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Organizational Context and Female Faculty's Perception of the Climate for Women in Academic Medicine

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Abstract

Purpose: Gender inequalities in the careers of faculty in academic medicine could partially be attributed to an organizational climate that can exclude or be nonsupportive of women faculty. This study explores the climate for women faculty from a systems perspective at the organizational and individual levels based on the perceptions of women faculty. Race differences were also investigated.

Materials and Methods: Cross-sectional survey data from women faculty ($N = 3127$) at 13 purposively sampled medical schools and an institutional assessment of organizational characteristics were used. Organizational factors related to the climate for women were identified using bivariate statistics. The association between perceived climate for women and organizational characteristics, individual perceptions of the work environment and individual career, and personal characteristics with control variables were investigated using hierarchical linear regression models. Organizational effects by race/ethnicity were estimated using interaction terms.

Results: The climate for women faculty varied across institutions and by classification as minority-serving institutions (MSIs). Respondent's report of existence of an office for women's affairs, trust in leadership, and satisfaction with mentoring were positively associated with the climate for women. Perceived workplace discrimination and work–family conflict were inversely associated with a positive climate. No race/ethnicity differences were observed in the multivariable analysis.

Conclusions: The climate for women faculty in academic medicine should not be regarded constant across organizations, specifically between MSIs and non-MSIs. Efforts to advance a positive climate for women could focus on improving trust in leadership, increasing support for structures/offices for women, and mitigating perceived discrimination and work–family conflict.

Keywords: academic medicine, women faculty, minority serving institutions, organizational climate, intersectionality

Introduction

The climate of an organization is best understood as its personality or the totality of the surroundings as perceived by individuals within the organization.[1,2] The climate is represented by the attributes, feelings, and social processes experienced by people within an organization[3] and is therefore subjective in nature. The organizational climate is frequently cited as a possible reason for gender disparities in faculty careers in academic medicine.[4–6] Gender disparities are reported in career advancement,[4,7] compensation,[7–9] publication productivity, and grant receipt.[10,11] Disparities are not unique to academic medicine as the climate for women in academia has generally been described as chilly, representing the systematic exclusion, devaluation, and marginalization of women faculty in the sciences.[6]

Literature reviews conducted by others[5,6] indicate that studies about the climate for women in academia highlight mostly individual determinants. However, a qualitative national study suggests that the gender climate may vary across

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and within medical schools.[4] One study conducted at a university found that organizational characteristics, such as demographic composition of departments, were related to how women faculty perceived the organizational climate.[5] Another found that departmental culture is pivotal to the success of women's careers.[12] These results underscore the need to examine not only individual factors but also organizational factors that could impact the climate for women in academic medicine.

Medical schools vary along organizational characteristics, including institutional type, for example, minority-serving institutions (MSIs) vs. non-MSIs. MSIs serve a large population of ethnic minority (*e.g.*, black, Hispanic, and/or Native American) students. Examples include Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), and Tribal Colleges. Other institutional characteristics include geographic region, institutional mission, demographic composition of faculty, and availability of faculty supports. Variation also exists among subjective measures of organizational characteristics, that is, how the work environment is perceived, including how leadership is viewed, the sense of collegial support, awareness of organizational supports (*e.g.*, women's affairs office), and perceived discrimination. Studies document gender differences in perceptions of the work environment with women reporting greater perceived discrimination and less collegiality.[13] Organizational characteristics have been related to retention, turnover intentions, organizational commitment, work satisfaction, and performance[14–18] and, given reported gender differences, may be associated with the climate for women.

This article explores the organizational climate for women faculty in academic medicine from a systems perspective by identifying organizational and individual-level factors. We address three research questions: (1) Do women faculty perceptions of the climate for women at their institution vary across different organizational characteristics? (2) How do women faculty's perception of their work environment and their personal and career characteristics relate to their perception of the climate for women in academic medicine considering different organizational contexts and characteristics? (3) Is the effect of organizational characteristics moderated by race/ethnicity?

Materials and Methods

Data

We used cross-sectional data from the Women and Inclusion in Academic Medicine (WIAM) study collected in 2012 at 13 medical schools.[19] Data collection for WIAM is described in detail elsewhere.[19] Organizational data about the medical schools were obtained through an institutional assessment that included a review of school websites, structured interviews, and an online survey completed by institutional representatives.[19] Individual-level data were collected using an online survey that was piloted, refined, and then distributed to faculty.[19] Institutional Review Board approval was given by the Harvard Medical School Committee on Human Subjects.

