JAMA Surgery | Original Investigation

Associations Between Career Satisfaction, Personal Life Factors, and Work-Life Integration Practices Among US Surgeons by Gender

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IMPORTANCE Burnout among US surgeons is alarmingly high, particularly among women, and work-life integration conflicts contribute to career dissatisfaction.

OBJECTIVE To evaluate associations between surgical career satisfaction and personal life factors such as time requirements for outside interests, household chores, and parenting responsibilities and to explore similarities and differences between men and women.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional survey study of practicing US surgeons was conducted between June 4 and August 1, 2018. The 257-item online survey was sent to 25 748 fellows of the American College of Surgeons. A 31-item subanalysis was performed from August 13 to November 4, 2019.

MAIN OUTCOMES AND MEASURES Degree of career satisfaction was measured on a 5-point Likert scale. Professional and personal life factors associated with career satisfaction were evaluated with gender-stratified multivariable proportional odds models.

RESULTS Among 3807 respondents, 3166 self-identified as male (83%) and 639 (17%) as female. Fewer women reported career satisfaction (483 [77%] vs 2514 [82%]) and relatively more women reported problematic interruption of personal life owing to work (315 [50%] vs 1381 [45%]). A higher proportion of women reported being primarily responsible for meal preparation (282 [46%] vs 355 [12%]) and housekeeping (149 [24%] vs 161 [5%]). On multivariable analyses, factors independently associated with career satisfaction were generally similar between genders. Stronger collegial support of work-life integration efforts was significantly associated with higher career satisfaction for both genders ($P < .001$), although the odds ratio (OR) for women was higher than for men (OR, 4.52; 95% CI, 2.60-7.87 vs OR, 2.45; 95% CI, 1.88-3.21). For men and women, increasing age was significantly associated with higher career satisfaction (men: OR, 1.04; 95% CI, 1.03-1.05; $P < .001$; women: OR, 1.04; 95% CI, 1.02-1.06; $P = .001$), and insufficient time for family owing to work was associated with lower satisfaction (men: OR, 0.66; 95% CI, 0.49-0.90; $P = 009$; women: OR, 0.49; 95% CI, 0.30-0.81; $P = .006$). For women only, there was a significant association between primary responsibility for at least 1 household chore and lower career satisfaction (OR, 0.66; 95% CI, 0.45-0.98; $P = .04$).

CONCLUSIONS AND RELEVANCE In this study, although women had relatively lower surgical career satisfaction than men, the associations between career satisfaction and personal life factors were largely similar. Collegial support of work-life integration efforts appeared to be the most influential factor, particularly for women. Optimization of work-life integration may not only decrease physician burnout but also promote gender equity in surgery.

Invited Commentary
Author Audio Interview
Supplemental content

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JAMA Surg. doi:10.1001/jamasurg.2020.1332
Published online June 24, 2020.

Burnout affects nearly half of US physicians and disproportionately affects women.[1] Compared with men, women report lower satisfaction with work-life integration in medicine generally[1] and surgery specifically.[2] Conflicts between one's professional life and personal life are a major contributor to burnout in surgery, and women experience work-home conflicts at higher rates than men.[2] Multiple gender differences in domestic and parenting responsibilities have been reported among early-career surgeon scientists,[3] and a 2019 survey of physicians who are mothers demonstrated an association between greater domestic responsibilities and lower career satisfaction among women in procedural fields.[4] It is unclear whether these findings are generalizable to surgeons without children and across practice types.

Improved understanding of the characteristics of US surgeons' personal lives can guide efforts to mitigate the effect of work-life integration conflicts on physician burnout. These efforts will in turn facilitate improved patient care, higher workplace productivity, and enhanced physician well-being.[5] As burnout is a robust predictor of career dissatisfaction among US surgeons,[6] structural solutions to optimize work-life integration may improve retention and maximize return on investment.[7] Furthermore, effective solutions may help to promote gender equity in surgery.

The aim of this analysis is to explore associations between personal life factors, such as time requirements for outside interests, household chores, and parenting responsibilities with surgical career satisfaction, and to assess whether there are any potential differences between men and women.

