

# Disparities in Mentorship and Implications for US Surgical Resident Education and Wellness

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**IMPORTANCE** Many surgeons cite mentorship as a critical component of training. However, little evidence exists regarding factors associated with mentorship and the influence of mentorship on trainee education or wellness.

**OBJECTIVES** To evaluate factors associated with surgical trainees' perceptions of meaningful mentorship, assess associations of mentorship with resident education and wellness, and evaluate programmatic variation in mentorship.

**DESIGN, SETTING, AND PARTICIPANTS** A voluntary, anonymous survey was administered to clinically active residents in all accredited US general surgery residency programs following the 2019 American Board of Surgery In-Service Training Examination. Data were analyzed from July 2019 to July 2022.

**EXPOSURE** Residents were asked, "Do you have a mentor who genuinely cares about you and your career?"

**MAIN OUTCOMES AND MEASURES** Resident characteristics associated with report of meaningful mentorship were evaluated with multivariable logistic regression. Associations of mentorship with education (clinical and operative autonomy) and wellness (career satisfaction, burnout, thoughts of attrition, suicidality) were examined using cluster-adjusted multivariable logistic regression controlling for resident and program factors. Residents' race and ethnicity were self-identified using US census categories (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White), which were combined and dichotomized as non-Hispanic White vs non-White or Hispanic.

**RESULTS** A total of 6956 residents from 301 programs completed the survey (85.6% response rate); 6373 responded to all relevant questions (2572 [40.3%] female; 2539 [39.8%] non-White or Hispanic). Of these, 4256 (66.8%) reported meaningful mentorship. Non-White or Hispanic residents were less likely than non-Hispanic White residents to report meaningful mentorship (odds ratio [OR], 0.81; 95% CI, 0.71-0.91). Senior residents (postgraduate year 4/5) were more likely to report meaningful mentorship than interns (OR, 3.06; 95% CI, 2.59-3.62). Residents with meaningful mentorship were more likely to endorse operative autonomy (OR, 3.87; 95% CI, 3.35-4.46) and less likely to report burnout (OR, 0.52; 95% CI, 0.46-0.58), thoughts of attrition (OR, 0.42; 95% CI, 0.36-0.50), and suicidality (OR, 0.47; 95% CI, 0.37-0.60) compared with residents without meaningful mentorship.

**CONCLUSIONS AND RELEVANCE** One-third of trainees reported lack of meaningful mentorship, particularly non-White or Hispanic trainees. Although education and wellness are multifactorial issues, mentorship was associated with improvement; thus, efforts to facilitate mentorship are needed, especially for minoritized residents.

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Mentorship has long been recognized as a crucial component of training physicians.<sup>1,2</sup> Benefits of mentorship in medicine include increased productivity, improved career satisfaction, expansion of professional networks, reduction in stress, and better work-life balance.<sup>3-5</sup> Mentorship has also been shown to aid recruitment and retention of a diverse physician workforce. The establishment of mentorship programs has been proposed as a mechanism for promoting inclusivity and diversity within academic medicine.<sup>6,7</sup>

Residency is a formative time during a surgeon's career, and mentorship has been proposed as a potential strategy not only to help develop a trainee's career but also to mitigate burnout and attrition.<sup>8</sup> Our conceptual model of surgical resident wellness includes faculty engagement as 1 of 8 domains that affect trainee well-being.<sup>9,10</sup> However, while several studies have evaluated the prevalence of mentorship relationships in graduate medical education, the generalizability of these studies is limited by low response rates, conduct within a single institution, and/or assessment of subspecialty residents.<sup>11-14</sup> Furthermore, few have identified resident or program characteristics that are associated with successful mentorship relationship formation. Finally, while previous studies have evaluated the impact of mentorship relationships on the development of professional skills, retention rates, and academic promotions among faculty, the effect of mentorship on the training experience and resident wellness is not well understood.<sup>15</sup>

The objectives of this survey study of US general surgery residents were to (1) describe resident and program factors associated with report of meaningful mentorship among surgical trainees, (2) examine the associations meaningful mentorship has with resident education and wellness, and (3) evaluate programmatic variation in report of meaningful mentorship.

