

# UCSF

## UC San Francisco Previously Published Works

### Title

Evaluation of Culture Conducive to Academic Success by Gender at a Comprehensive Cancer Center.

### Permalink

<https://escholarship.org/uc/item/21m9g63b>

### Journal

The Oncologist, 29(3)

### Authors

Westring, Alyssa

Velazquez, Ana

Bank, Erin

et al.

### Publication Date

2024-03-04

### DOI

10.1093/oncolo/oyad194

Peer reviewed

# Evaluation of Culture Conducive to Academic Success by Gender at a Comprehensive Cancer Center

Bridget P. Keenan,<sup>1,2,†</sup> Amanda Sibley,<sup>1,†</sup> Li Zhang,<sup>1,2,3</sup> Alyssa F. Westring,<sup>4</sup> Ana I. Velazquez,<sup>1,2</sup> Erin M. Bank,<sup>1</sup> Emily K. Bergsland,<sup>1,2</sup> Lauren Boreta,<sup>1,5</sup> Patricia Conroy,<sup>1,6</sup> Mariza Daras,<sup>1,7</sup> Michelle Hermiston,<sup>1,8</sup> Gerald Hsu,<sup>1,2</sup> Pamela L. Paris,<sup>1,9</sup> Sorbarikor Piawah,<sup>1,2</sup> Sumi Sinha,<sup>1,5</sup> Julie A. Sosa,<sup>1,6</sup> Mazie Tsang,<sup>1,2</sup> Alan P. Venook,<sup>1,2</sup>  Melisa Wong,<sup>1,2</sup> Sue S. Yom,<sup>1,5</sup> Katherine Van Loon<sup>\*,1,2,</sup> 

<sup>1</sup>Helen Diller Family Comprehensive Cancer Center, University of California, San Francisco, CA, USA

<sup>2</sup>Division of Hematology/Oncology, Department of Medicine, University of California, San Francisco, CA, USA

<sup>3</sup>Department of Epidemiology and Biostatistics, University of California, San Francisco, CA, USA

<sup>4</sup>Department of Management and Entrepreneurship, Driehaus College of Business, DePaul University, Chicago, IL, USA

<sup>5</sup>Department of Radiation Oncology, University of California, San Francisco, CA, USA

<sup>6</sup>Department of Surgery, University of California, San Francisco, CA, USA

<sup>7</sup>Division of Neuro-Oncology, Department of Neurology, University of California, San Francisco, CA, USA

<sup>8</sup>Division of Pediatric Oncology, Department of Pediatrics, University of California, San Francisco, CA, USA

<sup>9</sup>Department of Urology, University of California, San Francisco, CA, USA

\*Corresponding author: Katherine Van Loon, MD, MPH, Helen Diller Family Comprehensive Cancer Center, University of California, San Francisco, 550, 16th Street, 6th Floor, Box 3211, San Francisco, CA 94143, USA. Email: [katherine.vanloon@ucsf.edu](mailto:katherine.vanloon@ucsf.edu)

†Co-first author.

## Abstract

**Introduction:** The primary objective of this study was to determine whether workplace culture in academic oncology differed by gender, during the COVID-19 pandemic.

**Materials and Methods:** We used the Culture Conducive to Women's Academic Success (CCWAS), a validated survey tool, to investigate the academic climate at an NCI-designated Cancer Center. We adapted the CCWAS to be applicable to people of all genders. The full membership of the Cancer Center was surveyed (total faculty = 429). The questions in each of 4 CCWAS domains (equal access to opportunities, work-life balance, freedom from gender bias, and leadership support) were scored using a 5-point Likert scale. Median score and interquartile ranges for each domain were calculated.

**Results:** A total of 168 respondents (men = 58, women = 106,  $n = 4$  not disclosed) submitted survey responses. The response rate was 39% overall and 70% among women faculty. We found significant differences in perceptions of workplace culture by gender, both in responses to individual questions and in the overall score in the following domains: equal access to opportunities, work-life balance, and leader support, and in the total score for the CCWAS.

**Conclusions:** Our survey is the first of its kind completed during the COVID-19 pandemic at an NCI-designated Cancer Center, in which myriad factors contributed to burnout and workplace challenges. These results point to specific issues that detract from the success of women pursuing careers in academic oncology. Identifying these issues can be used to design and implement solutions to improve workforce culture, mitigate gender bias, and retain faculty.

**Key words:** gender equity; oncologists; health workforce; culture.

## Implications for Practice

We aimed to evaluate whether workplace culture differed by gender in academic oncology during the COVID-19 pandemic. We found significant differences in workplace experience by gender, in all domains (equal access to opportunities, work-life balance, leader support, and freedom from gender bias). Identification of differences in workplace culture experience for women versus men faculty in academic oncology is necessary in order to create equitable strategies for faculty success and to improve the diversity of our leadership pipeline.

