

High Incidence of Burnout in Academic Chairpersons of Anesthesiology

Should We Be Taking Better Care of Our Leaders?

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ABSTRACT

Background: Burnout is a work-related psychologic syndrome characterized by emotional exhaustion, low personal accomplishment, and depersonalization.

Methods: By using an instrument that included the MBI-HHS Burnout Inventory, we surveyed academic anesthesiology chairpersons in the United States. Current level of job satisfaction compared with 1 and 5 yr before the survey, likelihood of stepping down as chair in the next 2 yr, and a high risk of burnout were the primary outcomes.

Results: Of the 117 chairs surveyed, 102 (87%) responded. Nine surveys had insufficient responses for assessment of burnout. Of 93 chairs, 32 (34%) reported high current job satisfaction, which represented a significant decline compared with that reported for 1 yr ($P = 0.009$) and 5 yr ($P = 0.001$) before the survey. Of 93 chairs, 26 (28%) reported extreme likelihood of stepping down as a chair in 1–2 yr. There was no association of age ($P = 0.16$), sex ($P = 0.82$), or self-reported effectiveness ($P = 0.63$) with anticipated likelihood of stepping down, but there was a negative asso-

What We Already Know about This Topic

- Burnout among academic chairs has been studied in other specialties and, when present, diminishes leadership

What This Article Tells Us That is New

- In a survey of 102 chairs of anesthesiology departments, more than half met the criteria for high or moderate burnout
- Risk factors for burnout were low job satisfaction and reduced self-reported spousal/significant other support

ciation between the modified efficacy scale score ($\rho = -0.303$, $P = 0.003$) and likelihood of stepping down. Of 93 chairs, 26 (28%) met the criteria for high burnout and an additional 29 (31%) met the criteria for moderately high burnout. Decreased current job satisfaction and low self-reported spousal/significant other support were independent predictors of high burnout risk.

Conclusion: Fifty-one percent of academic anesthesiology chairs exhibit a high incidence/risk of burnout. Age, sex, time as a chair, hours worked, and perceived effectiveness were not associated with high burnout; however, low job satisfaction and reduced self-reported spousal/significant other support significantly increased the risk.

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Academic anesthesiology chairs in the United States contend with job attributes that can be frustrating and eventually lead to emotional exhaustion and burnout. Examples of these attributes include reporting conflicting relationships, responsibility for things over which they have no control, and human resource challenges. To understand the emotional impact of these frustrations, it is important to

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define precisely the vocabulary that describes the results of workplace frustration and unhappiness. Burnout is a work-related psychologic syndrome characterized by emotional exhaustion, low personal accomplishment, and depersonalization.¹ Emotional exhaustion is the subjective sense of fatigue or stupor related to one's work. Low personal accomplishment is a feeling of frustration with work-related achievements. Depersonalization is a person's attempt to separate himself or herself from his or her work as a defense mechanism. Burnout syndrome differs from depression because it is specific to the work environment, whereas depression extends to both one's professional and personal life.

Burnout syndrome was first characterized in the early 1970s.¹ Clinical manifestations are often nonspecific and include fatigue, sleep and eating disorders, headache, and emotional instability. The validated instrument most commonly used to study burnout is the MBI-HSS Burnout Inventory (MBI),¹ which uses a composite score that takes into consideration the three subscales based on questions relating to emotional exhaustion, depersonalization, and reduced personal accomplishment. Burnout syndrome is considered present when the responder demonstrates high scores in emotional exhaustion and depersonalization and a low score in personal accomplishment.

The prevalence of burnout is higher among individuals whose job involves interactions with people (*e.g.*, physicians, nurses, and social workers).² Evolving changes in health care, including decrease in physician services reimbursement, challenges with the Accreditation Council for Graduate Medical Education, and difficulties with faculty retention, generate stress for the department chair that can potentially predispose him or her to develop burnout.³ Burnout has been studied in academic chairs of other specialties.³⁻⁵ Gabbe *et al.*³ concluded that the psychologic well-being of the chairs of academic departments of obstetrics and gynecology affected the quality of leadership they provided in teaching, patient care, and administration.

The purpose of this study was to evaluate work-related stress and personal factors associated with professional burnout in chairs of anesthesiology departments. We designed a cross-sectional survey that was adapted from those used in the previously mentioned studies of other medical subspecialties³⁻⁵ to evaluate whether the trends observed in other departments would also apply to chairpersons of anesthesiology departments.