Sampling

WIAM survey data were collected in 2012 at 13 medical schools, which were purposively sampled to provide a diverse set of key institutional characteristics, including geographic location, public versus private status, faculty size, percentage of women of color faculty (WOC—African American, Hispanic, Native American/Alaskan Native, and Asian American female faculty), MSI status, and research intensity.[19] A list of the participating schools and their characteristics were previously reported.[19,20] Five of the 13 schools were MSIs (3 HBCUs and 2 HSIs). All promotable full and part-time women faculty at clinical and basic departments ($N = 8053$) were invited *via* email to participate in the study. After removing invalid email addresses ($n = 12$), 3127 completed the survey (39% response rate). No material incentives were offered. Table 1 shows that the respondents closely resembled the study population and the national[21] distribution of women faculty by race/ethnicity in 2012.

Table 1. Percent Women Faculty by Race–Ethnicity Nationally (AAMC, 2012) and for the Women and Inclusion in Academic Medicine Study Population and Respondents, 2012

Race–ethnicity	*National Data from AAMC, 2012*[32]	*Study population*[a]	*Study respondents*
Asian	11.91	16.47	10.36
Black	3.74	4.77	3.55
Native American/ Alaskan[b]	0.14	0.18	—
Native Hawaiian/ OPI[b]	0.14	0.09	—
White	51.23	68.08	47.94
Hispanic	3.85	6.23	4.83
Other	0.27	0.55	2.91
Multiple races	1.62	0.11	1.15
Unknown	27.09	3.58	29.26

[a]Data about the demography of institutions were sourced during institutional interviews and are presented here as the sum of the 13 participating medical schools.

[b]The racial categories Native American/Alaskan ($n = 6$) and Native Hawaiian/Other Pacific Islander ($n = 3$) were collapsed into other.

Measures

Dependent variable. Climate for women comprised eight items (Box 1) measured on a five-point Likert scale ranging from never true to always true. Participants were asked to respond to questions about the experience of women in their organization using items adapted from the Harvard Medical School Visiting Clerkship Program evaluation survey. The eight items formed a single factor based on principal factor analysis. The Likert-scale responses on the eight items were reversed and then averaged so that higher scores indicate a positive perception of the climate for women (Cronbach's $\alpha = 0.86$, range = 5).

Independent variables

Organizational characteristics. Medical schools were categorized based on geographic region (North East, Midwest, South, West, and US territory), public versus private, and MSI (yes/no). The presence of a dedicated structure/office for women was assessed in the institutional assessment

Box 1. Survey Measurement Items

Inclusive climate for women

(1) In professional settings, women feel invisible.
(2) In professional settings, women feel isolated.
(3) Women are omitted from key information networks.
(4) Women feel that they must work especially hard to be considered equal in work.
(5) Women are asked or assigned to perform activities because of their gender.
(6) Fatigue from gender issues contributes to professional dissatisfaction.
(7) The relevance of gender in professional settings is not acknowledged.
(8) There are no formal or informal structures to discuss the influence of gender.

Trust in leadership

(1) The leadership in my department is approachable when faculty members have job-related concerns.
(2) The leadership of my department can be trusted.
(3) Performance expectations for faculty are communicated clearly in my department.

Perceived collegiality

(1) Colleagues solicit my opinion about work-related matters of teaching, research, and/or service.
(2) My colleagues in my department value my contributions in teaching, research, and/or service.
(3) My field or area of study is valued by colleagues in my department.

Perceived workplace discrimination

(1) At work, when different opinions would be helpful, how often is your opinion not asked for?
(2) How often do you feel that you are ignored or not taken seriously by others at work?
(3) How often do you feel that you have to work twice as hard as others work?
(4) How often are you watched more closely than others?
(5) How often has a coworker with less experience and fewer qualifications gotten promoted or otherwise rewarded before you?

Work–life conflict with personal life

(1) I often have to forgo personal activities (*e.g.*, school events, community meetings) because of professional responsibilities.

Family caretaking demands conflict with professional life

(1) Over the past 12 months, to what extent has time committed for family caretaking been a barrier to pursuing your own interests in the areas of teaching, research, and/or service in your current medical school/academic medical center?

Satisfaction with mentoring

1) Overall, to what extent are your mentoring needs being met?

with the item, ''Are there ongoing dedicated offices/programs/centers/initiatives for women? (yes/no).'' Other categories included faculty size, percentage women faculty, deans/associate deans and department chairs, and percentage underrepresented minority women (URM—African American, Hispanic, American Indian, other race, or multiple races) and women of color (WOC—URM and Asian) among female faculty.

Individual perception of the work environment. Respondents' *report of the existence of a women's affairs office* was coded based on participants' response to the question, ''At your current medical school/academic medical center, is there an office(s) that focuses on women's affairs? [(1) yes, (2) no, and (3) unsure].'' Perceptions of *trust in leadership* and *collegiality* were measured using adapted scales from the University of Illinois ADVANCE Faculty Work Climate Survey.[22] The three trust in *leadership* items (Box 1) were measured on a five-point Likert response scale and averaged (Cronbach's $\alpha = 0.84$, range = 5).

