Job Stress, Burnout, Work-Life Balance, Well-Being, and Job Satisfaction Among Pathology Residents and Fellows

Melissa Kelly, PhD,[1] *Ryan Soles, MS,*[1] *Edna Garcia, MPH,*[2] *and Iman Kundu, MPH*[2]

From the [1]Evaluation, Measurement, and Assessment Department, Learning and Education Research Division, American Society for Clinical Pathology (ASCP), Chicago, IL; and [2]Institute for Science, Technology, and Public Policy, ASCP, Washington, DC.

Am J Clin Pathol April 2020;153:449-469

DOI: 10.1093/AJCP/AQAA013

ABSTRACT

Objectives: *The study explored job stress, burnout, work-life balance, well-being, and job satisfaction among pathology residents and fellows. The aims were to examine the prevalence and sources of stress and burnout, as well as identify resources to promote work-life balance and well-being and prevent burnout.*

Methods: *The study used a cross-sectional survey deployed online to a large national sample of pathology residents and fellows.*

Results: *Job stress and burnout were prevalent, with more than a third of the respondents reporting that they were currently experiencing burnout. The respondents, particularly residents, were struggling with academics, and higher percentages were struggling with work-life balance and emotional well-being. Overall, the majority of respondents who rated their work-life balance indicated that it was poor or fair. Among the factors contributing to job stress and burnout and detracting from work-life balance, workload was the leading factor.*

Conclusions: *The factors contributing to job stress and burnout included organizational factors such as workload, value, and aspects of the learning environment, as well as personal factors such as work-life integration. One of the overarching implications is the need to address a range of interdependent considerations in designing resources to reduce job stress, promote work-life balance, and prevent burnout.*

A growing body of literature has documented the pervasiveness of burnout among physicians and other medical personnel.[1-7] These groups include physicians in primary care, internal medicine, and family medicine; physician assistants; nurses; medical residents; and many others. While there is considerable variation in the prevalence of burnout across these groups, amid a wide range of operationalizations used in individual studies and other contributing factors, one of the common themes is an indication that concerns are widespread.[8] Studies have also documented the impact of burnout, which can adversely affect not only the medical professional's job satisfaction and well-being but also patient care.[1,2,4] The personal toll includes emotional exhaustion, fatigue, depression, and other mental health concerns, as well as a loss of enjoyment and fulfillment from one's work. While research focused on specific medical roles and medical specialties has emerged, there has been much less research targeting the medical laboratory. Understanding the prevalence and impact of burnout among medical laboratory personnel is important, as this group comprises pathologists, residents, and more than 15 types of laboratory professionals who ultimately affect patient care. Their work affects almost all aspects of patient care, from diagnosing disease to informing treatment plans and monitoring treatment response.[9] They also play a vital role in driving effective test utilization and promoting laboratory quality and public health, which help improve patient outcomes.

Understanding the factors contributing to stress and burnout in the training environment for pathologists and laboratory professionals is also important, especially given the body of evidence of burnout among medical residents.[1,10] Residents have especially struggled with work-life integration and striking an optimal balance, due to a variety of factors,

including heavy workloads. The toll of poor work-life balance can include fatigue, exhaustion, mental health concerns, and other characteristics of burnout. There are also workforce-related implications of burnout, as trainees' perceptions of where their career may be headed or how it is unfolding may dissuade them from pursuing a career as a pathologist.[11]

The present article examines issues around work-life balance, including job stress, burnout, and job satisfaction. Focusing on pathology residents and fellows, the aim was to answer the following research questions:

- How prevalent are job stress and burnout? What are the main sources and contributing factors?
- What types of work-life balance and well-being are prevalent? What factors and strategies are promoting them, and what sources of support are available? What factors are detracting from them?
- How satisfied are pathology residents and fellows with their jobs?

Materials and Methods

The larger study used a cross-sectional survey design to examine job satisfaction, job stress, burnout, and well-being among medical laboratory personnel: pathologists, pathology residents and fellows, and laboratory professionals. As reflected by the research questions, the survey targeted a wide array of indicators and measures of stresses associated with residency and fellowship training, burnout, work-life balance, well-being, and job satisfaction. Survey development began with discussions among a steering committee of residents as well as a review of peer-reviewed literature on job satisfaction and burnout among medical personnel. Survey items were subsequently crafted from these discussions and derived from existing instruments (including the Mini Z survey [developed by Dr Mark Linzer and team at Hennepin County Medical Center, Minneapolis MN], the National Academy of Medicine (NAM) model,[12] the Maslach Burnout Inventory,[13] etc). The final draft of the survey was then submitted to the Institutional Review Board (IRB) of the University of Nebraska Medical Center and subsequently approved (IRB 632-18-EX). The survey was deployed online from October 2018 to December 2018 to a national sample of pathologists, laboratory professionals, and pathology residents and fellows represented by the American Society for Clinical Pathology's (ASCP's) membership. Snowball sampling was also used to broaden the sampling frame to the larger laboratory community.

Results

Demographics

A total of 115 residents and 30 fellows responded to the survey. Nearly all of the residents (n = 113, 98.3%) and all of the fellows (n = 30, 100%) were working in the United States. **Table 1** summarizes the number of responses to survey questions asking about demographic characteristics: sex, postgraduate year, facility type, geographic region, and type of area (where the number of responses may be less than the total number of residents and fellows who responded to the survey due to respondents being able to skip questions). As shown in Table 1, slightly more than half of the residents who reported their sex were males (n = 58, 50.4%), and more than half of the fellows who reported their sex were females (n = 19, 63.3%). The mean (SD) age of the residents was 31.7 (5.0) years (median, 30.0 years), and the mean (SD) age of the fellows was 34.3 (2.7) years (median = 34.0 years). As shown in Table 1, the largest number of residents were in their first or third postgraduate year (PGY; n = 33, 28.7% and n = 30, 26.1%, respectively).

At least 84% of each group practiced in academic hospitals, specifically large academic hospitals with 500 or more beds (Table 1). There were also respondents from other types of facilities, such as a government facility, a military facility, Veterans Administration, or Veterans Health Administration, and a county facility. In terms of geographic location, the highest percentage of both groups (residents, n = 38, 34.9%; fellows, n = 14, 48.3%) was in the Northeast (Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont). Furthermore, most of the respondents were located in urban areas. Only one (0.9%) resident and none of the fellows practiced in rural areas.

Job Stress

Almost all of the 125 respondents who rated whether they were feeling stress from their job indicated that they were feeling at least some stress (n = 118, 94.4%). Only three (3.0%) residents and three (11.5%) fellows **Figure 1** reported not feeling any stress from their job. Furthermore, at least 40% of the respondents indicated that they were feeling a lot of stress (residents, n = 40, 40.4%; fellows, n = 11, 42.3%). To examine potential stressors, the survey asked respondents to specify whether their workload/call duties, working with colleagues, and/or working with patients were main sources of stress. The top source was workload, and as shown in **Figure 2**, only a few residents indicated that working with patients was a main source of their job stress.

DOI: 10.1093/ajcp/aqaa013

Table 1
Responses to Demographic Questions

Demographic Characteristic	No. (%) of Responses	
	Residents	Fellows
Sex	112	30
Male	58 (51.8)	11 (36.7)
Female	54 (48.2)	19 (63.3)
Resident postgraduate year	115	NA
PGY1	33 (28.7)	
PGY2	24 (20.9)	
PGY3	30 (26.1)	
PGY4	23 (20.0)	
Other	3 (2.6)	
Facility type	115	30
Academic hospital	97 (84.3)	28 (93.3)
≥500 beds	86 (76.8)	25 (83.3)
300-499 beds	10 (8.9)	3 (10.0)
100-299 beds	1 (0.9)	0 (0.0)
Nonacademic hospital	11 (9.6)	0 (0.0)
≥500 beds	6 (5.4)	0 (0.0)
300-499 beds	3 (2.7)	0 (0.0)
100-299 beds	2 (1.8)	0 (0.0)
Other	4 (3.6)	2 (6.7)
Geographic region	109	29
Central Northeast	19 (17.4)	7 (24.1)
Central Northwest	8 (7.3)	2 (6.9)
Far West	11 (10.1)	1 (3.4)
Northeast	38 (34.9)	14 (48.3)
South-Central Atlantic	22 (20.2)	4 (13.8)
Type of area	111	30
Urban area (50,000 or more people)	96 (86.5)	28 (93.3)
Urban cluster (between 2,500 and 50,000 people)	14 (12.6)	2 (6.7)
Rural (2,500 or fewer people)	1 (0.9)	9 (0.0)

NA, not applicable; PGY, postgraduate year.

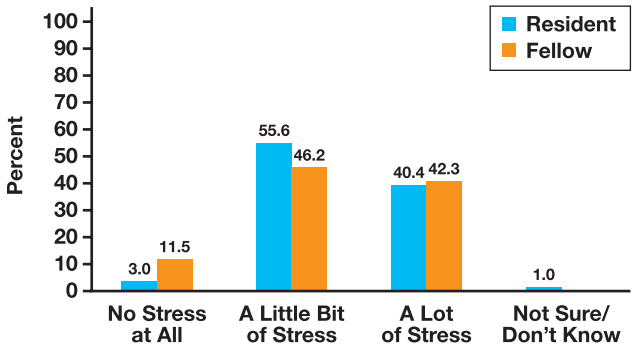

Figure 1 Level of job stress felt by the residents (n = 99) and fellows (n = 26).

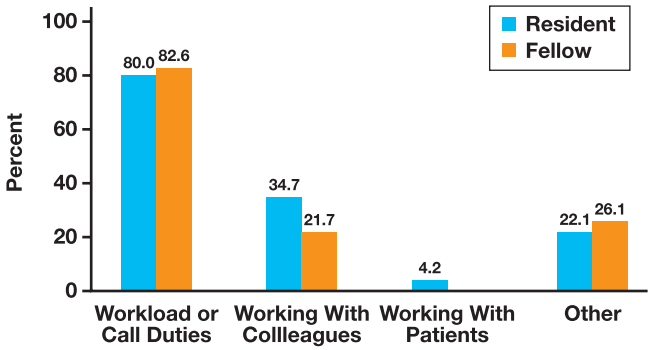

Figure 2 Percentage of respondents who reported feeling job stress due to their workload/call duties, colleagues, and/or patients (n = 95 residents, n = 23 fellows).

Workload and Job Tasks

At least 80% of the respondents who reported job stress indicated that it was due to their workload (residents, n = 76, 80.0%; fellows, n = 19, 82.6%). More than a third of each group indicated that they felt moderately or very overwhelmed by their workload (residents, n = 52, 46.0%; fellows, n = 11, 36.7%; Figure 3).

For both the residents and fellows, the quantity of the workload (eg, the number of tasks/cases) was the main reason for feeling overwhelmed Figure 4, accounting for more than 80% of the respondents in each group. Two other reasons that ranked in the top three for both groups were understaffing and additional responsibilities. Sixty-five percent of the residents who reported being moderately or very overwhelmed by their workload (n = 34, 65.4%), as well as 45.5% of the fellows who felt overwhelmed (n = 5), indicated that understaffing was a main reason.

Adequacy of Staffing/Time Allotted

Related to staffing, the survey asked respondents to rate the adequacy of the Anatomic Pathology staff at their institution in four areas: pathology assistants, histology technicians, transcription support, and other ancillary staff Figure 5. The areas where the highest percentage of residents indicated that staffing was adequate or more than adequate were ancillary staff and pathology assistants (n = 74, 67.3% and n = 72, 64.3%, respectively). However, the latter was also the area where the second highest percentage of residents indicated that staffing was less than adequate (n = 37, 33.0%). One of the residents pointed out that the impact of not having a pathology assistant contributed to the residents having a "heavy surgical pathology grossing workload and other additional responsibilities, such as frozen specimen cutting staining, digital image uploading, recording. No time for previewing or reading." Only two (6.7%) fellows indicated that pathology assistant staffing was less than adequate. The area with the most residents and fellows indicating less than adequacy was the staffing of histology technicians (residents, n = 39, 34.8%; fellows, n = 8, 26.7%).