Materials and Methods

The present study was approved by the Northwestern University Institutional Review Board, Chicago, Illinois. A cross-sectional nationwide survey was sent to 117 chairs of academic anesthesiology departments in the United States (appendix). The mailing list was developed from the 2009–2010 directory of the American Medical Association section of Graduate Medical Education. The initial search yielded 132 programs. Seven programs did not have a chairperson when the survey was con-

ducted, and eight programs did not provide the electronic address of the chairperson. The survey was created using software (Survey Monkey; SurveyMonkey Inc., Portland, OR). To ensure confidentiality of the participants, the survey was set up to delink the responses to the respondents' e-mail addresses. The participants who did not respond to the electronic questionnaire were mailed a copy of the survey with a self-addressed return envelope addressed to the primary investigator.

The questionnaire was divided into five parts. Open-ended and multiple choice questions were used. Likert scales were used to quantify respondents' level of agreement with a statement. The first section consisted of 11 questions designed to capture demographic information about the chairperson: age, sex, time of service as a chair, size of department by number of faculty, division chiefs, residents and fellows, amount of work hours per week, percentage of time dedicated to patient care, administrative duties, research, and whether his or her medical school had a support group for chairs. The second part of the survey required the chairperson to select from among 15 potential stressors those that have affected the department; also, one question assessed the degree to which these factors affected the chairs. They were asked to rank the factors on a five-point scale from "not at all" to "extreme amount." Current job satisfaction was assessed, as were job satisfaction perceived 1 and 5 yr prior (if appropriate) and likelihood the chair would resign in the next 1–2 yr (ranging from "not likely" to "extremely likely" using a five-point scale). Chairs were also asked to rate their job satisfaction in their position at 1 and 5 yr before the survey but were not expected to answer these questions if they had not been in the position for that length of time. The chairpersons were then questioned regarding satisfaction relating to the balance of personal and professional life using a five-point scale, ranging from "very satisfied" to "very dissatisfied." The third portion of the survey assessed the chairpersons' opinion regarding their professional life using a modified self-efficacy scale.⁶ The sum of these responses was calculated, ranging between a low of 7 and a maximum of 35. Respondents also ranked their effectiveness as a chair on a scale ranging from 0 (representing "least effective") to 100 (representing "most effective").

The fourth part of the survey included 12 questions from the MBI–Human Services Survey (HSS).¹⁻⁷ The full MBI–HSS involves 22 questions: 5 assessing depersonalization, 9 assessing emotional exhaustion, and 8 assessing personal accomplishment. A score is given to each part of the MBI–HSS based on a frequency scale of 0 ("never") to 6 ("every day"). The questionnaire evaluates depersonalization with statements such as "I feel I have become more callous toward people," emotional exhaustion with statements such as "I feel emotionally drained from my work" and "I feel used up at the end of the workday," and personal accomplishment with statements such as "I feel I am positively influencing people's life through my work." The MBI–HSS survey was shortened to 12 questions to facilitate comparison with other specialties that were evaluated for burnout in their academic chairs.³⁻⁵ The 12 questions selected were identified by Gabbe *et al.*³ using factor analysis of the subscales

in the original MBI-HHS questionnaire. These questions included three evaluating depersonalization, five examining emotional exhaustion, and four assessing personal accomplishment. From the subscale values, the original MBI-HSS was calculated using proportional scoring. The ranges of the subgroup scoring are as follows: emotional exhaustion, 0–16 (low), 17–26 (moderate), and >26 (high); depersonalization, 0–6 (low), 7–12 (moderate), and >12 (high); and personal accomplishment, 0–31 (high), 32–38 (moderate), and >39 (low). A high risk of burnout was considered present when the respondent scored high in both emotional exhaustion and depersonalization and low in personal accomplishment. A moderate risk was considered when two or more of the previously mentioned criteria were met.

The fifth part of the survey included six questions that evaluated the chair's support from his or her spouse/significant other and family. These questions were adapted from previous investigations³ from the marital support questionnaires developed by Spanier,⁸ Pearlin and Schooler,⁹ Penkower *et al.*,¹⁰ and Phelan *et al.*¹¹ A five-point scale, ranging from "never" to "always," was applied to questions as follows: "How often do you disagree with your spouse/significant other or other family members about the amount of time you spend on work?" and "How often does your spouse/significant other encourage you to take advantage of professional opportunities?" A score ranging from a low of 6 (indicating minimal support) to a maximum of 30 (indicating considerable support) was calculated based on the sum of the individual responses.