## Methods

### Data Source and Study Population

An optional and confidential survey was administered to both preliminary and categorical residents training in Accreditation Council for Graduate Medical Education (ACGME)-accredited general surgery programs following the January 2019 American Board of Surgery In-Training Examination (ABSITE). The American Board of Surgery (ABS) collected and deidentified the survey responses prior to transferring the data to Northwestern University for analysis. Given our focus on the clinical residency experience, residents were excluded from the analysis if they were not clinically active (ie, research residents [n = 1951]). Residents who did not answer the question regarding meaningful mentorship were also excluded (n = 583). Given the use of deidentified data, the Northwestern University Institutional Review Board deemed this study exempt from review. This study followed the American Association for Public Opinion Research (AAPOR) reporting guideline.

### Survey Instrument and Outcomes

The survey was constructed using previously validated instruments wherever possible.<sup>16-19</sup> If previously validated survey items were not available, new items were developed. The survey was

## Key Points

**Question** What resident characteristics are associated with report of meaningful mentorship, and what is the association between mentorship and resident wellness and/or education?

**Findings** In a survey study of residents of all accredited general surgery programs, mentorship was associated with significantly improved education and wellness, including autonomy, career satisfaction, and burnout. However, more than one-third of trainees reported lack of a mentor, and non-White residents had lower odds of reporting meaningful mentorship compared with White residents.

**Meaning** Efforts to facilitate mentorship, particularly for minoritized residents, are expected to improve retention and therefore workforce diversification.

evaluated for clarity and consistency and iteratively revised through cognitive interviews and pilot testing among a sample of general surgery residents from programs across the nation.

Residents were asked the degree to which they agreed with the following statement: "I have a mentor within the department of surgery who genuinely cares about me and my career." Residents were considered to have a meaningful mentor if they agreed or strongly agreed with the statement. Because autonomy is central to resident education and because the entrustment of autonomy can only be given by faculty, we suspected autonomy was highly correlated with mentorship. Thus, we asked residents the degree to which they agreed with the following statements: (1) "Relative to my training level, I have an appropriate level of autonomy in patient care and clinical decision-making," and (2) "Relative to my training level, I have an appropriate level of operative autonomy." These questions were loosely based on Maslach's Areas of Work-Life survey item about autonomy.<sup>20</sup> These responses were recorded using a 5-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree). Evaluation of resident wellness included assessments of career satisfaction, burnout, thoughts of attrition, and suicidality.<sup>21-24</sup> Residents were asked, "How satisfied were you with your decision to become a surgeon?" using a 5-point Likert scale.<sup>25</sup> Burnout was evaluated using a modified, abbreviated Maslach Burnout Inventory-Human Services Survey for Medical Personnel. This previously validated instrument has been extensively used within this cohort.<sup>20,22,26</sup> As in previous work, we defined burnout as an at least weekly occurrence of any of the 3 depersonalization or 3 emotional exhaustion symptoms.<sup>22</sup> Residents were asked if they agreed with the statement, "I have considered leaving my residency program during the current academic year," using a 5-point Likert scale.<sup>17</sup> Suicidality was evaluated by asking residents if they had thoughts of taking their own life within the past 12 months (yes vs no).<sup>18</sup> Resident responses for education and wellness outcomes were dichotomized into agree or strongly agree vs neutral, disagree, or strongly disagree and into satisfied or very satisfied vs neutral, dissatisfied, or very dissatisfied.

### Covariates

Resident postgraduate year (PGY), gender (male, female), geographic location (Northeast, Southeast, Midwest, Southwest,

West), and program size (quartiles: <26, 26-37, 38-51, >51 residents) were provided by the ABS. Program type (university affiliated, independent, military) was provided by residency program directors via survey. We asked residents to self-identify race and ethnicity using US census categories (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White); these variables were combined and dichotomized as non-Hispanic White vs non-White or Hispanic due to low frequency.<sup>27</sup> Residents were also asked to self-identify their gender identity and/or sexual orientation (straight, gay or lesbian, bisexual, other orientation, transgender, other gender identity); this was dichotomized as LGBTQ+ (lesbian, gay, bisexual, transgender, queer [or questioning], and more) vs non-LGBTQ+. Residents also provided their relationship status (married, in a relationship, not in a relationship, or divorced). Faculty diversity was calculated as the proportion of faculty who were female and/or non-White or Hispanic using data provided by the Association of American Medical Colleges. These data are reported by quartiles (percentage female: <19.5%, 19.5%-23.6%, 23.7%-26.9%, ≥27.0%; percentage non-White or Hispanic: <26.7%, 26.9%-32.9%, 33.6%-42.0%, ≥42.4%).