Also related to workload, the survey asked respondents to rate the adequacy of the time that their job allowed for performing the following types of tasks: sign-outs,

DOI: 10.1093/ajcp/aqaa013

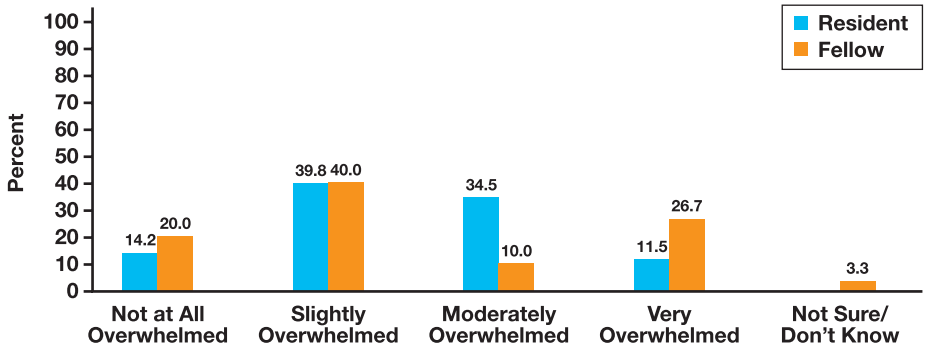

Figure 3 Ratings of feeling overwhelmed by workload (n = 113 residents, n = 30 fellows).

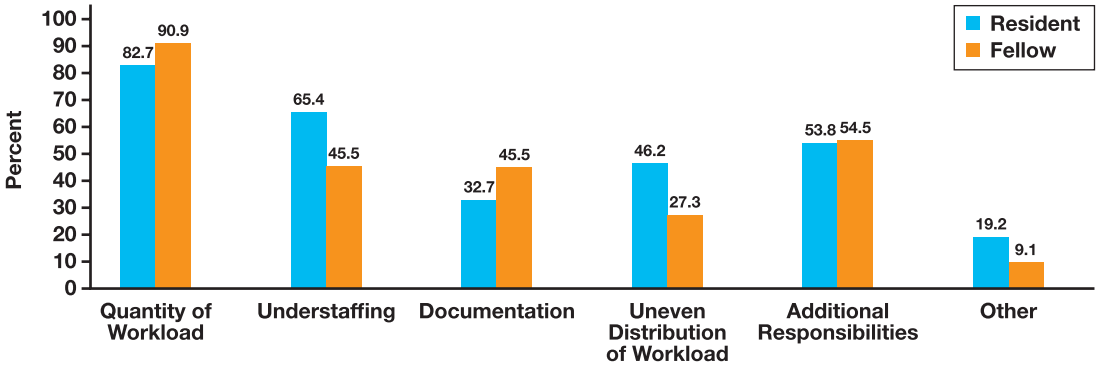

Figure 4 Reasons why respondents felt overwhelmed by their workload (n = 52 residents, n = 11 fellows).

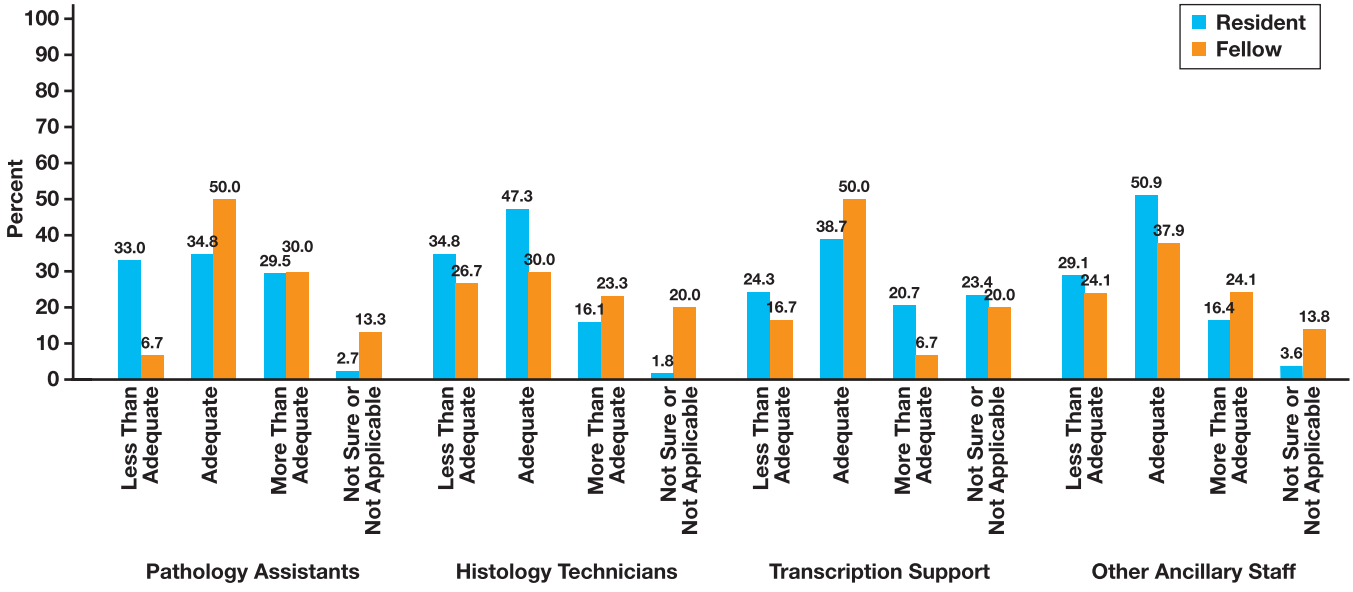

Figure 5 Perceived adequacy of the institution's Anatomic Pathology staff (pathology assistants and histology technicians: n = 112 residents, n = 30 fellows; transcription support: n = 111 residents, n = 30 fellows; other ancillary staff: n = 110 residents, n = 29 fellows).

reporting, preview time, research, and training others. While the majority of respondents indicated that the time allowed for each type of task was adequate or more than adequate, at least 19% or more of the residents rated the time as less than adequate **Figure 6**. Preview time had the highest percentage of respondents rating the time

DOI: 10.1093/ajcp/aqaa013

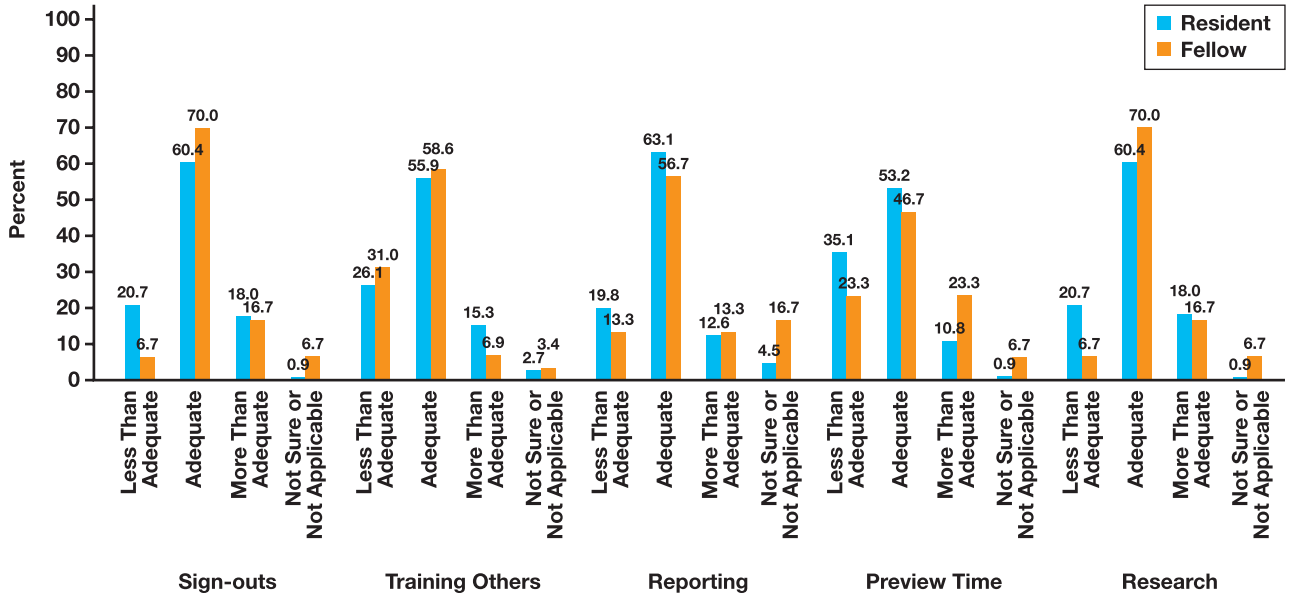

Figure 6 Ratings of the adequacy of the time that the respondents' job allowed for various tasks (sign-outs, reporting, preview time, and research: n = 111 residents, n = 30 fellows; training others: n = 111 residents, n = 29 fellows).

allowed as inadequate (residents, n = 39, 35.1%; fellows, n = 7, 23.3%). By contrast, sign-outs and research had the most time. Seventy-eight percent of the residents (n = 87, 78.4%) and 86.7% of the fellows (n = 26, 86.7%) rated the time allowed for sign-outs and research as adequate or more than adequate.

Distribution of Workload

Uneven distribution of workload was the fourth top reason for the respondents feeling overwhelmed by their workload (Figure 4), implicated by 46.2% of the residents and 27.3% of the fellows who reported being moderately or very overwhelmed. Thematic analysis of open-ended comments from a few respondents about their workload also reinforced this issue as one of the factors contributing to job stress and burnout. For example, one resident described the issue as one of not allocating resources efficiently so that a lone resident would end up with a higher workload/more cases than multiple residents did working in other areas.

Having additional responsibilities was also one of the top three reasons why residents or fellows were overwhelmed by their workload (Figure 4). Over half of both the residents and fellows indicated that it was a reason they were moderately or very overwhelmed by their workload (residents, n = 28, 53.8%; fellows, n = 6, 54.5%). A few of the respondents noted the time-consuming nature of research and leadership duties. Comments from a few of the respondents also implicated "nonphysician" or "nonpathology" work (eg, dealing with "IT issues" and following up on other people's work), as well as dealing with inefficient workflows.

Work-Related Anxiety

Related to the stressfulness of specific job tasks, there were questions that asked respondents to rate how anxious they felt about their work in general and about specific job tasks. Most of the 140 respondents who rated their level of anxiety about their work indicated that they were at least slightly anxious (residents, n = 95, 86.4%; fellows, n = 24, 80.0%), as shown in **Figure 7**. Over half of the residents (n = 57, 51.8%) and 40.0% (n = 12) of the fellows indicated that they were moderately or very anxious. Furthermore, there was a significant correlation between the respondents' ratings for job stress and feeling anxious about their work, $r_s(94) = 0.6$, $P < .01$ for residents and $r_s(25) = 0.6$, $P < .01$ for fellows. Among both groups, higher ratings of feeling anxious were associated with higher ratings of job stress.

Respondents also rated how anxious or worried they were about performing specific job tasks (using a 4-point scale from *not at all anxious* [1] to *very anxious* [4]). Depicted in **Figure 8**, the relative rank of each task based on the mean ratings was the same for the residents and fellows. The top two tasks with the highest mean ratings were:

DOI: 10.1093/ajcp/aqaa013

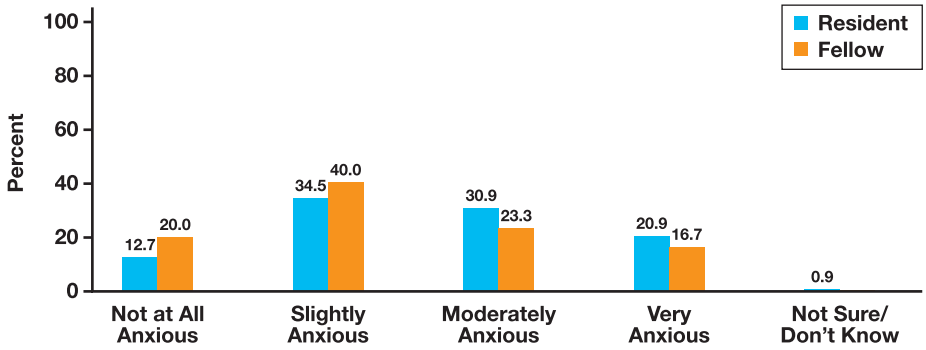

Figure 7 Extent of feeling anxious or worried about work as a resident (n = 110) or fellow (n = 30).