Characteristics of the respondents by sex, length of time as chair, and hours worked were compared using the Fisher exact test. Current self-evaluation of the level of satisfaction was compared with responses regarding satisfaction and 5 yr prior using the sign test. The associations of the likelihood of stepping down with characteristics of the chairs were estimated using a 10,000-sample bootstrap and the Spearman ρ . Respondents whose scores indicated a high risk of burnout on the MBI-HHS scale were compared with those with a low to moderate risk using the Fisher exact test statistic or the Mann-Whitney U test. MBI-HHS subscale scores among the risk of burnout-indexed groups were compared using the Kruskal-Wallis H test and the Mann-Whitney U test with Bonferroni correction. Estimates of exact P values were determined for the Sign, Kruskal-Wallis H, and Mann-Whitney tests using a Monte Carlo method with 10,000 samples and confidence limits of 99%. Factors associated with a high risk for burnout ($P < 0.1$) were entered into a binary logistic regression model. The model was fitted using stepwise backward elimination with removal testing ($P > 0.1$) based on the probability of the likelihood-ratio statistic. Confidence intervals (95%) for the variables in the model were estimated using a 10,000-sample bootstrap. The overall predictive value of the model was assessed as the area under the receiver operating characteristic curve of burnout risk predicted by the model *versus* that predicted by the MBI-HHS scale. Sensitivity, specificity, and positive likelihood of a positive test result were calculated using a standard formula. Missing data were handled listwise for

grouped comparisons and pairwise for assessment of current and prior satisfaction. $P < 0.05$ was required to reject the null hypothesis. Nominal and ordinal are presented as counts and percentages of respondents. Interval data are presented as medians with interquartile ranges (IQRs). All reported P values are two-tailed. Data were analyzed using computer software (NCSS 2007 version 7.1.20, release date February 19, 2010 [NCSS LLC, Kaysville, UT]; and PASW Statistics 18.0.2, release date April 2, 2010 [SPSS Inc, Chicago, IL]).

Results

A total of 102 chairpersons responded to the survey, 67 *via* the electronic version and 35 *via* the mail, corresponding to a response rate of 87%. Nine surveys had insufficient responses for calculation of the burnout index. There were 43 data elements used for analysis on each survey and a total of 4,386 data elements in the 102 returned questionnaires. In total, 4,096 data points were obtained (93%). Eighty-eight surveys had all possible responses entered. Nine respondents completed between 10 and 36 elements but did not complete the MBI-HSS section; therefore, the MBI-HHS score could not be computed. Three surveys that contained an MBI-HSS section had one or more elements missing for inclusion in the logistic regression model.

The median (IRQ) age for the chairs ($n = 98$) was 55 (52–61) yr, and 51 of 101 respondents had been chair for less than 5 yr. Of the respondents, 82 (82%) were men and 18 (18%) were women. Of 98 responding chairs, 63 (64%) reported that they worked more than 60 h/wk, with 14 (78%) of female chairs reporting a work week of more than 60 h compared with 49 (61%) of male chairs ($P=0.28$). Duration on the job did not have an impact on the number of hours worked; 32 (67%) of 48 chairs with more than 5 yr in their current position reported working more than 60 h/wk *versus* 32 (63%) of 51 chairs with less than 5 yr in their position as chair ($P = 0.83$). Of 100 respondents, 82 (82%) reported spending less than 40% of their time involved with patient care. Administrative duties accounted for more than 40% of the chairs' time in 81 of 100 respondents; 83 (83%) of 100 spent less than 20% of their time in research-related activities. Of 101 respondents, 51 (50%) reported that their department included more than 50 faculty members and 31 (31%) had more than 60 faculty members. Of 101 chairs, 31 (31%) oversaw residency programs with more than 60 residents. Most of the medical schools did not have a support group for chairpersons (79 of 98 respondents).

Responses to issues that occurred in the year before the survey that created stress for the responding chairs are shown in table 1. Stressful problems that affected many chairs were faculty retention and department finances. Of 94 chairpersons, 32 (34%) noted that these issues had affected them only to a slight degree, 34 (36%) reported being moderately affected, and 28 (30%) reported being largely to extremely affected. Nevertheless, 32 (34%) of 93 respondents reported current high job satisfaction; however, this represented a sig-

Table 1. Stress-Provoking Issues Experienced by Academic Chairpersons during the Year Prior to the Survey

Issue	No. of Chairpersons	Perceived Impact by Chairperson		
		None or Slight	Moderate	Large or Extreme
Violence at the workplace	94	90	3	1
Sexual harassment	94	83	8	3
Accreditation Council for Graduate Medical Education issues	94	46	29	19
Substance abuse	94	71	18	5
Compliance issues	94	42	32	20
Medicare audits	94	74	21	3
Faculty retention	94	22	23	50
Tenure dispute	93	76	12	5
Resident or faculty dismissal	94	72	13	9
Dispute with the dean	93	72	14	7
Problems with department budget	93	40	11	42
Problems with hospital budget	94	43	24	27
Malpractice	92	89	2	1

