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Authors

Wingard, Deborah
Trejo, JoAnn
Gudea, Monica
et al.

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Faculty Equity, Diversity, Culture and Climate Change in Academic Medicine: A Longitudinal Study

Deborah Wingard, Ph.D., JoAnn Trejo, Ph.D., M.B.A., Monica Gudea, B.A., Seneca Goodman, B.A., Vivian Reznik, M.D., M.P.H.

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Abstract: There is a national call for academic medicine to use evidence-based initiatives to improve its culture and climate. The authors report data-driven policy and programmatic interventions that were associated with increased faculty diversity, equity, respectful behavior and improved faculty climate, at UC San Diego Health Sciences.

Methods: Based on demographic and survey data, interventions were designed to improve the climate between 2005 and 2015. Interventions included routine measuring and dissemination of demographic data, changes and dissemination of policy and procedures, and new and improved faculty development programming. Impact was measured using demographic data over time, salary equity studies, and school-wide climate surveys in 2005, 2011, and 2015. Specific outcomes included measures of diversity, salary equity, behavior, and climate.

Results: Over the ten-year period, the proportion of women increased from 16% to 23% of tenure/tenure-track faculty and 31%–40% of all faculty. Underrepresented minority faculty increased from less than 1%–7% of tenure/tenure-track faculty and from 5% to 8% of all faculty. While women continued to be paid less than men, the adjusted difference dropped from 23% to 12%. Reports of inappropriate behavior by faculty decreased significantly, while satisfaction and knowledge about institutional mentoring and resources improved.

Conclusion: Multiple interventions including new faculty development programs, changes in policy, and measuring demographics/climate supported diverse faculty recruitment, enhanced a culture of respect and improved faculty morale. Cultural changes in policy, periodic faculty data collection with dissemination, and increased faculty development, improve the climate in academic medicine.

Keywords: Diversity ■ Climate ■ Equity ■ Faculty development ■ Underrepresented minorities

Author affiliations: Deborah Wingard, University of California, San Diego Health Sciences, La Jolla, CA 92093, USA; Department of Family Medicine and Public Health, School of Medicine, UC San Diego, La Jolla, CA 92093, USA; JoAnn Trejo, University of California, San Diego Health Sciences, La Jolla, CA 92093, USA; Health Sciences Office of Faculty Affairs and Department of Pharmacology, School of Medicine, UC San Diego, La Jolla, CA 92093, USA; Monica Gudea, University of California, San Diego Health Sciences, La Jolla, CA 92093, USA; Health Sciences Office of Faculty Affairs, UC San Diego, La Jolla, CA 92093, USA; Seneca Goodman, University of California, San Diego Health Sciences, La Jolla, CA 92093, USA; Health Sciences Office of Faculty Affairs, UC San Diego, La Jolla, CA 92093, USA; Vivian Reznik, University of California, San Diego Health Sciences, La Jolla, CA 92093, USA; Health Sciences Office of Faculty Affairs and Department of Pediatrics and Family Medicine Public Health, School of Medicine, UC San Diego, La Jolla, CA 92093, USA

Correspondence: Vivian Reznik, M.D., M.P.H., UC San Diego, 9500 Gilman Drive, MC 0742, La Jolla, CA 92093, USA., email: vreznik@ucsd.edu

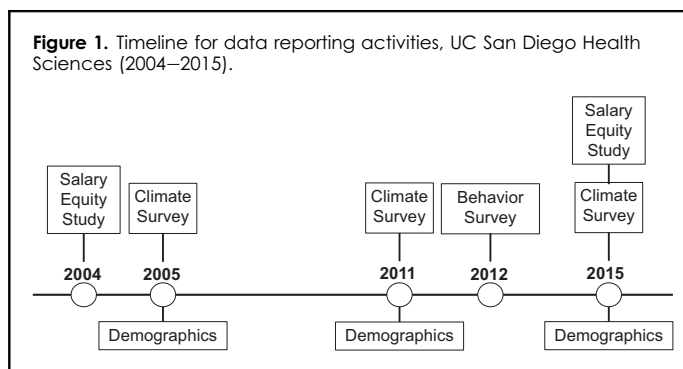
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INTRODUCTION