### Statistical Analysis

Characteristics of residents reporting meaningful mentorship were compared with those who did not using  $\chi^2$  tests. Multivariable logistic regression was used to assess the associations of resident and program characteristics with report of meaningful mentorship. Multivariable logistic regression models were constructed to evaluate the association between meaningful mentorship and all education and wellness outcomes of interest, adjusting for resident (gender, race and ethnicity, PGY, relationship status) and program (size, type, location) characteristics. All analyses were cluster adjusted with robust SEs to account for clustering within programs. All tests were 2-sided with significance set at  $\alpha = .05$ . Program-level rates of meaningful mentorship were calculated and plotted to demonstrate variation across programs. Data were analyzed from July 2019 to July 2022. Analyses were performed using Stata MP version 17.0 statistical software (StataCorp LLC).

## Results

### Meaningful Mentorship

A total of 6956 clinically active residents (85.6% response rate) from 301 ACGME-accredited programs completed the survey. Among them, 6373 residents responded to all relevant questions (2572 [40.3%] female; 2539 [39.8%] non-White or Hispanic). Of these 6373 residents, 4256 (66.8%) reported having meaningful mentorship within their department.

### Resident and Program Factors

#### Associated With Reports of Meaningful Mentorship

Differences between male and female residents in report of meaningful mentorship were not statistically significant (67.9% vs 65.5%;  $P = .09$ ). Non-Hispanic White residents reported meaningful mentorship significantly more frequently than non-

White or Hispanic residents (68.7% vs 63.9%;  $P = .02$ ). Married residents reported meaningful mentorship more often than residents who were not in a relationship (70.6% vs 63.5%;  $P < .001$ ). Residents in programs with a higher percentage of female faculty members more often reported meaningful mentorship (quartile 1, 66.5%; quartile 2, 64.2%; quartile 3, 69.4%; quartile 4, 67.6%;  $P = .03$ ) (Table 1). This did not seem to be a result of gender concordance: female residents in programs with more female faculty members did not report meaningful mentorship more frequently than female residents in programs with fewer female faculty members (quartile 1, 63.8%; quartile 2, 63.7%; quartile 3, 68.3%; quartile 4, 66.0%;  $P = .33$ ) (eTable in Supplement 1). There were no statistically significant associations between percentage of non-White or Hispanic faculty members and reports of meaningful mentorship (Table 1).

After adjusting for resident and program characteristics, resident non-White race and/or Hispanic ethnicity was independently associated with lower odds of reporting meaningful mentorship (odds ratio [OR], 0.81; 95% CI, 0.71-0.91;  $P < .001$ ) (Table 2). Compared with interns, the odds of having a meaningful mentor increased with PGY year (PGY-2/3: OR, 1.88; 95% CI, 1.62-2.18; PGY-4/5: OR, 3.06; 95% CI, 2.59-3.62). There were no significant differences in adjusted odds of meaningful mentorship between programs of different sizes, types, or faculty diversity (Table 2).

### Resident Education and Wellness

After adjusting for resident and programmatic characteristics, residents who reported meaningful mentorship were significantly more likely to report clinical (OR, 4.47; 95% CI, 3.78-5.29) and operative (OR, 3.87; 95% CI, 3.35-4.46) autonomy (Table 3). Residents who reported meaningful mentorship were significantly more likely to report satisfaction with their decision to become a surgeon (OR, 3.39; 95% CI, 2.94-3.91) and significantly less likely to report burnout (OR, 0.52; 95% CI, 0.46-0.58), thoughts of attrition (OR, 0.42; 95% CI, 0.36-0.50), or suicidality (OR, 0.47; 95% CI, 0.37-0.60) (Table 3).

### Programmatic Variation

Considerable variation was noted in the program-level rates of meaningful mentorship (Figure). In the median program, 66.7% of residents reported the presence of meaningful mentorship (mean [SD], 67.4% [14.9%]). While several programs had 100% of their residents report meaningful mentorship, rates in other programs ranged as low as 20%.

