

# Factors associated with burnout among minimally invasive gynecologic surgery fellows



Kelli McEntee, MD; Hannah Koenig, MPH; Rohan Hattiangadi, MD; Megan Loring, MD; Amy Brockmeyer, MD; Marisa Dahlman, MD, MPH

**BACKGROUND:** While burnout has been identified in half of practicing physicians, no validated questionnaires have assessed burnout among minimally invasive gynecologic surgery fellows.

**OBJECTIVE:** This study aimed to assess factors associated with burnout among minimally invasive gynecologic surgery fellows.

**STUDY DESIGN:** Cross-sectional online survey including the validated Copenhagen Burnout Inventory: 100 minimally invasive gynecologic surgery fellows in the United States were invited, including the classes of 2021 and 2022. Of the 100 fellows invited, 60 fellows completed the Copenhagen Burnout Inventory survey. Descriptive statistics were used to report the demographic variables, the mean Copenhagen Burnout Inventory score, and the responses to the survey questions. Logistic and linear regression models were created to assess relationships between fellow characteristics and Copenhagen Burnout Inventory scores.

**RESULTS:** Of the 60 fellows with complete Copenhagen Burnout Inventory survey data, 73% were female, 50% were first-year, and 50% were second-year fellows. The mean Copenhagen Burnout Inventory score was 39.2 (standard deviation, 14.4), indicating moderate burnout, and 21.7% of fellows had scores >50, indicating high burnout. Personal and work-related burnout were highest, with Copenhagen Burnout Inventory scores of 47.9 (standard deviation, 16.8) and 45.1 (standard deviation, 17.6), respectively. Patient-related burnout scores were the lowest at 23.5 (standard deviation, 16.5).

Factors associated with overall burnout included career choice dissatisfaction (beta, 5.6; 95% confidence interval, 0.9–10.3;  $P=.02$ ) and absence of a positive and respectful work environment (beta, 5.9; 95% confidence interval, 1.0–10.9;  $P=.02$ ). Fellows who were somewhat satisfied with their career choice scored 11.2 points higher than those who were highly satisfied. Fellows whose work environment was almost never positive and respectful scored 17.8 points higher than those whose work environment was always positive and respectful. Female fellows were significantly less likely to have a low Copenhagen Burnout Inventory score than male fellows (odds ratio, 0.05; 95% confidence interval, 0.004–0.3;  $P=.004$ ). Only one-third of fellows reported regular individual wellness behaviors: mindfulness (23%), exercise (35%), 7 to 8 hours of sleep (37%), and recreation (27%); however, these factors were not associated with lower burnout scores.

**CONCLUSION:** Fellows had moderate to high personal and work-related burnout, whereas patient-related burnout was low. Factors associated with burnout were negative work culture, lack of control over work schedule, and decreased career satisfaction. Individual wellness behaviors were not associated with burnout, highlighting the need to look beyond individual behavior in the fight against physician burnout.

**Key words:** career satisfaction, Copenhagen Burnout Inventory, fellowship, gynecology, pandemic, surgical trainee, wellness, work culture

## Introduction

Physician burnout is a vital public health concern, affecting half of practicing physicians in the United States<sup>1</sup> and 40% to 75% of obstetrician–gynecologists.<sup>2</sup>

The impact is immense, costing the healthcare system approximately \$4.6 billion annually owing to burnout-related lost productivity,<sup>3</sup> whereas others estimate the cost to be equivalent to the

loss of 7 medical school graduating classes.<sup>4</sup> Burnout is associated with increased self-reported medical errors,<sup>5,6</sup> unnecessary hospitalization, and decreased patient satisfaction<sup>7</sup>; in addition, burnout

From the Departments of Gynecology, Virginia Mason Franciscan Health, Seattle, WA (Drs McEntee, Hattiangadi, Loring, Brockmeyer, and Dahlman); Research and Academics, Virginia Mason Franciscan Health, Seattle, WA (Ms Koenig)

The authors report no conflict of interest.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

This study was presented at the 50th Global Congress on Minimally Invasive Gynecologic Surgery of the American Association of Gynecologic Laparoscopists, Austin, TX, November 14–17, 2021.