## Background

Women are under-represented in the academic oncology workforce in general and even more strikingly in senior leadership positions.<sup>1,2</sup> There are many potential causes of gender disparities in academic oncology, including bias, and harassment, which have downstream effects on retention, recruitment, and representation in leadership.<sup>3</sup> Among both men and women, pre-pandemic rates of burnout ranged from 28% to 38% in different oncology subspecialties (radiation, medical, and surgical oncology) and have been attributed in part to increasing burden of administrative tasks, professional-personal life imbalance, and caring for patients who are critically ill.<sup>4,5</sup>

Alarming data regarding the effects of the pandemic on careers of women in academia are rapidly emerging, many of which have likely been exacerbated by intersectional factors such as race, ethnicity, and/or caregiver status.<sup>6,7</sup> For example, female researchers and those with young dependents saw the greatest reductions in time devoted to research during the COVID-19 pandemic.<sup>8</sup> This translated into a reduction in female authorship of grant submissions and publications contemporaneous with the start of the pandemic, with disproportionate effects on Black women and mothers.<sup>7,9-11</sup> This occurred at the same time that women took on greater service roles for academic journals.<sup>9,12</sup>

According to one 2020 survey of 667 female oncologists, 22% of those working in an academic setting were considering leaving academic oncology in the next 5 years.<sup>13</sup> Among respondents, approximately 40% felt that the largest sacrifice of a career in academic oncology was less time spent with loved ones, and more than half felt that they were less likely than male colleagues to be promoted.<sup>13</sup> However, because this survey was conducted only with female respondents, data are lacking on how the experiences of men and women compared at academic cancer centers during the COVID-19 pandemic.

In 2021, the UCSF Helen Diller Family Comprehensive Cancer Center (HDFCCC) formed a Gender Equity Committee (GEC) in response to emerging data on the exacerbation of gender inequities during the COVID-19 pandemic. The GEC sought to investigate the scope of gender-related workplace issues by assessing the climate for all faculty at HDFCCC.

## Methods

### Study Population

The survey was conducted at an NCI-designated Cancer Center, with 429 associate and full members, spanning a wide range of interdisciplinary research in laboratory, clinical, and population sciences. The survey was initially distributed in an email from the HDFCCC Director on September 13, 2021, followed by a reminder email on September 23, 2021, and advertised in the HDFCCC newsletter. Due to the specific focus of the survey tool on faculty experiences, staff and trainees were excluded from participation. This study was submitted to the UCSF Institutional Review Board and determined to be exempt (IRB Number: 22-36217).

### Data Collection

Given the sensitive nature of the topic, demographic variables were intentionally limited to protect the identities of respondents and to improve response rates. Respondents were asked to self-report on their current gender identity (man,

woman, non-binary/third gender, transwoman, transman, genderqueer, additional category, or prefer not to disclose); their promotion schedule at UCSF (on time, accelerated, or delayed); primary work responsibilities (clinical/patient care, education, research, and/or administration/management); and whether they self-identified as a primary caregiver for children <18 years old (yes or no). Respondents were asked if they self-identified as part of a racial or ethnic group that is under-represented in health professions or medicine (yes or no), according to the NIH definition.<sup>14</sup> Response selections for all demographic questions included an option: "Prefer not to disclose." Respondents were asked to report their primary academic appointment, with the option of 5 oncology-specific Departments or Divisions, prefer not to disclose, or other (with the option to include a write-in response). For the purposes of maintaining respondents' anonymity and enhancing sample size, faculty were not asked to report their current rank.

The Culture Conducive to Women's Academic Success (CCWAS) tool was previously developed and validated to define, measure, and analyze how culture constrains women's career success in academic medicine.<sup>15</sup> The CCWAS consists of 46 questions across 4 distinct domains (Fig. 1): (1) equal access to opportunities, (2) work-life balance, (3) freedom from gender bias, and (4) leadership support.<sup>15</sup>

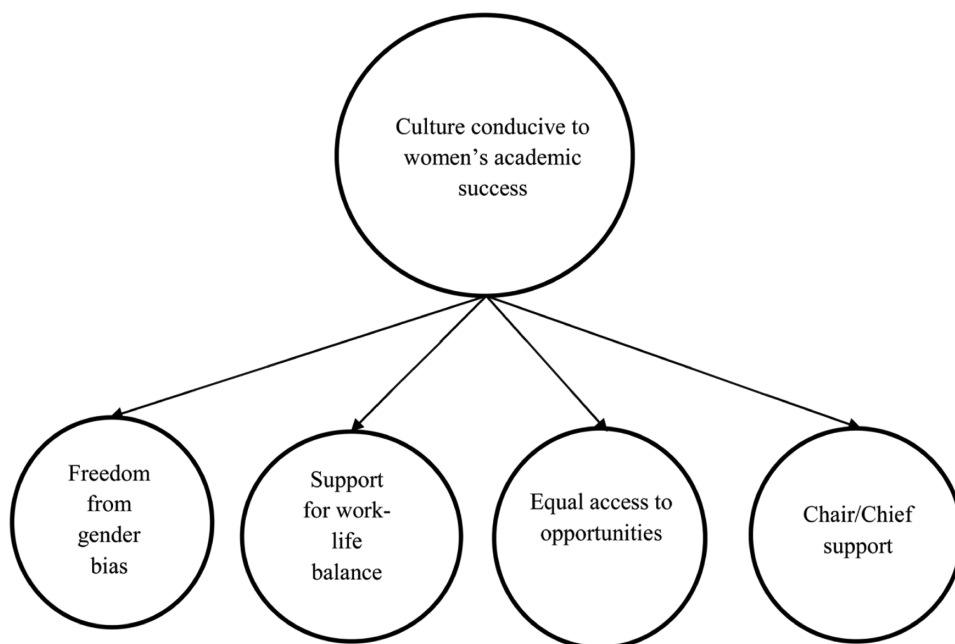
We adapted the original CCWAS tool to be relevant for individuals of all gender identities, making minor modifications only to remove gender specificity from the questions. For example, instead of "Women faculty have equal access to career development opportunities," the modified instrument stated: "I have equal access to career development opportunities." As in the original survey, questions were organized according to the 4 dimensions, and all sections were scored using a 5-point Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*). At the end of each section, a separate question provided an option for respondents to share relevant experiences and comments in free text.