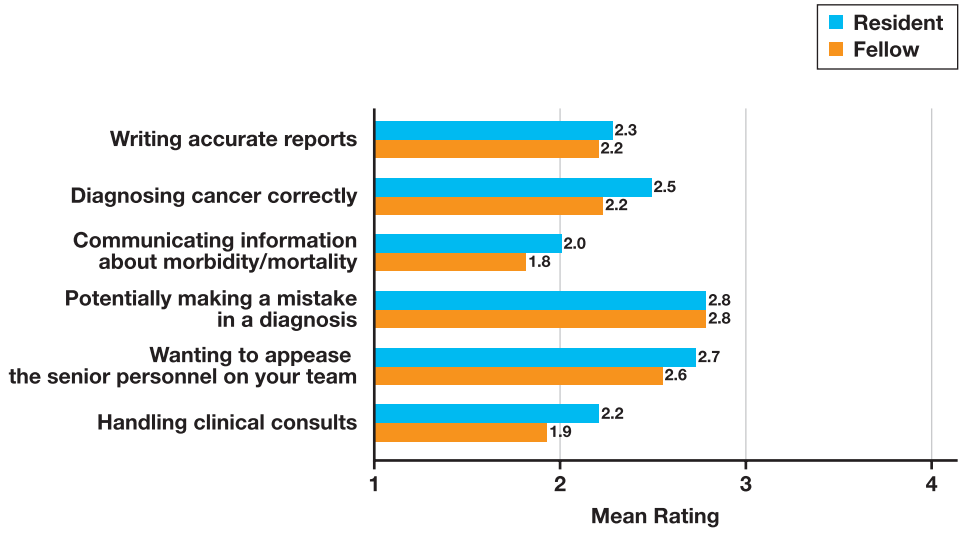

Figure 8 Extent that respondents felt anxious about performing specific job tasks, where 1 = not at all anxious, 2 = somewhat anxious, 3 = moderately anxious, and 4 = very anxious (n = 112 residents, n = 30 fellows).

- Potentially making a mistake in a diagnosis (mean [SD] = 2.8 [1.0] for residents and 2.8 [1.0] for fellows)
- Wanting to appease senior personnel on your team (eg, the attending pathologist or fellow for whom you are working; mean [SD] = 2.7 [1.1] for residents and 2.6 [0.9] for fellows)

At least half of the respondents in each group indicated that they were moderately (residents, n = 65, 58.0%; fellows, n = 16) or very anxious (residents, n = 61, 53.3%; fellows, n = 15, 50.0%) about these tasks. Diagnosing cancer correctly was the task with the third highest mean for both groups (mean [SD] = 2.5 [1.0] for residents and 2.2 [0.9] for fellows). The percentage of residents who indicated that they were moderately or very anxious about this task was 43.8% (n = 49), compared with a third of the fellows (n = 10, 33.3%).

The results of follow-up analyses using Spearman's rank correlation to determine whether there was a relationship between anxiety level and the residents' PGY year revealed a significant correlation for three of the tasks:

- Diagnosing cancer correctly, $r_s(109) = -0.20$, $P < .05$
- Handling clinical consults, $r_s(102) = -0.20$, $P < .05$
- Communicating information about morbidity/mortality, $r_s(106) = -0.24$, $P < .05$

For all three tasks, the correlation was negative, signifying that the more senior residents tended to feel less anxious about performing each task.

Personnel-Related Stressors

As shown in Figure 2, over one-third of the residents (n = 33, 34.7%) and several of the fellows (n = 5, 21.7%) rated working with their colleagues as one of the main sources of job stress. Thematic analysis of the comments of the 27 respondents who specified "other" sources of their stress also implied personnel-related issues (n = 7), such as nonsupportive relationships with their peers and/or attending physicians. For example, three of these respondents indicated the attending

DOI: 10.1093/ajcp/aqaa013

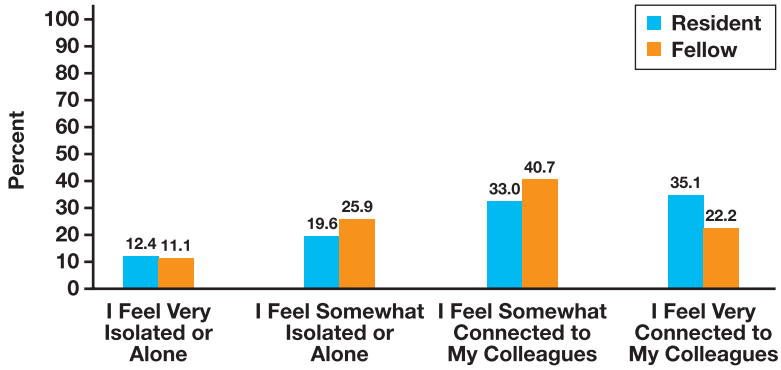

Figure 9 How isolated or connected the residents (n = 97 residents) and fellows (n = 27) felt to their colleagues.

Table 2

Perceptions of Feeling Valued by Colleagues, the Program Director, Institution, and the Field

	No. (%) Disagree or Strongly Disagree		No. (%) Agree or Strongly Agree	
I Feel . . .	Residents	Fellows	Residents	Fellows
Valued by my colleagues	20 (21.1)	4 (14.8)	72 (75.8)	21 (77.8)
Respected by my program director	17 (17.9)	4 (14.8)	74 (77.9)	22 (81.5)
Valued by professionals outside my team	30 (31.6)	8 (29.6)	60 (63.2)	16 (59.3)
Appreciated by my institution	43 (45.3)	9 (33.3)	47 (49.5)	13 (48.1)
Respected in the field of pathology	29 (30.5)	11 (40.7)	52 (54.7)	13 (48.1)

physician was a main source of their job stress. One of the residents also described competition among the residents. By contrast, the majority of the respondents indicated that they felt connected to their colleagues, as opposed to feeling isolated **Figure 9**. Sixty-eight percent of the residents (n = 66, 68.0%) and 63.0% of the fellows (n = 17, 63.0%) indicated that they felt somewhat or very connected. Follow-up analyses showed that a slightly higher percentage of the residents identified working with their colleagues as a main source of stress among those who felt somewhat or very isolated as opposed to feeling connected (n = 17, 53.1% vs n = 15, 46.9). However, the results of a χ^2 test on the distribution of responses indicated that the difference in the proportions was not statistically significant, $\chi^2(df = 3, n = 32) = 2.3$, $P > .05$. Although a couple of respondents who both identified working with colleagues as a main source of stress and indicated that they felt isolated cited "disenfranchisement" and a lack of mentoring as the main reasons, at least 75% of both residents and fellows agreed or strongly agreed that they felt valued by their colleagues (n = 72, 75.8% and n = 21, 77.8%, respectively; **Table 2**).

Other Job Stressors

Another common source of job stress revealed by the respondents' comments pertained to several types of individual factors identified on the NAM framework.[14] Examples included feelings of inadequacy and concerns about personal competence, such as feeling underprepared or not knowing enough. Related to this issue, the respondents also indicated whether they were overwhelmed by the amount of information that they needed to know to be a good pathologist. Over 80% of both the residents and fellows agreed or strongly agreed with the corresponding statement on the survey **Figure 10**. Moreover, the respondents' concerns about the volume of information they needed to know also implied similar reasons why they were experiencing job stress and burnout. A few of the residents conveyed that feeling overwhelmed and underprepared was one of the main reasons why they were experiencing job stress and/or burnout. A few respondents also implicated a lack of adequate structured, supervised training and mentorship as one of the main reasons.

Related indicators of feeling overwhelmed included questions that asked the respondents whether they were struggling with three aspects of residency: academics, work-life balance, and emotional well-being. While the percentage of residents and fellows who were struggling with academics was lower than the percentage who were struggling with work-life balance or emotional well-being, it still accounted for more than half of the respondents **Figure 11**. The majority of the residents (n = 56, 61.5%) indicated that they were struggling with academics either a little or a lot. Most of the residents who were struggling

DOI: 10.1093/ajcp/aqaa013

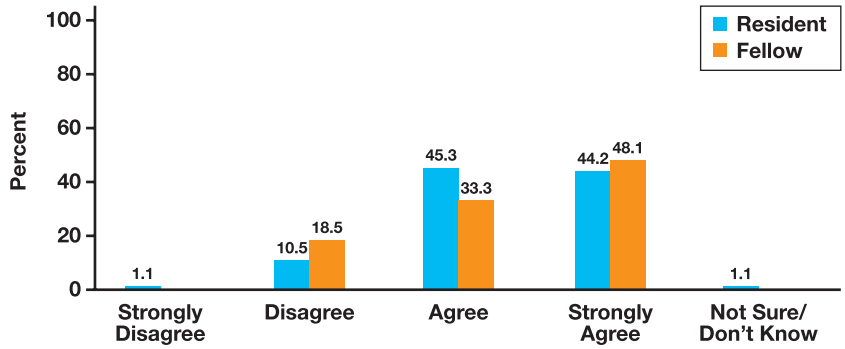

Figure 10 Perceptions of the amount of information needed to know to be a good pathologist (n = 97 residents, n = 27 fellows).

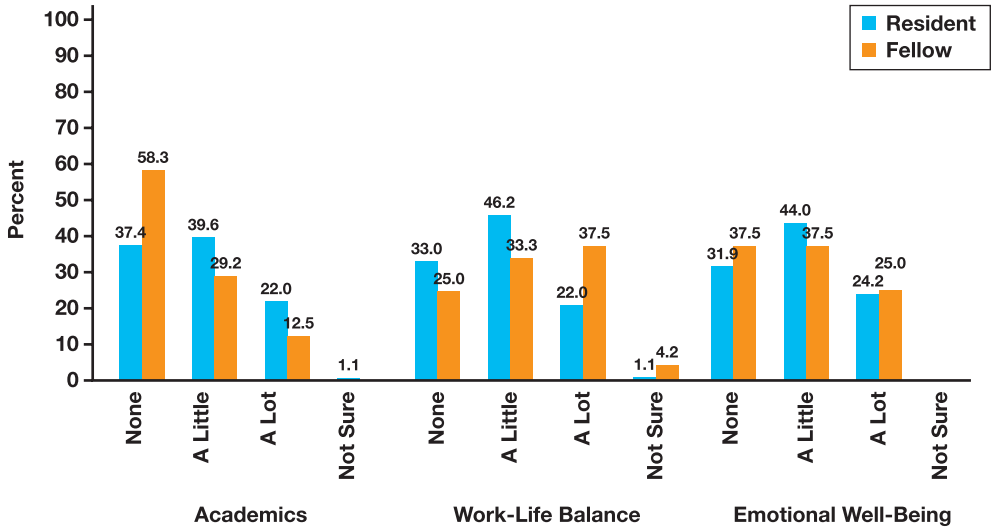

Figure 11 How much respondents were struggling with aspects of residency (academics: n = 91 residents, n = 24 fellows; work-life balance: n = 93 residents, n = 24 fellows; emotional well-being: n = 91 residents, n = 24 fellows; other: n = 63 residents, n = 21 fellows).

a lot were between PGY1 and PGY3. However, there was no correlation between PGY and how much the residents reported struggling, $r_s(88) = -0.01$, $P > .05$. In comparison to the residents, the percentage of fellows who were struggling with academics was much lower, with 41.7% of the group (n = 10) indicating that they were struggling a little or a lot.