## Discussion

Mentorship is widely accepted as a critical component of professional development, particularly in the early career stages. In this survey study of US general surgery residents, meaningful mentorship was significantly associated with improvements in both education and wellness. However, 33% of residents reported lack of meaningful mentorship. In comparison, studies have documented relatively low rates (<50%) of resident-reported mentorship in other specialties, and in a Gallup poll, only 40% of working adults reported having a

Table 1. Demographic and Program Characteristics of Residents Reporting Meaningful Mentorship

Characteristic	Meaningful mentorship, No. (%) (N = 6373)		P value <sup>a</sup>
	Yes (n = 4256)	No (n = 2117)	
<b>Gender</b>			
Female	1684 (65.5)	888 (34.5)	.09
Male	2469 (67.9)	1165 (32.1)	
<b>Race and ethnicity<sup>b</sup></b>			
Non-Hispanic White	2622 (68.7)	1193 (31.3)	.02
Non-White or Hispanic	1623 (63.9)	916 (36.1)	
<b>Gender identity and sexual orientation</b>			
LGBTQ+	201 (66.1)	103 (33.9)	.72
Non-LGBTQ+	3911 (67.1)	1918 (32.9)	
<b>Relationship status</b>			
Married	1921 (70.6)	801 (29.4)	<.001
In a relationship	1297 (64.1)	725 (35.9)	
Not in a relationship	940 (63.5)	541 (36.5)	
Divorced	79 (66.9)	39 (33.1)	
<b>Clinical PGY</b>			
Intern, PGY-1	845 (52.6)	762 (47.4)	<.001
Junior, PGY-2/3	1690 (67.0)	832 (33.0)	
Senior, PGY-4/5	1721 (76.7)	523 (23.3)	
<b>Program size, No. of residents</b>			
Quartile 1, 6-25	1130 (68.2)	527 (31.8)	.15
Quartile 2, 26-37	1072 (67.8)	509 (32.2)	
Quartile 3, 38-51	1077 (66.2)	246 (33.8)	
Quartile 4, 52-81	977 (64.7)	532 (35.3)	
<b>Program type</b>			
University affiliated	2910 (66.9)	1438 (33.1)	.28
Independent	1163 (67.0)	572 (33.0)	
Military	109 (61.2)	69 (38.8)	
<b>Female faculty</b>			
Quartile 1, <19.5%	967 (66.5)	486 (33.4)	.03
Quartile 2, 19.5%-23.6%	880 (64.2)	491 (35.8)	
Quartile 3, 23.7%-26.9%	917 (69.4)	404 (30.6)	
Quartile 4, ≥27.0%	925 (67.6)	443 (32.4)	
<b>Non-White faculty</b>			
Quartile 1, <26.7%	912 (69.6)	399 (30.4)	.14
Quartile 2, 26.9%-32.9%	1057 (66.3)	538 (33.7)	
Quartile 3, 33.6%-42.0%	940 (65.9)	487 (34.1)	
Quartile 4, ≥42.4%	780 (66.1)	400 (33.9)	
<b>Program location</b>			
Northeast	1375 (64.9)	742 (35.1)	.003
Southeast	898 (71.4)	359 (28.6)	
Midwest	942 (66.5)	473 (33.5)	
Southwest	486 (66.0)	250 (34.0)	
West	555 (65.5)	293 (34.6)	

Abbreviations: LGBTQ+, lesbian, gay, bisexual, transgender, queer (or questioning), and more; PGY, postgraduate year.

<sup>a</sup> P values are derived from  $\chi^2$  tests of independence.

<sup>b</sup> Residents self-identified race and ethnicity using US census categories (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White); these variables were combined and dichotomized as non-Hispanic White vs non-White or Hispanic due to low frequency.

mentor in the workplace.<sup>28</sup> Our study was the first, to our knowledge, to assess the prevalence within the entire population of US general surgery trainees.<sup>12,14,29</sup>

**Inequity in Mentorship**

We found that non-White and/or Hispanic residents were significantly less likely to report meaningful mentorship. Gender differences and differences between LGBTQ+ and non-

