

# The Experience of Minority Faculty Who Are Underrepresented in Medicine, at 26 Representative U.S. Medical Schools

Linda H. Pololi, MD, Arthur T. Evans, MD, MPH, Brian K. Gibbs, PhD, MPA, Edward Krupat, PhD, Robert T. Brennan, EdD, and Janet T. Civian, EdD

## Abstract

### Purpose

A diverse medical school faculty is critical to preparing physicians to provide quality care to an increasingly diverse nation. The authors sought to compare experiences of underrepresented in medicine minority (URMM) faculty with those of non-URMM faculty in a nationally representative sample of medical schools.

### Method

In 2007–2009, the authors surveyed a stratified random sample of 4,578 MD and PhD full-time faculty from 26 U.S. medical schools. Multiple regression models were used to test for differences between URMM and other faculty on 12

dimensions of academic culture. Weights were used to adjust for oversampling of URMM and female faculty.

### Results

The response rate was 52%, or 2,381 faculty. The analytic sample was 2,218 faculty: 512 (23%) were URMM, and 1,172 (53%) were female, mean age 49 years. Compared with non-URMM faculty, URMM faculty endorsed higher leadership aspirations but reported lower perceptions of relationships/inclusion, gave their institutions lower scores on URMM equity and institutional efforts to improve diversity, and more frequently engaged in disparities research. Twenty-two percent (115) had experienced racial/

ethnic discrimination. For both values alignment and institutional change for diversity, URMM faculty at two institutions with high proportions (over 50%) of URMM faculty rated these characteristics significantly higher than their counterparts at traditional institutions.

### Conclusions

Encouragingly, for most aspects of academic medicine, the experiences of URMM and non-URMM faculty are similar, but the differences raise important concerns. The combination of higher leadership aspirations with lower feelings of inclusion and relationships might lead to discouragement with academic medicine.

The night is beautiful,  
So the faces of my people. . .  
Beautiful, also, are the souls of my people.  
—Langston Hughes, "My People," 1923

It is commonly accepted that it is essential to attract and support diversity in medical school faculty.<sup>1</sup> Inclusion of underrepresented in medicine minority (URMM) faculty in medical schools helps all faculty and physicians-in-training to achieve awareness and appreciation of cultural differences among racial and ethnic groups, promotes more effective health care delivery to an increasingly diverse patient population, improves the quality of medical education, and stimulates research that is inclusive of the needs and concerns of underserved

groups. URMM faculty bring knowledge and experience of different backgrounds and world views to medical schools, and can serve as important role models and mentors to students and residents.

Despite these compelling reasons to draw on the perspectives and contributions of a diverse faculty, there is a disturbing lack of URMM faculty in U.S. medical schools and a paucity in leadership and senior roles. Caucasians are disproportionately the largest group among medical school faculty. Between 1981 and 2001, the number of URMM U.S. medical school faculty increased from 1,140 to 4,060, which still represented only 4.2% of total faculty.<sup>1</sup> Currently, faculty from underrepresented minority groups constitute 7% of all medical school faculty (approximately 130,000 full-time faculty nationally) and fewer than 5% of all newly hired academic faculty.<sup>2</sup> This representation is far below the demographics of minority group members in the United States, where, as of 2010, African Americans make up 12.6% of the population and Hispanic/Latino Americans make up 16.3%.<sup>3</sup> Approximately 54% of URMM faculty

are assistant professors compared with 26% of white faculty.<sup>4</sup>

## Introduction

### Prior research on the experience of URMM faculty

In prior studies at academic medical settings, URMM faculty compared with white faculty were less likely to be satisfied with their careers, had greater debt burdens, and spent more time on clinical activities and less time on research.<sup>5</sup> Ethnic minority members reported harassment, bias, and discrimination by their colleagues in academic settings, and this experience of bias was linked to their decreased career satisfaction.<sup>6</sup> Studies have also shown that racial/ethnic minority faculty were promoted at lower rates than their white counterparts.<sup>7,8</sup>

A qualitative study of 32 tenure-track faculty members of different ethnicities at a single institution found that visible dimensions of race/ethnicity, gender, and foreign-born status often provoked bias and resulted in cumulative advantages or disadvantages in the workplace that

Please see the end of this article for information about the authors.

Correspondence should be addressed to Dr. Pololi, National Initiative on Gender, Culture and Leadership in Medicine: C - Change, Brandeis University, 415 South St., Mailstop 079, Waltham, MA 02454-9110; telephone: (781) 736-8120; fax: (781) 736-8117; e-mail: lpololi@brandeis.edu.

Acad Med. 2013;88:1308–1314.