The survey also asked respondents whether they perceived any stigma or negative consequences associated with struggling with the aspects listed in Figure 11, and the majority who reported struggling indicated that they did not perceive stigma **Figure 12**. However, 18.9% (n = 14) of the residents who were struggling and 15.0% (n = 3) of the fellows reported that they did perceive stigma or negative consequences from their program. Comments from several of these residents implied a lack of support or empathy from the program, including concerns about being labeled as weak or deficient or as a complainer. When asked if the residency program had offered any assistance to help address the aspects of residency with which they were struggling, 36.5% (n = 27) of the residents who were struggling indicated that the program had, but 18.9% (n = 14) indicated that the program had not offered assistance.

Burnout

Overall, at least a third of each group reported that they were currently experiencing burnout (residents, n = 34, 33.7%; fellows, n = 12, 44.4%). The percentage who reported ever experiencing burnout was higher **Figure 13**, accounting for 74% or more of each group (residents, n = 75, 74.3%; fellows, n = 21, 77.8%).

The majority of both the residents and fellows who reported feeling a lot of job stress also indicated that they

DOI: 10.1093/ajcp/aqaa013

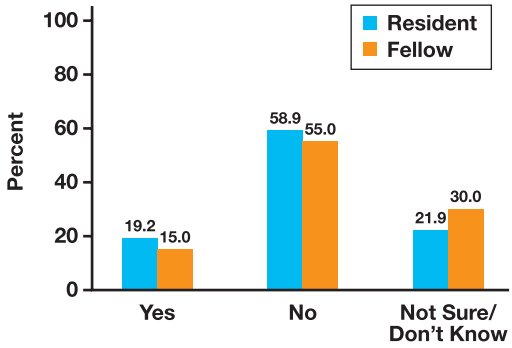

Figure 12 Perceptions of stigma or negative consequences from the program associated with the respondents struggling with residency (n = 74 residents, n = 20 fellows).

were presently experiencing burnout (residents, n = 25, 75.8%; fellows, n = 8, 66.7%). Comparatively, far fewer respondents who were not experiencing burnout reported feeling a lot of job stress (residents, n = 8, 15.4%; fellows, n = 3, 23.1%). The overall difference in the respondents feeling job stress and experiencing burnout was statistically significant, $\chi^2(df = 2, n = 109) = 35.5$, $P < .01$, with higher levels of job stress associated with burnout. However, there were also eight residents and three fellows who reported feeling a lot of job stress who were not currently experiencing burnout **Figure 14**.

Workload

Descriptions of the main issues contributing to the respondents' burnout were similar to the factors that they identified as the main sources of job stress (Figure 2). The prevalence of comments about having heavy workloads and/or long work hours implicated workload as one of the top issues contributing to the residents' and fellows' burnout. Ratings of how overwhelmed the respondents were by their workload were high (mean [SD] = 2.4 [0.9] for residents and 2.4 [1.1] for fellows), with more than a third of each group indicating that they felt at least moderately overwhelmed (residents, n = 52, 46.0%; fellows, n = 11, 36.7%). Furthermore, there was a significant relationship between feeling overwhelmed by workload and experiencing burnout, $\chi^2(df = 3, n = 112) = 36.7$, $P < .01$. Close to three-fourths of the respondents who reported presently experiencing burnout also indicated that they were moderately or very overwhelmed by their workload (n = 34, 73.9%) compared with 27.3% who were not experiencing burnout **Figure 15**.

Value and Respect

Being perceived or treated as "cheap labor" was another common factor among the residents and fellows experiencing burnout. Sentiments included not feeling valued or recognized for their accomplishments and a lack of emphasis on helping the respondents learn. Ratings of the respondents' perceptions of feeling valued and respected from the levels indicated in Table 2 (ie, by colleagues, the program director, the institution, and the field) were somewhat consistent with this theme. At least three-fourths of both residents and fellows agreed or strongly agreed that they felt valued by their colleagues (n = 72, 75.8%, and n = 21, 77.8%, respectively; Table 2), and the percentage who felt respected by their program director was slightly higher (residents, n = 74, 77.9%; fellows, n = 22, 81.5%). At levels outside of the trainee/director dyad and resident/fellow team, the percentages were much lower. Sixty-three percent of the residents (n = 60, 63.2%) and 59.3% (n = 16) of the fellows agreed or strongly agreed that professionals outside their team valued them, and less than half of each group felt that they were appreciated by their institution (residents, n = 47, 49.5%; fellows, n = 13, 48.1%). While more than half of the residents indicated that they felt respected in the field of pathology (n = 52, 54.7%), less than half of the fellows did (n = 13, 48.1%).

Work-Life Balance

When asked whether they were struggling with specific aspects of their residency (ie, academics, work-life balance, and emotional well-being), the aspect where the largest number of respondents indicated that they were struggling was with work-life balance (Figure 11). Sixty-eight percent of the residents (n = 62, 68.1%) and 70.8% of the fellows (n = 17) indicated that they were struggling a lot or a little in this area (Figure 11). Overall, the majority of ratings of work-life balance indicated that it was poor or fair (residents, n = 58, 62.4%; fellow, n = 16, 64.0%). Only 37.6% (n = 35) of the residents and 36.0% (n = 9) of the fellows rated their work-life balance as good or excellent.

Overall, there was a significant negative association between burnout and work-life balance, $\chi^2(df = 3, n = 103)$, $P < .01$. A higher percentage of residents and fellows reported poor or fair work-life balance among the respondents currently experiencing burnout than among the respondents who were not experiencing burnout **Figure 16**. Among the respondents who were not currently experiencing burnout, the proportions were much closer, with 57.4% (n = 35) of the respondents rating their work-life balance as good or excellent compared to 42.6% (n = 26) rating the balance as poor or fair. Overall, though, the majority of the 118 respondents who rated the quality of their work-life balance indicated that it was poor or

DOI: 10.1093/ajcp/aqaa013

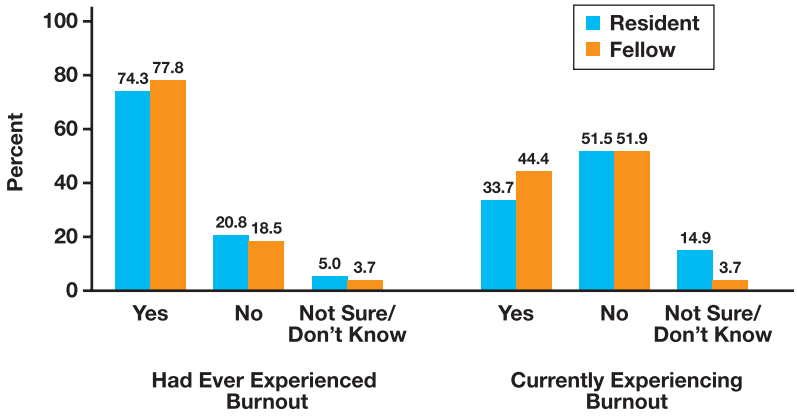

Figure 13 Percentage of respondents who had experienced or were currently experiencing burnout (n = 101 residents, n = 27 fellows).

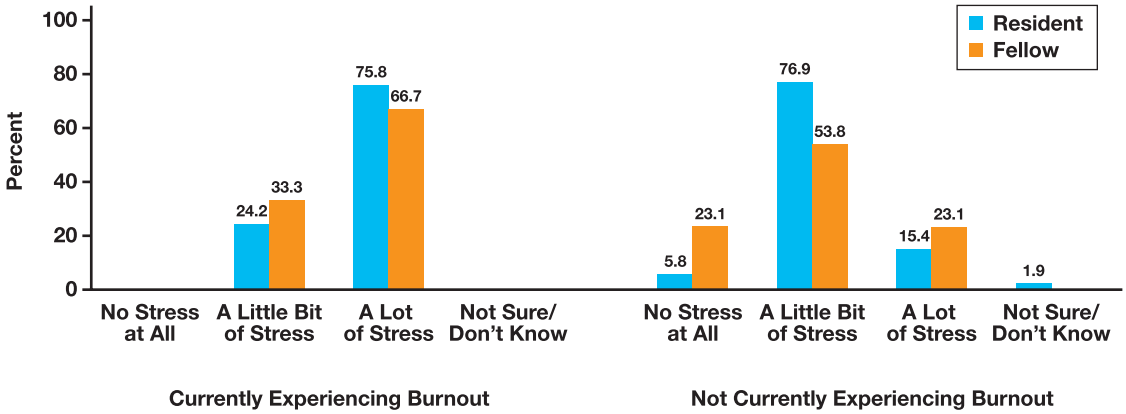

Figure 14 Self-reported level of job stress and whether respondents were experiencing burnout (n = 99 residents, n = 26 fellows).

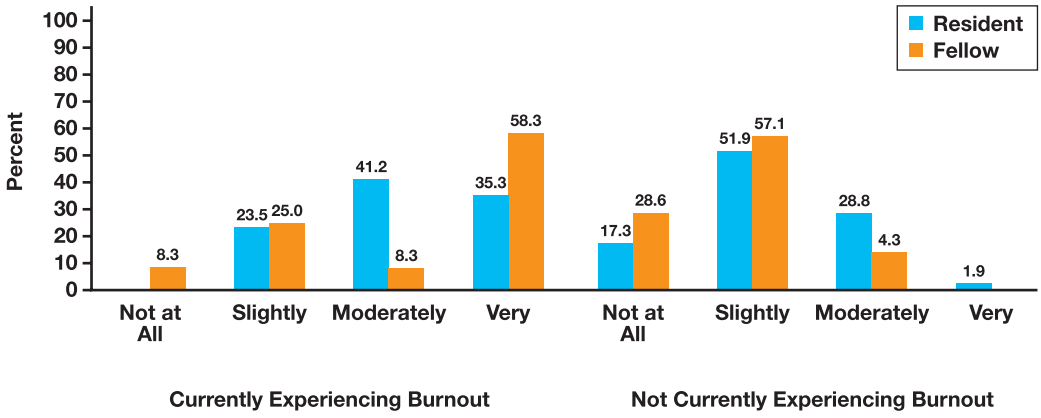

Figure 15 Burnout and feeling overwhelmed by workload (n = 101 residents, n = 27 fellows).

fair (residents, n = 58, 62.4%; fellows, n = 16, 64.0%). Less than 40% of either group rated their balance as good or excellent (residents, n = 35, 37.6%; fellows, n = 9, 36.0%).

Individual Strategies and Support

Respondents who rated their work-life balance as good or excellent (n = 30, 68.2%) shared strategies that

DOI: 10.1093/ajcp/aqaa013

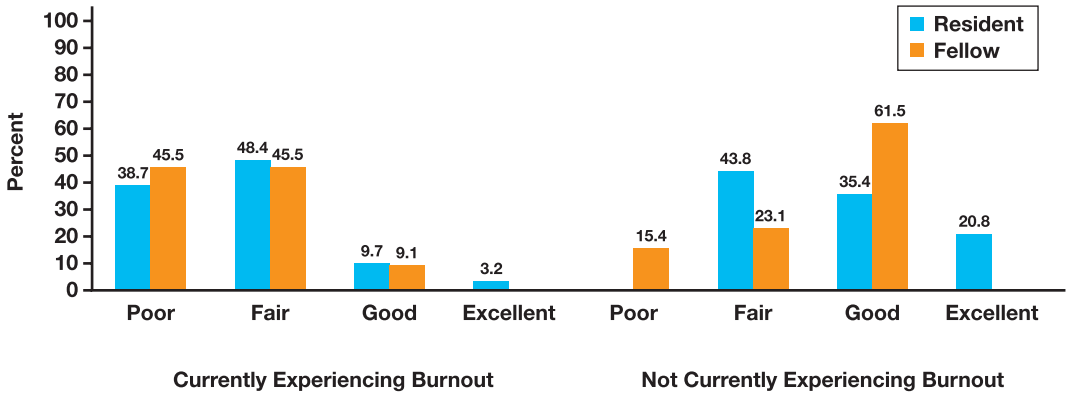

Figure 16 Quality of work-life balance among residents and fellows by whether they were currently experiencing burnout (n = 79 residents, n = 24 fellows).