Data presented as number of respondents.

nificant decline compared with that reported for 1 yr ($P = 0.009$) and 5 yr ($P = 0.001$) before the survey (fig. 1). Regarding the balance between personal and professional life, 41 (44%) of 94 respondents reported dissatisfaction to high dissatisfaction with balance, but only 12 (13%) of 94 reported this same level of dissatisfaction with their salary. The median (IQR) composite score of the modified efficacy scale of 21 (18–24) ($n = 93$) corresponds to a feeling of a moderate level of control by the chairpersons over their professional life, and the median (IQR) self-assessment of effectiveness of 85 (75–90) ($n = 90$) suggests that the chairpersons view their impact in a predominantly favorable manner. Of 93 chairs, 43 (46%) reported that it is moderate to extremely

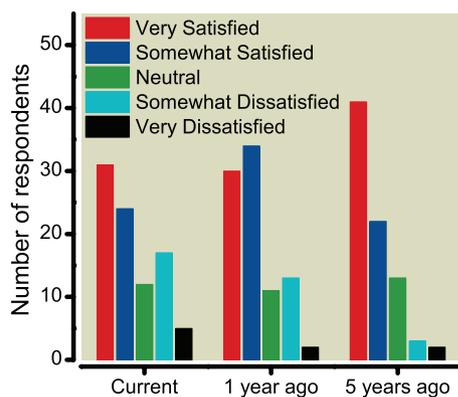


Fig. 1. Distribution of respondents' self-evaluation of level of satisfaction with anesthesiology chair position currently and 1 and 5 yr before the current year. A total of 37 respondents rated their current satisfaction decreased by 1 or more levels, 17 rated their satisfaction increased by 1 or more levels ($n = 17$), and 37 were unchanged compared with 1 yr ago (Sign test, $P = 0.009$). The response level for satisfaction compared with 5 yr before the survey was 39 decreased by 1 or more levels, 15 increased by 1 or more levels, and 29 unchanged (Sign test, $P = 0.001$).

likely that they will step down as a chair within 1–2 yr, with 26 (28%) suggesting that the chance of stepping down was very or extremely likely. There was no association of the age ($P = 0.16$) or sex ($P = 0.82$) of the respondents and their anticipated likelihood of stepping down or their rating of their effectiveness ($P = 0.63$); however, respondents who reported a higher likelihood of stepping down scored lower on the modified efficacy scale ($\rho = -0.303$, $P = 0.003$) than those reporting a low likelihood of stepping down.

The distribution of respondents at risk for burnout based on the MBI-HHS criteria is shown in figure 2. Of 93 anesthesiology chairs, 26 (28%) met the criteria for high burnout, with an additional 29 (31%) in the moderate to high burnout category. Median (IQR) subscale scores for emotional exhaustion, personal accomplishment, and depersonalization were 32 (21–41), 36 (24–44), and 10 (7–16), respectively. The breakdown of the MBI-HHS subscale scores for the levels of the burnout index is shown in figure 3. Emotional exhaustion scores were more likely to be increased in chairs with a moderate-risk index of burnout, and deperson-

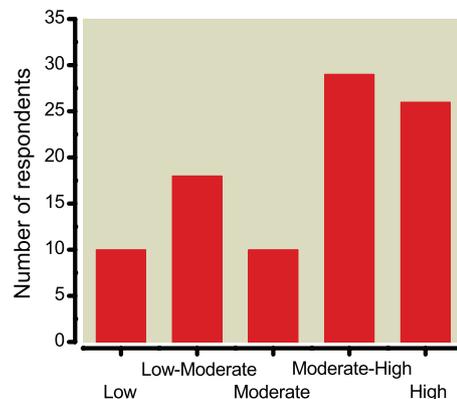


Fig. 2. Distribution of burnout based on the MBI-HHS score among chairpersons of academic anesthesiology chairpersons.