Changing the culture and climate of academic medicine requires focused attention and measurement over time to improve the environment. As stated by Powell et al. “instead of studying characteristic and behaviors of the individuals...we should chose to focus on the aspects of our institutional culture that could be contributing to this phenomenon”.¹ This study recommended using qualitative and quantitative research to understand the culture of our schools to enable the development of effective solutions for change. It is especially important to focus on the multiple facets of the environment essential for creating and sustaining a diverse and equitable faculty work force.² At the University of California, San Diego (UCSD), an organized central Health Sciences faculty development program known as the National Center for Leadership in Academic Medicine (NCLAM) and extramural resources focused on underrepresented minority (URM) faculty development, funded by the Hispanic Center of Excellence (HCOE), began working with junior faculty to improve skills and knowledge about academic medicine advancement and institutional engagement beginning in 1999. Based on feedback from faculty as well as the national call to focus on culture and climate in academic medicine, we began to measure the institutional climate. Issues identified in surveys became the basis of focused faculty development workshops and created an impetus for institutional policy changes. The present study examines the association of policy and programmatic interventions focused on increasing faculty diversity, equity, and respectful behavior, to the improvement in the faculty climate at UCSD Health Sciences over a ten-year period starting in 2005.

Figure 1. Timeline for data reporting activities, UC San Diego Health Sciences (2004–2015).



MATERIALS AND METHODS

Data

Data for the present study came from a variety of sources. The first faculty salary equity study shown in [Figure 1](#), was conducted in 2004 and examined data for 504 faculty employed between 1997 and 1999. The following year, an anonymous online climate survey was conducted, which included 358 faculty participants for a response rate of 40%. Demographic data for 902 faculty were examined for 2005.

Partway through the follow-up period, a second anonymous online climate survey was conducted in 2011, with 515 faculty participants for a response rate of 37%. Based on concerns identified in the 2011 climate survey, another anonymous survey was conducted the following year that focused on behavioral factors and included 478 faculty participants for a response rate of 35%. While demographic data are available throughout the time period, 1350 faculty were employed in 2011.

At the end of the study period, a second faculty salary equity study was conducted in 2015, examining data for 1688 faculty employed between 2009 and 2014. A third anonymous online climate survey (including areas from the interim behavior survey) was conducted in 2015, with 729 faculty participants for a response rate of 50%. Demographic data were available for 1451 faculty in 2015. In addition, a 10-year retention analysis was conducted for 860 faculty employed in 2005 and included in demographics analysis.

Intervention

The Office of Faculty Affairs was established in 2005 and undertook the task of systematically reviewing existing data and collecting additional data for the purpose of identifying areas of concern and recommending strategies for improving the climate for faculty in the Health Sciences at UCSD.

Based on issues raised in the early surveys and demographic analyses, interventions were designed as detailed

in [Table 1](#). Improved communication included sharing climate survey data with the leadership and departments by conducting over 40 presentations, as well as posting of reports on the Health Sciences website. The demographic data was shared on an annual basis starting in 2012.

Policy and procedures were adapted or changed in response to data throughout the follow-up period. Based on gender differences identified in a salary equity study in 2004, departments were mandated to provide justification for faculty salaries falling below the AAMC 30th percentile during annual budgeting process. Bias training was mandated for all tenure/tenure-track faculty search committees starting in 2012 in response to data indicating that women were underrepresented as candidates compared to the available pool.

Family accommodation policies were also revised and expanded during this time period ([Table 1](#)). These policies included an automatic one year extension of the clock for faculty reporting parental leave for a birth or adoption of a child under 5 years, removing the requirement of a faculty member having to apply for an extension within a year of the birth (2004), lengthening the period of active service modified duty (ASMD) for childbearing to 2 quarters (2004), specifying that promotion review for assistant professors who deferred for family accommodation should be treated without prejudice (2004, 2005), establishing a flexible workload program for family accommodation for tenure/tenure-track faculty (2007), expanding permissible reasons for extending probationary period to include serious illness or death of a family member or serious personal health condition (2013) and stopping the clock was broadened to include the addition of a child of any age becoming a part of the family and for newly hired assistant professors arriving with a child (2015).

NCLAM (established in 1999) and new faculty orientation sessions (established in 2005) were continually updated between 2005 and 2015, in response to changes in demographics, responses to interim surveys, and changes in best practices ([Table 1](#)). Approximately one third of all junior faculty have participated in NCLAM. Over the life of the NCLAM program, 1999–2015, 54% of participants have been women and 15% URM faculty. This is well above the Health Sciences-wide representation of women and URM, as efforts have specifically been made to recruit these individuals. Approximately two thirds of new faculty members have participated in the new faculty orientation programs. Between 2005 and 2015, eleven new programs were developed with an attendance of over 1300 faculty members.

Analysis methods

Significance of differences in survey responses overtime were analyzed statistically, using Fisher's exact test (two-tailed), and results were considered significant when *P* was

Table 1. Interventions based on institutional data, UC San Diego Health Sciences (2005–2015).