Table 3
Frequency of Engaging in Hobbies, Recreational Activities, or Personal Interests Outside of Work by Work-Life Balance

	No. (%) With Poor or Fair Work-Life Balance		No. (%) With Good or Excellent Work-Life Balance	
Frequency of Engaging in Hobbies, Recreational Activities, and Personal Interests	Residents	Fellows	Residents	Fellows
Never	3 (5)	2 (13)	0 (0)	0 (0)
Up to once or twice a month	24 (41)	7 (44)	1 (3)	2 (22)
Up to three or four times a month	9 (16)	2 (13)	9 (26)	1 (11)
Up to once or twice a week	13 (22)	2 (13)	11 (31)	4 (44)
Up to three or four times a week	6 (10)	1 (6)	5 (14)	2 (22)
Almost every day	1 (2)	1 (6)	9 (26)	0 (0)
Other	2 (3)	1 (6)	0 (0)	0 (0)

they use to promote it. One of the most common types of strategies involved compartmentalizing work and/or extracurricular activities, such as designating or carving out specific times for activities and "leaving work at work." Specific types of activities were also common, including exercise, watching movies or videos, cooking, crafts, and other hobbies. Social support via friends and/or family was also common among the respondents who had good or excellent work-life balance. Two of the residents also noted that they engaged in meditation.

When asked how often they engage in hobbies, recreational activities, or personal interests outside of their role as a resident or fellow, very few respondents indicated that they never engaged in these activities (residents, n = 3, 3.2%; fellows, n = 2, 8.0%). Most of the other respondents specified a frequency of at least a weekly to monthly basis, with 9.3% indicating that they engaged in these types of activities almost every day. Nearly all of the respondents who rated their quality of life as good or excellent engaged in these activities at least three or four times a month, with 70% of them specifying a frequency that was close to weekly or daily Table 3. By contrast, most of the respondents who seldom or never engaged in activities tended to rate their work-life balance as poor or fair. This correlation between frequency of activities and quality of work-life balance was statistically significant, $r_s(114) = 0.53$, $P < .01$.

Institutional Support

At the institutional level, the respondents indicated whether their institution offered any of several types of support resources to promote work-life balance and emotional well-being. General wellness programs were most common, with the majority of the residents and fellows reporting that their institution offered them support resources (residents, n = 61, 54.0%; fellows, n = 18, 60.0%). The number of respondents whose institution specifically offered resources to promote mental or emotional well-being, address depression, and/or address burnout was much lower Table 4, ranging from 26.7% (n = 8) of the fellows to 35.4% (n = 40) of the residents. There were also several respondents whose institution offered recreational/recharge activities (residents, n = 27, 23.9%; fellows, n = 5, 16.7%).

DOI: 10.1093/ajcp/aqaa013

Table 4

Types of Support Resources Offered by the Respondents' Institution

Type of Resource	No. (%) of Residents	No. (%) of Fellows
Wellness program	61 (54.0)	18 (60.0)
Resources to promote physical wellness	42 (37.2)	12 (40.0)
Resources to promote mental or emotional well-being	40 (35.4)	10 (33.3)
Resources to address burnout	33 (29.2)	8 (26.7)
Resources to address depression	31 (27.4)	8 (26.7)
Resources on substance abuse	28 (24.8)	5 (16.7)
Recreational/recharge activities	27 (23.9)	5 (16.7)
Resources on time management	21 (18.6)	7 (23.3)
Peer support program	22 (19.5)	4 (13.3)
Mentorship program or resources for mentoring	21 (18.6)	2 (6.7)
Resources on parenting/caregiving	18 (15.9)	0 (0.0)
No resources	4 (3.5)	1 (3.3)
Not sure/don't know	16 (14.2)	4 (13.3)
Other	5 (4.4)	2 (6.7)

Follow-up analyses indicated that respondents whose institutions offered recreational/recharge activities tended to have better work-life balance, $\chi^2(df = 3, n = 118) = 11.7$, $P < .05$. Over half of the 32 respondents whose institution offered this type of resource (n = 18, 56.3%) rated their work-life balance as good or excellent, compared with 43.8% (n = 14) who rated their work-life balance as poor or fair. However, there was no association between work-life balance and whether the institution offered resources on time management, $\chi^2(df = 3, n = 118) = 5.5$, $P > .05$. Nor was there a significant association between work-life balance and whether the institution offered resources to address burnout. Slightly more than half of the 41 respondents whose intuition offered these types of resources (n = 21, 51.2%) rated their work-life balance as poor or fair, compared with 48.8% (n = 20) who rated their work-life balance as good or excellent. Thirty-one percent of the respondents who did not indicate that their institution provided resources to address burnout (n = 24, 31.2%) also rated their work-life balance as good or excellent.

However, follow-up analyses focused solely on the respondents whose institution offered resources on burnout indicated that there were differences in whether the respondents were currently experiencing burnout, $\chi^2(df = 1, n = 41) = 15.4$, $P < .01$. Sixty-one percent of the respondents who indicated that their institution provided resources to address burnout (n = 25, 61.0%) indicated that they were not currently experiencing it, compared with 26.8% (n = 11) who indicated that they were currently experiencing burnout. The results were similar for the respondents whose institution offered resources to promote mental/emotional well-being, $\chi^2(df = 2, n = 49) = 21.7$, $P < .01$, respectively. Among the respondents whose institution offered resources to promote mental or emotional well-being, a significantly higher percentage indicated that they were not currently experiencing burnout (n = 31, 62.0%), compared with the percentage who was experiencing burnout (n = 13, 26.0%).

Obstacles

When asked whether the specific factors listed in Figure 17 prevented the respondents from engaging in hobbies, recreational activities, or personal interests, the highest percentage of both residents and fellows specified "workload/call duties" (residents, n = 33, 71.7%; fellows, n = 8, 57.1%). Furthermore, the majority of the fellows (n = 19, 63.3%) and close to half of the residents (n = 53, 47.7%) indicated that their work schedule often encroached on their personal time. Less than 10% of each group reported that work never encroached on their personal time Figure 18. The respondents also reported the level of control that they had over their work schedule Figure 19. While the majority indicated that they had at least some control, over a quarter of both the residents and fellows reported having no control at all (n = 35, 31.3% and n = 8, 26.7%, respectively).

Other factors that at least half of both the residents and fellows identified as preventing them from engaging in hobbies, recreational activities, and personal interests included a lack of energy (residents, n = 32, 69.6%; fellows, n = 9, 64.3%) and studying (residents, n = 28, 60.9%; fellows, n = 7, 50.0%). Family obligations were another factor specified by over half of the fellows (n = 9, 64.3%) but under a third of the residents (n = 14, 30.4%). Burnout was cited as the number 4 factor overall, with close to half of the residents (n = 22, 47.8%) and 42.9% of the fellows (n = 6) implicating it as a hindrance.

Well-Being

Similar to the extent that the residents were struggling with work-life balance, they were also struggling with their emotional well-being (Figure 11). Sixty-eight percent of the residents (n = 62, 68.1%) and 62.5% (n = 15) of the fellows indicated that they were struggling in this area, many of whom indicated that they were struggling a lot (residents, n = 22, 24.2%; fellows, n = 6, 25.0%). Furthermore, the results of χ^2 analyses on the extent that the respondents whose institution offered resources to promote mental or emotional well-being were statistically significant, $\chi^2(df = 2, n = 49) = 9.1$, $P < .05$. Only 14.0% (n = 7) of these respondents indicated that they

DOI: 10.1093/ajcp/aqaa013

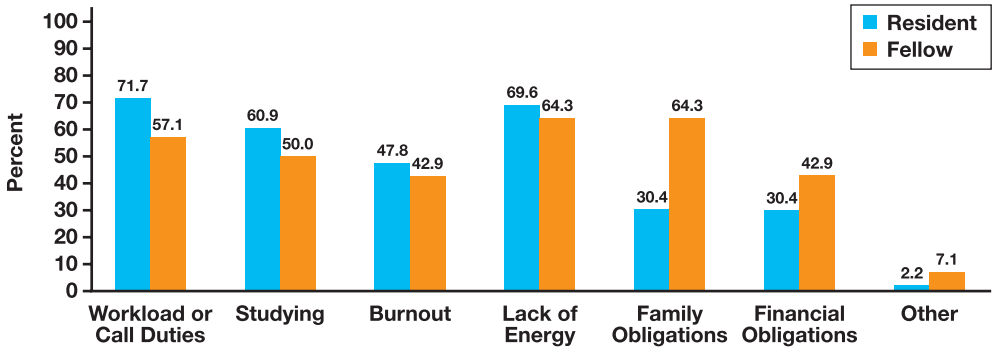

Figure 17 Factors that prevented respondents from engaging in hobbies, recreational activities, and personal interests (n = 46 residents, n = 14 fellows).

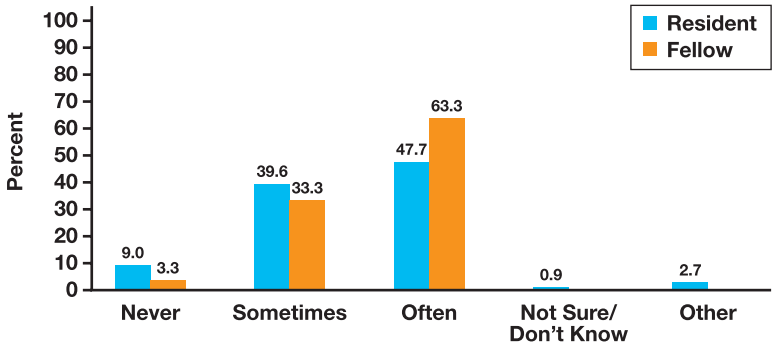

Figure 18 How often the respondents reported work encroaching on their personal time (n = 111 residents, n = 30 fellows).

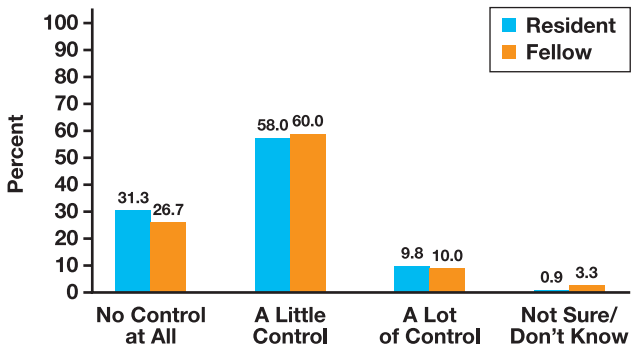

Figure 19 Level of control the respondents reported having over the work schedule (n = 111 residents, n = 30 fellows).

were struggling a lot, compared with 48.0% (n = 24) who were struggling a little and 36.0% (n = 18) who were not struggling at all.

Among various indicators of well-being, the survey asked respondents how often they had experienced various conditions that are often associated with negative well-being. At least 28% of both residents and fellows indicated that they had experienced almost all the conditions listed in Figure 20 more than daily. The conditions that the most respondents had experienced more than daily were feeling fatigued (residents, n = 37, 40.2%; fellows, n = 12, 48.0%) and feeling used up (residents, n = 37, 40.2%; fellows, n = 11, 44.0%).

The survey also asked about the emotional toll of the respondents' job, such as whether the job had made them more callous or hardened. Over a third of both the residents and fellows agreed or strongly agreed that they had become callous toward people since taking their job (residents, n = 38, 38.4%; fellows, n = 10, 37.0%). As shown in Figure 21, the percentage of residents who were currently experiencing burnout and reported becoming more callous (n = 20, 62.5%) was comparable to the percentage who were not currently experiencing burnout but still reported becoming more callous (n = 33, 63.5%). The percentage of fellows who were experiencing burnout and had become more callous (n = 7, 58.3%) was lower than the percentage who was not experiencing burnout but had become more callous (n = 10, 71.4%).