Key Points

Question How are personal life factors such as time requirements for outside interests, household chores, and parenting responsibilities associated with surgical career satisfaction, and does this vary by gender?

Findings In this national survey of practicing surgeons, women reported significantly lower career satisfaction than men (483 [77%] vs 2514 [82%]), but associations between personal life factors and career satisfaction were largely similar between genders. Collegial support of work-life integration efforts had the strongest association with higher career satisfaction (men: odds ratio, 2.5 vs women: odds ratio, 4.5).

Meaning Cultivation of a supportive workplace culture may mitigate burnout and promote gender equity in surgery.

Methods

Study Design and Population

A cross-sectional study of practicing US surgeons was performed in 2018 to examine practice attributes, surgical training, professional choices, harassment, malpractice, career satisfaction, and personal life characteristics. This survey represents a modernized, expanded version of a 1998 to 1999 surgical workforce survey, which was developed from existing surveys of physicians with additional focus group input.[8,9]

Details on the 2018 survey design, population, and implementation were previously published.[10] Briefly, an email obtaining written informed consent with an individualized link to a 257-item questionnaire was distributed to 25 748 practicing US surgeons on June 4, 2018. Two reminder emails were sent, and responses were collected until August 1, 2018. Respondents were not required to answer all questions, so response rates vary between survey items. The survey and all associated studies were approved by the institutional review board at the University of North Carolina. From the questionnaire, 31 items were evaluated for this focused analysis.

Weighting

Nonresponse weights were used in all analyses. Weights were derived based on American College of Surgeons (ACS)-reported sex (male, female), age (<48 years, 48-59 years, and ≥60 years), and surgical specialty (general, other) as described previously.[10]

Demographics: Gender, Other Personal Factors, and Professional Factors

Gender was classified as either man or woman, according to self-reported sex data on file with the ACS, as follows: male/man and female/woman. Previously described definitions for academic vs private practice, subspecialty practice, and rural vs urban practice location were used.[10]

Primary Outcome: Degree of Career Satisfaction

The primary outcome variable for analysis was degree of career satisfaction, which was determined by response to the statement, "I am satisfied with my career as a surgeon." A 5-point Likert scale was used with the following choices: strongly disagree, disagree, neutral, agree, or strongly agree. This Likert scale was used for other questions relating to professional satisfaction and satisfaction with work-life integration. For analyses, strongly disagree and disagree were grouped together, and agree and strongly agree were grouped together.

Statistical Analysis

Continuous variables are presented as (scaled) weighted mean and standard error of the mean, and categorical variables are presented as weighted frequencies and percentages. Summaries are provided by gender. Multivariable proportional odds model[11] was used to evaluate associations between personal life factors and the degree of career satisfaction (strongly disagree/disagree, neutral, agree/strongly agree) while adjusting for the following professional factors known or hypothesized to affect burnout and/or career satisfaction: practice type (private, academic, neither),[2,12] specialty (general surgery, subspecialty),[2] practice location (urban, rural), and number of hours worked per week (per unit increase).[1,2] Personal life factors included variables previously shown to be associated with burnout and/or career satisfaction (age [per year increase],[1] marital status,[1] domestic responsibilities,[4,13] and work-life integration conflicts[2]) and variables hypothesized to affect career satisfaction (parental status, number of children, occupation of spouse/partner, division of parenting responsibilities,

Table 1. Respondent Demographics, Practice Characteristics, and Household Composition by Gender[a]