Institutional Review Board ID: IRB20-079 (approval date: February 5, 2021).

The data that support the findings of this study are available on request from the corresponding author.

**Cite this article as:** McEntee K, Koenig H, Hattiangadi R, et al. Factors associated with burnout among minimally invasive gynecologic surgery fellows. *Am J Obstet Gynecol Glob Rep* 2022;2:100074.

Corresponding author: Kelli McEntee, MD. [mcentee.kelli@gmail.com](mailto:mcentee.kelli@gmail.com)

2666-5778/\$36.00

© 2022 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)  
<http://dx.doi.org/10.1016/j.xagr.2022.100074>

## AJOG Global Reports at a Glance

**Why was this study conducted?**

This study aimed to assess the prevalence of and factors associated with burnout among minimally invasive gynecologic surgery fellows.

**Key findings**

All maternal deaths related to placenta accreta spectrum were potentially preventable, mostly with interventions of low or intermediate complexity.

**What does this add to what is known?**

Systemic factors are central drivers of burnout rather than individual behaviors. Female physicians are more likely to suffer burnout than their male counterparts.

has been linked to physician suicidal ideation,<sup>8</sup> decreased career satisfaction, and increased odds of early retirement.<sup>9,10</sup> Female physicians have 20% to 60% higher odds of burnout than male physicians,<sup>4</sup> uniquely affecting the rising workforce of obstetrics and gynecology.

Against this backdrop came the COVID-19 pandemic, with its additional layers of stress on the medical system.<sup>11</sup> Trainees had the unique challenge to not only survive this whirlwind year, but protect their education and training, particularly for surgical trainees experiencing dramatic drops in surgical volume.<sup>12</sup> Although burnout has been previously described among surgical trainees of other specialties,<sup>12,13</sup> no validated burnout assessment tools have been used among minimally invasive gynecologic surgery (MIGS) fellows.

We sought to understand the prevalence of burnout and its associated factors among MIGS fellows to inform evidence-based approaches to burnout prevention among the rising generation of MIGS surgeons. Training a surgical fellow is a tremendous investment with potential for the high return of a long and productive career; therefore, understanding burnout may benefit not only MIGS surgeons, but also their patients.

**Materials and Methods**

This prospective cohort survey study included all current Fellowship in Minimally Invasive Gynecologic Surgery (FMIGS) fellows in the graduating classes of 2021 and 2022 in the United States. A link to the electronic survey tool was emailed to the fellows via the

private listserv kept by the FMIGS administrative office. Before answering the survey questions, written background, purpose, and instructions were provided to serve as informed consent. The fellows were informed that their responses would be anonymous and were given the option to skip any questions they preferred not to answer. No identifying data were collected to optimize honest responses given the sensitive nature of the questions; to this end, neither cookies nor Internet Protocol addresses were used. The survey was tested for usability by the authors. The survey remained open for 1 month (March 1–31, 2021), and 3 weekly reminder emails were sent. No incentives for survey completion were used. The institutional review board at Virginia Mason Franciscan Health and the FMIGS Board approved this study.

The survey contained demographic questions regarding age, gender, year in training, and region of fellowship program. Given the small population, race was not asked to avoid risk of compromising anonymity. Burnout status was assessed using the validated Copenhagen Burnout Inventory (CBI). This inventory provides a score from 0 to 100, with higher numbers indicating higher burnout. Three categories of burnout are assessed: personal, work-related, and patient-related.<sup>14</sup> In addition, 20 unique questions were asked regarding factors in the work and personal realms theorized to play a role in burnout, including several questions about the impact of the COVID-19 pandemic on fellows' training (full survey provided in the Appendix). These

questions were developed on the basis of a literature review of factors associated with physician burnout.<sup>1,2,4,10,13,15,16</sup> All response types were in the same format as the CBI tool, with 5-item Likert scale response choices. The last question of the survey asked: "What keeps you well or contributes to burnout?" with an optional free text response. Survey responses were collected via REDCap<sup>17,18</sup> (Research Electronic Data Capture; Vanderbilt University, Nashville, TN) secure, web-based electronic data capture tools hosted at Virginia Mason Franciscan Health and then exported for analysis. Surveys were included in the analysis if they had complete CBI data.