First published online July 24, 2013

doi: 10.1097/ACM.0b013e31829eefff

affected faculty recruitment, promotion, and retention.<sup>9</sup> A follow-up survey study at the same institution found relatively negative perceptions of the institution's diversity climate for most physician faculty, with URMM faculty having worse perceptions of the climate.<sup>10</sup>

The National Initiative on Gender, Culture, and Leadership in Medicine, known as C - Change (for culture-change), seeks to change the culture of academic medicine through influencing its values, norms, and actions. In prior C - Change studies across five medical schools we analyzed in-depth faculty interviews. We found that URMM faculty experienced feeling isolated and outside the mainstream, which resulted from a combination of barriers to communication and relationship formation with nonminority faculty and scarcity of people of color among the faculty. As well, respondents reported a lack of role models. Lack of family instrumental support, social capital, and education-related debt added to the burden of attempting to function successfully in academic medical careers. URMM faculty reported experiencing disrespect, discrimination and racism, and a devaluing of their professional interests in community service and minority health disparities.<sup>11</sup> The "tokenism" and "window dressing" URMM faculty described implied a lack of authenticity among institutional leaders in efforts to include URMM faculty. Additional issues were the burden of having to represent one's entire race, and having people assume that, as a person of color, one's achievements were attributable to special favors rather than due to one's own merits.<sup>11</sup>

### Study rationale

The study we report here aimed to better understand the impact of institutional culture on URMM and optimal engagement of URMM faculty through quantitatively surveying URMM and nonminority faculty at 26 nationally representative medical schools.

A prior C - Change quantitative study has shown that the culture in academic health centers determines faculty vitality and attrition,<sup>12</sup> and therefore it is essential to measure the culture as perceived by URMM faculty. Although perceptions of inequity have been documented, in

this report we additionally investigate other dimensions of culture such as values alignment, ethical/moral distress, perception of gender equity, work-life integration, relationships/inclusion, and leadership aspirations, which to our knowledge have not been published for URMM in academic medicine.

### Method

In-depth treatment of our study methods has been previously published.<sup>12</sup>

#### Instrument development

We derived the domains and items of our survey questions in large part from themes identified in previous C - Change studies<sup>11,13-17</sup> in conjunction with a literature search and reviews of relevant instruments.<sup>18-23</sup> We created a 74-item survey related to advancement, engagement, relationships, feelings about their workplace, diversity and equity, leadership, institutional values and practices, and work-life integration. Items used five-point Likert scales (range: 1 = strongly disagree to 5 = strongly agree). We obtained human subject institutional approvals from Brandeis University, Boston University, and the Association of American Medical Colleges (AAMC).

#### Sampling procedures

**Selecting schools.** Five schools in the sample were part of the C - Change consortium, originally selected to vary by region and public-private status. Then, from the AAMC list of all U.S. medical schools, we created a stratified random sample of an additional 21 medical schools to ensure that the 26 schools together spanned all important types (purposefully including in the 21 schools one small and one historically black school), and achieved a distribution similar to the overall proportion of AAMC schools by geographic region and public/private sector. Institutions where the majority of the faculty were from URMM groups were termed "high URMM faculty institutions" (HUFU). Other schools were termed "traditional" schools. We compared data from the five C - Change schools with those of the 21 from the stratified random sample. We found no significant differences in respondents' perceptions on 11 of 12 scales that were developed to measure attributes of the work culture, and all demographic characteristics of the faculty were alike.

**Sampling faculty within schools.** The AAMC provided names and demographic characteristics of full-time faculty at each school (PhD, EdD, and MD), and deans provided e-mail addresses. For sampling, each faculty member was categorized by sex, age (under 39 years of age, 39-47 years, and 48 years and older), URMM status (yes or no), and surgical specialty (yes or no). We selected 25 faculty from each of six sex-by-age categories for a base sample of 150 per school. URMM faculty (American Indian or Alaska Native, black or African American, Hispanic/Latino, Native Hawaiian or other Pacific Islander) and female surgeons were added to the base sample to ensure adequate numbers for analysis. Weights were employed in the analyses to adjust for this oversampling.

#### Survey administration

The selection process resulted in a list of 4,578 faculty. We administered the survey electronically with reminders at two- to three-week intervals and eventual follow-up with phone contact and a hard copy mailing. The survey was distributed as schools were recruited in waves from 2007 through early 2009.

#### Analytic overview

We constructed weights based on sex, age, and URMM characteristics of the 2008 AAMC all-school faculty population to be able to generalize our findings to the national population of academic faculty. To address missing values, 10 multiply imputed data sets were estimated using IVEware 2002 (Survey Research Center, Institute for Social Research, University of Michigan).<sup>24</sup> Under certain assumptions (generally referred to as data missing at random), multiple imputation yields unbiased point estimates and confidence intervals and is superior to complete case analysis (listwise deletion) under most circumstances.<sup>25</sup> IVEware uses chained equations with a Markov chain Monte Carlo method. We undertook imputation of missing scores on dimensions of the culture scales using nonmissing scale scores, demographic items, and all nonmissing scale items from all scales.