Following the CCWAS tool, 2 additional sections were added to the survey: (1) burnout and (2) bias reporting. With regard to burnout, respondents were asked to rank their level of burnout on a scale of 1-5 based on a non-proprietary single-item burnout measure previously described.<sup>16</sup> The section on reporting included questions adapted from a previous survey, soliciting prior experiences regarding gender bias or harassment at work, reporting, impact, and institutional response.<sup>17</sup> In addition, this section contained open-ended questions asking the respondents about their ability to voice concerns about gender bias and recommendations for policies or directives that should be implemented by institutional leadership to address gender bias.

The survey was administered electronically using the Qualtrics Software Platform. The introduction to the survey offered assurance of anonymity with the following statement: "All responses will be reported anonymously. If any particular demographic category has fewer than 5 responses, data from this subgroup will not be reported but will be analyzed as part of the larger dataset."

### Data Analysis

Responses that were incomplete without any data provided beyond the demographic section ( $n = 13$ ) were removed from the analytic dataset. Descriptive statistics were used to report the demographics of respondents. For CCWAS questions with



**Figure 1.** Four domains of the original Culture Conducive to Women's Academic Success (CCWAS) instrument. Adapted with permission from Wolters Kluwer Health, Inc.: Westring et al.<sup>15</sup> (2012). The Creative Commons license does not apply to this content. Use of the material in any format is prohibited without written permission from the publisher, Wolters Kluwer Health, Inc. Please contact [permissions@lwv.com](mailto:permissions@lwv.com) for further information.

Likert-type scale responses (1-5), Pearson's chi-squared test was used to evaluate for difference in categorical responses between men and women respondents. Median scores and interquartile ranges were calculated for each CCWAS domain and for the total CCWAS score, and Wilcoxon rank sum test was used to compare differences in continuous responses between men and women respondents. For all analyses, a  $P$ -value of  $\leq .05$  was considered statistically significant. No multiple testing adjustment was performed. Statistical analyses were performed by R version 4.0.5.

## Results

### Demographics

A total of 168 respondents completed the survey. Among respondents, 35% identified as men ( $n = 58$ ), 63% identified as women ( $n = 106$ ), and 2% ( $n = 4$ ) did not disclose gender. Using the official faculty membership of HDFCCC as the denominator ( $n = 429$ , 152 women, 231 men, the rest undisclosed/unknown), we calculated an overall response rate of 39%. The response rate was 70% among women faculty and 25% among men faculty. For analyses comparing results according to self-reported gender identity (men vs. women), the 4 respondents who did not disclose their gender were excluded from analyses (resulting sample size = 164).

The demographic characteristics for the 164 respondents who self-identified as men or women are summarized in Table 1. A minority of respondents reported belonging to a racial group that is under-represented in health professions or medicine (8%,  $n = 14$ ); 45% of respondents ( $n = 76$ ) reported being a primary caregiver for someone under 18 years of age. Respondents were able to select more than one primary work responsibility; the most common categories included research (78%,  $n = 131$ ) and clinical/patient care (58%,  $n = 98$ ). The primary appointment for 69 respondents (41%) was reported as "Other or Not disclosed," which

includes responses that were not provided and Divisions and Departments with fewer than 5 responses to protect the anonymity of respondents.

### CCWAS Domains

Median scores and interquartile ranges (IQRs) were calculated for each of the 4 CCWAS domains by faculty gender (Table 2). The overall median total score for the CCWAS was lower for women as compared to men (women: 108.50 [IQR 86.00, 133.25] vs. men: 128.00 [IQR 107.00, 157.75],  $P = .001$ ) (Fig. 2). Within each primary work responsibility category, there were similar trends for the CCWAS total score (as well as scores for each CCWAS domain; Supplementary Table 1). Optional free text responses are summarized in Table 3, according to domain.

Of the 17 questions in the CCWAS domain of *Equal Access to Opportunities*, 7 resulted in statistically significant differences in responses from men and women faculty (Supplementary Table S2, Section A). Women faculty were less likely to report equal access to career development opportunities ( $P < .001$ ), recognition for work productivity ( $P = .003$ ), receipt of feedback ( $P = .005$ ), awards/honors ( $P = .012$ ), equitable pay ( $P < .001$ ), leadership opportunities ( $P < .001$ ), and attention to comments in meetings ( $P < .001$ ), than men faculty. In addition, the median total scores from women faculty respondents were significantly lower than men (Table 2).

The *Work-life Balance* domain also had a lower median overall score for women as compared to men (Table 2). Of the 8 questions in the CCWAS domain of *Work-life Balance*, 3 resulted in statistically significant differences when analyzed by gender (Supplementary Table S2, Section B). Women faculty were more likely to report that a reduction of workload for family reasons results in an expectation to take on extra work upon their return ( $P = .018$ ). Second, women faculty were more likely to report that they are viewed as less committed to their careers by other faculty ( $P = .033$ ). Finally,