The three *collegiality* items (Box 1) were measured on a five-point agreement scale with an option for do not know. A binary variable, collegiality unknown, was coded to capture do not know on any one of the three items. The remaining responses were averaged across the three items so that higher average scores indicate greater perceived collegiality (Cronbach's $\alpha = 0.79$, range = 5).

Perceived workplace discrimination was measured using the average of five items adapted from the Perceived Racism Scale[23] and not anchored to a particular type of discrimination (Box 1) (Cronbach's $\alpha = 0.73$, range = 5). Participants were asked to indicate how often they have experienced each situation in the last 12 months on a five-point Likert response scale. A higher averaged score indicates greater perceived discrimination.

Individual career and personal characteristics. The extent to which *work–life conflicted with personal life* was assessed with a single nonvalidated measure on a five-point Likert agreement scale (Box 1). Response categories were collapsed into three groups, that is, agree (1–2), undecided (3), and disagree (4–5). The extent to which *family caretaking demands conflict with professional life* was assessed on a five-point Likert response scale with a single nonvalidated measure (Box 1). We collapsed response categories based on univariate and bivariate variance analyses to represent not at all (1), somewhat (2–3), and to a large extent (4–5). *Satisfaction with mentoring* was measured on a five-point Likert response scale using a single nonvalidated item (Box 1). The response categories were collapsed to not at all (1), somewhat (2–3), and well (4–5).

Race/ethnicity was measured using self-identified race and ethnicity that we coded as non-Hispanic white (reference), non-Hispanic black, non-Hispanic Asian, Hispanic, multiple races, and other/decline to answer. To test interactions, we used a binary code for race/ethnicity where respondents were classified as URMs and nonunderrepresented minorities (non-URMs—non-Hispanic white and Asian).

Control variables were measured as follows: age (≤44 years, 45–55 years, >55 years), past and current childcare responsibilities and care responsibilities for a dependent adult, respectively (yes—within the past 2 years, yes—more than 2 years ago, no), marital/partnership status (yes—married/engaged/in domestic partnership, no—separated/divorced/widowed/single), academic rank (full professor, associate professor, assistant professor, instructor, other), degree type (medical degree alone, doctoral degree alone, medical and doctoral degree, masters or bachelor's degree), and primary academic appointing department (clinical, basic science, other).

Analytical strategy

Missing data on items assumed to be missing at random and with less than 30% missing responses were imputed using multiple imputation procedures[24,25] as described elsewhere.[19] Five imputed datasets were generated and used in multivariable analysis. Point estimates and standard errors were pooled from the five imputed datasets using Rubin's rules.[26]

The sample was described using summary statistics. For organizational characteristics, Kruskal–Wallis H test (equality-of-populations rank test) was used to assess median differences between MSIs and non-MSIs. Normality in the distribution of organizational variables could not be assumed. We compared the respondents at MSIs with those at non-MSIs using Pearson's chi-square test (categorical responses) and two-sided *t*-test of independent samples (continuous variables). We also compared mean ranks between MSIs and non-MSIs using Kruskal–Wallis H test (for three multicategorical individual-level variables derived from ordinal responses).

To answer question 1 regarding organizational characteristics, we used two-sided *t*-test of independent samples, one-way analysis of variance, and Pearson product–moment correlation. Question 2 about perceptions of work environment and personal and career characteristics was investigated using a hierarchical linear model with random intercepts for medical school, where the dependent variable was perceived climate for women and the independent variables were MSI status, actual presence of a structure/office for women, respondents' report of the existence of a women's affairs office, trust in leadership, collegiality, perceived workplace discrimination, work–family conflict, and satisfaction with mentoring. Academic rank, primary appointing department, race/ethnicity, child and dependent adult care responsibilities, and marital/partnership status were controls. For question 3, the effect of organizational characteristics moderated by race/ethnicity, two sets of two-way interactions with *post hoc* tests were estimated to examine race/ethnicity differences in (1) the association between climate and MSI and (2) the association between climate and respondents' report of the existence of an office for women's affairs. All P-values were two-sided, and a minimum significance level of 0.05 was used. We used STATA, version 13.1 (StataCorp, 2013), for the analysis.

For the hierarchical model, individual responses of participants were nested within medical schools to account for significant nonindependence among observations within the 13 medical schools (ICC = 0.02, $p < 0.05$). The hierarchical linear models were estimated with random intercepts for medical schools. Model assumptions, including normality, linearity, and multicollinearity, were assessed.

Results

As shown in Table 2, faculty were predominantly junior at the rank of assistant professor (41%) and white (68%). About 15% were Asian, 7% Hispanic, and 5% black. Overall, most had a medical degree alone (60%), an appointment in a clinical department (85%), a full-time appointment (85%), and a mentor currently (53%). The majority were married/engaged/in domestic partnership (79%) and had childcare responsibilities within the last 2 years (55%). Most were 44 years or younger (48%) and a quarter were foreign-born. A small percentage reported being part of the lesbian, gay, bisexual, and transgender community (4%) or disabled (3%). The majority were from non-MSIs (89%), private institutions (74%), and the North East (53%).