To determine the conceptual structure underlying faculty responses, we subjected 46 items related to institutional culture to a factor analysis using SAS/STAT Version 8.2. 2004 (SAS Institute, Cary, North Carolina). First, we examined unrotated principal

Table 1

**Definitions and Estimated Statistical Characteristics (Unadjusted) of Dimensions of the Culture Scales for Study Sample Overall and by Underrepresented Minority in Medicine (URMM) Faculty Status, From a Multi-Institutional Analysis of Faculty Experiences, 2007–2009\***

Dimensions of the culture scale and description	No. of items	Cronbach's $\alpha$	Grand mean <sup>†</sup>	Mean for non-URMM <sup>†</sup>	Mean for URMM <sup>†</sup>
<b>Engagement:</b> being energized by work <sup>‡</sup>	5	.84	3.91	3.91	3.94
<b>Self-efficacy in career:</b> confidence in ability to advance in career <sup>‡</sup>	4	.82	3.65	3.64	3.70
<b>Institutional support:</b> perception of institutional commitment to faculty advancement <sup>‡</sup>	7	.90	3.26	3.26	3.25
<b>Relationships/inclusion:</b> faculty feelings of trust, inclusion and connection <sup>‡</sup>	6	.84	3.57	3.58	3.44
<b>Values alignment:</b> alignment of faculty personal values and observed institutional values <sup>‡</sup>	9	.85	3.24	3.23	3.32
<b>Ethical/moral distress:</b> feeling ethical or moral distress and being adversely changed by the culture <sup>‡</sup>	8	.78	2.35	2.34	2.41
<b>Leadership aspirations:</b> aspiring to be a leader in academic medicine <sup>‡</sup>	2	.66	3.99	3.97	4.18
<b>Gender equity:</b> perceptions of equity for women faculty	4	.83	3.58	3.59	3.53
<b>URMM equity:</b> perceptions of equity for URMM faculty	5	.87	3.80	3.84	3.51
<b>Work-life integration:</b> institutional support for managing work and personal responsibilities	4	.76	3.30	3.30	3.29
<b>Institutional change efforts for diversity:</b> good faith effort by institution to advance women and URMM faculty	3	.86	3.64	3.66	3.48
<b>Institutional change efforts for faculty support:</b> good faith effort by institution to improve support for faculty	6	.87	3.00	3.00	3.05

\*Responses from 2,218 full-time faculty at 26 representative U.S. medical schools about their organizational culture were used for this analysis. To determine the conceptual structure underlying survey responses, the authors subjected 46 items related to institutional culture to a factor analysis. Factor analysis with equamax rotation and semantic review guided development of seven of the scales shown in this table, and five were content derived.<sup>12</sup> Cronbach  $\alpha$  reliability coefficients were estimated to assess the internal consistency of each scale.

<sup>†</sup>Weighted means estimated on the analysis sample of 2,218 respondents based on 10 multiply imputed data sets.

<sup>‡</sup>Indicates factors identified by equamax rotation and semantic review.

component loadings showing the linear consistency among all items, retaining items with unrotated factor loadings  $\geq .40$ .<sup>26</sup> Then we used an equamax rotation to identify distinct factors, or subdimensions, of institutional culture. The research team used these in conjunction with semantic review of the items to guide final development of seven scales. We subjected the remaining survey items to expert review of their wording, and five additional constructs were identified. Negatively stated individual questions were reverse-coded, responses summed, and scores divided by the number of items in each scale in order to allow each scale to be interpreted in terms of the original five-point Likert scale. Cronbach  $\alpha$  reliability coefficients were estimated to assess the internal consistency of each scale (see Table 1 for a list of the scales, their properties, and descriptive statistics).

Regression models were estimated to understand the unique contribution of URMM status as a predictor of each dimension of the culture while including

these other demographic characteristics in our models: sex, age, rank, primary role (clinician, researcher, administrator, or educator), and school type (HUFI versus traditional). We used a cluster variable ("school") to accommodate the nested nature of the data and used IVEware to accommodate the 10 imputed datasets. Main effects of the demographic variables were estimated first, followed by interaction effects with URMM status when a demographic predictor was found to be statistically significant ( $P \leq .05$ ).

## Results

Of the 4,578 faculty invited to participate, 2,381 responded for a response rate of 52%. Response rates for URMM and non-URMM faculty were comparable. We excluded from the analytic sample faculty who reported their rank as anything other than assistant, associate, or full professor, for a final study sample of 2,218. The overall rate of missing data for items within the dimensions of the culture scales was 18.5%. This

was primarily attributable to items that solicited opinions on school policies or actions, where we assume respondents did not feel qualified to comment.

Table 2 describes the respondent sample. Among the 2,218 respondents, 512 (23%) were URMM faculty. The mean age was 49 years, more than a third (912) were assistant professors, and half (1,083) reported their primary role as clinician. Only 7% (159) of respondents worked in HUFI schools.

## Comparison of URMM and non-URMM faculty across all schools

Table 1 shows that the two-item leadership aspiration scale had modest internal consistency ( $\alpha = .66$ ), and the culture scales have very acceptable reliability for research purposes (range,  $\alpha = .78$ – $.90$ ). Table 2 shows the means on each scale for URMM and other faculty; however, because of differences in demographics of the samples, the differences are only tested in the context of the multiple regression models.