Characteristic	No. (%)		*P* value
	Men	Women	
Age, mean (SEM), y	55.6 (0.1)	48.8 (0.1)	<.001
Practice type[b]			
Academic	1390 (44)	345 (54)	<.001
Private	1276 (41)	187 (29)	
Neither	484 (15)	104 (16)	
Practice location[c]			
Rural	270 (9)	38 (6)	.01
Urban	2850 (91)	588 (94)	
Subspecialty surgeon[d]	2195 (72)	476 (77)	.001
Time practicing, mean (SEM), y	22.2 (0.1)	15.0 (0.1)	<.001
Time spent working as surgeon per week, mean (SEM), h	54.5 (0.4)	53.0 (0.7)	.054
Current relationship status			
Married	2752 (90)	431 (70)	<.001
Unmarried couple	59 (2)	33 (5)	
Single, never married	47 (2)	85 (14)	
Separated/divorced	162 (5)	65 (10)	
Widowed	21 (1)	5 (1)	
Spouse/partner occupation			
Surgeon	122 (4)	102 (17)	<.001
Nonsurgeon physician	425 (14)	56 (9)	
Business/management	161 (5)	54 (9)	
Homemaker	1050 (34)	63 (10)	
Professional	775 (25)	111 (18)	
Self-employed	140 (5)	59 (10)	
Student	11 (<1)	2 (<1)	
Other	222 (7)	45 (7)	
Has child(ren)	2869 (94)	425 (69)	<.001
No. of children, mean (SEM)	2.7 (0.02)	2.2 (0.04)	<.001
Current living situation			
Alone	161 (5)	110 (18)	<.001
Children only	46 (1)	39 (6)	
Spouse/partner only	1212 (40)	137 (22)	
Spouse/partner and children	1622 (53)	327 (53)	
Friend(s)/roommate(s)	7 (<1)	6 (1)	

[a] Data are presented as scaled weighted frequencies and percentage of responses for each survey item owing to differential response rates for each item.

[b] Practice type was considered private if respondents answered yes to "Are you currently primarily in a private practice setting," and academic if respondents answered no to the same question and also reported currently holding a medical school faculty appointment.

[c] Practice location was defined as urban or rural based on US 2013 rural-urban continuum codes.

[d] Surgeons were considered subspecialty if they (1) reported being board certified in a subspecialty, (2) completed an integrated residency program in cardiothoracic, vascular, or plastic surgery, or (3) reported completing at least 1 year of additional subspecialty fellowship training (eg, colorectal, transplant) after general surgery.

and satisfaction with childcare). For covariates drawn from Likert scale survey questions, neutral was used as the reference group. For factors specific to childcare and parenting, analysis was restricted to respondents with children. The proportional odds model was fit separately to men and women to better delineate the potential similarities and differences between genders. Odds ratios (ORs) and 95% CIs are provided as measures of strength of association and precision, respectively.

Given the need for effective strategies to mitigate burnout and optimize work-life integration, associations between specific interventions and degree of career satisfaction were also evaluated by gender using a proportional odds model. This model evaluated the following work-life integration policies and practices: structural solutions (employer-sponsored formal leave, career sharing, and on-site daycare), workplace accommodations (collegial support), and personal compromises (modification of surgical practice owing to childcare issues, adjustment of career goals to maximize control of personal time).

A 2-sided *P* value of less than .05 was considered statistically significant. Analyses were performed using SAS, version 9.4 (SAS Institute). Statistical analysis was performed from August 13 to November 4, 2019.

Results

Of 25 748 surgeons contacted, 3807 completed the survey and were eligible for inclusion (overall response rate, 14.8%). Two survey respondents did not have a sex classification on file with the ACS. After survey administration, 536 respondents were deemed ineligible for inclusion because they indicated they were not in practice. A total of 4231 female and 20 981 male surgeons were eligible, and after scaled weighting, respondents included 639 surgeons (17%) who self-identified as female and 3166 (83%) as male. Women were slightly more likely to respond than men.

Demographic data, practice characteristics, and household compositions of respondents are summarized in **Table 1**. The mean (standard error of the mean) age among women was lower than that of men (48.8 [0.1] vs 55.6 [0.1] years). Relatively fewer women had children (2869 men [94%] vs 425

Table 2. Satisfaction Measures by Gender[a]