The distribution by rank, degree type, department type, race/ethnicity, age, report of the existence of a women's affairs office, and work–family conflict differed by MSI status (Table 2). Specifically, a smaller percentage of MSI faculty were instructors, and a greater percentage were professors and associate professors. A smaller percent of MSI faculty were in clinical departments or had a combined MD and doctorate. At MSIs, a greater percentage were Hispanic, black, US-born, and in older age cohorts. At non-MSIs, a greater percentage reported more conflict between work and family demands. Kruskal–Wallis H test showed a statistically significant difference between faculty at MSIs and non-MSIs in experience of family responsibilities as a career barrier ($\chi^2(1) = 9.51$, $p = 0.002$) (results not shown).

Faculty size varied from 160 to 11,561 with a median of 1501 in non-MSIs and 254 in MSIs ($\chi^2(1) = 6.94$, $p \leq 0.01$). The median percent WOC ($\chi^2(1) = 6.19$, $p \leq 0.05$) and URM women ($\chi^2(1) = 8.57$, $p \leq 0.05$) was significantly higher at MSIs. The presence of a designated structure/office for women was similar for MSIs (60%) and non-MSIs (63%) (Table 2).

Table 3 shows that on average, faculty reported greater perceived discrimination at MSIs (mean = 2.71, standard deviation [SD] = 0.91) than at non-MSIs (mean = 2.52, SD = 0.86). We found significant differences ($p < 0.001$) in the mean perceived discrimination for non-Hispanic black (mean = 2.96, SD = 0.97) compared with white (mean = 2.48, SD = 0.83) and non-Hispanic Asian faculty (mean = 2.56, SD = 0.90) (results not shown).

Among organizational characteristics, the climate for women varied by MSI status. On average, the climate for women was rated 12 percentage points more positive at MSIs (mean = 3.03, SD = 0.71) than at non-MSIs (mean = 2.91, SD = 0.64). Faculty size was inversely correlated with climate; however, size of faculty, percent women, WOC, and URM faculty, deans/associate deans, and department chairs were all significant, but small (Table 4).

Table 5 shows the results for the all institution hierarchical linear model with random intercepts for schools. Adjusting for all covariates, the perceived climate for women was estimated 3.8 percentage points more positive at MSIs compared with non-MSIs (b = 0.19, $p < 0.01$). Women who reported that there was a women's affairs office rated the climate 3.2 percentage points more positive (b = –0.16, $p = 0.001$) than those who did not. For every unit increase in trust in department leadership, the climate increased by 2.4 percentage points (b = 0.12, $p < 0.001$). Conversely, the perception of the climate decreased by 5 percentage points for every unit increase in perceived discrimination (b = –0.25, $p < 0.001$). Those who sacrificed personal activities because of professional activities in the last 12 months perceived the climate about 2 percentage points less positive than those who did not (b = –0.10, $p < 0.01$). Similarly, the conflict reported between family responsibilities and professional pursuits impacted the climate negatively with a 2.4 percentage point lower rating reported by those who experienced conflict frequently compared with those who did not at all

Table 2. Organizational and Individual-Level Description of the Sample, Overall and by Minority-Serving Institution and Non-Minority-Serving Institution Status, Female Faculty at 13 Academic Medical Schools, 2012