LGBTQ+ residents did not reach statistical significance. For women, it is possible that increasing numbers of female trainees and early-career attending surgeons have mitigated gender-based disparities in mentorship.<sup>30</sup> For LGBTQ+ residents, we may have been underpowered to detect a significant difference. Previous studies have described differential treatment and increased rates of discrimination and bullying among female, racially and/or ethnically minoritized, and LGBTQ+

residents.<sup>22,24,31</sup> Lack of mentorship is a form of differential treatment and constitutes a potentially major source of inequity. Explicit and implicit bias embedded in programmatic culture may drive the observed mentorship disparities.<sup>32,33</sup> Homophily (eg, racial and gender concordance) is a known driver of mentorship formation.<sup>34</sup> A recent study showed that racially and/or ethnically minoritized medical students regarded race-concordant mentorship as extremely important.<sup>35</sup> However, underrepresentation of racially and/or ethnically minoritized individuals at the faculty level may lead to decreased opportunities for identity-concordant mentorship for minoritized residents.<sup>1,36</sup> Moreover, given that underrepresentation is most prominent in leadership and advanced academic positions, underrepresented trainees are less likely to have high-ranking sponsors and mentors, leading to further inequity.<sup>37</sup>

We found that junior residents were also less likely to report meaningful mentorship. Meaningful mentorship relationships often take time to develop, and the hierarchical nature of many surgical teams may result in junior residents reporting to their senior residents rather than directly to faculty. Prior evaluations have shown that junior residents are particularly vulnerable to mistreatment, burnout, and attrition; nearly 50% of attrition from general surgery residency occurs after PGY-1.<sup>22,38</sup> Thus, efforts to boost mentorship for junior trainees may prove particularly impactful.

### Implications for Resident Education

Our results indicate that meaningful mentorship is significantly associated with perceived autonomy, which, to our knowledge, has not been demonstrated previously. While it is possible that higher-performing residents receive better mentorship, it is also likely that meaningful mentorship facilitates resident education. Sponsorship and support for educational opportunities are key components of mentorship.<sup>3,39</sup> In addition to allowing mentees autonomy in their own cases, mentors may share strategies for case preparation or technical skill practice that could lead to increased autonomy with other faculty members.<sup>14</sup> Participation in mentorship programs has previously been shown to increase feelings of confidence and self-efficacy; as such, mentorship may result in increased assertiveness and thus increased autonomy.<sup>40,41</sup>

### Implications for Resident Wellness

Recent reports of the decline in surgical resident well-being have led to renewed efforts to improve wellness.<sup>22,23,31,42</sup> Mentorship constitutes one such strategy. It is difficult to establish directionality in the association between mentorship and wellness. It is possible that residents experiencing higher burnout are less likely to seek mentorship. However, there are multiple potential mechanisms by which meaningful mentorship may enhance resident wellness. First, mentors may improve resident well-being by simply caring about and taking an interest in their mentees.<sup>43</sup> Mentors may also provide emotional support and guidance on navigating personal and professional challenges. This empathy and support are particularly relevant for residents experiencing mistreatment, which contributes substantially to poor wellness

**Table 2. Demographic and Program Characteristics Associated With Report of Meaningful Mentorship**

Characteristic	OR (95% CI)	P value <sup>a</sup>
Gender		
Female	0.91 (0.80-1.04)	.16
Male	1 [Reference]	NA
Race/ethnicity		
Non-Hispanic White	1 [Reference]	NA
Non-White or Hispanic	0.81 (0.71-0.91)	.001
Gender identity and sexual orientation		
LGBTQ+	0.96 (0.74-1.23)	.73
Non-LGBTQ+	1 [Reference]	NA
Relationship status		
Married	1 [Reference]	NA
In a relationship	0.88 (0.76-1.03)	.11
Not in a relationship	0.94 (0.80-1.11)	.48
Divorced	1.03 (0.65-1.62)	.69
Clinical PGY		
Intern, PGY-1	1 [Reference]	NA
Junior, PGY-2/3	1.88 (1.62-2.18)	<.001
Senior, PGY-4/5	3.06 (2.59-3.62)	<.001
Program size, No. of residents		
Quartile 1, 6-25	1 [Reference]	NA
Quartile 2, 26-37	0.96 (0.72-1.26)	.75
Quartile 3, 38-51	0.86 (0.65-1.16)	.31
Quartile 4, 52-81	0.82 (0.61-1.11)	.20
Program type		
University affiliated	1 [Reference]	NA
Independent	0.95 (0.74-1.22)	.71
Military	0.94 (0.52-1.71)	.85
Female faculty		
Quartile 1, <19.5%	1 [Reference]	NA
Quartile 2, 19.5%-23.6%	0.90 (0.69-1.17)	.44
Quartile 3, 23.7%-26.9%	1.19 (0.93-1.52)	.16
Quartile 4, ≥27.0%	1.05 (0.83-1.33)	.69
Non-White faculty		
Quartile 1, <26.7%	1 [Reference]	NA
Quartile 2, 26.9%-32.9%	0.92 (0.73-1.16)	.50
Quartile 3, 33.6%-42.0%	0.85 (0.68-1.07)	.16
Quartile 4, ≥42.4%	0.89 (0.69-1.16)	.41