**Table 1.** Demographic characteristics of faculty respondents.\*

	No. (%)			P-value
	Man (N = 58)	Woman (N = 106)	Total (N = 168)	
Belong to underrepresented racial group				
Yes	6 (10)	8 (8)	14 (8)	.85
No	52 (90)	94 (89)	149 (89)	
No response	0 (0)	4 (4)	5 (3)	
Primary caregiver for children <18 years				
Yes	22 (38)	53 (50)	76 (45)	.18
No	36 (62)	53 (50)	92 (55)	
Promotion schedule				
On time	25 (43)	66 (62)	93 (55)	.048
Accelerated	19 (33)	19 (18)	39 (23)	
Delayed	5 (9)	9 (8)	15 (9)	
Not yet applicable	8 (14)	9 (8)	17 (10)	
No response	1 (2)	3 (3)	4 (2)	
Primary work responsibilities				
Clinical/patient care- yes	35 (60)	63 (59)	98 (58)	1
Clinical/patient care- no	23 (40)	43 (41)	66 (39)	
Education- yes	16 (28)	40 (38)	56 (33)	.255
Education- no	42 (72)	66 (62)	108 (64)	
Research- yes	47 (81)	84 (79)	131 (78)	.945
Research- no	11 (19)	22 (21)	33 (20)	
Administration/management- yes	21 (36)	31 (29)	53 (32)	.459
Administration/management- no	37 (64)	75 (71)	112 (67)	
No response	0 (0)	1 (1)	1 (1)	
Primary academic appointment				
Division of Pediatric Oncology, Department of Pediatrics	6 (10)	3 (3)	9 (5)	.03
Department of Radiation Oncology	2 (3)	18 (17)	20 (12)	
Division of Hematology/Oncology, Department of Medicine	20 (34)	25 (24)	45 (27)	
Division of Surgical Oncology, Department of Surgery	5 (9)	8 (8)	13 (8)	
Division of Neuro-Oncology, Department of Neurology	3 (5)	5 (5)	8 (5)	
Other/not disclosed	22 (38)	47 (44)	69 (41)	

\*P-value calculation provides a comparison of responses from those who identified as male faculty versus female faculty. Non-responses were excluded from P-value calculations.

women faculty were more likely to report losing out on career opportunities due to having children ( $P = .02$ ).

Of the 13 questions in the CCWAS domain of *Leadership Support* (Supplementary Table S2, Section C), one resulted in a statistically significant difference in responses from men and women respondents. Women faculty were less likely than men faculty to state that their chief or chair encourages faculty to take advantage of institutional policies for managing work and family ( $P = .009$ ). Overall, there was a lower median score in this domain for women as compared to men (Table 2).

Of the 4 questions in the domain of *Freedom from Gender Bias* (Supplementary Table S2, Section D), all 4 resulted in statistically significant differences in responses from women and men respondents, despite no significance difference in median score for this domain (Table 2). Women respondents were less likely to report that faculty feel comfortable raising concerns about the supportiveness of the work environment ( $P = .004$ ), that faculty are encouraged to raise concerns about gender biases ( $P = .004$ ), and that concerns about gender bias

and harassment are handled confidentially and effectively ( $P = .002$ ). Finally, women were more likely to feel that when a faculty member raises concerns about gender bias, the person would be seen as a “whiner” ( $P < .001$ ).

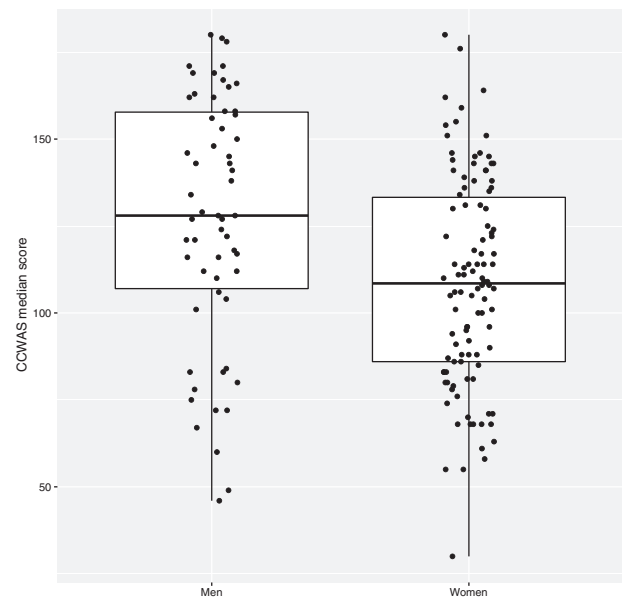
### Experience of Gender Bias

Among all respondents, 32% ( $n = 54$ ) reported a prior experience of gender bias in the workplace. However, there was a difference in responses by gender, with 49% of women ( $n = 52$ ) reporting an experience of gender bias at work, compared with 3% of men ( $n = 2$ ) ( $P = < .001$ ). For those who reported experiencing gender bias, respondents were invited to provide a written response to describe the issue in question; 31 respondents provided write-in responses, mentioning inappropriate behavior from leadership or inappropriate treatment by patients ( $n = 12$ ); gender disparity in compensation, hiring track, research credit, or overall treatment by leadership ( $n = 10$ ); lack of respect and/or leadership opportunities ( $n = 9$ ); and issues related to children or childcare ( $n = 4$ ).

**Table 2.** Wilcoxon rank-sum test results of CCWAS domain scores by gender in each of 4 domains and total combined score.\*

	Equal access		Work-life balance		Freedom from gender bias		Leadership support		Total score	
	Median (IQR)	P-value	Median (IQR)	P-value	Median (IQR)	P-value	Median (IQR)	P-value	Median (IQR)	P-value
Women	37.00 [31.00, 45.00]	<.001	20.00 [15.25, 27.00]	.002	10.00 [6.00, 13.00]	.4	43.00 [30.25, 52.00]	.01	108.50 [86.00, 133.25]	.001
Men	49.00 [42.00, 54.00]		25.00 [19.25, 32.00]		11.50 [0.50, 17.75]		51.00 [39.00, 60.00]		128.00 [107.00, 157.75]	

\*Higher CCWAS scores indicate the respondent perceived the work culture to be favorable.