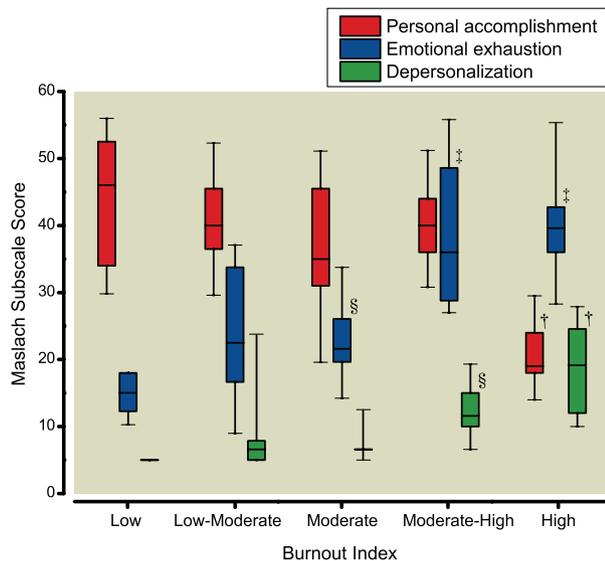


Fig. 3. Box plot of subscale scores for chairpersons at each level of the MBI-HHS index. The solid line with box plots represents the median; box, 25th and 75th percentiles; and whiskers, 10th and 90th percentiles. †Different from low, low-moderate, moderate, and moderate-high groups. ‡Different from low, low-moderate, and moderate groups. §Different from the low group. Scores were compared among levels of risk index groups using the Kruskal-Wallis H and the Mann-Whitney U tests with Bonferroni correction. All comparisons are reported at $P = 0.05$.

alization scores increased as the risk reached the moderately high level; scores for personal accomplishment remained consistent until the respondents reached the high-risk category.

A comparison of respondent characteristics in chairpersons with a high risk of burnout compared with those with a low to moderate risk is shown in table 2. Age, sex, time as a chair, time worked weekly, and perceived effectiveness did not differ between chairs in the high-risk compared with the lower-risk categories. Interestingly, chairs of larger departments appear to be at lower risk of burnout compared with chairs with medium (range, 40–50) size faculty. High-risk chairpersons reported a greater likelihood of stepping down within 2 yr, demonstrated lower personal efficacy scores, had low current job satisfaction, and were more affected by stressors facing the department. Faculty retention and departmental budgetary issues were more frequently rated as high to extremely high stressors by chairpersons who were at high risk for burnout.

The median (IRQ) score for support from a spouse/significant other was 20 (17–24) and was not different between male and female chairpersons. Support scores were lower in the high risk of burnout chairpersons compared with those at low to moderate risk of burnout (table 2). Chairpersons reporting a high likelihood of stepping down in the next 2 yr also reported lower median (IQR) scores of 17 (14–22) for spousal support compared with those unlikely to step down (21 [18–25]) ($P = 0.006$). Of 26 respondents, 17 (65%) in the high risk of burnout group reported their spouse/significant other was not understanding of extra hours worked

compared with 5 (8%) of 65 in the low- to moderate-risk group ($P < 0.005$), although the median number of hours per week that each of these groups worked was not different.

Multivariate analysis identified decreased current job satisfaction and low spousal/significant other support as independent predictors of a high burnout risk. The risk ratios (95% confidence intervals) for high burnout for respondents with moderate (10.9 [2.6–84.1]) ($P = 0.001$) and high (8.2 [2.6–79.3]) ($P = 0.008$) dissatisfaction were greater than those with high satisfaction. Chairpersons with a support index of less than 20 had a 5.2 (1.6–27.9) times greater likelihood of scoring in the high burnout category ($P = 0.007$). The area under the receiver operating characteristics curve for predicted high risk of burnout and actual risk was 0.80. The sensitivity and specificity (95% confidence intervals) of the model for predicting high burnout risk were 72% (52–86%) and 88% (78–94%), respectively. The positive likelihood ratio (95% confidence interval) for a predicted high risk of burnout from the model was 6.0 (3.1–12.9).

Discussion

The important finding of this study is the high incidence of risk of burnout (28%) among academic chairs of anesthesiology departments in the United States. When considering the chairs who are at risk for developing the syndrome (defined by a MBI-HHS score of moderate-high burnout), the percentage reaches 59%. Chairs of academic anesthesiology departments constantly deal with challenges of the ever-evolving healthcare environment, including providing high-quality clinical services in the face of decreasing reimbursements, nurturing research programs with limited career funding¹² and high competition and underperformance by faculty in National Institutes of Health grant submissions and awards,¹³ and ensuring accreditation of educational programs while adapting to changing requirements of the Accreditation Council for Graduate Medical Education and the American Board of Anesthesiologists. In addition, chairs are frequently involved in strategic planning at the institutional and/or hospital level and substantial university committee service that may limit the amount of time that they are able to devote to their own departmental issues. Finally, all serious disciplinary action must run through the chair (*e.g.*, questions of clinical competence and appropriate interpersonal interactions), which can be extremely time-consuming and frequently include difficult conversations. Among the stress factors assessed that were identified in chairs with a high risk of burnout, departmental budgetary issues and faculty retention concerns were most frequent.