Abbreviations: LGBTQ+, lesbian, gay, bisexual, transgender, queer (or questioning), and more; NA, not applicable; OR, odds ratio; PGY, postgraduate year.

<sup>a</sup> ORs are derived from multivariable logistic regression models.

and is more common among residents with minoritized identities.<sup>3,22,24,31,42,44</sup>

### Programmatic Variation

We found substantial variation in program-level rates of meaningful mentorship, with rates ranging from 20% to 100%. This variation may potentially be attributable to differences in faculty incentives, program infrastructure for mentoring, and departmental or institutional culture.<sup>45</sup> While one might expect residents from smaller programs to be more familiar with their faculty, we did not find an association between program size



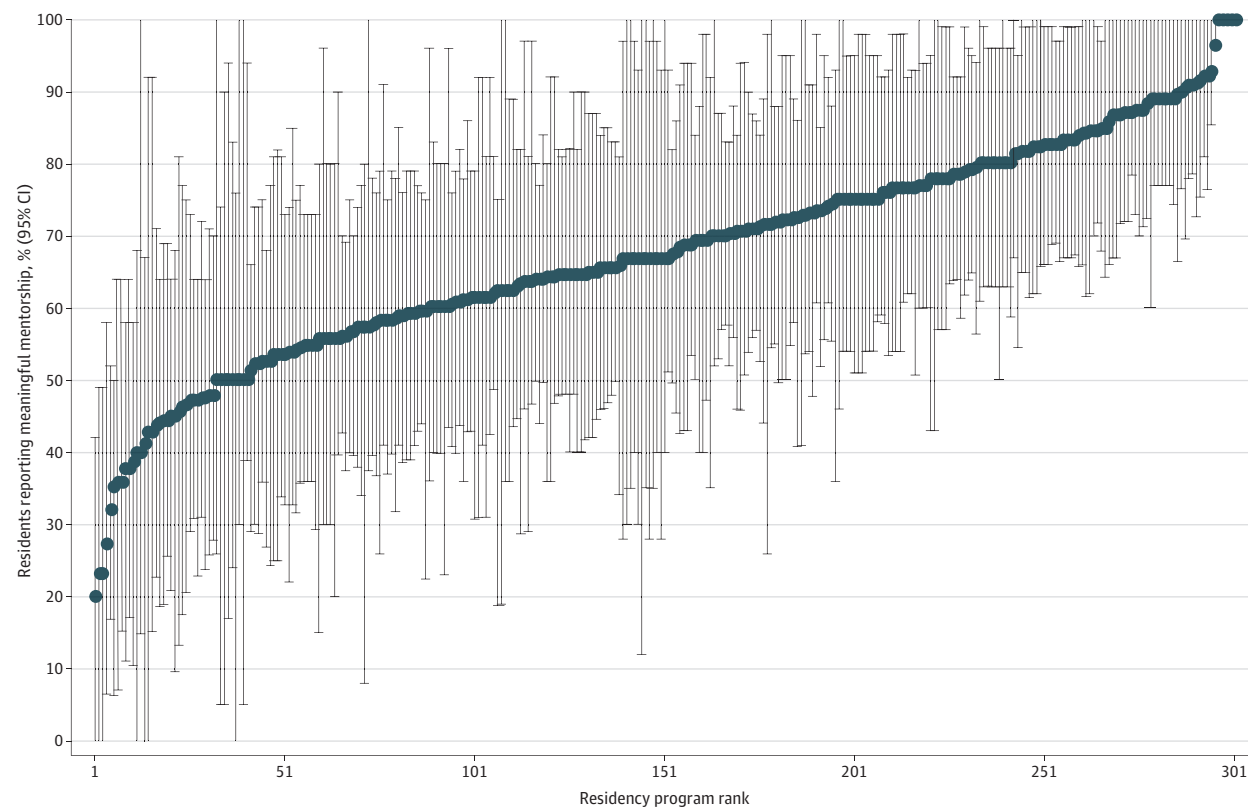
Table 3. Associations of Meaningful Mentorship With Resident Education and Wellness Measures