**Figure 2.** Boxplots demonstrating distributions of CCWAS total combined scores according to gender of respondents. Box limits indicate the range of the central 50% of the data, with a central line marking the median value.

### Burnout

When asked about level of burnout, 44% of respondents ( $n = 61$ ) reported no or mild symptoms of burnout, and 56% ( $n = 79$ ) reported moderate to severe symptoms of burnout (15% of participants [ $n = 24$ ] did not provide a response and were removed from analysis; [Supplementary Table S3, Section A](#)). When analyzed by gender, there was a significant difference between reported burnout from women faculty compared with male faculty. Among women faculty, 66% ( $n = 62$ ) reported a moderate to severe level of burnout, compared with 37% of men ( $n = 17$ ) ( $P = .02$ ) ([Supplementary Table S3, Section B](#)). An analysis of burnout by caregiver status was also performed, and 66% ( $n = 43$ ) of faculty who self-identified as a primary caregiver reported moderate to severe levels of burnout, compared to 47% ( $n = 37$ ) of those who did not self-identify as a primary caregiver ( $P = .03$ ) ([Supplementary Table S3, Section C](#)).

### Discussion

We report a study conducted at an NCI-designated Cancer Center measuring the extent to which work culture is conducive to faculty success. Although this assessment focuses on dimensions of culture which have been established as most directly affecting the success of women faculty, we surveyed all faculty across genders in order to establish a basis for comparison. Analyses of reported experiences among faculty according to gender revealed a significant difference in questions in all 4 domains of the CCWAS and by total median score; differences were most pronounced in the domain of *Equal Access to Opportunities*. This was consistent across a variety of work roles including education, clinical, research, and administration.

Within the domain of *Equal Access to Opportunities*, significant differences were detected in access to career development and leadership opportunities. This finding is consistent with

**Table 3.** Illustrative quotes from free text answers for the 4 CCWAS domains.

CCWAS domain	Free text answer
1. Equal access	<p>“There are many inequities in opportunities given—be it protected time, vacation, advancement opportunities. When this is brought up, I am told ‘it will get better.’ However, I see others getting opportunities, and I feel I am still lacking.”</p> <p>“I constantly have to fight for space for myself and my lab, but at the same time, I am criticized for not growing the lab fast enough.”</p> <p>“I’ve noticed I’m most often asked to take minutes at meetings, which precludes me from participating as much as I would like.”</p> <p>“I have lost traction and opportunities during each pregnancy. People have been reluctant to give me opportunities once they know I’m pregnant, but it can take years to recover from the missed opportunity.”</p> <p>“I am chosen for a lot of leadership work but do not have enough protected time or compensation for these roles.”</p> <p>“Compensation is opaque ... It is also unclear how to negotiate for increases. When asked, I was told from leadership that getting another job offer is the best way to negotiate salary.”</p>
2. Work-life balance	<p>“There is no formal support. A competitive environment favors overwork.”</p> <p>“We are ridiculously overworked, undervalued, and there is no time for the core academic mission.”</p> <p>“The culture is that everyone emails and Zoom calls at all hours of the day/night and on weekends; We are expected to join calls even when we are driving our kids to school or during family dinner time. There are no boundaries that are respected, including when we take vacation. And when we do return, there’s a disgruntled sense that we have to make up the time.”</p> <p>“There should be support in place for faculty who need to take time off, like hiring someone for that temporary amount of time off. That would ensure the faculty stays productive while still taking on family responsibilities, without jeopardizing productivity and promotions.”</p> <p>“It is standard in my division to make up the call you miss on maternity leave.”</p> <p>“I don’t have any children and feel that I am expected to be flexible and able to cover the clinic significantly more often than those who have kids.”</p> <p>“Loss of administrative support has added hours of extra work to my plate each week, taking away from productivity or valuable time with my family.”</p>
3. Supportive leadership	<p>“Our Chair/Chief is making an effort to improve things but is stymied by senior faculty intent on preserving the old-school ways.”</p> <p>“While I think leader support is important and the tone set by the Chair/Chief is influential... I think systemic, structural, and cultural changes are needed to address a lot of these things, it cannot be up to one person.”</p> <p>“There are multiple toxic members in our workplace that the Chair/Chief does not have the power to fire.”</p> <p>“The Chair/Chief has removed leadership opportunities from faculty who have challenging family situations. Rather than working with the faculty members to help figure out how to be supportive, they just categorically decided to remove them and has commented that they doesn’t think they are able to do it, when evidence shows otherwise.”</p>
4. Freedom from gender bias	<p>“I have been yelled at by my department chair in front of my lab members. Have also experienced other faculty belittled because of ethnicity.”</p> <p>“I feel like I can report gender bias, but often that nothing will be done.”</p> <p>“I was attacked verbally, insulted and undermined for being openly gay.”</p> <p>“I have had patients say inappropriate things to me based on my gender.”</p> <p>“When I have had interactions with abusive patients, I routinely receive no support in setting limits, and the manager typically handles the situation by disparaging me to others.”</p> <p>“I received an inappropriate recommendation for promotion into an education rather than a research track.”</p>

prior reports in the literature that women are under-represented in oncology leadership positions.<sup>1</sup> In addition, women respondents were more likely to report that they were not recognized for productivity or substantive contributions in meetings and less likely to receive awards or honors. This is also consistent with previous reports that women in oncology are under-represented in awards from professional societies.<sup>18</sup>