Many chairs of academic anesthesiology departments exhibited at least one component of the MBI-HHS scoring system, with 69% reporting high emotional exhaustion, 60% reporting high depersonalization, and 39% reporting low personal accomplishment. Chairs with moderate burnout risk generally reported increased emotional exhaustion and increased depersonalization. Personal accomplishment generally remained strong until subjects reached the highest-

Table 2. Chairperson Characteristics Associated with High Risk of Burnout

Characteristic	Risk of Burnout		P Value
	Low to Moderately High	High	
Age, y (n = 89)*	55 (52–62)	56 (52–62)	0.86
Sex (n = 91)			
Male	56	18	0.08
Female	9	8	
Time as chairperson, y (n = 92)			0.25
≤5	31	16	
>5	35	10	
Time worked weekly, h (n = 91)			0.34
<60	25	7	
>60	40	19	
Department size (faculty) (n = 92)			0.01
<40	16	3	
41–50	14	14	
>50	36	9	
Institutional support group (n = 89)			0.38
No	50	23	
Yes	13	3	
Modified efficacy scale score (n = 92)*†	24 (20–25)	20 (18–21)	<0.005
Perceived effectiveness, % (n = 90)*	82 (75–90)	88 (77–90)	0.21
Current job satisfaction (n = 92)			
Low	9	13	<0.005
Neutral	6	8	
High	51	5	
Perceived impact of stressful factors on chairperson (n = 92)			0.001
Minimal	27	4	
Moderate	26	7	
Significant	13	15	
Faculty retention issues (n = 92)			0.004
Low to moderate	37	6	
Large to extreme	29	20	
Department budgeting deficits (n = 91)			0.001
None to moderate	42	7	
Large to extreme	23	19	
High likelihood of stepping down in next 2 yr (n = 91)	12	14	0.001
Support from family (n = 91)‡	24 (20 to 26)	18 (15 to 21)	<0.005

Data are given as number in each group unless otherwise indicated.

* Data are given as median (interquartile range). † Modified efficacy scale based on the sum of responses to self-efficacy questions, ranging between a low of 7 and a maximum of 35, as described by Carey *et al.*⁶ ‡ Family support score adopted from Gabbe *et al.*³

risk category, suggesting that stress at that stage had reached a point at which individuals began to question their value to the department and to themselves. A comparison of the MBI-HHS subscales with those reported among chairpersons of other academic specialties is shown in table 3. Based on our findings overall, anesthesiology chairs exhibit a higher rate of burnout compared with chairs of obstetrics/gynecology,³ otolaryngology,⁴ and ophthalmology.⁵

The degree of depersonalization and emotional exhaustion was higher in anesthesiology chairs than in chairs of these departments.

Physicians who cultivate their personal and professional well-being are less likely to develop burnout or will at least diminish its impact on their lives.¹⁴ The development of well-being should be stimulated throughout one's career, always being careful to minimize the delayed gratification

Table 3. Burnout among Chairs of Academic Medical Specialties

Specialty	Emotional Exhaustion	Depersonalization	Personal Accomplishment
Anesthesiology	32.3	12.2	34.7
Obstetrics and gynecology*	29.9	9.1	41.5
Ophthalmology†	21.3	4.3	29.8
Otolaryngology‡	17.5	4.0	32.8

Data reported as mean from subcategories of the MBI-Human Services Survey.

* Data from Gabbe *et al.*³ † Data from Golub *et al.*⁴ ‡ Data from Cruz *et al.*⁵

mechanism used so frequently by physicians.¹⁵ McCue and Sachs¹⁶ demonstrated that resident physicians who have learned stress management techniques decreased their subscale score on depersonalization and emotional exhaustion. Another method of better preparing faculty for the stresses related to the chairperson's position is through mentorship. According to Bates and Blackhurst,¹⁷ mentors have an important role in guiding new chairs through administrative challenges and in introducing them to other leaders. The presence of support in the form of a mentor(s) might have a greater impact on younger chairs who are new to the demands of the position. Although changes on an individual level might be part of the answer,¹⁸ the fact that an organization recognizes the potential for burnout as a problem decreases the chance that individuals will blame themselves or the recipients of their care as a cause of job-related stress. Support groups have also been suggested as a potential method to reduce physician burnout.^{19,20} In our sample, only 19% of medical schools had a support group for chairs, yet the rate of burnout among chairs in institutions with support groups was 13% lower than among those without support groups. However, our study was not designed to assess the effect of support groups on the risk of burnout.