Close to half of the residents and fellows agreed or strongly agreed that their job had hardened them emotionally (residents, n = 46, 46.5%; fellows, n = 13, 48.1%). Most of these respondents were also experiencing burnout Figure 22. Approximately 75.8% (n = 25) of the residents who were experiencing burnout also indicated they had become emotionally hardened, compared with 25.5% (n = 13) who were not experiencing burnout. For the

DOI: 10.1093/ajcp/aqaa013

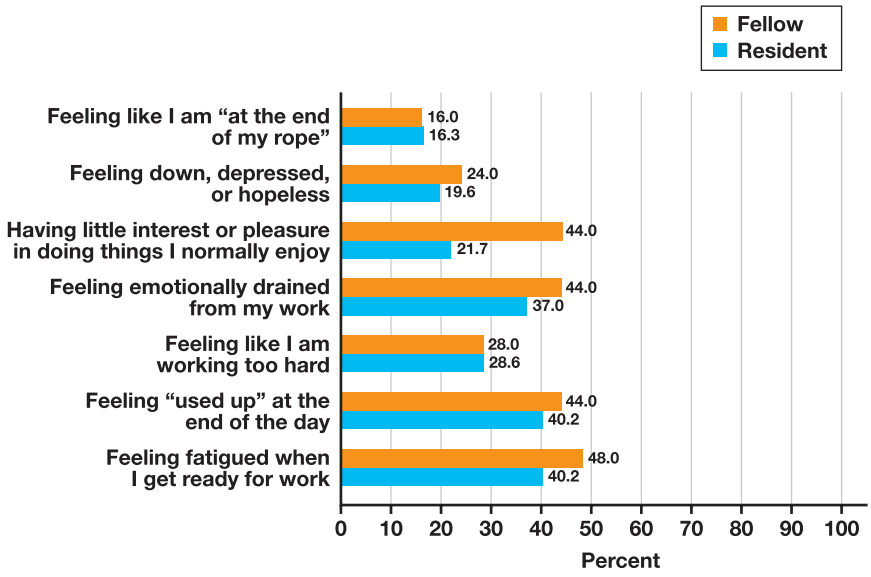

Figure 20 Percentage of respondents who experienced negative indicators of well-being more than daily (n = 92 residents, n = 25 fellows).

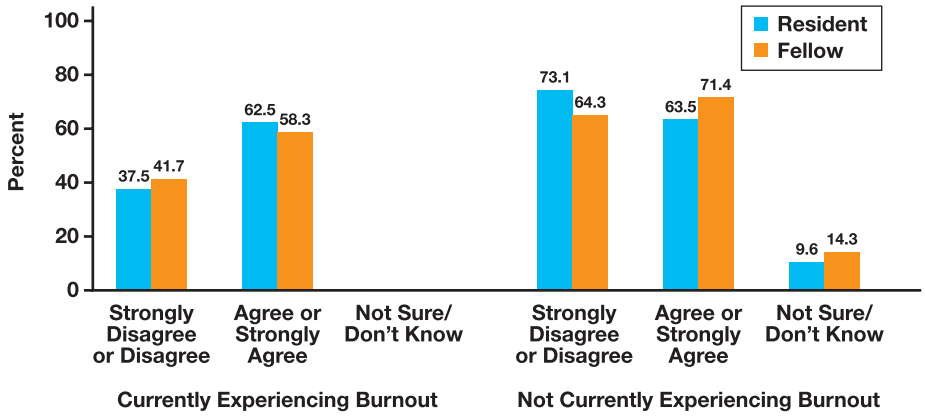

Figure 21 Percentage of respondents who reported becoming callous by whether they were experiencing burnout (n = 97 residents, n = 27 fellows).

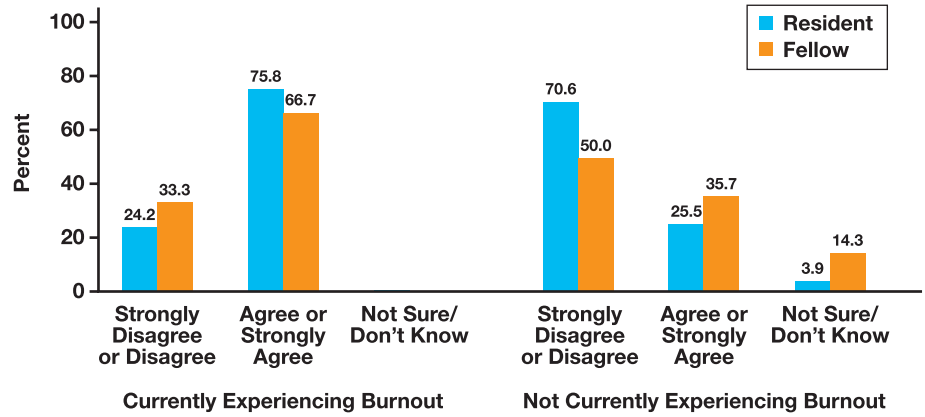

Figure 22 Percentage of respondents who reported becoming hardened emotionally by their job (n = 97 residents, n = 27 fellows).

DOI: 10.1093/ajcp/aqaa013

Table 5

Resources That the Respondents Used for Social Support for Personal Issues

Which of the Following Resources Do You Primarily Use as a Source of Social Support When You Encounter a Personal Issue?	No. (%) of Residents	No. (%) of Fellows
Other residents	55 (48.7)	9 (30.0)
Other laboratory colleagues	9 (8.0)	1 (3.3)
A mentor	17 (15.0)	5 (16.7)
My program director	11 (9.7)	1 (3.3)
My family	76 (67.3)	19 (63.3)
My friends	69 (61.1)	17 (56.7)
Mental health professionals	16 (14.2)	6 (20.0)
Other	7 (6.2)	1 (3.3)
I do not have any sources of social support.	3 (2.7)	2 (6.7)

fellows, 66.7% of the respondents who were experiencing burnout also indicated emotional hardening, compared with 35.7% (n = 5) who were not experiencing burnout.

In terms of support resources, the percentage of respondents whose institutions offered resources to specifically address mental/emotional well-being, depression, and burnout ranged from 26.7% to 35.4% (Table 4). Fewer respondents indicated that their institution specifically offered a mentorship program or resources for mentoring (n = 23, 16.1%). Follow-up analyses showed that among the respondents whose institution offered a mentorship program, a higher percentage indicated that they were not struggling with emotional well-being (n = 11, 47.8%) compared with the respondents who were struggling a little (n = 10, 43.5%) or a lot (n = 2, 8.7%). The overall difference in the proportions was statistically significant, $\chi^2(df = 2, n = 23) = 6.3$, $P < .05$. Among the respondents who did not indicate that their institution offered a mentorship program, 42.4% (n = 39) reported that they were struggling a little with emotional well-being, and 28.3% (n = 26) reported that they were struggling a lot. However, there was no association between struggling with well-being and using a mentor as a resource for social support **Table 5**, $\chi^2(df = 2, n = 21) = 2.6$, $P > .05$. Half of the 22 respondents who indicated that they used a mentor also indicated that they were struggling with emotional well-being a little or a lot, but the other half indicated that they were not struggling.

Compared with the percentage of respondents whose program offered a mentorship program, the overall percentage whose institution offered a peer support program was slightly higher (n = 26, 18.2%). Follow-up analyses showed that the majority of these respondents felt connected to their colleagues (n = 18, 69.2.0%), which was significantly more than the percentage who indicated that they felt isolated (n = 7, 26.9%), $\chi^2(df = 1, n = 25) = 5.2$, $P < .05$. By contrast, 65.7% of the respondents who did not indicate that their institution offered a peer support program (n = 65) indicated they felt connected rather than isolated.

Related to the respondents' feelings of connectedness, close to half of the residents indicated that they used other residents as a resource for social support when they encountered a personal issue (n = 55, 48.7%; Table 5). As shown in Table 5, the top two sources of social support were family and friends (n = 95, 66.4% and n = 86, 60.1%, respectively).

Less than 10% of the respondents indicated that they used their program director as a resource for social support (Table 5). The respondents also indicated whether they felt comfortable discussing various types of issues with their program director, such as their workload and issues affecting their performance **Table 6**. The majority of respondents felt comfortable discussing their workload (residents, n = 46, 51.1%; fellows, n = 14, 58.3%), but close to half (residents, n = 44, 48.9%; fellows, n = 9, 37.5%) indicated that they felt somewhat or very uncomfortable discussing this issue with their program director. Approximately half of the residents (n = 46, 49.5%) indicated that they felt comfortable discussing an issue with a fellow resident with their program director. The percentage of fellows who felt comfortable discussing this type of issue was slightly more the half (fellows, n = 13, 54.2%). The percentage of residents and fellows who felt comfortable discussing a personal problem affecting their work performance was lower (residents, n = 41, 45.1%; fellows, n = 8, 33.3%). The majority of the respondents indicated that they did not feel comfortable discussing this type of issue with their program director (residents, n = 47, 51.6%; fellows, n = 15, 62.5%). Similarly, the majority also indicated that they did not feel comfortable discussing a personal problem not affecting their work performance (residents, n = 57, 63.3%; fellows, n = 17, 70.8%).

The survey also asked respondents whether their program director had guided them appropriately if they had ever brought a work issue and a personal issue to him or her. A total of 86 respondents (n = 71 residents, 15 fellows) indicated that they had brought a work issue to the program director, and most of them indicated that the guidance was appropriate **Figure 2**. However, 13 (14.3%) residents and four (16.7%) fellows also indicated that the program director did not guide them appropriately. Fewer respondents (47 residents, 12 fellows) indicated that they had ever brought a personal issue to the program director, but the majority of them also indicated that the program director had guided them appropriately (Figure 2). Close to half of the respondents (residents,

DOI: 10.1093/ajcp/aqaa013

Table 6
How Comfortable the Respondents Felt About Discussing Types of Issues With Their Program Director

Type of Issue	Very Uncomfortable or Somewhat Uncomfortable, No. (%)		Very Comfortable or Somewhat Comfortable, No. (%)	
	Residents	Fellows	Residents	Fellows
My workload	44 (48.9)	9 (37.5)	46 (51.1)	14 (58.3)
A personal problem impacting my performance at work	47 (51.6)	15 (62.5)	41 (45.1)	8 (33.3)
A personal problem not impacting my performance at work	57 (63.3)	17 (70.8)	31 (34.4)	6 (25.0)
An issue with a fellow resident/fellow	46 (50.5)	10 (41.7)	45 (49.5)	13 (54.2)

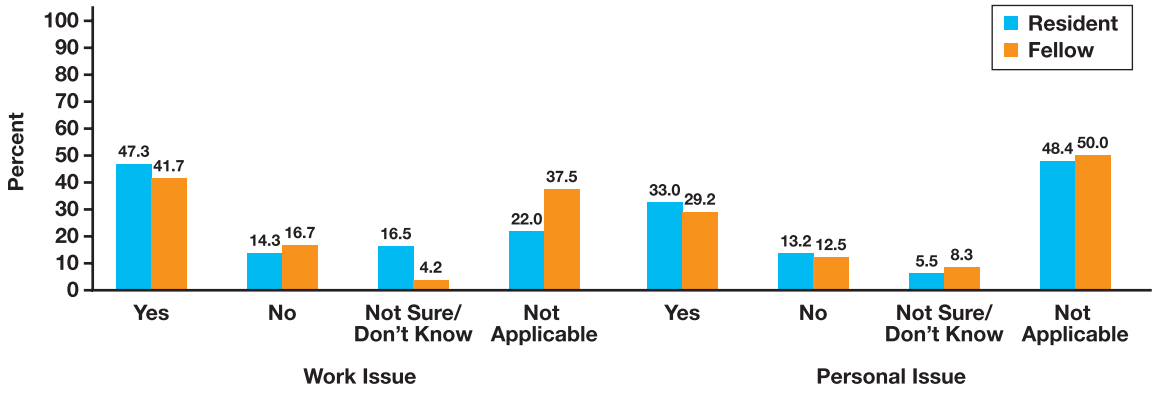

Figure 23 Perceptions of the appropriateness of guidance for work issues and personal issues brought to the program director (n = 91 residents, n = 24 fellows).