Significant differences were detected in several questions in the *Work-Life Balance* domain, which may reflect that women shoulder a higher burden of extra-professional responsibilities.<sup>19</sup> This study was conducted in late 2021, following a period when many childcare facilities were closed and prior to the COVID-19 vaccine approval for children <12 years,

and therefore at a time when extraprofessional demands were heightened among primary caregivers.<sup>20-22</sup> Burnout was also demonstrated to be higher in those with responsibilities as a primary caregiver. This analysis could not cover all work-life related factors, such as caregiving for elders and other family members and, therefore, may have under-ascertained extra-professional demands.

In the *Freedom from Gender Bias* domain, significant differences in comfort, perceived freedom to raise concerns, and expectations for appropriate handling related to actual experiences of gender bias were all detected. These findings are in contrast with fewer statistically significant differences in the *Leader Support* domain, which may reflect that while leaders

may outwardly espouse values of diversity, equity, and inclusion, the ability of faculty to self-advocate to leaders when concerns arise may in fact be more problematic. Although statistical significance was not achieved in the total score for the *Freedom from Gender Bias* domain, it is noteworthy that the results of each individual question were statistically significant. The failure to detect a statistically significant difference in the total domain score could be related to the small number of questions ( $n = 4$ ), a higher level of missingness for responses in this section, or a reluctance to share experiences of bias despite survey anonymity.

Potential limitations of this study must be acknowledged. First, this study was conducted in the midst of the COVID-19 pandemic, and no prior data from our institution existed for comparison. Thus, it is unknown whether results reflect pre-existing conditions at our institution, or if the results reflect factors related to or exacerbated by the pandemic.<sup>23,24</sup> However, many of the free text answers summarized in Table 3 reflect issues that are not directly related to the pandemic. Second, the majority of respondents were women, with dramatically different response rates by gender (70% vs. 25%), which may reflect a self-selection effect and may bias the results based on those who are impacted negatively by work culture being more likely to respond. High non-response rates from men may reflect, distrust, lack of engagement related to issues of gender equity, and/or reluctance to participate in survey completion since they may not be directly affected by the topic.<sup>25,26</sup> The 2:1 participation of women to men is, however, consistent with previous studies showing that women are generally more likely to respond to surveys<sup>27,28</sup> and are more likely to respond to a survey related to gender. Finally, our analyses were limited by the intentional omission of data on faculty rank from our survey, which could have potentially shed light on the directionality of any association of gender bias with career stage. Due to limited sample size, we did not evaluate associations of race, ethnicity, and sexual orientation; therefore, the intersectional issues at the crossroads of gender and other identities were not addressed in the current study and remain priorities for future inquiry.

These data have potential to inform the development of targeted interventions to reduce inequities in academic oncology. Related to findings from the *Equal Access to Opportunities* domain, we propose development of faculty leadership and coaching programs particularly targeting early and mid-career women faculty, evaluation of composition of leadership positions by gender and race/ethnicity, and adhering to best practices for recruitment/hiring to ensure equity in the selection process.<sup>29-32</sup> Setting term limits for leadership positions is another proposed solution to increasing diverse representation in academic medicine leadership.<sup>33</sup> Based upon findings from the *Work-Life Balance* domain, we recommend that policies for coverage during periods of leave and support to maintain research productivity such as bridge funding opportunities are needed.<sup>34</sup> Moreover, policies about timing of work meetings and after-hours clinical coverage may serve to reduce the burden of work demands after hours and flexible work schedules should be encouraged.<sup>35,36</sup> A “time banking” approach can provide support for extraprofessional tasks and help balance work service demands.<sup>37</sup> In the *Leader Support* domain, we ensured results of this survey were disseminated to pertinent leaders along with resources for training in unconscious bias and allyship.<sup>38</sup> Finally, in

the *Freedom from Gender Bias* domain, we recommend the creation of institutional resources and dissemination of information regarding anonymous reporting and support structures.<sup>39</sup>

Without immediate action to counteract the effects of the COVID-19 pandemic on the workforce in academic medicine, there is risk of undoing previous progress toward gender parity in academic medicine.<sup>40</sup> Understanding specific factors that detract from the success of women and others who are under-represented in medicine is critical to designing and implementing relevant strategies to improve job satisfaction, performance, and retention in the academic oncology workforce. With these findings, we aim to raise attention to the myriad factors contributing to the under-representation of women faculty in cancer-related specialties at an NCI-designated Comprehensive Cancer Center. This survey will potentially serve as an example for other academic centers who desire to understand the workplace culture, as it impacts academic success for its faculty and as a benchmark for longitudinal measurements at our institution to evaluate trends over time. Furthermore, we propose solutions aimed at mitigating differences in workplace culture in each of the domains to improve gender equity in cancer clinical care and research workforce.

## Acknowledgment

We are grateful for support provided by Dr. Alan Ashworth and by the UCSF HDFCCC Office of Diversity, Equity, Inclusion, and Accessibility.

## Funding

The author indicated no financial relationships.

