, burnout, or depression among residents adversely affected a patient’s outcome or clinician judgment. These findings suggest the need for more effective wellness strategies to protect residents and their patients.

Our survey results also highlight potential strategies to bridge the gap between the resident experience and program requirements. One strategy would be to ensure that local graduate medical education leaders inform residents of wellness programming and provide residents the opportunity to suggest additions or modifications to existing support systems. In one survey of ophthalmic PDs, 98% of respondents reported that counseling services were available in their residency programs.<sup>5</sup> However, more than half of our resident respondents were unaware of the availability of counseling services or how to access them. Since one-fourth of residents reported a lack of time to attend wellness programs as the main hindrance to resi-

dent wellness, another strategy would be to encourage residents to attend wellness events and provide them time off to do so. Otherwise, residents may hesitate to take time off, as that may pose a burden to other faculty and residents when work schedules need to be rearranged. Designating faculty wellness champions and promoting resident-faculty dialogue on topics such as work-life balance may also be beneficial.

**Limitations**

While the 23.0% response rate in the present study is in the midrange of national resident surveys (10%-34.3%),<sup>13,14</sup> the generalizability of the results may be limited by the response rate and nonresponse bias unrelated to PGY. For example, the mental health status of the residents may have influenced the results. On one hand, residents who faced depression or burnout in the past may have been more likely to respond relative to those who had not. On the other hand, residents currently facing depression or burnout may have been less likely to participate. Therefore, it is unclear whether our study’s observed rate of depression and burnout is higher or lower than the true rate among all ophthalmology residents.



## Conclusions

In July 2017, the Accreditation Council for Graduate Medical Education released a revised set of ophthalmology program requirements that mandate residency programs to

provide activities and curricula that encourage resident well-being, encourage residents to pay attention to work intensity, and permit residents to attend personal health appointments.<sup>15</sup> It is hoped that these new requirements will help PDs implement wellness strategies and reduce resident burnout.

### ARTICLE INFORMATION

**Accepted for Publication:** March 15, 2018.

**Published Online:** May 3, 2018.

doi:10.1001/jamaophthalmol.2018.1383

**Author Affiliations:** Program in Liberal Medical Education, Brown University, Providence, Rhode Island (Tran); Division of Ophthalmology, Warren Alpert Medical School, Brown University, Providence, Rhode Island (Tran, Greenberg); Division of Ophthalmology, Rhode Island Hospital, Providence (Tran, Greenberg); Department of Ophthalmology, Penn State College of Medicine, Hershey, Pennsylvania (Scott); Department of Public Health Sciences, Penn State College of Medicine, Hershey, Pennsylvania (Scott); Department of Quantitative Health Sciences, University of Massachusetts Medical School, Worcester (Clark); Section of Ophthalmology, Providence Veterans Affairs Medical Center, Providence, Rhode Island (Greenberg).

**Author Contributions:** Dr Greenberg had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

**Study concept and design:** Tran, Clark, Greenberg.  
**Acquisition, analysis, or interpretation of data:** Tran, Scott, Greenberg.

**Drafting of the manuscript:** Tran.

**Critical revision of the manuscript for important intellectual content:** All authors.

**Statistical analysis:** Tran, Clark.

**Obtained funding:** Tran.

**Administrative, technical, or material support:** Clark, Greenberg.

**Study supervision:** Greenberg.

**Conflict of Interest Disclosures:** All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

**Funding/Support:** Ms Tran received a Brown University Undergraduate Research and Teaching Award and a Research at Brown Grant.

**Role of the Funder/Sponsor:** The funding source had no role in the design and conduct of the study;

collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

**Disclaimer:** The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the US government.

**Meeting Presentation:** This paper was presented at the Annual Meeting of the Association for Research in Vision and Ophthalmology; May 3, 2018; Honolulu, Hawaii.

**Additional Contributions:** Samantha Paul, BS, Division of Ophthalmology, Warren Alpert Medical School, Brown University, assisted with preparation of the mailed envelopes. She was not compensated for her contribution.

### REFERENCES

- Mata DA, Ramos MA, Bansal N, et al. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. *JAMA*. 2015;314(22):2373-2383.
- Collier VU, McCue JD, Markus A, Smith L. Stress in medical residency: status quo after a decade of reform? *Ann Intern Med*. 2002;136(5):384-390.
- Accreditation Council of Graduate Medical Education. CLER pathways to excellence: expectations for an optimal clinical learning environment to achieve safe and high quality patient care. [http://www.acgme.org/Portals/0/PDFs/CLER/CLER\\_Brochure.pdf](http://www.acgme.org/Portals/0/PDFs/CLER/CLER_Brochure.pdf). Published 2014. Accessed May 4, 2016.
- Martini S, Arfken CL, Churchill A, Balon R. Burnout comparison among residents in different medical specialties. *Acad Psychiatry*. 2004;28(3):240-242.
- Tran EM, Scott IU, Clark MA, Greenberg PB. Assessing and promoting the wellness of United States ophthalmology residents: a survey of program directors. *J Surg Educ*. 2018;75(1):95-103.
- Gunasingam N, Burns K, Edwards J, Dinh M, Walton M. Reducing stress and burnout in junior doctors: the impact of debriefing sessions. *Postgrad Med J*. 2015;91(1074):182-187.
- West CP, Dyrbye LN, Rabatin JT, et al. Intervention to promote physician well-being, job satisfaction, and professionalism: a randomized clinical trial. *JAMA Intern Med*. 2014;174(4):527-533.
- Eckleberry-Hunt J, Van Dyke A, Lick D, Tucciarone J. Changing the conversation from burnout to wellness: physician well-being in residency training programs. *J Grad Med Educ*. 2009;1(2):225-230.
- American Medical Association. Search FREIDA Online, the AMA residency & fellowship database. <https://www.ama-assn.org/go/freida>. Updated October 10, 2016. Accessed October 12, 2016.
- sfind.org. Residency and fellowship matching services. <https://www.sfind.org/SpecialtyInsideAll.aspx?id=2&typ=1&name=Ophthalmology>. Accessed September 1, 2017.
- Lebares CC, Guvva EV, Ascher NL, O'Sullivan PS, Harris HW, Epel ES. Burnout and stress among US surgery residents: psychological distress and resilience. *J Am Coll Surg*. 2018;226(1):80-90.
- Sadun AA. The challenge of teaching ophthalmology: a residency review committee perspective. *Ophthalmology*. 2000;107(11):1971-1972.
- McNichols CHL, Diaconu S, Alfadil S, et al. Cosmetic surgery training in plastic surgery residency programs. *Plast Reconstr Surg Glob Open*. 2017;5(9):e1491.
- Shah MD, Johns MM 3rd, Statham M, Klein AM. Assessment of phonosurgical training in otolaryngology residencies: a resident survey. *Laryngoscope*. 2013;123(6):1474-1477.
- Accreditation Council for Graduate Medical Education. ACGME program requirements for graduate medical education in ophthalmology. [https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/240\\_ophthalmology\\_2017-07-01.pdf](https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/240_ophthalmology_2017-07-01.pdf). Accessed February 20, 2018.