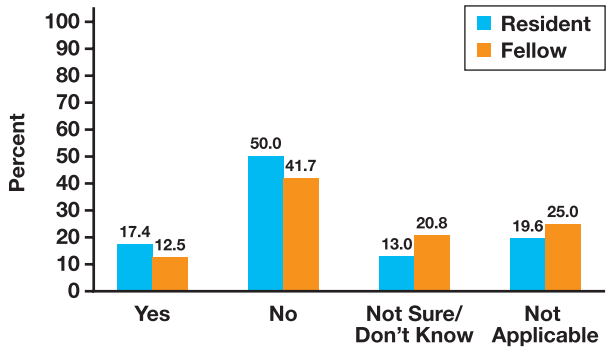

Figure 24 Perceptions of stigma associated with seeking help for a personal issue (n = 92 residents, n = 24 fellows).

n = 44, 48.4%; fellows, n = 12, 50.0%) indicated that they had not ever brought a personal issue to their program director.

A related question on the survey also asked respondents whether they had perceived any stigma or negative consequences from the program/institution for seeking help for a personal issue **Figure 24**. Half of the residents did not perceive any stigma or consequences (n = 46, 50.0%), but 17.4% (n = 16) indicated that they did. The percentages were lower for the fellows, with 41.7% (n = 10) indicating that they had not perceived stigma and 12.5% (n = 3) indicating that they had.

Job Satisfaction

Indicators of job satisfaction included the respondents' overall rating of how satisfied they were, ratings of how much they enjoyed their work, their sense of empowerment and accomplishment, and their perceptions of the adequacy of their compensation. Regarding overall job satisfaction, close to two-thirds of the residents and fellows indicated that they were somewhat or very satisfied with their current job (residents, n = 64, 66.0%; fellows, n = 18, 66.7%; **Figure 25**). The majority of the respondents also agreed or strongly agreed that they enjoyed their work as a resident or fellow (residents, n = 63, 66.3%; fellows, n = 21, 77.8%; **Figure 26**). However, a third of the residents (n = 32, 33.7%) disagreed or strongly disagreed with this statement, and all of these respondents also indicated that they felt a little or a lot of stress because of their job. Follow-up analyses indicated a significant negative correlation between the two ratings, $r_s(90) = -0.6$, $P < .01$ for residents and $r_s(24) = -0.5$, $P < .05$ for fellows. Higher ratings of agreement about enjoying their work were associated with lower ratings of job stress.

The results were similar for the question that asked whether the respondents were still as excited about becoming a pathologist as they were when they started their residency **Figure 27**. For the residents, 58.9% (n = 56) agreed or strongly agreed with the statement, compared

DOI: 10.1093/ajcp/aqaa013

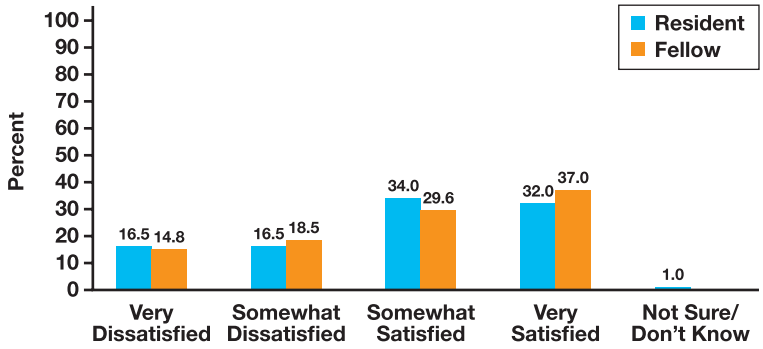

Figure 25 Ratings of overall job satisfaction (n = 97 residents, n = 27 fellows).

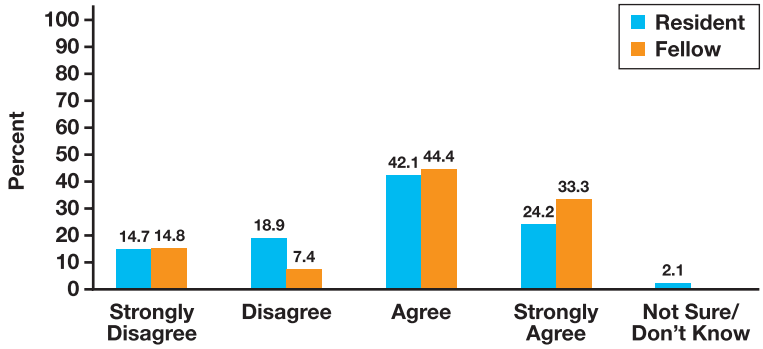

Figure 26 Ratings of whether the respondents enjoyed their work (n = 97 residents, n = 27 fellows).

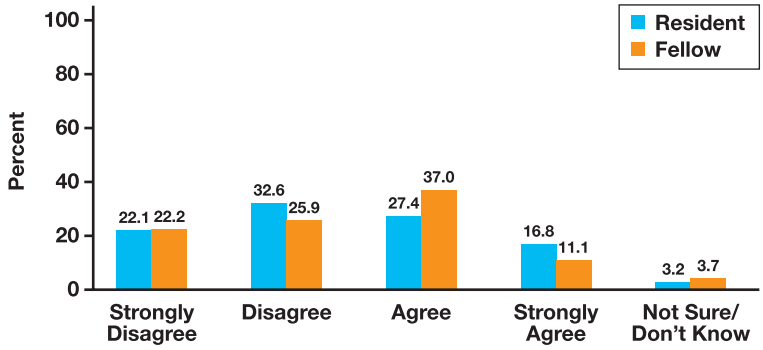

Figure 27 Feeling excited about being a pathologist (n = 95 residents, n = 26 fellows).

with 70.4% (n = 19) of the fellows. Just under a third of the residents disagreed (n = 30, 31.6%), and all of them also indicated that they felt a little or a lot of job stress. All but one of the seven (25.9%) fellows who disagreed also indicated that they felt job stress.

When asked about their sense of empowerment and accomplishment, the majority of both the residents and fellows indicated that they felt empowered to make work-related decisions (residents, n = 56, 58.9%; fellows, n = 18, 66.7%). More than 75% of both groups also agreed or strongly agreed that they had accomplished worthwhile things in their job (residents, n = 73, 76.8%; fellows, n = 21, 77.8%). Furthermore, follow-up correlations showed that there was a positive relationship between sense of accomplishment and still feeling excited about being a pathologist, $r_s(115) = 0.6$, $P < .05$. A higher level of agreement about having accomplished something worthwhile in the job tended to correspond with a higher level of agreement about feeling excited to be a pathologist.

Related to job satisfaction, the survey also asked respondents about the adequacy of the compensation they received for their work. The overall percentage who agreed or strongly agreed that they were adequately compensated was 57.3% **Figure 28**. Over half of the residents agreed or

DOI: 10.1093/ajcp/aqaa013

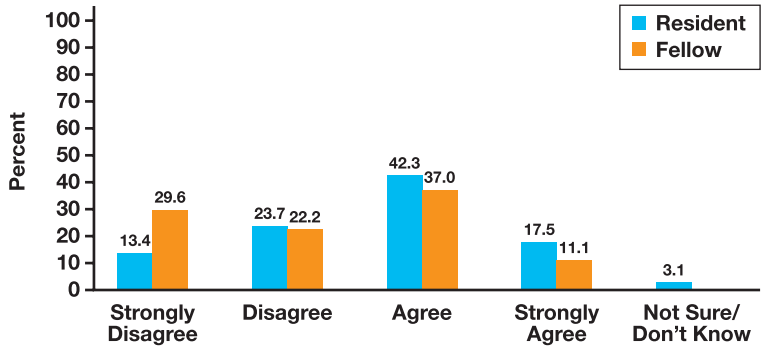

Figure 28 Perceived adequacy of compensation for their work (n = 97 residents, n = 27 fellows).

strongly agreed that they were adequately compensated (n = 58, 59.8%), but fewer than half of the fellows agreed or strongly agreed (n = 13, 48.1%).

Discussion

The results show that job stress and burnout were prevalent among the residents and fellows. Most of the respondents (94.4%) indicated that they felt a little or a lot of job stress, with 40.8% reporting that they felt a lot. More than a third of the residents and fellows reported that they were currently experiencing burnout, and the percentage who reported that they had ever experienced burnout was even higher (75.0%). Among the contributing factors covered on the survey, the top contributor to job stress, burnout, and work-life balance was workload. Approximately 83.9% of the residents and fellows indicated that they were at least slightly overwhelmed by their workload, with 14.7% of them indicating that they were very overwhelmed. For both the residents and fellows, the main reason that their workload was overwhelming pertained to the number of tasks/cases. The other top reasons probed in the survey pertained to understaffing and having additional responsibilities. Of the four types of staffing examined in the survey (pathology assistants, histology technicians, transcription support, and other ancillary staff), the roles with the least adequate staffing were histology technicians and pathology assistants. However, 80.0% of the fellows who rated the adequacy of the pathology assistants at their institutions indicated that this staffing was adequate or more than adequate.

The results also showed a positive relationship between job stress and work-related anxiety. Higher ratings of feeling anxious about work corresponded to higher ratings of job stress. In addition to more than half of the residents and 40.0% of the fellows indicating that they were moderately or very anxious, at least half of the respondents in each group indicated that they were moderately or very anxious about potentially making a mistake in a diagnosis and wanting to appease senior personnel (eg, the attending pathologist or fellow). Ratings of how anxious the respondents felt about appeasing senior personnel, as well as their comments about conflict with their attending physician, also indicated that the latter was a major factor in their stress and burnout. These findings were somewhat consistent with results from the 2019 Medscape Residents Lifestyle & Happiness Report that showed that attending physicians posed one of the biggest challenges for 2% to 3% of the participating residents and that colleagues (eg, "senior residents" and their "peers/other residents") were the third and fourth main sources of bullying.[9] These types of personnel-related stressors also surfaced in the present study, as more than a third of the residents who were feeling job stress rated working with their colleagues as one of the main sources. However, the majority of the respondents indicated that they felt somewhat or very connected to their colleagues.

Another common source of job stress revealed by the respondents' comments involved individual factors in the NAM framework,[14] such as feeling inadequate or underprepared. These concerns were also reflected in the respondents' feelings about being overwhelmed by the amount of information they needed to know to be a good pathologist. For some of the respondents, concerns about the volume of information they needed to know implied similar reasons why they were experiencing job stress and burnout. More than half of the residents and over 40% of the fellows indicated that they were struggling with academics. Moreover, there were concerns about stigma, as 18.1% of the respondents who were struggling with academics, work-life balance, and/or emotional well-being reported that they had perceived a stigma or negative consequences from their program due to their struggling. This percentage was much lower than the percentage of

DOI: 10.1093/ajcp/aqaa013

residents from the Medscape study[9] who somewhat or strongly agreed that there was a "stigma among peers when it comes to seeking help for mental health."

Feeling like they were not valued or respected was another common factor among the respondents experiencing burnout. However, the majority of residents and fellows agreed or strongly agreed that they felt valued by their colleagues (76.2%) and respected by their program director (78.7%). At levels beyond the trainee/director dyad, the percentages were much lower, though, as 62.3% of the respondents agreed or strongly agreed that professionals outside their team valued them. Less than half (49.2%) felt that they were appreciated by their institution, and slightly more than half (53.3%) indicated that they felt respected in the field of pathology. Comments from the respondents about the factors contributing to their burnout also conveyed sentiments about feeling undervalued and treated as cheap labor.

Whereas the majority of the residents (61.5%) and 41.7% of the fellows indicated that they were struggling with academics, even higher percentages indicated that they were struggling with work-life balance (68.7%) and emotional well-being (67.0%). Overall, the majority of the respondents who rated their work-life balance (62.7%) indicated that it was poor or fair, and only 37.3% rated it as good or excellent. There was also a significant negative association between burnout and work-life balance, with a higher percentage of respondents who were experiencing burnout rating their work-life balance as poor or fair. Struggling with work-life balance was consistent with the finding from the 2019 Medscape Residents Lifestyle & Happiness Report[9] indicating that work-life balance was the greatest challenge that the medical residents faced.