Organizational-level description	*Total* (n = *13*)	*Non-MSI* (n = *8*)	*MSI* (n = *5*)	p
Range in size of faculty	160–11,561	654–11,561	160–986	
Median number total faculty[a]	986	1501	254	≤0.01
Median percentage women faculty[a]	38.38	37.92	44.20	0.1432
Median percentage women of color faculty	29.64	23.88	89.04	≤0.05
Median percentage underrepresented minority women faculty[a]	9.71	6.11	78.10	≤0.05
Median percentage women deans and associate deans[a]	42.85	37.565	50.0	0.2688
Median percentage women departmental chairs[a]	11.54	11.03	14.29	0.3798
Have a designated structure/office for women[b]	8	5	3	0.9310
Individual-level description	*Total*	*Non-MSI* (n = *8*)	*MSI* (n = *5*)	p[b]
Academic rank	*n (%)*	*n (%)*	*n (%)*	
Full Professor	465 (15.27)	384 (14.10)	81 (25.23)	<0.001
Associate Professor	637 (20.92)	552 (20.26)	85 (26.48)	
Assistant Professor	1245 (40.89)	1109 (40.71)	136 (42.37)	
Instructor	698 (22.92)	679 (24.93)	19 (5.92)	
Degree type				
Medical	1822 (59.56)	1638 (59.8)	184 (57.5)	<0.001
Medical and doctorate	202 (6.6)	193 (7.05)	9 (2.81)	
Doctorate	992 (32.43)	881 (32.17)	111 (34.69)	
Masters/bachelors	43 (1.41)	27 (0.99)	16 (5.00)	
Primary appointing department type				
Clinical	2576 (84.71)	2333 (85.68)	243 (76.42)	<0.001
Basic	319 (10.49)	270 (9.92)	49 (15.41)	
Other	146 (4.8)	120 (4.41)	26 (8.18)	
Current and prior mentor status				
Had a mentor in past, but not currently	739 (33.51)	647 (33.16)	92 (36.22)	0.449
Have a mentor currently	1176 (53.33)	1050 (53.82)	126 (49.61)	
No mentor	290 (13.15)	254 (13.02)	36 (14.17)	
Work status				
Full-time work status	2568 (84.45)	2306 (84.78)	262 (81.62)	0.085
Part-time work status	411 (13.52)	356 (13.09)	55 (17.13)	
Other, work status	62 (2.04)	58 (2.13)	4 (1.25)	
Marital/partnership status				
Separated/divorced/widowed/single	462 (20.81)	401 (20.4)	61 (24.02)	0.181
Married/engaged/in domestic partnership	1758 (79.19)	1565 (79.6)	193 (75.98)	
Care responsibilities for dependent child/ren				
Yes, within last 2 years	1225 (55.11)	1093 (55.51)	132 (51.97)	0.229
Yes, more than 2 years ago	364 (16.37)	313 (15.9)	51 (20.08)	
No	634 (28.52)	563 (28.59)	71 (27.95)	
LGBT				
Yes	93 (4.19)	80 (4.07)	13 (5.14)	0.527
No	2095 (94.45)	1857 (94.5)	238 (94.07)	
Decline to answer	30 (1.35)	28 (1.42)	2 (0.79)	
Disability				
Yes	57 (2.56)	48 (2.43)	9 (3.56)	0.512
No	2144 (96.36)	1902 (96.45)	242 (95.65)	
Decline to answer	24 (1.08)	22 (1.12)	2 (0.79)	
Racial–ethnic group				
Hispanic	150 (6.83)	91 (4.68)	59 (23.51)	<0.001
Non-Hispanic Asian	322 (14.66)	300 (15.42)	22 (8.76)	
Non-Hispanic black	111 (5.05)	61 (3.13)	50 (19.92)	
Non-Hispanic white	1489 (67.77)	1384 (71.12)	105 (41.83)	
Multiple races	36 (1.64)	31 (1.59)	5 (1.99)	
Other/decline	89 (4.05)	79 (4.06)	10 (3.98)	
Place of birth				
Foreign-born	559 (25.15)	504 (25.58)	55 (21.74)	0.185
US-born	1664 (74.85)	1466 (74.42)	198 (78.26)	

(*continued*)

Table 2. (Continued)

Individual-level description	*Total*	*Non-MSI* (n = *8*)	*MSI* (n = *5*)	p[b]
Age group, years				
≤44	1047 (47.85)	957 (49.3)	90 (36.44)	<0.001
45–55	612 (27.97)	538 (27.72)	74 (29.96)	
>55	529 (24.18)	446 (22.98)	83 (33.6)	
Faculty report of the existence of a women's affairs office				
Yes	1311 (58.7)	1269 (64.4)	42 (16.2)	≤0.001
No	239 (10.7)	143 (7.3)	96 (36.9)	
Unsure	682 (30.6)	560 (28.4)	122 (46.9)	
Often forgo personal activities because of professional responsibilities				≤0.05
Disagree	682 (27.93)	591 (27.32)	91 (32.62)	
Undecided	131 (5.36)	124 (5.73)	7 (2.51)	
Agree	1629 (66.71)	1448 (66.94)	181 (64.87)	
Family responsibilities conflict with professional pursuits				≤0.01
Not at all	646 (27.04)	553 (26.18)	93 (33.57)	
Somewhat	1181 (49.43)	1046 (49.53)	135 (48.74)	
Large extend	562 (23.52)	513 (24.29)	49 (17.69)	
Mentoring needs met				0.255
Not at all	490 (22.03)	426 (21.65)	64 (25)	
Somewhat	972 (43.55)	857 (43.55)	115 (44.92)	
Well	762 (34.26)	685 (34.81)	77 (30.08)	

Unimputed survey data from the Women and Inclusion in Academic Medicine study (2012). Missing data are excluded from table and analysis and, as a result, totals will vary by variable pairs.

[a]Kruskal–Wallis H test (equality-of-populations rank test) was used to assess median rank differences between MSIs and non-MSIs. Normality in the distribution of the variables could not be assumed.

[b]Pearson s chi-square test was used to test distribution difference in response between MSIs and non-MSIs.