Descriptive statistics were used to report demographic variables, mean CBI score, and responses to the survey questions. A CBI score  $\geq 50$  is consistently identified as a marker of high burnout,<sup>16,19</sup> whereas a CBI score of 35 was the average among physicians in the original validation sample.<sup>14</sup> Differences of  $\geq 5$  points are considered clinically significant.<sup>14</sup> Therefore, we created logistic regression models assessing factors associated with high (CBI  $\geq 50$ ) and low (CBI  $< 30$ ) burnout cutoffs as determined by previous literature and distribution of the data.<sup>16,19</sup> Moderate burnout was defined as CBI score from 30 to  $< 50$ . In addition, linear regression models were created to assess relationships with overall CBI scores that were not apparent in the high or low burnout logistic regression models.

All regression models were constructed for all survey responses and individual survey sections (system, personal, work, COVID-19) separately. Given the large proportion of female fellows in this study and the results from the low burnout (CBI  $< 30$ ) regression for gender, a subanalysis was performed to assess burnout factors among females. Demographic factors were all included in the final regression models as controls, except for the female-only sample, because of low cell counts for several demographic categories related to sample size. All statistical analysis was conducted using R (R Core Team, Vienna, Austria).<sup>20</sup>

## Results

The survey was sent to all 100 active MIGS fellows in the United States, and 60 fellows responded with complete CBI data (Figure 1). Most respondents were aged 30 to 34 years (77%) and of female gender (73%). Equal proportions responded from the first- and second-year classes (50%); 45% of fellows were located in the Northeastern United States, consistent with the distribution of FMIGS programs (Table 1).

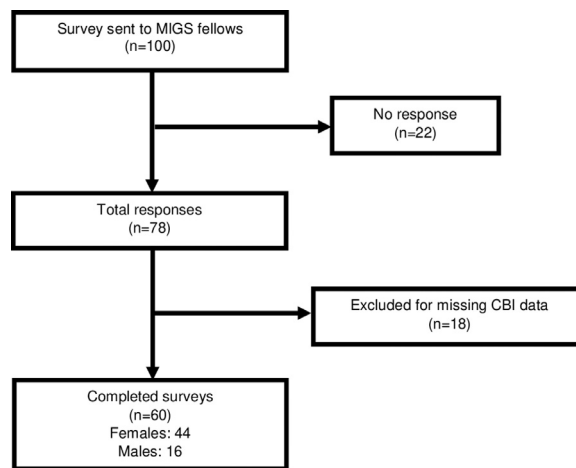
The mean CBI score was 39.2 (standard deviation [SD], 14.4), indicating moderate burnout, and 21.7% of fellows had scores  $\geq 50$ , indicating high burnout. Personal and work-related burnout were highest, with CBI scores of 47.9 (SD, 16.8) and 45.1 (SD, 17.6), respectively. Patient-related burnout scores were the lowest at 23.5 (SD, 16.5) (Table 2).