## Conflict of Interest

Michelle Hermiston reported external advisory board member for Sobi. Julie A. Sosa reported institutional research funding from Exelixis and Eli Lilly, Data Monitoring Committee member for the Medullary Thyroid Cancer Consortium Registry supported by Novo Nordisk, AstraZeneca, and Eli Lilly. Alan P. Venook reported scientific advisory board member for Genentech/Roche, GSK, BMS, Exelixis, and Amgen. Melisa Wong reported receipt of royalties from UpToDate, independent contractor for KD Coach LLC, and that an immediate family member is an employee and stockholder of Genentech/Roche. Sue S. Yom reported research funding from Genentech, EMD Serono, and Bristol-Myers Squibb, and honoraria from Elsevier and American Society for Radiation Oncology. Bridget P. Keenan reported consulting fees from Regeneron, research funding from Partner Therapeutics, and travel funding from Roche/Genentech. The other authors indicated no financial relationships.

## Author Contributions

Conception/design: B.P.K., K.V.L. Provision of study material or patients: A.F.W. Collection and/or assembly of data: B.P.K., K.V.L. Data analysis and interpretation: all authors. Manuscript writing: all authors. Final approval of manuscript: all authors.



## Data Availability

The data underlying this article will be shared on reasonable request to the corresponding author.

## Supplementary Material

Supplementary material is available at *The Oncologist* online.

## References

- Chowdhary M, Chowdhary A, Royce TJ, et al. Women's representation in leadership positions in academic medical oncology, radiation oncology, and surgical oncology programs. *JAMA Netw Open*. 2020;3(3):e200708. <https://doi.org/10.1001/jamanetworkopen.2020.0708>.
- Riaz IB, Siddiqi R, Zahid U, et al. Gender differences in faculty rank and leadership positions among hematologists and oncologists in the United States. *JCO Oncol Pract*. 2020;16(6):e507-e516. <https://doi.org/10.1200/OP.19.00255>.
- Subbiah IM, Markham MJ, Graff SL, et al. Incidence, nature, and consequences of oncologists' experiences with sexual harassment. *J Clin Oncol*. 2574;2022;JCO210.
- Shanafelt TD, Gradishar WJ, Kosty M, et al. Burnout and career satisfaction among US oncologists. *J Clin Oncol*. 2014;32(7):678-686. <https://doi.org/10.1200/JCO.2013.51.8480>.
- Shanafelt T, Dyrbye L. Oncologist burnout: causes, consequences, and responses. *J Clin Oncol*. 2012;30(11):1235-1241. <https://doi.org/10.1200/JCO.2011.39.7380>.
- Dahlberg ML, Higginbotham E, eds. *The Impact of COVID-19 on Careers of Women in Academic Sciences, Engineering, and Medicine*. National Academies Press, 2021.
- Roubinov D, Haack LM, Folk JB, et al. Gender differences in National Institutes of Health grant submissions before and during the COVID-19 pandemic. *J Womens Health (Larchmt)*. 2022;31(9):1241-1245. <https://doi.org/10.1089/jwh.2022.0182>.
- Myers KR, Tham WY, Yin Y, et al. Unequal effects of the COVID-19 pandemic on scientists. *Nat Hum Behav*. 2020;4(9):880-883. <https://doi.org/10.1038/s41562-020-0921-y>.
- Andersen JP, Nielsen MW, Simone NL, Lewiss RE, Jagsi R. COVID-19 medical papers have fewer women first authors than expected. *Elife*. 2020;9(e58807).1-7.
- Staniscuaski F, Kmetzsch L, Soletti RC, et al. Gender, race and parenthood impact academic productivity during the COVID-19 pandemic: from survey to action. *Front Psychol*. 2021;12(663252):1-4. <https://doi.org/10.3389/fpsyg.2021.663252>.
- Krukowski RA, Jagsi R, Cardel MI. Academic productivity differences by gender and child age in science, technology, engineering, mathematics, and medicine faculty during the COVID-19 pandemic. *J Womens Health (Larchmt)*. 2021;30(3):341-347. <https://doi.org/10.1089/jwh.2020.8710>.
- Squazzoni F, Bravo G, Grimaldo F, et al. Gender gap in journal submissions and peer review during the first wave of the COVID-19 pandemic. a study on 2329 Elsevier journals. *PLoS One*. 2021;16(10):e0257919. <https://doi.org/10.1371/journal.pone.0257919>.
- Merfeld EC, Blitzer GC, Kuczmarska-Haas A, et al. Women oncologists' perceptions and factors associated with decisions to pursue academic vs nonacademic careers in oncology. *JAMA Netw Open*. 2021;4(12):e2141344. <https://doi.org/10.1001/jamanetworkopen.2021.41344>.
- Division of Biomedical Research Workforce, O.o.E.R., National Institutes of Health. *Notice of NIH's Interest in Diversity (NOT-OD-20-031)*. 2019.
- Westring AF, Speck RM, Sammel MD, et al. A culture conducive to women's academic success: development of a measure. *Acad Med*. 2012;87(11):1622-1631. <https://doi.org/10.1097/ACM.0b013e31826dbfd1>.
- Dolan ED, Mohr D, Lempa M, et al. Using a single item to measure burnout in primary care staff: a psychometric evaluation. *J Gen Intern Med*. 2015;30(5):582-587. <https://doi.org/10.1007/s11606-014-3112-6>.
- Carolan AGK, Han OMB. *Sexual harassment reporting structures in oncology are broken. the cancer letter survey finds*. *Cancer Lett*; 2020;46(37):5-27.
- Patel SR, St Pierre F, Velazquez AI, et al. The matilda effect: under-recognition of women in hematology and oncology awards. *Oncologist*. 2021;26(9):779-786. <https://doi.org/10.1002/onco.13871>.
- Jolly S, Griffith KA, DeCastro R, et al. Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. *Ann Intern Med*. 2014;160(5):344-353. <https://doi.org/10.7326/M13-0974>.
- Sharp EA, Pelletier JH, Friehling E, et al. Gender, parenting status, and the academic productivity of pediatricians during the COVID-19 pandemic. *Hosp Pediatr*. 2022;12(11):e379-e388. <https://doi.org/10.1542/hpeds.2022-006650>.
- Frank E, Zhao Z, Fang Y, et al. Experiences of work-family conflict and mental health symptoms by gender among physician parents during the COVID-19 pandemic. *JAMA Netw Open*. 2021;4(11):e2134315. <https://doi.org/10.1001/jamanetworkopen.2021.34315>.
- Halley MC, Mathews KS, Diamond LC, et al. The intersection of work and home challenges faced by physician mothers during the coronavirus disease 2019 pandemic: a mixed-methods analysis. *J Womens Health (Larchmt)*. 2021;30(4):514-524. <https://doi.org/10.1089/jwh.2020.8964>.
- Woitowich NC, Jain S, Arora VM, Joffe H. COVID-19 threatens progress toward gender equity within academic medicine. *Acad Med*. 2021;96(6):813-816. <https://doi.org/10.1097/ACM.0000000000003782>.
- Ellinas EH, Ark TK, Kaljo K, et al. Winners and losers in academic productivity during the COVID-19 pandemic: is the gender gap widening for faculty? *J Womens Health (Larchmt)*. 2022;31(4):487-494. <https://doi.org/10.1089/jwh.2021.0321>.
- Phillips AW, Reddy S, Durning SJ. Improving response rates and evaluating nonresponse bias in surveys: AMEE Guide No. 102. *Med Teach*. 2016;38(3):217-228. <https://doi.org/10.3109/0142159X.2015.1105945>.
- Groves RM, Singer E, Corning A. Leverage-saliency theory of survey participation: description and an illustration. *Public Opin Q* 2000;64(3):299-308. <https://doi.org/10.1086/317990>.
- Smith W. *Does gender influence online survey participation? A record-linkage analysis of university faculty online survey response behavior*. Online Submission; 2008.
- Curtin R, Presser S, Singer E. The effects of response rate changes on the index of consumer sentiment. *Public Opin Q*. 2000;64(4):413-428. <https://doi.org/10.1086/318638>.
- Harris TB, Jacobs NN, Fuqua CF, et al. Advancing equity in academic medicine through holistic review for faculty recruitment and retention. *Acad Med*. 2022;97(5):631-634. <https://doi.org/10.1097/ACM.0000000000004568>.
- Drake AF, Sollecito WA, Horneffer KE, et al. Building diverse leadership in an academic medical center: the ACCLAIM program. *J Natl Med Assoc*. 2023.
- Fainstad T, Mann A, Suresh K, et al. Effect of a novel online group-coaching program to reduce burnout in female resident physicians: a randomized clinical trial. *JAMA Netw Open*. 2022;5(5):e2210752. <https://doi.org/10.1001/jamanetworkopen.2022.10752>.
- Massick S, King K, Pawlik TM. Practical approaches to foster diversity in surgical faculty recruitment. *JAMA Surg*. 2022;157(11):981-982. <https://doi.org/10.1001/jamasurg.2022.3119>.
- Beeler WH, Mangurian C, Jagsi R. Unplugging the pipeline - a call for term limits in academic medicine. *N Engl J Med*. 2019;381(16):1508-1511. <https://doi.org/10.1056/NEJMp1906832>.
- Szczygiel LA, Jones RD, Drake AF, et al. Insights from an intervention to support early career faculty with extraprofessional