Table 2

**Unweighted and Weighted Demographic Characteristics of Respondent Sample Overall and by Underrepresented Minority in Medicine (URMM) Faculty Status, From a Multi-Institutional Analysis of Faculty Experiences, 2007–2009\***

Characteristic	Overall Sample		Non-URMM		URMM	
	No. (U%) (W%) <sup>†</sup>	U/W mean <sup>‡</sup>	No. (U%) (W%) <sup>†</sup>	U/W mean <sup>‡</sup>	No. (U%) (W%) <sup>†</sup>	U/W mean <sup>‡</sup>
<b>Female</b>	1,172 (53)(35)	—	930 (54)(34)	—	242 (47)(40)	—
<b>URMM status</b>	512 (23)(10)	—	—	—	—	—
<b>Age in years</b>		49/49		49/49		48/48
<b>Rank</b>						
Assistant professor	912 (41)(39)	—	684 (40)(38)	—	228 (45)(42)	—
Associate professor	680 (31)(31)	—	534 (31)(32)	—	146 (28)(27)	—
Full professor	626 (28)(30)	—	488 (29)(30)	—	138 (27)(26)	—
<b>Role</b>						
Clinician	1,083 (49)(50)	—	843 (49)(50)	—	240 (47)(48)	—
Research	696 (31)(31)	—	544 (32)(31)	—	152 (30)(30)	—
Administrator	220 (10)(9)	—	153 (9)(9)	—	67 (13)(13)	—
Educator	219 (10)(9)	—	166 (10)(10)	—	53 (10)(9)	—
<b>HUFI institution<sup>§</sup></b>	159 (7)(4)	—	34 (2)(2)	—	125 (24)(22)	—

\*Responses from 2,218 full-time faculty at 26 representative U.S. medical schools about their organizational culture were used for this analysis. Unless otherwise indicated, variables were coded 1 if the attribute is present and 0 if not. (Coding not shown.)

<sup>†</sup>(U%) refers to the unweighted percent in the study sample and (W%) to the weighted percent.

<sup>‡</sup>U refers to the unweighted mean in the study sample and W to the weighted mean.

<sup>§</sup>HUFI = high URMM faculty institutions, which are institutions where more than 50% of the faculty are minority group members underrepresented in medicine.

In multiply imputed models employing sample weights and including predictors representing all the characteristics displayed in Table 2, URMM faculty compared with non-URMM faculty endorsed higher leadership aspirations but rated their institutions lower on the cultural dimension of relationships/inclusion (see Table 3). URMM faculty also gave their institutions lower scores on URMM equity and institutional efforts to improve diversity. There were no main effects of URMM status on the eight other scales: engagement, self-efficacy for career advancement, institutional support, values alignment, ethical/moral distress, perception of gender equity, work–life integration, and institutional change efforts related to faculty support.

For the model predicting scores on the relationships and inclusion scale, the adjusted coefficient for URMM was  $-0.14$ , adjusting for all other variables in the model (Table 3). This is equivalent to having one of every seven URMM faculty giving a 1-point lower score for each of the six 5-point items that make up the scale, compared with the average scores of all other faculty. In contrast,

for the model predicting URMM equity, the coefficient is more extreme ( $-0.5$ ), equivalent to having one of every two URMM faculty giving 1-point lower scores for each of the items of the scale, compared with their non-URMM colleagues.

#### Personal experience of racial discrimination

In descriptive analyses, we found that 22% (115) of URMM faculty reported that they had personally experienced racial/ethnic discrimination by a superior or colleague at their institution; 12% (64) reported this experience in the two-year period before being surveyed, and 10% (51) reported discrimination before that time. This compares to 6% (97) of non-URMM faculty who reported ethnic/racial discrimination.

#### Comparison of URMM perspectives in traditional and HUFI schools

With two exceptions, an institution's prevalence of URMM faculty did not appear to modify the effect of URMM in any of the statistical models: values alignment and perceptions of URMM equity (Table 3). URMM faculty in HUFI schools gave their institutions

more positive scores on URMM equity compared with their non-URMM peers, and more negative equity scores when they were in traditional schools. URMM faculty in HUFI schools perceived a closer alignment of their own values with those of the institution, compared with URMM faculty in traditional schools. Figure 1 displays the adjusted means of URMM and non-URMM faculty for all 12 models estimated.

#### URMM choice of research focus on health disparities

Among faculty who spend time in research, URMM faculty were twice as likely as non-URMM faculty (33% versus 17%; 130 versus 234) to report that most of their research could be categorized as “disparities research.”

#### Discussion and Conclusions

Our findings from among over 500 URMM in 26 nationally representative schools show that URMM faculty have similar levels of engagement and self-efficacy in their careers as nonminority faculty, as well as higher leadership aspirations than nonminority faculty. However, they have a lower sense of inclusion, trust, and relationships than nonminority colleagues. Although only two HUFI schools participated in this study, it is of interest that URMM faculty at HUFI schools reported more alignment of their personal and institutional values in these organizations and more positive perceptions of equity when compared with URMM faculty in traditional schools.