Factors associated with high CBI score ( $\geq 50$ ) included work schedule control and career choice satisfaction. Fellows who reported little to no control over their work schedule were more likely to have a high burnout CBI score (odds ratio [OR], 2.9; 95% confidence interval [CI], 1.3–8.1;  $P=.02$ ). Fellows who were dissatisfied with their career choice in MIGS were also more likely to have a high CBI score (OR, 3.4; 95% CI, 1.3–10.9;  $P=.02$ ) (Table 3). Although 23.3% of fellows reported concerns about finding MIGS employment after fellowship, and 36.9% reported concerns that such a MIGS practice may not be financially feasible, these factors were not associated with burnout scores. Factors associated with low CBI score ( $<30$ ) included gender and hours worked per week. Female fellows were significantly less likely to have a low CBI score than male fellows (OR, 0.05; 95% CI, 0.004–0.3;  $P=.004$ ). Fewer hours worked per week were also associated with low CBI scores (OR, 4.7; 95% CI, 1.8–17.6;  $P=.007$ ). There was no difference in burnout scores between first- and second-year fellows (Table 4).

When assessing factors associated with overall CBI score via linear regression, only career choice satisfaction and a positive and respectful work culture remained significant while controlling

**FIGURE 1**

### Consort diagram of participant recruitment and survey response rate



CBI, Copenhagen Burnout Inventory; FMIGS, Fellowship in Minimally Invasive Gynecologic Surgery; US, United States. McEntee. Burnout in minimally invasive gynecologic surgery fellows. *Am J Obstet Gynecol Glob Rep* 2022.

for other factors. Fellows who were dissatisfied with their career choice for MIGS were much more likely to have a high burnout score (beta, 5.6; 95% CI, 0.9–10.3;  $P=.02$ ). For example, fellows who were somewhat satisfied with their career choice scored 11.2 points higher than those who were highly satisfied. In addition, the absence of a positive and respectful work environment was highly associated with increased CBI scores (beta, 5.9; 95% CI, 1.0–10.9;  $P=.02$ ). Fellows whose work environment was almost never positive and respectful scored 17.8 points higher than those whose work environment was always positive and respectful.

The subanalysis of female fellows was done to elucidate any driving factors behind the finding that female fellows were much less likely to have CBI scores  $<30$  and had slightly higher average CBI scores than male fellows (40.9 and 34.5, respectively). However, no additional significant relationships were identified in this subgroup.

With respect to the COVID-19 pandemic, 73% reported a decrease in surgical volume, 43% were assigned to roles outside their typical scope, and 28% experienced inadequate access to personal protective equipment. These factors were not associated with burnout scores. Only one-third of fellows reported regular individual wellness

behaviors: mindfulness (23%), exercise (35%), 7 to 8 hours of sleep (37%), recreation (27%); however, these factors were not associated with burnout.

Free-text responses about factors that contribute to burnout or conversely support wellness revealed some themes. Commonly identified contributors to feeling burned out included: no flexibility in clinical duties, poor administrative support, negative attitude from staff and generalist providers toward fellows, disrespect shown toward MIGS as a specialty, poor communication, trying to provide good patient care while fighting against systems beyond one's control, and grappling with systemic racism. Fellows shared that many stave off burnout by looking forward to life post-fellowship, maintaining boundaries between work and home life, and relying on support from an attending or cofellow; others identified that having protected time to work on academic goals helps to keep them in balance.

## Comment

### Principal findings

We found that 1 in 5 fellows had scores indicating high burnout. Factors associated with high burnout included lack of control over work schedule, negative work culture, and career choice dissatisfaction. Factors associated with low burnout included male gender and

**TABLE 1**  
**Characteristics of minimally invasive gynecologic surgery fellows with complete Copenhagen Burnout Inventory data**

Characteristic	Frequency (N=60)	Proportion (%)
Age (y)		
25–29	4	6.7
30–34	46	76.7
35–39	9	15
≥40	1	1.7
Gender		
Male	16	26.7
Female	44	73.3
Nonbinary	0	0
Decline to answer	0	0
Year in fellowship		
First	30	50
Second	30	50
Region of fellowship		
Northeast	27	45
Midwest	10	16.7
South	15	25
West	8	13.3
High burnout cutoff <sup>a</sup>		
CBI <50	47	78.3
CBI ≥50	13	21.7
Low burnout cutoff <sup>b</sup>		
CBI ≥30	45	75
CBI <30	15	25

CBI, Copenhagen Burnout Inventory.