Characteristic	Men	Women	*P* value
Professional satisfaction			
Satisfied with career			
Strongly agree/agree	2514 (82)	483 (77)	.003
Neutral	312 (10)	88 (14)	
Strongly disagree/disagree	254 (8)	59 (9)	
Work-life integration satisfaction			
Work encroaches on my personal time			
Strongly agree/agree	2020 (66)	454 (72)	.001
Neutral	568 (18)	93 (15)	
Strongly disagree/disagree	496 (16)	82 (13)	
Interruption of personal life owing to work is a problem			
Strongly agree/agree	1381 (45)	315 (50)	.02
Neutral	820 (27)	157 (25)	
Strongly disagree/disagree	881 (29)	158 (25)	
Work schedule leaves enough time for hobbies			
Strongly agree/agree	878 (29)	146 (23)	<.001
Neutral	663 (22)	113 (18)	
Strongly disagree/disagree	1528 (50)	368 (59)	
Work schedule leaves enough time for family life			
Strongly agree/agree	1261 (41)	210 (33)	<.001
Neutral	656 (21)	132 (21)	
Strongly disagree/disagree	1176 (38)	290 (46)	
Satisfied with childcare arrangement[b]			
Strongly agree/agree	2041 (72)	302 (72)	.82
Neutral	485 (17)	70 (17)	
Strongly disagree/disagree	296 (10)	47 (11)	
Satisfied with division of parenting responsibilities[b]			
Strongly agree/agree	1941 (69)	235 (56)	<.001
Neutral	474 (17)	78 (18)	
Strongly disagree/disagree	410 (15)	107 (26)	

[a] Data are presented as scaled weighted frequencies and percentage of responses for each survey item owing to differential response rates for each item.

[b] Among respondents with children only.

women [69%]). A higher proportion of men were married (2752 men [90%] vs 431 women [70%]). Among married or partnered surgeons, more men had a significant other who worked as a homemaker (1050 men [34%] vs 63 women [10%]) while a greater proportion of women were coupled to another surgeon (122 men [4%] vs 102 women [17%]). There were several differences in practice characteristics by gender, with greater proportions of women reporting the following: subspecialty training (2195 men [72%] vs 476 women [77%]), academic practice (1390 men [44%] vs 345 women [54%]), and urban location (2850 men [91%] vs 588 women [94%]). Hours worked per week as a surgeon was similar between genders (mean [standard error of the mean]: men, 54.5 [0.4] vs women, 53.0 [0.7]).

Measures of professional satisfaction and work-life integration satisfaction are delineated in **Table 2**. Fewer women reported career satisfaction (2514 men [82%] vs 483 women [77%]) with more women expressing neutrality (312 men [10%] vs 88 women [14%]). In general, men reported a higher degree of satisfaction with work-life integration. Fewer women agreed that their work schedule allowed sufficient time for family life (1261 men [41%] vs 210 women [33%]) or hobbies (878 men [29%] vs 146 women [23%]), and a higher proportion of women reported problematic interruption of personal life owing to work (1381 men [45%] vs 315 women [50%]). Among surgeons with children, relatively more men were satisfied with the division of parenting responsibilities and more women were dissatisfied (1941 men [69%] vs 235 women [56%]). Satisfaction with childcare arrangements was similar between genders.

Multiple gender differences were observed in household and childcare responsibilities (eTable 1 in the Supplement). A higher proportion of women reported being primarily responsible for meal preparation (355 men [12%] vs 282 women [46%]) and housekeeping (161 men [5%] vs 149 women [24%]). In contrast, more men reported that their partner was primarily responsible for these chores (1945 men [69%] vs 86 women [20%]). More than half of respondents of both genders reported outsourcing yardwork (1485 men [52%] vs 294 women [53%]), but a higher proportion of men reported being primarily responsible for yardwork (786 men [27%] vs 65 women [12%]). Among surgeons with children, more men reported that their spouse/partner served as the primary childcare provider (1945 men [69%] vs 86 women [20%]), while a higher proportion of women reported employing a caregiver (718 men [25%] vs 289 women [68%]).

Gender-stratified multivariable analyses showed similar trends in career satisfaction for nearly all professional and

Table 3. Multivariable Analysis of Professional and Personal Factors Associated With Degree of Career Satisfaction by Gender