It is encouraging that for most aspects of academic medicine we measured at the 26 nationally representative schools, the experiences of URMM and non-URMM faculty are equal, but the few differences that were identified raise two important concerns. First, compared with their non-URMM colleagues, URMM faculty have higher leadership aspirations. This might initially be interpreted as a positive result. Yet, previous studies have shown that when high leadership aspirations coexist with lesser feelings of inclusion, trust, and relationships, the combination produces a dynamic tension that is associated with intending to leave academic medicine.<sup>12</sup> The permutation of high leadership aspirations with low feelings of inclusion and relationships, as might be expected to be felt by those perceiving themselves as “outsiders,” would substantially

Table 3

**Demographic Predictors of Five Dimensions of the Culture Scales, From a Multi-Institutional Analysis of Underrepresented Minority in Medicine (URMM) Faculty Experiences, 2007–2009\***

Characteristic	Outcome, coefficient (SE)				
	Relationships and inclusion	Values alignment	Leadership aspirations	URMM equity	Institutional change efforts for diversity
<b>Constant</b>	3.566 <sup>§</sup> (0.021)	3.237 <sup>§</sup> (0.025)	3.990 <sup>§</sup> (0.023)	3.789 <sup>§</sup> (0.032)	3.639 <sup>§</sup> (0.046)
<b>URMM status</b>	-0.142 <sup>†</sup> (0.060)	-0.008 (0.060)	0.197 <sup>†</sup> (0.068)	-0.499 <sup>§</sup> (0.071)	-0.310 <sup>†</sup> (0.080)
<b>Female</b>	-0.175 <sup>†</sup> (0.053)	-0.073 <sup>†</sup> (0.033)	-0.040 (0.051)	-0.379 <sup>§</sup> (0.042)	-0.333 <sup>§</sup> (0.035)
<b>Age in decades</b>	-0.011 <sup>†</sup> (0.004)	-0.003 (0.004)	-0.015 <sup>§</sup> (0.003)	-0.007 <sup>†</sup> (0.003)	0.003 (0.003)
<b>Rank</b>					
Full professor <sup>¶</sup>	—	—	—	—	—
Assistant professor	-0.221 <sup>†</sup> (0.078)	-0.049 (0.074)	-0.423 <sup>§</sup> (0.068)	-0.108 (0.067)	-0.075 (0.084)
Associate professor	-0.117 (0.080)	-0.122 (0.064)	-0.142 <sup>†</sup> (0.062)	-0.092 (0.061)	-0.125 (0.081)
<b>Role</b>					
Clinician <sup>¶</sup>	—	—	—	—	—
Researcher	-0.016 (0.055)	0.013 (0.040)	0.016 (0.055)	-0.173 <sup>§</sup> (0.041)	-0.101 (0.057)
Administrator	0.257 <sup>†</sup> (0.083)	0.243 <sup>†</sup> (0.081)	0.359 <sup>§</sup> (0.068)	0.028 (0.080)	0.153 (0.089)
Educator	0.123 (0.094)	0.057 (0.068)	0.133 (0.087)	-0.120 (0.076)	-0.010 (0.083)
<b>HUFI institution**</b>	0.008 (0.154)	0.180 (0.108)	0.099 (0.053)	0.304 (0.439)	0.689 (0.662)
<b>URMM × HUFI**</b>	n/a <sup>††</sup>	0.308 <sup>†</sup> (0.137)	n/a <sup>††</sup>	0.811 <sup>†</sup> (0.352)	n/a <sup>††</sup>
<b>URMM × female</b>	n/a <sup>††</sup>	n/a <sup>††</sup>	n/a <sup>††</sup>	n/a <sup>††</sup>	.283 <sup>†</sup> (.131)

\*Responses from 2,218 full-time faculty at 26 representative U.S. medical schools about their organizational culture were used for this analysis.

<sup>†</sup> P ≤ .05

<sup>‡</sup> P < .01

<sup>§</sup> P < .001

<sup>¶</sup>Effects of assistant and associate professor are compared to the reference group, full professor. Effects of researcher, administrator, and educator are compared to the reference group, clinician.

\*\*HUFI = high URMM faculty institutions, which are institutions where more than 50% of the faculty are minority group members underrepresented in medicine.