<sup>a</sup> Number of fellows with CBI score above and below the cutoff point representing high levels of burnout; <sup>b</sup> Number of fellows with CBI score above and below the cutoff point representing low levels of burnout.

McEntee. Burnout in minimally invasive gynecologic surgery fellows. *Am J Obstet Gynecol Glob Rep* 2022.

**TABLE 2**  
**Mean Copenhagen Burnout Inventory scores among minimally invasive gynecologic surgery fellows**

CBI score <sup>a</sup>	Mean score	Standard deviation
Total	39.2	14.4
Personal	47.9	16.8
Work	45.1	17.6
Client	23.5	16.5

CBI, Copenhagen Burnout Inventory.

<sup>a</sup> The CBI is scored from 0 to 100, with higher numbers representing higher levels of burnout.

McEntee. Burnout in minimally invasive gynecologic surgery fellows. *Am J Obstet Gynecol Glob Rep* 2022.

fewer hours worked per week. There was no difference in burnout scores between first- and second-year fellows. We found no association between burnout and individual wellness behaviors, nor did we find an association between burnout and factors related to the COVID-19 pandemic. These findings are similar to those of other assessments of trainee burnout, which have revealed high burnout among 21% to 37% of fellows and residents.<sup>12,16,21</sup>

## Results

High burnout in 1 in 5 current MIGS fellows is concerning given that physician burnout has been tied to diminished quality of care and reduced career satisfaction, length, and productivity.<sup>3–10</sup> This study assessed MIGS fellow burnout using a validated screening tool, and our results add nuance to an earlier study revealing that half of fellows self-identified as burned out on an unvalidated questionnaire.<sup>13</sup> We had hypothesized that COVID-19–specific factors such as impact on surgical volume or diversion to alternative clinical service would be associated with burnout; however, despite the relative frequency of these experiences we did not find an association with burnout.

It has been widely demonstrated that lack of control and autonomy is associated with physician burnout,<sup>1,4,10,15</sup> and our findings were consistent: lack of control over work schedule to meet educational needs or professional interests was associated with burnout. At this level of training, some autonomy in schedule and clinical focus may help to maximize the short time in surgical training while minimizing burnout. Work culture, which we assessed broadly by asking about frequency of positive and respectful team interactions, has also been widely associated with burnout,<sup>15</sup> and our results are consistent. The concept of a culture of wellness has been proposed to include leadership, values alignment, sense of community, appreciation, and voice or input; organizational-level models exist to assess and optimize these factors.<sup>22,23</sup>

**TABLE 3****Factors associated with high burnout (Copenhagen Burnout Inventory score  $\geq 50$ ) among minimally invasive gynecologic surgery fellows**

Variable	Odds ratio	95% confidence interval	P value <sup>a</sup>
Age (y)	0.2	0.01–1.1	.1
Gender			
Male	Reference		
Female	0.7	0.1–4.8	.7
Year in fellowship			
First	Reference		
Second	4.8	1.0–31.6	.07
Lack of control over work schedule	2.9	1.3–8.1	.02
Dissatisfaction with career choice in MIGS	3.4	1.3–10.9	.02

MIGS, minimally invasive gynecologic surgery.

<sup>a</sup> Corresponds to multivariate logistic regression while controlling for demographic variables.McEntee. Burnout in minimally invasive gynecologic surgery fellows. *Am J Obstet Gynecol Glob Rep* 2022.**TABLE 4****Factors associated with low burnout (Copenhagen Burnout Inventory score  $< 30$ ) among minimally invasive gynecologic surgery fellows**

Variable	Odds ratio	95% confidence interval	P value <sup>a</sup>
Age (y)	2.1	0.5–8.7	.3
Gender			
Male	Reference		
Female	0.05	0.004–0.3	.004
Year in fellowship			
First	Reference		
Second	0.68	0.1–3.3	.6
Fewer hours worked per week	4.7	1.8–17.6	.007