Characteristic	Men		Women	
	OR (95% CI)	*P* value	OR (95% CI)	*P* value
Age (per y increase)	1.04 (1.03-1.05)	<.001	1.04 (1.02-1.06)	.001
Time spent working per week (per unit increase), h	1.00 (1.00-1.01)	.30	1.01 (1.00-1.02)	.27
Practice type				
Academic	1 [Reference]	NA	NA	NA
Private	0.53 (0.42-0.68)	<.001	0.67 (0.45-1.01)	.054
Neither	0.49 (0.36-0.67)	<.001	0.54 (0.34-0.87)	.01
Practice location: rural vs urban	0.97 (0.66-1.41)	.86	1.07 (0.53-2.17)	.84
Subspecialty vs general surgery	1.04 (0.82-1.33)	.73	1.02 (0.70-1.57)	.92
Lives with spouse/partner: yes vs no[a]	1.04 (0.65-1.65)	.87	1.13 (0.71-1.82)	.61
Has children: yes vs no	1.27 (0.83-1.96)	.27	1.36 (0.90-2.06)	.14
Primarily responsible for at least 1 household chore: yes vs no	0.89 (0.70-1.12)	.32	0.66 (0.45-0.98)	.04
Interruption of personal life owing to work is a problem				
Strongly agree/agree	0.53 (0.40-0.71)	<.001	0.64 (0.41-1.00)	.052
Neutral	1 [Reference]	NA	1 [Reference]	NA
Strongly disagree/disagree	1.42 (0.98-2.06)	.06	1.75 (0.92-3.33)	.09
Work schedule leaves enough time for family life				
Strongly agree/agree	1.23 (0.88-1.72)	.22	1.16 (0.63-2.14)	.64
Neutral	1 [Reference]	NA	1 [Reference]	NA
Strongly disagree/disagree	0.66 (0.49-0.90)	.009	0.49 (0.30-0.81)	.006
Work schedule leaves enough time for hobbies				
Strongly agree/agree	1.45 (0.98-2.14)	.06	1.17 (0.61-2.22)	.64
Neutral	1 [Reference]	NA	1 [Reference]	NA
Strongly disagree/disagree	0.84 (0.62-1.15)	.28	1.01 (0.60-1.69)	.98

Abbreviations: NA, not applicable; OR, odds ratio.

[a] With or without children.

personal life factors (**Table 3**). The only factor with a notable difference between genders was household chore responsibilities: being primarily responsible for at least 1 chore was significantly associated with lower career satisfaction for women (OR, 0.66; 95% CI, 0.45-0.98; *P* = .04) but not men (OR, 0.89; 95% CI, 0.70-1.12; *P* = .32). For both men and women, increasing age was significantly associated with higher career satisfaction (men: OR, 1.04; 95% CI, 1.03-1.05; *P* < .001; women: OR, 1.04; 95% CI, 1.02-1.06; *P* = .001), and insufficient time for family owing to work was associated with lower satisfaction (men: OR, 0.66; 95% CI, 0.49-0.90; *P* = .009; women: OR, 0.49; 95% CI, 0.30-0.81; *P* = .006). Compared with academic practice, private practice was associated with lower career satisfaction for men (OR, 0.53; 95% CI, 0.42-0.68; *P* < .001); a similar trend was observed for women but did not reach statistical significance. Subspecialty practice, practice location, workweek duration, and parental status were not significantly associated with career satisfaction for either gender.

When multivariable analyses were restricted to respondents with children, similar patterns of association between professional factors and career satisfaction were observed (eTable 2 in the Supplement). Compared with academic practice, private practice was observed to be associated with lower career satisfaction (men: OR, 0.53; 95% CI, 0.41-0.70; *P* < .001; women: OR, 0.56; 95% CI, 0.33-0.95; *P* = .03). Other professional factors including subspecialty practice, practice location, and workweek duration did not have a significant association with career satisfaction. With respect to personal life factors, insufficient time for family life owing to work was again significantly associated with lower career satisfaction for both genders (men: OR, 0.70; 95% CI, 0.52-0.95; *P* = .02; women: OR, 0.45; 95% CI, 0.23-0.87; *P* = .02). In contrast to results from the overall analysis that included both surgeons with and without children, neither age nor household chore responsibilities were significantly associated with degree of career satisfaction for women with children. A significant association between dissatisfaction with childcare arrangement and lower career satisfaction was observed for men (OR, 0.61; 95% CI, 0.41-0.91; *P* = .02) but not women (OR, 0.92; 95% CI, 0.46-1.85; *P* = .82). Satisfaction with division of parenting responsibilities was significantly associated with higher career satisfaction among men (OR, 1.73; 95% CI, 1.26-2.36; *P* = .001). Number of children, spouse/partner cohabitation, spouse/partner occupation, and primary childcare provider had no significant association with career satisfaction for either gender.