<sup>††</sup>Interaction effect either not tested because no main effect present, or tested and found not to be significant then trimmed from final model.

disadvantage change agents from outside the mainstream groups. This insight may help explain the phenomenon of the static nature of the culture in medical schools and academic medicine’s historical resistance to change.<sup>27,28</sup>

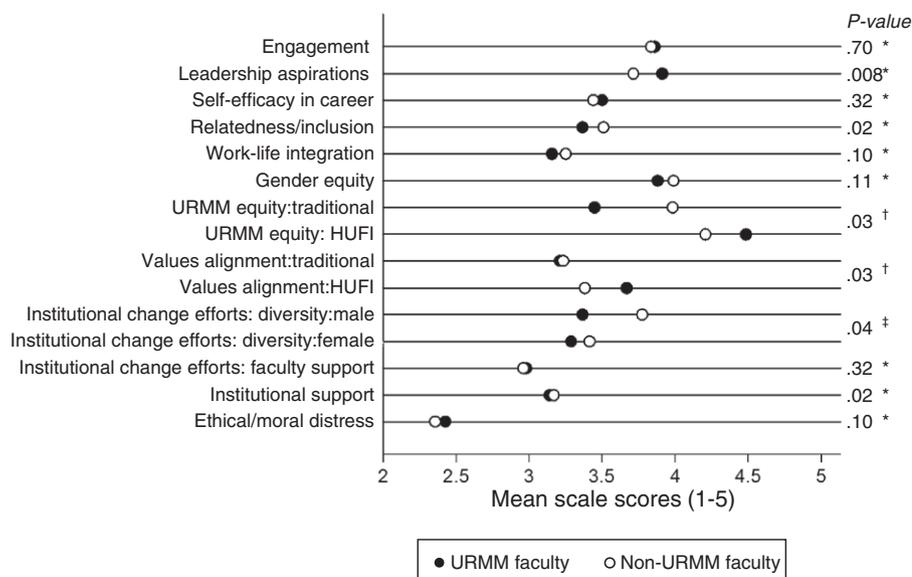
Our findings also raise a second issue: whether non-URMM faculty exhibit unwarranted optimism and what the consequences of this could be. It is reasonable to presume that issues of diversity and equity are more salient to URMM faculty, and even that they may be more accurate assessors of institutional efforts in this arena. If this were so, the finding that non-URMM faculty are less likely to be aware that this problem exists (i.e., that their perceptions underestimate the extent of the problem in academic medicine) might certainly have a dampening effect on efforts to eliminate remaining inequities and promote diversity.

We found that URMM faculty at the two HUFI schools were much more readily able to realize their professional goals and perceived better alignment of their values. This may explain why so many of the nation’s URMM faculty choose to work in these environments. Twenty percent of all U.S. URMM faculty work in the three historically black medical schools and three Puerto Rican medical schools.

Previously, we and others have argued for the goal of increasing diversity in leadership in academic medicine as a way of facilitating change and improvement in health care for the nation.<sup>1,5,7,11</sup> National data show that URMM faculty concentrate in historically black or HUFI schools and seldom advance in their careers in traditional medical schools. It may be that URMM faculty are able to develop their skills more readily in the level “playing field” of a HUFI

school where the combination of their leadership aspirations and alignment of values becomes a powerful motivating combination. The choice by URMM faculty to go to HUFI schools because they expect that they will feel included exacerbates the failure of traditional medical schools to recruit URMM faculty. These findings may hold some pointers for initiatives to successfully engage URMM faculty in traditional medical schools.

One finding that may be surprising for some is that across all age groups of URMM faculty, there was a similar distribution of enhanced leadership aspirations. Possible explanations include that URMM faculty are more proactive in wanting to make change, that they are a self-selected group as they have had to overcome so many more barriers than non-URMM faculty to becoming faculty members, and that they are



**Figure 1** Adjusted means for underrepresented in medicine minority (URMM) and non-URMM faculty on 12 dimensions of the culture scales (where a higher score indicates more positive perceptions with the exception of ethical/moral distress where a higher score indicates higher distress). Responses from 2,218 full-time faculty at 26 representative U.S. medical schools from 2007 to 2009 about their organizational culture were used for this analysis. HUFI indicates high URMM faculty institutions.

\* P value is for the comparison of URMM and non-URMM faculty.

† P value is for the comparison of URMM and non-URMM faculty in traditional and HUFI institutions.

‡ P value is for the comparison of URMM and non-URMM faculty among male and female faculty.

very earnest about wanting to apply their nontraditional insights. These findings are reminiscent of the concept of the “tempered radical” as described in the management literature by Ely and Meyerson in their studies of the professional advancement of women.<sup>29</sup> Members of this group have “dual vision”: They are able to see from both an insider and an outsider perspective and are able to envision possibilities that are outside the mainstream. They aim to create change within their institution (and creating positive change is the role of leaders), but they go about it in a moderate or “tempered” manner. “Tempered” also takes on an alternative meaning as in strengthened similarly to metal, through the experience of operating in challenging environments where they need to be guarded about discrimination.<sup>17</sup>