LGBT, lesbian, gay, bisexual, transgender; MSI, minority-serving institution; non-MSI, non-minority serving institution.

(b = −0.12, $p < 0.01$). The effect of mentoring on the climate was positive, with an estimated 2 percentage point difference between those whose needs were very well met and those whose needs were not at all met (b = 0.10, $p = 0.05$). Full professors (b = −0.15, $p = 0.001$) and associate professors (b = −0.10, $p = 0.01$) viewed the climate 3 and 2 percentage points less positive, respectively, than assistant professors.

In the all institution hierarchical model, the interaction between race/ethnicity and MSI status revealed no significant differences in the climate for women by race/ethnicity group within MSIs (b = 0.01, $p = 0.85$) and non-MSIs (b = 0.03, $p = 0.37$). URMs and non-URMs at MSIs perceived the climate 4 and 3.6 percentage points more positive, respectively, compared with peers at non-MSIs (b = 0.20, $p < 0.01$; b = 0.18, $p < 0.05$). Non-URMs who said there is an office for women's affairs perceived the climate 3.2 percentage points more positive than non-URMs who reported an absence of an office (b = 0.16, $p < 0.01$). URM perception of the climate was not moderated by faculty report of the existence of an office for women's affairs. Interactions are not included in the final model presented in Table 5.

Discussion

To our knowledge, this is the first multi-institutional quantitative study using hierarchical modeling to explore organizational characteristics associated with the perceived climate for women faculty in academic medicine. We found differences across the 13 medical schools in the association between women faculty's perception of the climate relative to organizational characteristics, individual perceptions of the work environment, and individual career and personal characteristics. As the number of schools restricted statistical power, we investigated the role of organizational characteristics individually and found MSI status as a significant

Table 3. Average Perception of Workplace Environment Factors by Minority-Serving Institution and Non-Minority-Serving Institution Status, Female Faculty at 13 Academic Medical Schools, 2012

	Total mean (SD)	*Non-MSI mean (SD)*	*MSI mean (SD)*	p
Trust in department leadership[a]	3.38 (1.05)	3.37 (1.04)	3.38 (1.12)	0.97
Collegiality[a]	3.83 (1.15)	3.84 (1.15)	3.76 (1.16)	0.29
Perceived workplace discrimination[a]	2.54 (0.87)	2.52 (0.86)	2.71 (0.91)	<0.001

Using imputed survey data from the Women and Inclusion in Academic Medicine study (2012).

[a]Two-sided *t*-test of independent samples was used to calculate mean difference in responses between MSIs and non-MSIs on a scale with a range of five.

IQR, interquartile range; SD, standard deviation.

Table 4. Perceived Climate for Women by Organizational Characteristics, Female Faculty at 13 Academic Medical Schools, 2012

Organizational characteristic	*Mean (SD)*	p
Institutional type[a]		
Non-MSI ($n_s = 8$, $n_i = 2013$, 89%)	2.91 (0.64)	<0.001
MSI ($n_s = 5$; $n_i = 262$, 11%)	3.03 (0.71)	
Public/private status[a]		
Public ($n_s = 5$; $n_i = 823$, 26%)	2.94 (0.66)	0.26
Private ($n_s = 8$; $n_i = 2304$, 74%)	2.91 (0.64)	
Region[b]		
North East ($n_s = 3$; $n_i = 1646$, 53%)	2.90 (0.63)	0.06
Midwest ($n_s = 2$; $n_i = 310$, 10%)	2.95 (0.63)	
South ($n_s = 3$; $n_i = 371$, 12%)	3.00 (0.68)	
West ($n_s = 4$; $n_i = 746$, 24%)	2.93 (0.66)	
US territory ($n_s = 1$; $n_i = 54$, 2%)	2.89 (0.77)	
Institution has an organizational structure/office for women[a]		
Yes ($n_s = 8$; $n_i = 2{,}611$, 83.5%)	2.90 (0.03)	0.16
No ($n_s = 5$; $n_i = 516$, 16.5%)	2.95 (0.03)	
	Correlation coefficient[c]	
Faculty demographics		
Total faculty	–0.01	≤0.05
Percentage women faculty	0.03	≤0.05
Percentage URM women faculty	0.03	≤0.05
Percentage WOC women faculty	0.02	≤0.05
Leadership demographics		
Percentage women deans and associate deans	0.05	≤0.05
Percentage women chairs	0.03	≤0.05

Imputed survey data from the Women and Inclusion in Academic Medicine study (2012).
[a]Two-sided *t*-test of independent samples was used to calculate mean differences in responses.
[b]Results are based on one-way ANOVA.
[c]Pearson's product–moment correlation between perceived climate for women and each of the demographic variables was used.
ANOVA, analysis of variance; n_i, number of individuals; n_s, number of schools.

predictor of perceived climate for women and a demarcation that captured key organizational characteristics that relate to the climate.