Men and women reported several differences in availability and use of policies and practices to optimize work-life integration (**Table 4**). Prevalence of employer provision of formal leave was similar between genders, with approximately half of all respondents reporting this resource (1606 men [54%] vs 329 women [53%]). On-site daycare and career-sharing options were less common overall, and more women reported a

Table 4. Availability and Use of Policies and Practices to Optimize Work-Life Integration by Gender[a]

Characteristic	Men	Women	*P* value
Employer provides formal leave			
Yes	1606 (54)	329 (53)	.08
No	878 (29)	1667 (27)	
Do not know	511 (17)	126 (20)	
Employer offers career sharing			
Yes	337 (12)	35 (6)	<.001
No	1557 (54)	370 (61)	
Do not know	966 (34)	203 (33)	
Employer provides on-site daycare			
Yes	476 (16)	95 (16)	.004
No	2038 (70)	459 (75)	
Do not know	386 (13)	57 (9)	
My colleagues support my efforts to balance family and work responsibilities			
Strongly agree/agree	1754 (57)	335 (53)	<.001
Neutral	850 (28)	153 (24)	
Strongly disagree/disagree	476 (15)	141 (22)	
Surgical practice has been modified because of childcare issues			
Strongly agree/agree	406 (14)	185 (44)	<.001
Neutral	400 (14)	47 (11)	
Strongly disagree/disagree	2021 (72)	189 (45)	
Career goals influenced by need to maximize control of personal time			
Strongly agree/agree	816 (27)	243 (39)	<.001
Neutral	585 (19)	91 (14)	
Strongly disagree/disagree	1673 (54)	294 (47)	

[a] Data are presented as scaled weighted frequencies and percentage of responses for each survey item owing to differential response rates for each item.

lack of these resources (476 men [16%] vs 95 women [16%] and 337 men [12%] vs 35 women [6%], respectively). A significantly higher proportion of women reported that their surgical practice was modified owing to childcare issues (406 men [14%] vs 185 women [44%]). More than half of respondents of both genders reported that their colleagues were supportive of their efforts to balance work and family responsibilities, but men reported a higher degree of perceived support (1754 men [57%] vs 335 women [53%]).

Multivariable analyses demonstrated several associations between specific policies and practices to optimize work-life integration and surgical career satisfaction (**Table 5**). Trends were similar between genders for nearly all variables. Degree of collegial support of work-life integration efforts was significantly associated with degree of career satisfaction for both genders: lower support was associated with lower career satisfaction (men: OR, 0.47; 95% CI, 0.35-0.63; $P < .001$; women: OR, 0.56; 95% CI, 0.33-0.95; $P = .03$) and higher support was associated with higher satisfaction. The latter was particularly strong for women (OR, 4.52; 95% CI, 2.60-7.87) compared with men (OR, 2.45; 95% CI, 1.88-3.21) ($P < .001$). Provision of formal leave was significantly associated with higher career satisfaction for men (OR, 1.43; 95% CI, 1.08-1.89; $P = .01$). Career sharing, on-site daycare, and modification of surgical practice owing to childcare issues were not significantly associated with career satisfaction for either gender.

Discussion

This large, cross-sectional survey of contemporary US surgeons demonstrates that career satisfaction is significantly associated with not only professional factors such as practice type, but also personal life factors such as household and parenting responsibilities. We observed several striking differences between genders: women reported lower career satisfaction, more conflicts between professional life and personal life, and greater domestic demands. Explorations of associations between surgical career satisfaction and personal life factors revealed many similarities between men and women. For both genders, the factor with the strongest association with higher career satisfaction was a higher degree of collegial support of work-life integration efforts. Notably, the strength of this association appears to be greater for women.