Education or wellness measure	Meaningful mentorship (N = 6373)				P value <sup>a</sup>
	No (n = 2117)		Yes (n = 4256)		
	Rate, %	OR (95% CI)	Rate, %	OR (95% CI) <sup>a</sup>	
Clinical autonomy	67.0	1 [Reference]	90.3	4.47 (3.78-5.29)	<.001
Operative autonomy	56.1	1 [Reference]	82.6	3.87 (3.35-4.46)	<.001
Satisfaction with career choice	67.3	1 [Reference]	87.8	3.39 (2.94-3.91)	<.001
Burnout	54.1	1 [Reference]	38.0	0.52 (0.46-0.58)	<.001
Thoughts of attrition	18.2	1 [Reference]	8.5	0.42 (0.36-0.50)	<.001
Suicidality	6.8	1 [Reference]	3.3	0.47 (0.37-0.60)	<.001

Abbreviation: OR, odds ratio.

<sup>a</sup> Multivariable logistic regression models adjusting for resident (gender, race and ethnicity, postgraduate year, relationship status) and program (program size, type, location) characteristics.

Figure. Variation in Program-Level Rates of Report of Meaningful Mentorship



Each data point represents a separate program. Programs have been arranged in order of increasing rate of mentorship.

and odds of meaningful mentorship, suggesting that other infrastructural and/or cultural factors play a greater role. We also did not find a significant association between report of meaningful mentorship and faculty diversity. However, surgical departments tend to be fairly homogeneous, with more than 75% of programs employing faculty with less than one-third who are female and 50% employing faculty with less than one-third who are non-White. The impact of faculty diversity may become more apparent with increased variation between programs. Alternatively, minoritized faculty members may take on more mentees, thus compensating for the relative lack of identity-concordant mentors but contributing to the minority tax.<sup>43</sup> Extensive variation between training programs implies significant opportunities for improvement.

Identifying practices of programs with high rates of mentorship may help inform initiatives at all programs.

**Recommendations**

Structured programs may facilitate mentorship in the absence of time or opportunity to organically develop relationships.<sup>11</sup> Residents experiencing higher burnout may particularly benefit from such programs, as these residents are less likely to seek mentorship. However, it should be cautioned that simply assigning mentors may not be an effective strategy; efforts must be made to facilitate development of these relationships. Additionally, senior residents may serve as mentors for their more junior colleagues through peer-mentoring programs; senior residents offer a wealth of practical knowledge, shared experience, and perhaps increased

approachability compared with faculty.<sup>46,47</sup> Group, family, and/or team mentorship models, which provide mentees with a range of mentors with diverse expertise and perspectives, may facilitate cross-mentorship and reduce inequities in mentorship access.<sup>46</sup> Until surgical faculty and leadership are adequately diversified, surgeons must learn to mentor across racial and ethnic, gender, and other demographic lines.<sup>48-50</sup> Opportunities for mentorship outside of a resident's home institution, such as the Association for Academic Surgery–Surgical Education Culture Optimization Through Targeted Interventions Based on National Comparative Data (SECOND) Trial National Mentorship Network, may help compensate for lack of faculty diversity,<sup>51</sup> although we acknowledge that this is an incomplete solution that may effectively outsource the minority tax to other institutions.

### Limitations

As in all survey studies, self-reported measures may be subject to recall bias. Administration of the survey following the ABSITE may render reporting susceptible to examination-related stress or postexamination relief. However, recent data demonstrate that reports of mistreatment and wellness are not susceptible to situational distress and/or transient emotions associated with the post-ABSITE context.<sup>52</sup> Administration of the survey following the ABSITE may have led some participants to believe completion was compulsory, although the survey preambles explicitly state that it is voluntary and electronic exits have been built into every survey webpage. We are also unable to account for unmeasured trainee or hospital factors that may have influenced our education or wellness outcomes. We did not inquire how meaningful mentorship relationships were formed, thus limiting our ability to propose detailed solutions. We did not ask for details on the mentors themselves, and thus we are unable to assess identity concordance. However, this limitation was partially mitigated in our analysis of faculty diversity data. We did not define *mentor* in