<sup>a</sup> Corresponds to multivariate logistic regression while controlling for demographic variables.McEntee. Burnout in minimally invasive gynecologic surgery fellows. *Am J Obstet Gynecol Glob Rep* 2022.**Clinical implications**

Burnout is a complex, multifactorial problem with capacity to profoundly affect productivity and patient care; therefore, investigation into its causes and solutions is a pressing quality improvement measure. The fact that 22% of fellows reported being only “somewhat” satisfied with their career choice should raise concern, especially given the strong association between career dissatisfaction and burnout scores. Although career satisfaction is highly individual, nearly 1 in 4 fellows cited concerns about being able to find

MIGS employment after fellowship, and 1 in 3 fellows were concerned that such a practice may not be financially feasible. Institution-level efforts can be made to support fellows in career planning and networking. National-level leadership is needed to advocate for the value of MIGS specialists, so that graduating MIGS fellows can launch and sustain the careers they have trained for.

We found it encouraging that despite the high prevalence of burnout among MIGS fellows, patient-related burnout was low, indicating that fellows are still finding satisfaction and joy in direct

delivery of care. We hope that this positive finding will continue and that steps will be taken to reverse or prevent burnout in the other facets of surgical training.

**Research implications**

Gender discrepancy in burnout among physicians has been consistently described,<sup>1,4</sup> and factors hypothesized to drive this include workplace discrimination<sup>24</sup> and additional caregiver responsibilities outside the workplace.<sup>1</sup> The scope of our study limited our ability to interpret our finding that female fellows were less likely to have a low burnout score. This is an area for future focus, especially given that 3 of 4 current MIGS fellows are female.

Although many interventions aimed to improve physician wellness focus on individual behaviors such as exercise, sleep, mindfulness, and recreation, we did not find these factors to be associated with burnout. While acknowledging that there is certainly no harm in these practices given their known mental and physical health benefits, we would propose that future research on this topic focus on how to promote career development and mentorship, support fellows’ autonomy and ownership of the fellowship experience, and develop positive and respectful departmental cultures. Although these goals are complex, it is appropriate that the burden of additional labor fall on the systems we are developing, rather than the individual. Hospital leadership should be engaged in addressing this issue, as Dr Shanafelt summarized so succinctly: “The primary causes of burnout are systemic and organizational, and healthcare organizations should embrace accountability for mitigating the factors driving this epidemic.”<sup>23</sup> In addition, future research assessing burnout among MIGS attendings would help to elucidate how burnout levels change after training, which could be helpful for trainees deciding on their career paths.

**Strengths and limitations**

The strengths of this study include its use of a validated screening tool,



anonymous reporting, and response rate above average for physician survey studies.<sup>25</sup> Limitations include relatively small sample size and no baseline pre-pandemic data, making it difficult to assess the impact of the pandemic on fellow burnout. However, the data we have presented here can now serve as a baseline for future studies as the pandemic continues to evolve.

### Conclusion

Fellowship training should be the launching point of fulfilling and productive careers, and high levels of burnout threaten this valuable investment. Systems factors were highly associated with burnout, whereas individual behaviors did not mitigate this impact, highlighting the complex and systemic nature of the burnout problem. As we adapt to this pandemic, we have an important opportunity to reorient fellowship programs with a goal to raise up a generation of MIGS surgeons who are well, thus increasing career satisfaction and productivity, and improving patient care and satisfaction. Programs can focus on career development mentorship, allowing fellows control over their schedule, and creating or maintaining a positive and respectful work environment. ■

### ACKNOWLEDGMENTS

We thank all the minimally invasive gynecologic surgery fellows who took the time to respond to this survey, making this work possible.

### Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.xagr.2022.100074](https://doi.org/10.1016/j.xagr.2022.100074).