The observed differences in perception of climate between women faculty at MSIs versus non-MSIs may be partially attributable to institutional differences related to diversity, equity, and social justice. The MSIs in our study had a long tradition of serving minority communities and had a higher percentage of women in leadership, WOC, and URM women faculty. Social justice is salient for academic medicine faculty, particularly those from marginalized populations.[27,28] Three of the study MSIs versus none of the non-MSIs ranked among the top 20 of 141 medical schools in social mission score.[29] A congruence of norms and values centered on social justice between faculty at MSIs and their institutions may contribute to women faculty's sense of fit with the organization. Positive person–organization fit[30] could impact how the climate is perceived in the same way that it relates to positive work attitudes.[31] Investigation, through multi-organizational and case-based studies, about the climate at MSIs may yield important lessons and offer strategies to improve the climate for women elsewhere.

This study documents the relative importance of faculty's report of the existence of an office for women's affairs compared with the actual presence of an organizational structure/office for women at their medical school. Five of the thirteen schools did not have a structure/office; however, many faculty perceived that a structure/office existed whether this was consistent with institutional reality. When women faculty report the existence of an office for women's affairs, they might assume that their institution has put a structure that is responsive to women's issues in place. This impression, in turn, may lead to a more positive perception of the climate for women. Literature describes this as organizational signaling, employees ascribing less observable organizational characteristics (*e.g.*, commitment to gender equity) to an organization based on perceived signals—whether real or not.[32] Support for signaling theory is found in research on work–life benefits, where employees react positively to work–life benefits even if they do not use it themselves.[33] Among those faculty who reported the existence of an office for women's affairs, most ($n = 440/801$, 55%) had never sought assistance from or participated in activities or programs sponsored by the office for women's affairs, compared with 5% that frequently (often or very often) accessed the office.

A dichotomy of office/no office may not adequately capture the variance in the nature, functions, and programs of offices for women.[22,34,35] The WIAM institutional assessment found that structure/offices for women varied greatly in mission/goal, internal support, external funding, colocation in administrative building, age of office, and programs offered.[36] Qualitative studies will be useful in understanding the functions of these structure/offices for women in advancing a positive climate for women in academic medicine. To actively signal that institutions consider women's affairs

Table 5. The Association Between Perceived Climate for Women and Organizational Context, Perceptions of the Workplace and Career, and Personal Characteristics, Female Faculty at 13 Academic Medical Schools, 2012

	Coefficient	*Standard error*	p
Institutional classification			
Non-MSI	Ref		
MSI	0.19	0.06	0.003
Institution has an organizational structure/office for women			
Yes	Ref		
No	−0.08	0.05	0.109
Faculty report of the existence of women's affairs office			
Yes	Ref		
No	−0.16	0.05	0.001
Unsure	−0.05	0.03	0.07
Trust in department leadership	0.12	0.02	0.000
Collegiality	0.03	0.02	0.26
Collegial support—unknown	0.06	0.10	0.56
Perceived workplace discrimination	−0.25	0.02	0.000
Mentoring needs met			
Not at all		Ref	
Somewhat	0.01	0.04	0.82
Well	0.04	0.05	0.44
Very well	0.10	0.05	0.05
Often forgo personal activities because of professional responsibilities			
Disagree		Ref	
Undecided	−0.08	0.07	0.270
Agree	−0.10	0.03	0.003
Family responsibilities conflict with professional pursuits			
Not at all		Ref	
Somewhat	−0.03	0.03	0.36
To a large extent	−0.12	0.04	0.003
Race–ethnicity			
Non-Hispanic white		Ref	
Non-Hispanic black	−0.01	0.07	0.85
Hispanic	−0.03	0.05	0.58
Non-Hispanic Asian	−0.01	0.03	0.81
Other/multiple/decline	−0.05	0.05	0.35
Academic rank			
Full Professor	−0.15	0.04	0.001
Associate Professor	−0.10	0.03	0.011
Assistant Professor		Ref	
Instructor	0.02	0.04	0.559
Other	−0.05	0.14	0.718
Age group			
Age ≤44		Ref	
Age >44–≤54	−0.01	0.03	0.68
Age >54	−0.01	0.04	0.86
Primary appointing department			
Clinical		Ref	
Basic	0.004	0.05	0.932
Other	−0.07	0.06	0.248
Current/past care responsibilities for dependent child/ren			
Yes, within past 2 years		Ref	
Yes, more than 2 years ago	0.05	0.04	0.124
No	0.03	0.03	0.322
Current/past care responsibilities for dependent adult(s)			
No		Ref	
Yes, within past 2 years	−0.01	0.06	0.934
Yes, more than 2 years ago	0.00	0.03	0.933
Married/domestic partner	0.01	0.04	0.795
Constant	3.26	0.14	0.000

Based on imputed survey data from the Women and Inclusion in Academic Medicine study (2012).

important, medical school leaders, including departmental leaders, should consider providing and promoting visible services that are valued and used by women faculty.