- caregiving responsibilities. *Womens Health Rep (New Rochelle)*. 2021;2(1):355-368. <https://doi.org/10.1089/whr.2021.0018>.
35. Strong EA, De Castro R, Sambuco D, et al. Work-life balance in academic medicine: narratives of physician-researchers and their mentors. *J Gen Intern Med*. 2013;28(12):1596-1603. <https://doi.org/10.1007/s11606-013-2521-2>.
36. Shanafelt TD, Noseworthy JH. Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. *Mayo Clin Proc*. 2017;92(1):129-146. <https://doi.org/10.1016/j.mayocp.2016.10.004>.
37. Fassiotto M, Simard C, Sandborg C, Valantine H, Raymond J. An integrated career coaching and time-banking system promoting flexibility, wellness, and success: a pilot program at stanford university school of medicine. *Acad Med*. 2018;93(6):881-887. <https://doi.org/10.1097/ACM.0000000000002121>.
38. Girod S, Fassiotto M, Grewal D, et al. Reducing implicit gender leadership bias in academic medicine with an educational intervention. *Acad Med*. 2016;91(8):1143-1150. <https://doi.org/10.1097/ACM.0000000000001099>.
39. Binder R, Garcia P, Johnson B, Fuentes-Afflick E. Sexual harassment in medical schools: the challenge of covert retaliation as a barrier to reporting. *Acad Med*. 2018;93(12):1770-1773. <https://doi.org/10.1097/ACM.0000000000002302>.
40. Keenan B, Jagsi R, Van Loon K. Pragmatic solutions to counteract the regressive effects of the COVID-19 pandemic for women in academic oncology. *JAMA Oncol*. 2021;7(6):825-826. <https://doi.org/10.1001/jamaoncol.2020.7681>.