We previously reported lower career satisfaction among women who completed an earlier version of the survey distributed to fellows of the ACS in 1998 to 1999.[9] A 2008 survey of ACS members conducted by other investigators also demonstrated lower rates of professional satisfaction among women.[2] Still other studies have demonstrated higher burnout, which has been shown to be the strongest predictor of surgical career satisfaction,[6] in women physicians in general[1] and surgeons specifically.[13] In keeping with our results, gender-stratified analyses of the 2008 survey data demonstrated that

Table 5. Multivariable Analysis of Work-Life Integration Policies and Practices Associated With Degree of Career Satisfaction by Gender

	Men		Women	
Characteristic	OR (95% CI)	*P* value	OR (95% CI)	*P* value
Employer provides formal leave				
Yes	1.43 (1.08-1.89)	.01	1.42 (0.84-2.39)	.19
No	1 [Reference]	NA	1 [Reference]	NA
Do not know	0.76 (0.54-1.08)	.13	1.11 (0.57-2.19)	.75
Employer offers career sharing				
Yes	1.46 (0.93-2.31)	.10	0.47 (0.18-1.20)	.11
No	1 [Reference]	NA	1 [Reference]	NA
Do not know	1.14 (0.85-1.53)	.39	1.14 (0.64-2.05)	.65
Employer provides on-site daycare				
Yes	1.41 (0.99-2.02)	.06	1.26 (0.62-2.56)	.53
No	1 [Reference]	NA	1 [Reference]	NA
Do not know	1.19 (0.81-1.75)	.38	1.60 (0.45-5.70)	.46
My colleagues support my efforts to balance family and work responsibilities				
Strongly agree/agree	2.45 (1.88-3.21)	<.001	4.52 (2.60-7.87)	<.001
Neutral	1 [Reference]	NA	1 [Reference]	NA
Strongly disagree/disagree	0.47 (0.35-0.63)	<.001	0.56 (0.33-0.95)	.03
Surgical practice has been modified because of childcare issues				
Strongly agree/agree	0.67 (0.45-1.00)	.051	0.78 (0.39-1.59)	.50
Neutral	1 [Reference]	NA	1 [Reference]	NA
Strongly disagree/disagree	0.93 (0.67-1.30)	.68	0.85 (0.42-1.72)	.64
Career goals influenced by need to maximize control of personal time				
Strongly agree/agree	1.23 (0.90-1.69)	.20	1.26 (0.65-2.46)	.50
Neutral	1 [Reference]	NA	1 [Reference]	NA
Strongly disagree/disagree	1.40 (1.05-1.88)	.02	1.32 (0.69-2.52)	.40

Abbreviations: NA, not applicable; OR, odds ratio.

resolution of work-home conflicts in favor of work was significantly associated with lower career satisfaction for both genders,[2] similar to our observation about insufficient time for family. Dyrbye and colleagues[2] also identified significant associations between academic practice and increased career satisfaction for men and women. Similarly, a survey of US surgeons certified by the American Board of Surgery between 1998 and 2004 found that a nonuniversity practice setting was significantly associated with career dissatisfaction.[12] Our observation that increasing age is associated with higher career satisfaction is not supported by either of these prior national surveys of surgeons[2,12] but is corroborated by a 2017 survey of US physicians that reported less burnout among older physicians.[1] Changes in professional and personal life over time, such as increased control over one's schedule, may contribute to higher career satisfaction among older surgeons and warrant further clarification.

Our study lends important insights into the personal lives of contemporary US surgeons and is the first, to our knowledge, to explore associations between specific personal factors and career satisfaction for surgeons of both genders on a national level. In a similar study of attending surgeons and resident physicians within a single academic medical center, Baptiste and colleagues[13] also observed lower satisfaction and disproportionately greater domestic responsibilities among women. A survey of early-career physician researchers found that among married or partnered physicians with children, women reported spending an average of 8.5 more hours per week on domestic or parenting tasks than men.[3] However, as less than 10% of the respondents were in surgical fields,[3] further studies are needed to corroborate these findings among surgeons.

Our results about household chores contrast with those of a recent survey of physicians who are mothers.[4] Lyu and colleagues[4] found a significant association between sole responsibility for at least 5 domestic and parenting tasks and a desire to change careers among mothers in surgical specialties. Although we observed a significant association between primary responsibility for at least 1 household chore and career satisfaction among women overall, this trend was not seen on analyses limited to parents. Differences in definitions of career satisfaction may contribute to our disparate findings.