Burnout can have significant health implications for the individuals who are affected by the syndrome. McCall²¹ suggested that substance abuse is more common among health-care workers affected by burnout. There is also growing evidence that burnout might substantially increase the risk of cardiovascular disease due to sympathetic system activation, sleep disturbances, immune function compromise, and poor health behaviors.²² The high incidence of burnout among anesthesiology chairs calls for preventive measures and early interventional modalities of treatment. Unfortunately, therapeutic interventions to decrease burnout have not been well studied. The fact that 87% of the academic anesthesiology chairs in the United States responded to this survey also suggests that the chairs as a group perceive that there is a problem.

Twenty-six chairs stated that they were very to extremely likely to step down within 1–2 yr. Age, sex, and perceived effectiveness did not appear to be predictive of this response because none of these variables was different between chairs who believed that they were likely to step down compared with chairs who believed that they were unlikely to step down. Departmental chairs are an extremely valuable resource to universities, and turnover can cause emotional distress to faculty members and can have significant financial implications for the institutions.²³

We did not find a sex difference in the frequency of burnout in male and female chairs of anesthesiology, although the few female chairs may have limited our ability to detect an effect. In a study of 5,704 male and female physicians in primary and specialty nonsurgical care, McMurray *et al.*²⁴ found that women have a 1.6 times higher rate of burnout than their male counterparts. This risk was increased by 12–15% as the work hours per week increased from 40 h to 45 h.

More recently, this same group compared the burnout risk between US physicians and those in the Netherlands and found that there was a sex difference in burnout risk in the United States but not in the Netherlands, where the difference in work hours was more similar between men and women.²⁵ Our study did confirm the findings of previously mentioned researchers²⁵ who determined that the odds of burnout were 40% less when workers have a high amount of support from spouses or significant others. In our study, we found that there is a 15% less chance of experiencing burnout or being at high risk of burnout in chairs who had greater support from family members. Linn *et al.*²⁶ showed that among academic internists, those who did not have spousal/significant other support were more depressed and dissatisfied with their work than those who did receive support. Chairs of anesthesiology should make their families aware that they value their support and they should create an environment that allows them to have more control over their time because both factors may be protective against burnout.

This study has several limitations. The surveys were self-reported and might not represent actual behaviors. The questionnaires were not completed in a controlled setting. We also did not use the full 22 questions of the MBI-HSS; instead, we used the same 12 questions as Gabbe *et al.*³ because those questions were shown to have a better correlation with the burnout subcomponents. Thus, we reduced the survey burden to the participants. There were missing data elements, and the reason for the missing data was not apparent. The most frequently omitted section included the questions related to spousal support (only 91 respondents completed the questions). In addition, the results of our study may not be generalizable beyond the United States because of differences in healthcare practices and demands placed on academic chairs in other countries. We did survey 15 academic chairs from countries other than the United States and found that most agreed that burnout was an important issue in their country, despite low rates of faculty and chair turnover (table 4).

In conclusion, we report a high incidence and risk of burnout among anesthesiology chairs. We found that age,

Table 4. Survey of 15 Non U.S. Academic Anesthesiologists*

Survey Question	Yes	No
Do you believe that burnout among department chairs is an important issue in your country?	12	3
Is the department budget a significant problem in your practice?	12	3
Is faculty retention a significant problem in your practice?	7	8
Is there a high turnover of anesthesiology chairs in your country?	4	11

* Of the anesthesiologists who responded yes, 13 have a public health care system in their country; of the anesthesiologists who responded no, 2 have a private health care system in their country.

sex, time as a chair, time worked, and perceived effectiveness were not associated with high burnout, but low job satisfaction and reduced spousal/significant other support significantly increased the risk. Because of the high financial and emotional cost to institutions and because of the paramount role these leaders have on shaping the future of anesthesiology, academic institutions and professional societies should be encouraged to develop strategies and perform studies evaluating methods of reducing burnout in chairs.

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Appendix

1. Demographic**1. Please fill in the box**

- What is your age?
- How many year have you been serving as a program director?
- How many residents are in your program?
- On average , How many hours do you work per week ?