Although URMM faculty in traditional schools perceive more inequity for URMM faculty, we also note that in a prior study<sup>12</sup> we found that high perceptions of URMM equity at an institution were associated with higher faculty attrition rates across all faculty generally. An association between faculty attrition and high perceived URMM equity might mean that one

factor causes the other—for instance, high URMM equity causes attrition, perhaps mediated by institutional prestige. An equally plausible explanation is that there is no causal link between these two factors and that the association is due instead to a third (unmeasured) factor that is causing both. This factor might be something like institutional resources for faculty support (salaries, professional advancement, mentoring, infrastructure for enhancing patient care, research, and clinical teaching). At historically black medical colleges, where there have been historically fewer resources to support faculty (i.e., traditionally poorer institutions), there have been both greater URMM equity and more faculty attrition (faculty leaving for attractive jobs at institutions with more resources). The relative lack of resources, therefore, might account for the higher attrition rather than the higher URMM equity. Higher attrition may also be related to social, environmental, and economic challenges that come with working in highly concentrated and underresourced urban communities (where many prominent academic medical institutions are located). One disturbing interpretation could be that non-URMM faculty perceive that the institution is less prestigious when there is a high standard of URMM equity.

## Strengths and limitations of this study

Strengths of this study are its large, multi-institutional, cross-disciplinary representative sample, as well as a broad array of items on multiple issues involving culture. An additional strength is a sophisticated analysis that allows specific factors to be identified while controlling for other factors: In this case, we have been able to isolate URMM status as a factor while controlling for sex, rank, and primary role. The 52% response rate can be seen as a limitation; however, those who have studied physician response rates and their impact on the representativeness of the data have concluded that response rates among physicians are approximately 10% below those of nonphysicians and that response bias (e.g., nonrepresentativeness of responses) is not as large a concern as had been previously thought.<sup>30,31</sup>

Our findings add to the literature as the first multi-institutional large-scale survey of URMM faculty regarding dimensions of the culture of academic medicine. We have quantitatively documented the perception of racial/ethnic inequity embedded in medical schools. Furthermore, we have shown that a higher proportion of URMM faculty members conduct health disparities research than their non-URMM counterparts. These findings, combined with URMM faculty’s higher leadership aspirations, and the fact that they are more likely to care for underserved patient populations, provide further support to the supposition that increasing the numbers of URMM in senior and leadership positions in academic medicine would help address the nation’s moral and social imperatives to provide health care equitably to currently underserved groups.

*Acknowledgments:* The authors wish to thank all the members of the C - Change research team who participated in developing items for the survey and supporting the process of C - Change work. The authors thank the AAMC for assisting in the initial phase of the project. The authors are indebted to the medical faculty who generously shared their perspectives in the survey.

*Funding/Support:* The authors gratefully acknowledge the critical funding support of the Josiah Macy, Jr. Foundation, and Brandeis University Women’s Studies Research Center. Funding supported the design and conduct of the study; and collection, management, analysis, and interpretation of the data. Supplemental funds to support data analysis were provided by

the U.S. Health and Human Services Office of Public Health and Science, Office on Women's Health, and Office of Minority Health; National Institutes of Health, Office of Research on Women's Health; Agency for Healthcare Research and Quality; Centers for Disease Control and Prevention; and Health Resources and Services Administration.

*Other disclosures:* The C - Change Faculty Survey and its items, described in this report, are copyrighted by C - Change, Brandeis University. Please contact [cchange@brandeis.edu](mailto:cchange@brandeis.edu) to use this survey.

*Ethical approval:* Human subject institutional approvals were obtained from Brandeis and Boston Universities, and the AAMC.

**Dr. Pololi** is senior scientist and resident scholar, Women's Studies Research Center, and director, National Initiative on Gender, Culture and Leadership in Medicine: C - Change, Brandeis University, Waltham, Massachusetts.

**Dr. Evans** is vice chair for faculty development, Department of Medicine, division chief, Hospitalist Medicine, and professor of medicine, Weill Cornell Medical College, New York, New York.

**Dr. Gibbs** is associate dean for diversity and cultural competence and assistant professor of medicine, Johns Hopkins School of Medicine, Baltimore, Maryland.

**Dr. Krupat** is director, Center for Evaluation, Harvard Medical School, and associate professor of psychology, Department of Psychiatry, Beth Israel Deaconess Medical Center, Boston, Massachusetts.

**Dr. Brennan** is research associate, Harvard School of Public Health, Boston, Massachusetts.

**Dr. Civian** is senior survey analyst, National Initiative on Gender, Culture and Leadership in Medicine: C - Change, Women's Studies Research Center, Brandeis University, Waltham, Massachusetts.