Perhaps the most important finding of our study is the association between stronger collegial support of work-life integration efforts and higher career satisfaction. As only about half of respondents indicated collegial support, and men reported significantly higher perceived support than women, our results highlight room for improvement. Not only did collegial support have the strongest association with career satisfaction of all analyzed factors, but it appears to be particularly impactful for women. Cultivation of a supportive workplace culture may therefore mitigate burnout and promote gender equity in surgery. Specific strategies for achieving this type of culture include accommodation of requests for

individualized schedules,[14] avoidance of early or late meetings that may interfere with personal responsibilities,[15] and flexibility and compassion when work-life integration conflicts arise. Other interventions to promote collegiality include team building exercises and protected time for small-group discussions, which has been shown to correlate with decreased burnout.[16] The National Academies of Sciences, Engineering, and Medicine further suggest incentivizing teamwork and holding team leaders accountable for maintaining a positive workplace culture.[17]

Another notable observation from our study is that while women were more likely to report modification of their surgical practice owing to childcare issues, this compromise was not significantly associated with improved career satisfaction. This suggests that some personal compromises may be less effective than structural solutions to work-life integration challenges. Although burnout is increasingly recognized to be a system-level problem,[7,18] personal interventions to promote well-being continue to be emphasized as potential solutions for burnout reduction.[5,19-21]

Structural solutions to mitigate work-life integration conflicts include options for formal leave, career sharing, and onsite childcare. Our findings demonstrate that these resources are not commonplace or well advertised, as a significant proportion of respondents were unsure whether these benefits were available. Other structural interventions that may reduce the burden of work-life integration conflicts include extended-hour and drop-in childcare,[22] subsidized childcare for minor illnesses that preclude attendance at school or daycare, flexible vacation time and paid time off,[14] and options for sabbaticals. Although these solutions require financial and time investments by institutions, reduction of burnout facilitates employee retainment and potentially improves productivity, thereby yielding a return on investment.[1]

Limitations

This study has several limitations. One major limitation is the low response rate of 15%, although this is consistent with similar national surveys of physicians.[1,23] The survey length and summer month implementation certainly may have affected the response rate. We attempted to account for nonresponse bias through weighting but are unable to account for the selection bias incurred by personal factors that may have attributed to the lack of response. This study is also limited by lack of differentiation between sex and gender and use of gender as a dichotomous variable, thereby precluding analysis of transgender, nonbinary gender, and other individuals who do not identify as either men or women. Additionally, this study lacks information about caregiving responsibilities besides childcare such as care of elderly parents or loved ones with illnesses or disabilities, which has been reported to affect 16% of physicians who are mothers and shown to be associated with increased burnout.[24] In spite of these limitations, this is one of the largest and most robust survey studies of contemporary US surgeons and lends important insights into gender differences that affect career satisfaction and burnout.

Conclusions

In summary, these data suggest that both professional and personal factors contribute to surgical career satisfaction, and cultivation of a supportive workplace culture may mitigate burnout and promote gender equity in surgery.

ARTICLE INFORMATION

Accepted for Publication: March 15, 2020.

Published Online: June 24, 2020. doi:10.1001/jamasurg.2020.1332

Author Contributions: Drs Irish and Strassle had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.
Concept and design: Johnson, Strassle, Mahoney, Tuttle, Brownstein.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: Johnson, Irish, Brownstein.
Critical revision of the manuscript for important intellectual content: Irish, Strassle, Mahoney, Schroen, Josef, Freischlag, Tuttle, Brownstein.
Statistical analysis: Irish, Strassle.
Obtained funding: Mahoney, Tuttle, Brownstein.
Administrative, technical, or material support: Mahoney, Josef, Tuttle, Brownstein.
Supervision: Strassle, Schroen, Freischlag, Tuttle, Brownstein.

Conflict of Interest Disclosures: Drs Mahoney and Brownstein report payment from American College of Surgeons for survey distribution and weighting during the conduct of the study. No other disclosures were reported.

Funding/Support: The Carolina Survey Research Laboratory (Department of Biostatistics, University of North Carolina at Chapel Hill) received financial assistance from the American College of Surgeons for the survey distribution, data collection, and weighting analysis.

Role of the Funder/Sponsor: The American College of Surgeons had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

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