2. What is your gender?

- Male
- Female

3. What percentage of your time is dedicated to patient care?

- Less than 20 %
- 21-40%
- 41-60%
- 61-80%
- 81-100%

4. What percentage of your time is dedicated to administration ?

- less than 20%
- 21-40%
- 41-60%
- 61-80%
- 81-100%

5. What percentage of your time is dedicated to research?

- Less than 20 %
- 21-40%
- 41-60%
- 61-80%
- 81-100%

6. Is there a program director "support group" in your medical school ?

- yes
- No

2. Potential Stressors

1. During the past year , to what degree have you and your department been affected by the following problems ?

	Not at all	Slight amount	Moderate amount	Large amount	Extreme amount
Violence in the workplace	<input type="radio"/>				
Sexual harassment	<input type="radio"/>				
RRC/ACGME Issues	<input type="radio"/>				
Substance abuse	<input type="radio"/>				
Compliance issues	<input type="radio"/>				
Resident retention /recruitment	<input type="radio"/>				
resident dismissal	<input type="radio"/>				
Dispute(s) with Chairman/Administration	<input type="radio"/>				
Defendant in Malpractice Case	<input type="radio"/>				
How have these problems affected you?	<input type="radio"/>				

2. How satisfied are/were you with your professional position ?

	Very satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Very dissatisfied
Currently	<input type="radio"/>				
One year ago	<input type="radio"/>				
Five years ago	<input type="radio"/>				

3. How likely are you to step down as a program director in the next 1-2 years?

- Not at all
- Slightly likely
- Moderately likely
- Very likely
- Extremely likely

4. Stressors

	Very satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Very dissatisfied
How satisfied are you with the balance between your personal and professional life ?	<input type="radio"/>				
How satisfied are you with the finances/salaries of your position ?	<input type="radio"/>				

3. Self -efficacy Survey

1. Professional life

	Not at all	Slight Amount	Moderate Amount	Large Amount	Extreme Amount
How much control over your professional life do you have ?	<input type="radio"/>				
How much uncertainly do you currently experience in your life as a result of being a program director?	<input type="radio"/>				
To what degree does your professional role get in the way of developing your other life goals?	<input type="radio"/>				

2. Professional Life

	Not likely	Slightly likely	Moderately likely	Very likely	Extremely likely
How likely is your professional life to worsen over the next several years ?	<input type="radio"/>				
How likely is your professional life to improve over the next several years?	<input type="radio"/>				

3. Professional Life

	Totally due to me	Mostly due to me	Partly me, partly other factors	Mostly due to other factors	Totally due to other factors
Do you believe that achieving good control of your professional life is due to your efforts or factors beyond your control ?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Professional life

	Not at all	Slightly effective	Moderately effective	Very effective	Extremely effective
How effective are you in coping with time management in your professional life?	<input type="radio"/>				

5. On a scale 0-100, how would you rate your effectiveness as a program director ? (0=least effective to 100= most effective)

4. MBI-HSS

1. Please check the box for your best answer regarding the frequency of the questions below

	Never	A few times a year	Once a month	A few times a month	Every week	A few times a week	Every day
I deal very effectively with the problems of my residents	<input type="checkbox"/>						
I feel I am positively influencing other people's lives through my work	<input type="checkbox"/>						
I feel exhilarated after working closely with my residents	<input type="checkbox"/>						
I have accomplished many worthwhile things in this job	<input type="checkbox"/>						
I feel emotionally drained from my work	<input type="checkbox"/>						
I feel used up at the end of the workday	<input type="checkbox"/>						
I feel burnout from my work	<input type="checkbox"/>						
I feel frustrated by my job	<input type="checkbox"/>						
I feel like I am at the end of my rope	<input type="checkbox"/>						
I feel I treat some of my residents as if they were impersonal "objects"	<input type="checkbox"/>						
I've become more callous toward people since I took this job	<input type="checkbox"/>						
I worry that this job is hardening me emotionally	<input type="checkbox"/>						

5. Support

1. Please check the most appropriate answer

	1-Never	2-Rarely	3-Sometimes	4-Very often	5-Always
How often are you withdrawn and quiet with your spouse, significant other or other family members when you are preoccupied with work matters	<input type="radio"/>				
How often are you irritable with your spouse, significant other, or other family members when you are preoccupied with work matters	<input type="radio"/>				
How often do you disagree with your spouse, significant other, or other family members about the amount of time you spend on work	<input type="radio"/>				

2. Spouses can show support for their spouses in a number of different ways . In regards to your chairmanship, how often does your spouse do each of these things :

	1-Never	2-Rarely	3-Sometimes	4-Very often	5-Always
Is willing to listen to you talk about work-related problems	<input type="radio"/>				
Encourages you to take advantage of professional opportunities	<input type="radio"/>				
Is understanding when you have to work "extra hours"	<input type="radio"/>				