## References

- Smedley BD, Butler AS, Bristow LR. In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce. Washington, DC: Institute of Medicine, National Academies of Sciences Press; 2004:23–54.
- Association of American Medical Colleges. AAMC Data On Line, US Medical School Faculty, 2010. Table 19: Sex, race/Hispanic origin, tenure status, and department. <http://www.aamc.org/data/facultyroster/reports/169876/usmsf10.html> [user ID and PW required]. Accessed May 15, 2013.
- U.S. Census Bureau. Census 2010: United States Profile. <http://www.census.gov/2010census/>. Accessed May 17, 2013.
- Castillo-Page L, Zhange K, Steinecke A, et al. Minorities in Medical Education: Facts and Figures 2005. Washington, DC: Association of American Medical Colleges; 2005.
- Association of American Medical Colleges. Striving Towards Excellence: Faculty Diversity in Medical Education. AAMC Diversity, Policy and Programs. Washington, DC: Association of American Medical Colleges; 2009.
- Peterson NB, Friedman RH, Ash A, Franco, Carr PL. Faculty self-reported experience with racial and ethnic discrimination in academic medicine. *J Gen Intern Med.* 2004;19:259–265.
- Fang D, Moy E, Colburn L, Hurley J. Racial and ethnic disparities in faculty promotion in academic medicine. *JAMA.* 2000;284:1085–1092.
- Rubio DM, Primack BA, Switzer GE, Bryce CL, Seltzer DL, Kapoor WN. A comprehensive career-success model for physician-scientists. *Acad Med.* 2011;86:1571–1576.
- Price EG, Gozu A, Kern DE, et al. The role of cultural diversity climate in recruitment, promotion, and retention of faculty in academic medicine. *J Gen Intern Med.* 2005;20:565–571.
- Price EG, Powe NR, Kern DE, Golden SH, Wand GS, Cooper LA. Improving the diversity climate in academic medicine: Faculty perceptions as a catalyst for institutional change. *Acad Med.* 2009;84:95–105.
- Pololi L, Cooper LA, Carr P. Race, disadvantage and faculty experiences in academic medicine. *J Gen Intern Med.* 2010;25:1363–1369.
- Pololi LH, Krupat E, Civian JT, Ash AS, Brennan RT. Why are a quarter of faculty considering leaving academic medicine? A study of their perceptions of institutional culture and intentions to leave at 26 representative U.S. medical schools. *Acad Med.* 2012;87:859–869.
- Pololi L, Conrad P, Knight S, Carr P. A study of the relational aspects of the culture of academic medicine. *Acad Med.* 2009;84:106–114.
- Carr PL, Pololi L, Knight S, Conrad P. Collaboration in academic medicine: Reflections on gender and advancement. *Acad Med.* 2009;84:1447–1453.
- Pololi L, Kern DE, Carr P, Conrad P, Knight S. The culture of academic medicine: Faculty perceptions of the lack of alignment between individual and institutional values. *J Gen Intern Med.* 2009;24:1289–1295.
- Conrad P, Carr P, Knight S, Renfrew MR, Dunn MB, Pololi L. Hierarchy as a barrier to advancement for women in academic medicine. *J Womens Health (Larchmt).* 2010;19:799–805.
- Pololi LH, Jones SJ. Women faculty: An analysis of their experiences in academic medicine and their coping strategies. *Gend Med.* 2010;7:438–450.
- Schindler BA, Novack DH, Cohen DG, et al. The impact of the changing health care environment on the health and well-being of faculty at four medical schools. *Acad Med.* 2006;81:27–34.
- Butler JK. Toward understanding and measuring conditions of trust: Evolution of a conditions of trust inventory. *J Manage.* 1991;17:643–663.
- Pololi L, Price J. Validation and use of an instrument to measure the learning environment as perceived by medical students. *Teach Learn Med.* 2000;12:201–207.
- Pololi LH, Dennis K, Winn GM, Mitchell J. A needs assessment of medical school faculty: Caring for the caretakers. *J Contin Educ Health Prof.* 2003;23:21–29.
- Women in Science and Engineering Leadership Institute (WISELI). University of Wisconsin–Madison. WISELI Reports and Publications. <http://wiseli.engr.wisc.edu/pubtype.php>. Accessed May 15, 2013.
- University of Michigan. Survey of Academic Climate and Activities. Fall 2001. <http://www.advance.rackham.umich.edu/climatesurvey1.pdf>. Accessed May 15, 2013.
- Raghunathan TE, Lepkowski JM, Van Hoewyk J, Solenberger PW. A multivariate technique for multiply imputing missing values using a sequence of regression models. *Surv Methodol.* 2001;27:85–95.
- Rubin DB. Multiple Imputation for Nonresponse in Surveys. New York, NY: John Wiley and Sons, Inc.; 1987.
- Hatcher L. A Step-by-Step Approach to Using the SAS System for Factor Analysis and Structural Equation Modeling. Cary, NC: SAS Institute; 1994.
- Bloom SW. Structure and ideology in medical education: An analysis of resistance to change. *J Health Soc Behav.* 1988;29:294–306.
- Bloom SW. The medical school as a social organization: The sources of resistance to change. *Med Educ.* 1989;23:228–241.
- Ely RJ, Meyerson DE. Theories of gender in organizations: A new approach to organizational analysis and change. *Res Organiz Behav.* 2000;22:103–151.
- Asch DA, Jedrzejewski MK, Christakis NA. Response rates to mail surveys published in medical journals. *J Clin Epidemiol.* 1997;50:1129–1136.
- Groves RM, Peytcheva E. The impact of nonresponse rates on nonresponse bias: A meta-analysis. *Public Opin Q.* 2008;72:167–189.