Departmental leadership mattered and the importance of trust in leadership as it relates to the climate for women is consistent with other studies that found that trust in leadership is an organizational predictor of employee well-being, job satisfaction, and performance in general, as well as a predictor of attrition from academic medicine.[37,38] Accessible trusted leaders who use transparent communication may be instrumental in making women faculty (and perhaps all faculty) feel more included, thereby improving the climate. Training leaders about social capital and network development has been found most effective for enhancing trusting relationships between leaders and team members.[39] Medical school and professional association leadership development programs should incorporate boundary spanning[40] training as a vehicle for building trust in leadership.

Perceived work discrimination emerged as important and was negatively associated with gender climate. The prevalence of discrimination reported by minority faculty in academic medicine[13,28] may be indicative of norms, values, and behaviors within an organization that undermine the productivity, job satisfaction, and mental and physical health of faculty.[41,42] Perceived workplace discrimination was higher in MSIs, which may reflect perceived discrimination based on multiple factors, including race/ethnicity, and gender, among others. This is illustrative of the interdependence between personal experiences and the organizational climate.[43]

Faculty reports of discrimination should be regularly assessed and addressed promptly. Assessment could be accomplished through faculty surveys, focus groups, and interviews; however, these actions alone are insufficient. Institutional leaders, diversity and faculty affairs offices, and faculty mentors and colleagues should be mindful that discrimination exists and take action that mitigates occurrences and their impacts. Interventions to limit and prevent discrimination should be actively pursued through implicit bias,[44] gender bias and habit changing training,[45] and/or cultural sensitivity/competency[46] training.

The extent to which women faculty felt their mentoring needs were met also colored their perception of the climate for women. This underscores the importance of developing effective mentoring programs that include mentor and mentee training, clarity of expectations, and monitoring of outcomes.

The relationship between the higher levels of work–family conflict and climate for women suggests that the culture in academic medicine may hinder a positive climate for women. The absence and/or underutilization of support[47] (*i.e.*, on-campus child care) may explain some, but not all, of the persistent work–family conflict women experience.[48–50] In this analysis, we did not investigate this issue. Adopting a culture that acknowledges and supports the strengths of employees based on their varied interests, roles, and identities[51,52] could alleviate the negative effects of work–family conflict. While policies that address this conflict may exist, broad-based and unambiguous support for the utilization of these policies is essential. For example, mentors, role models, and supervisors were found to be essential in implementing policies that support woman faculty managing work–life conflict.[53]

We explored whether women from different race/ethnic groups viewed the climate for women differently. Although we did not see any race/ethnicity differences, our results should not divert attention from the literature documenting the double jeopardy[54] that women of color face in the academy.

Our measure of perceived climate for women was inclusive of all women in the organization. The climate measure had an organizational referent (group experiences within the organization) and therefore faculty were not asked about their individual experience, but rather how they perceived the experiences of all women. An individual referent (assessing personal experience) may have revealed race/ethnicity differences. We recommend that future studies investigate measures using individual and organizational referents.

Limitations

The study's reliance on self-reported data for variables may have introduced common method bias. The reliance on cross-sectional data and exploratory design limited causal inference and thus our recommendations should be considered preliminary. Although the sample closely resembled the study population and national demographic data, lack of data about nonrespondents prevented us from estimating any potential nonrespondent bias. The study focused solely on women, therefore limiting comparison to how faculty from other genders viewed the climate for women, recommendations may therefore not be gender specific or unique to women. The limited number of medical schools prevents further investigation of why the climate varied across organizational factors. Qualitative and/or larger cross-institutional studies are required to investigate further. We included possible confounders (factors where the MSI and non-MSI samples differed), but there remain possible unmeasured confounding. Measures of career and personal characteristics were not previously validated. The variance inflation factor, a marker for potential multicollinearity, was higher for actual presence of an office and workplace discrimination compared with other variables. Although multicollinearity affects the precision of our estimate for these variables, it does not impact the overall model fit. Less than ten respondents identified as American Indian or Alaskan Native and Native Hawaiian, limiting analysis by these racial groups.

Conclusion

To better understand the climate for women faculty in academic medicine, we investigated women faculty perceptions of the climate from a systems perspective, which focuses simultaneously on organizational and individual determinants. Our results across multiple institutions provide support for this approach. We conclude that advancing a positive climate in academic medicine should be extended beyond interventions aimed at developing and/or supporting women faculty to organizational-level learning and transformation.

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Ethical Approval

Ethical approval was provided by the Harvard University Faculty of Medicine Committee on Human Studies (CHS Study No. M19492-106).

Author Disclosure Statement

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