### REFERENCES

- Bradford L, Glaser G. Addressing physician burnout and ensuring high-quality care of the physician workforce. *Obstet Gynecol* 2021;137:3–11.
- Smith RP. Burnout in obstetricians and gynecologists. *Clin Obstet Gynecol* 2019;62:405–12.
- Han S, Shanafelt TD, Sinsky CA, et al. Estimating the attributable cost of physician burnout in the United States. *Ann Intern Med* 2019;170:784–90.
- West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. *J Intern Med* 2018;283:516–29.
- Menon NK, Shanafelt TD, Sinsky CA, et al. Association of physician burnout with suicidal ideation and medical errors. *JAMA Netw Open* 2020;3:e2028780.
- Dewa CS, Loong D, Bonato S, Trojanowski L. The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: a systematic review. *BMJ Open* 2017;7:e015141.
- Mangory KY, Ali LY, Rø KI, Tyssen R. Effect of burnout among physicians on observed adverse patient outcomes: a literature review. *BMC Health Serv Res* 2021;21:369.
- Shanafelt TD, Balch CM, Dyrbye L, et al. Special report: suicidal ideation among American surgeons. *Arch Surg* 2011;146:54–62.
- Kuerer HM, Eberlein TJ, Pollock RE, et al. Career satisfaction, practice patterns and burnout among surgical oncologists: report on the quality of life of members of the Society of Surgical Oncology. *Ann Surg Oncol* 2007;14:3043–53.
- Keeton K, Fenner DE, Johnson TRB, Hayward RA. Predictors of physician career satisfaction, work-life balance, and burnout. *Obstet Gynecol* 2007;109:949–55.
- Bradley M, Chahar P. Burnout of health-care providers during COVID-19. *Cleve Clin J Med* 2020. [Epub ahead of print].
- Khalafallah AM, Lam S, Gami A, et al. A national survey on the impact of the COVID-19 pandemic upon burnout and career satisfaction among neurosurgery residents. *J Clin Neurosci* 2020;80:137–42.
- Jijon AJ, Carrubba AR, Destephano CC, Heckman MG, Johnson PW, Dinh TA. Factors associated with burnout and frustration among minimally invasive gynecologic surgery fellows. *J Minim Invasive Gynecol* 2021;28:75–81.
- Kristensen TS, Borritz M, Villadsen E, Christensen KB. The Copenhagen Burnout Inventory: a new tool for the assessment of burnout. *Work Stress* 2005;19:192–207.
- DeChant PF, Acs A, Rhee KB, et al. Effect of organization-directed workplace interventions on physician burnout: a systematic review. *Mayo Clin Proc Innov Qual Outcomes* 2019;3:384–408.
- Thrush CR, Guise JB, Gathright MM, et al. A one-year institutional view of resident physician burnout. *Acad Psychiatry* 2019;43:361–8.
- Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research Electronic Data Capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* 2009;42:377–81.
- Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: building an international community of software platform partners. *J Biomed Inform* 2019;95:103208.
- Madsen IEH, Lange T, Borritz M, Rugulies R. Burnout as a risk factor for antidepressant treatment - a repeated measures time-to-event analysis of 2936 Danish human service workers. *J Psychiatr Res* 2015;65:47–52.
- R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>
- Becker JL, Milad MP, Klock SC. Burnout, depression, and career satisfaction: cross-sectional study of obstetrics and gynecology residents. *Am J Obstet Gynecol* 2006;195:1444–9.
- National Academies of Sciences, Engineering, and Medicine 2019. Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25521>
- Shanafelt T, Trockel M, Ripp J, Murphy ML, Sandborg C, Bohman B. Building a program on well-being: key design considerations to meet the unique needs of each organization. *Acad Med* 2019;94:156–61.
- Watson KL, King LP. Double discrimination, the pay gap in gynecologic surgery, and its association with quality of care. *Obstet Gynecol* 2021;137:657–61.
- Cunningham CT, Quan H, Hemmelgarn B, et al. Exploring physician specialist response rates to web-based surveys. *BMC Med Res Methodol* 2015;15:32.