Individual-level strategies that the respondents used to promote their work-life balance included compartmentalizing their work and engaging in extracurricular activities. Specific types of activities (eg, exercise, watching movies or videos, cooking, crafts, and other hobbies) were also common. Social support via friends and/or family was also common among the respondents who had good or excellent work-life balance. The frequency of engaging in activities, hobbies, and personal interests outside of work varied, but there was a significant positive relationship with work-life balance. A higher frequency was associated with a higher quality of work-life balance. However, the respondents also contended with a wide range of obstacles that prevented them from engaging in hobbies, recreational activities, or personal interests. Workload was the top obstacle, and 89.4% of the respondents indicated that their work schedule often encroached on their personal time. In terms of institutional support for promoting work-life balance, there was a wide range of offerings. General wellness programs were most common, identified by over half of the respondents. The percentage whose institution specifically offered resources to promote mental or emotional well-being, address depression, and/or address burnout was much lower, ranging from 27.3% to 35.0%. There was no significant difference in the quality of work-life balance among the respondents whose institutions offered resources to address burnout, as the majority of these respondents still rated their work-life balance as poor or fair. However, there was generally an inverse association between whether the institution offered these types of resources and whether the respondent was currently experiencing burnout. Respondents whose institution offered resources to address burnout and promote mental/emotional well-being tended to report that they were not currently experiencing burnout.

Among the resources that the residents and fellows used for social support when they encountered a personal issue, family and friends were the top resources. The third highest resource was other residents. However, only 18.2% of the respondents reported that their institution offered a peer support program. Far fewer respondents indicated that they used a mentor as a resource for social support or that their institution offered a mentorship program or resources for mentoring (15.4% and 16.1%, respectively). Only 8.4% of the respondents indicated that they used their program director as a resource for social support. However, the majority of respondents (52.6%) indicated that they would feel comfortable discussing their workload with their program director if an issue arose. Most of the other respondents (46.5%) indicated that they would feel uncomfortable discussing this type of issue with their program director. The percentage who indicated that they would feel uncomfortable discussing a personal problem affecting their performance at work was even higher (53.9%).

The emotional toll of job stress and burnout was evident for many of the residents and fellows. More than 38% of the respondents had experienced negative indicators of well-being more than daily, such as feeling fatigued, emotionally drained, and "used up." More than a third of the respondents (38.1%) also agreed or strongly agreed that they had become more callous since taking their job, and the majority of these respondents also indicated that they were currently experiencing burnout. Close to half of the respondents (46.8%) strongly agreed that their job had hardened them emotionally. Most of these respondents were also experiencing burnout.

By contrast, overall ratings of job satisfaction were relatively favorable. The majority of the respondents (68.9%) agreed or strongly agreed that the enjoyed their

DOI: 10.1093/ajcp/aqaa013

work, and higher ratings of agreement were associated with lower ratings of job stress. Most of the respondents who disagreed about enjoying their work also indicated that they felt a little or a lot of job stress. Overall, 66.1% of the respondents indicated that they were somewhat or very satisfied with their current job. Moreover, 61.5% agreed or strongly agreed that they were still as excited about becoming a pathologist as they were when they started their residency.

Implications

Collectively, the results of the survey add to the body of literature documenting the prevalence of job stress and burnout among medical personnel and trainees. The main factors contributing to job stress and burnout also align with both external and individual factors outlined in the NAM framework,[15] particularly organizational factors, such as workload, value, and aspects of the learning environment, and personal factors, such as work-life integration. One of the overarching implications of these findings is the need to address a wide range of interdependent considerations in designing resources to reduce job stress, promote work-life balance, and prevent burnout. For example, the main source of job stress and burnout in the present study implies that reducing the trainees' workload and promoting work-life balance would help alleviate job stress and burnout, as also suggested by the Medscape report.[9] However, encouraging more trainees to manage their time effectively and engage in recreational activities may be counterproductive if their work schedules continually encroach on their personal time. Having "adequate support staff" was one of the top six factors that the residents in the Medscape study[9] identified for helping to avoid burnout but may not necessarily eliminate issues with an uneven distribution of workload, which was a contributor to the residents' and fellows' job stress in the present study. Similarly, focusing on helping trainees deal with emotional issues and anxiety may not be optimal in the absence of addressing their concerns about feeling underprepared due to a lack of structured training and formal mentorship. Fostering a learning environment that is personally supportive and promotes positive interpersonal relationships is also important. This type of environment could help reduce competition and issues such as bullying and harassment. It could also help establish an organizational culture that encourages the trainees to seek help when they are struggling with various types of issues and provides resources and support to address those issues. This type of learning environment could improve trainee morale, which could help reduce personnel-related job stress, improve job satisfaction, and prevent burnout.

Another key, related implication of the findings is the need to address these issues beyond the training environment and at a systems level (eg, at the organizational or institutional level). For example, the push for expansions and improvements in patient care services without commensurate growth in pathology departments can exacerbate burnout among the pathologists and pathology trainees as they take on more tasks and cases to keep pace with the increasing demand for pathology services.[1,16-18] The effects can worsen error rates and other issues that may ultimately undermine the desired outcomes in patient care. Thus, staffing considerations need to be part of institutional efforts to help prevent burnout. Institutions are also encouraged to provide pathologists with the range of "resources and authority they need to deliver good laboratory information."[15]

Limitations

While the results of the study largely support published literature on stress and burnout about medical trainees, there are also limitations to note. One of the main limitations pertains to the sample size and representativeness of pathology trainees who responded to the survey. The survey was deployed to a large national sample of more than 2,100 residents and fellows represented by ASCP's membership database and promoted to a broader reach via various social media channels and snowball sampling. The intent was to obtain a large diverse pool of respondents across age ranges, training level, types of learning/practice settings, and geographic locations, which would be representative of the population of pathology trainees in the United States. However, the relatively low number of survey respondents may limit the ability to generalize the findings. Another limitation relates to the breadth and scope of factors examined in the study. As indicated by the number of factors in the NAM framework[13] and as previously discussed, numerous types of external factors and individual factors affect clinicians' well-being. While the survey examined many of these factors, it did not cover the complete, comprehensive set. Also, the focus of this study was on job-related stress and factors contributing to burnout and detracting from well-being. Other personal factors, such as family dynamics, financial stressors, and immigration concerns, will be addressed in a future study.

Future Directions

In addition to examining the role that these other personal factors may play in job stress and burnout, there are also several other areas planned for exploration in subsequent iterations of the study. One of these directions is to delve deeper into relationships between work-life balance

DOI: 10.1093/ajcp/aqaa013

and factors that promote or impede it, such as the role that specific types of recreational activities may play. Another area under consideration pertains to the culture and climate within the pathology training environment and particular aspects that may have a positive role in promoting well-being and reducing job stress and burnout. Future directions also include examining whether concerns about bullying, harassment, and discrimination are prevalent within pathology training programs. Other potential directions for future research also include delving deeper into similarities and differences across pathology trainees and laboratory personnel, such as cross-cutting issues that transcend role and postgraduate year. For example, the relatively low percentage of fellows in the study who indicated that they felt respected in the field of pathology, compared with the percentage of residents, is one potential difference to consider exploring. Further investigation could help determine whether this result is replicable with a larger sample and whether it belies a more significant finding. Another direction under consideration is to begin compiling data on hours worked and relative growth rates in department size/resources compared with case numbers and how it relates to job stress and burnout. Providing hospital administration with this type of information may afford insight on how to address workload and therefore job stress and burnout within pathology departments.

The results of these future studies, as well as the present findings, will also be used to inform ASCP's efforts to alleviate stress and burnout among laboratory personnel. Current initiatives include a collection of resources on stress and burnout, available via ASCP's website. Future initiatives include augmenting these resources and identifying ways to help pathology programs strengthen efforts to support trainees.

Corresponding author: Edna Garcia, MPH; Edna.Garcia@ascp.org.
Reviewers and Contributors: Kendall Brewer, MD; Anne Chen, MD; Yekaterina Eichel, MD; Alexander Feldman, MD; Sounak Gupta, MBBS, PhD; Melissa Straub Hogan, MD (reviewer); Jennifer Kasten, MD, MSc; Jeffrey Mohlman, MD, MPH; Kelly Mooney, MD (reviewer); Rugvedita Parakh, MBBS, MD; S. Joseph Sirintrapun, MD, FASCP, FCAP; Stephanie Skala, MD; Geoffrey A. Talmon, MD; Hannah Wang, MD (reviewer); Jennifer Woo, MD.

References

1. Dyrbye LN, Shanafelt TD, Sinsky CA, et al. *Burnout Among Health Care Professionals: A Call to Explore and Address This Underrecognized Threat to Safe, High-Quality Care*. Washington, DC: National Academy of Medicine; 2017. https://nam.edu/burnout-among-health-care-professionals-a-call-to-explore-and-address-this-underrecognized-threat-to-safe-high-quality-care. Accessed May 29, 2019.
2. Essary AC, Bernard KS, Coplan B, et al. *Burnout and Job and Career Satisfaction in the Physician Assistant Profession: A Review of the Literature*. Washington, DC: National Academy of Medicine; 2018. https://doi.org/10.31478/201812b. Accessed May 29, 2019.
3. Linzer M, Baier Manwell L, Mundt M, et al. Organizational climate, stress, and error in primary care: the MEMO study. In: Henriksen K, Battles JB, Marks ES, et al, eds. *Advances in Patient Safety: From Research to Implementation: Volume 1: Research Findings*. Rockville, MD: Agency for Healthcare Research and Quality; 2005. https://www.ncbi.nlm.nih.gov/books/NBK20448/. Accessed May 29, 2019.
4. Dyrbye LN, Meyers D, Ripp J, et al. *Pragmatic Approach for Organizations to Measure Health Care Professional Well-Being*. Washington, DC: National Academy of Medicine; 2018. https://doi.org/10.31478/201810b. Accessed May 29, 2019.
5. Smith CD, Balatbat C, Corbridge S, et al. *Implementing Optimal Team-Based Care to Reduce Clinician Burnout*. Washington, DC: National Academy of Medicine; 2018. https://nam.edu/ implementing-optimal-team-based-care-to-reduce-clinician-burnout. Accessed December 15, 2019.
6. Linzer M, Poplau S, Babbott S, et al. Worklife and wellness in academic general internal medicine: results from a National Survey. *J Gen Intern Med.* 2016;31:1004-1010.
7. 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.
8. Rotenstein LS, Torre M, Ramos MA, et al. Prevalence of burnout among physicians: a systematic review. *JAMA.* 2018;320:1131-1150.
9. College of American Pathologists. Pathologists in patient care. https://www.cap.org/member-resources/patient-education/pathologists-in-patient-care. Accessed November 1, 2019.
10. Martin KL. *Medscape Residents Lifestyle & Happiness Report 2019*.
11. Xu H, Remick DG. Pathology: a satisfying medical profession. *Acad Pathol.* 2016;3:2374289516661559.
12. Brigham T, Barden C, Dopp AL, et al. A journey to construct an all-encompassing conceptual model of factors affecting clinician well-being and resilience. *NAM Perspectives.* 2018;8:24-31.
13. Maslach C, Jackson S, Leiter M. *Maslach Burnout Inventory Manual*. 3rd ed. Palo Alto, CA: Consulting Psychologists Press; 1996.
14. National Academy of Sciences. *Factors Affecting Clinician Well-Being and Resilience*. Washington, DC: National Academy of Medicine; 2018.
15. Action Collaborative on Clinician Well-Being and Resilience. Establishing clinician well-being as a national priority. Public Meeting 2 of the National Academy of Sciences. Washington, DC: National Academy of Medicine; 2018.
16. Maung R. All in a day's work. 2017. https://thepathologist.com/outside-the-lab/all-in-a-days-work. Accessed December 2, 2019.
17. National Academies of Sciences, Engineering, and Medicine. *Taking Action against Clinician Burnout: A Systems Approach to Professional Well-Being*. Washington, DC: National Academies Press; 2019.
18. Robboy SJ, Gupta S, Crawford JM, et al. The pathologist workforce in the United States: II, an interactive modeling tool for analyzing future qualitative and quantitative staffing demands for services. *Arch Pathol Lab Med.* 2015;139:1413-1430.

DOI: 10.1093/ajcp/aqaa013