the question stem; thus, some identified mentors may be co-residents, resulting in overestimation of the rate of faculty mentorship, or assigned mentors who may not meaningfully fill that role. However, we asked about mentors who “genuinely care” in an effort to mitigate these possibilities. Our question assesses resident perception of mentorship, which we believe is the relevant definition, reflecting that reported mentorship is meaningful to the reporter. Similarly, we are only able to assess resident perceptions of appropriate autonomy. Faculty perceptions would likely provide additional useful information to counter any incorrect resident self-assessments. Associations between education, wellness, and mentorship are multifactorial, and causality is not discernable using cross-sectional measurements. Learning environment measures may be interrelated. However, a prior confirmatory factor analysis of our survey items demonstrated that our 8 learning environment domains reflected in our measures are distinct.<sup>9</sup> We are unable to distinguish preliminary and categorical residents. Preliminary residents may be less likely to receive meaningful mentorship, resulting in an underestimation of mentorship among general surgery residents.<sup>53</sup>

### Conclusions

Meaningful mentorship was associated with improvements among surgical trainees—not only in their professional advancement and success, but also in their personal development and well-being. However, more than one-third of general surgery residents in this study reported lack of meaningful mentorship. Meaningful mentorship is unequally distributed, with concerning racial and ethnic inequities. Efforts to facilitate the equitable formation of mentoring relationships in surgical residency programs are critical to the diversification of the surgical workforce.

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## Invited Commentary

# Ensuring Equitable Mentorship—We All Have a Role

Shukri H. A. Dualeh, MD; Andrew M. Ibrahim, MD, MSc

**When surgeons reflect** on their careers, they often point to a mentor or set of mentors who have been pivotal for their growth. The mentor is typically an individual who helped the surgeon develop clinically, find their research mission, or navigate the inevitable challenges of becoming a surgeon. Missing this invaluable guidance could mean the difference between either excelling and feeling purpose in one's work or maintaining a career with unrealized potential.

Silver et al<sup>1</sup> used survey data collected after the 2019 American Board of Surgery In-Training Examination taken by clinically active surgical trainees to evaluate perceptions of meaningful mentorship. They found that one-third of trainees reported a lack of meaningful mentorship, and non-White or Hispanic residents were the most affected. The authors further found that lack of mentorship was associated with higher rates of burnout, thoughts of attrition, or suicidality and less perceived operative autonomy. The findings are sobering but not surprising. One limitation is the lack of granularity beyond the dichotomous non-Hispanic White vs non-White or Hispanic categorization. This broad generalization misses the opportunity to better identify who specifically would benefit from targeted resources.

All of us—departments, faculty, and residents—have a role to ensure equitable mentorship for surgical residents. At a departmental level, structures and processes should be in place to prioritize mentorship for trainees. Examples include formally assigning mentors (in the short term for safeguarding) or creating launch teams that have been described for both

early-career faculty and residents.<sup>2</sup> This team-based approach allows mentees to benefit from a diverse group of individuals whose different strengths can be leveraged to achieve tangible and realistic goals.

For attending surgeons, finding even small opportunities to mentor can help a mentee feel as though the mentor genuinely cares about them, as the survey asked. Our growing knowledge of entrustment between resident and attending surgeon identifies 5 domains where both groups can contribute to building a cohesive relationship in the operating room.<sup>3</sup> These same themes can be mirrored to intentionally understand a mentee's career vision and personal motivations and in doing so will set the trust and foundation necessary for bidirectional achievements.

For mentees, targeted introspection to differentiate between their true purpose vs executing work to solely fulfill external validation is key.<sup>4</sup> This is difficult as it not only requires proactive reflection with limited time during training, but also requires vulnerability and a self-starter mentality to identify and pursue the mentorship one needs. Ultimately, the most successful mentees take ownership of their own path forward by being able to make their goals known and express their needs to mentors.

Finally, while racial- and ethnic-concordant mentorship is sought after and important, the current reality is that it will take several years for the number of available surgeons of racial and ethnic minoritized groups to increase.<sup>5,6</sup> Until then, maximizing mentor-mentee relationships, even if racially discordant, is essential for realizing our collective potential.

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