Interventions, UC San Diego Health Sciences (2005–2015)	
Office of Faculty Affairs established (2005)	
Demographics - measured & disseminated	
2004, 2016	Conduct salary equity study
2005, 2011/12, 2015	Administer climate survey
2005–2006	Sharing of climate survey results
2011–2015	Sharing of climate survey results
2012 – present	Review demographic data annually
2012 – present	Annual sharing of demographic data
Policy & Procedure - changed & disseminated	
2004	Family Accommodations Policy - replaced Childbearing Policy
2005	Salary Negotiation - mandated changes
2012	Bias Training - mandated for tenure track search committees
2013 – present	Family Accommodations Policy - updated
Programming - established or updated	
1997–2013	Hispanic Center for Excellence
1999 – present	Junior faculty development program (NCLAM)
2002–2007	Center for Excellence in Partnerships for Community. Outreach, Research on Disparities in Health and Training
2005 – present	New faculty orientation
2009 – present	Travel to AAMC faculty development seminars sponsored
2011, 2012, 2013	Getting promoted workshop
2011 – present	Department Meetings and Retreats focused on climate
2012 – present	New chair orientation
2012 – present	Faculty compensation workshop
2012 – present	MBA leadership development with Rady School of Management
2013 – present	Celebration event for new women faculty
2014	Effective management of disruptive faculty workshop
2014 – present	Research space allocation workshop
2014 – present	University of California retirement workshop
2014 – present	Women in Health Sciences committee established event

less than or equal to .05 (GraphPad Instat version 3.10 for Windows, GraphPad Software, La Jolla California USA, www.graphpad.com).

RESULTS

Faculty diversity

Between 2005 and 2015, the proportion of women among all Health Sciences faculty increased from 31% to 40% ($P < .001$) (Table 2). This is comparable to the increase in proportion of women among all faculty including Assistant, Associate and Full Professors reported by AAMC in 2005

and 2015, 30%–37%.³ An even more dramatic increase was seen among tenure/tenure-track faculty, with the proportion of women increasing from 16% to 23% ($P < .001$). Over this same time period, the proportion of URM faculty increased from 5% to 8% of all faculty ($P < .05$), and from less than 1%–7% of tenure/tenure-track faculty ($P < .001$). The change in URM faculty representation was markedly greater than that reported by AAMC in 2005 and 2015, 8%–9%.³ As shown in Figure 2, which covers 1995 through 2015, improvements of URM tenure/tenure-track faculty recruitment are most pronounced during the ten years (2005–2015) of the current study.

Table 2. Changes in the culture and climate, UC San Diego Health Sciences (2005–2015).

Culture and Climate	2005	2011 ^a	2015
Culture			
Faculty Diversity (%)			
Women among all faculty	31	37 ⁺⁺	40 ⁺⁺⁺
Women among tenure/tenure-track faculty	16	20 ⁺	23 ⁺⁺⁺
URM among all faculty	5	6	8 ^{*,++}
URM among tenure/tenure-track faculty	0.5	3 ⁺⁺⁺	7 ^{***}
Faculty Salary Equity (%)			
Women paid less than white men	23	–	12
URM paid less than white men	–	–	10
Faculty Behavior (% observing or experiencing) ^b			
Derogatory comments or inappropriate jokes	–	29	15 ^{***}
Diminished work productivity	–	27	19 ^{**}
Anger outburst	–	25	18 ^{**}
Hostile email or verbal communication	–	25	16 ^{***}
Climate			
Faculty Climate (% agree or strongly agree)			
Well informed about expectations for academic advancement	73	77	80 ⁺⁺
Well informed about negotiation for resources	37	36	43 [*]
Adequate resources to teach effectively	–	65	73 ^{**}
Fair distribution of teaching load	–	62	69 [*]
Adequate research space allocation	63	57	69 ^{***}
Equitable research space allocation	66	62	69 [*]
Adequate mentoring	62	60	68 ^{**}

URM, underrepresented minorities.

⁺P < .05 ⁺⁺P < .01 ⁺⁺⁺P < .001 compared to 2005.

^{*}P < .05 ^{**}P < .01 ^{***}P < .001 compared to 2011 or 2012.

^aBehavioral data from 2012.

^b3 or more instances of inappropriate behavior or comments over the past year.

Among all faculty who were employed in 2005, 58% were still at UCSD in 2015 with no apparent differences by gender (58% of men and 60% of women) or URM status (60%). This ten-year retention was higher than reported nationally by the AAMC.⁴ A separate analysis demonstrated that faculty who participated in NCLAM between 1999 and 2006 were more likely to stay at UCSD than matched controls.⁵ In that analysis, there were also no significant differences by gender or URM status.

Faculty salary equity

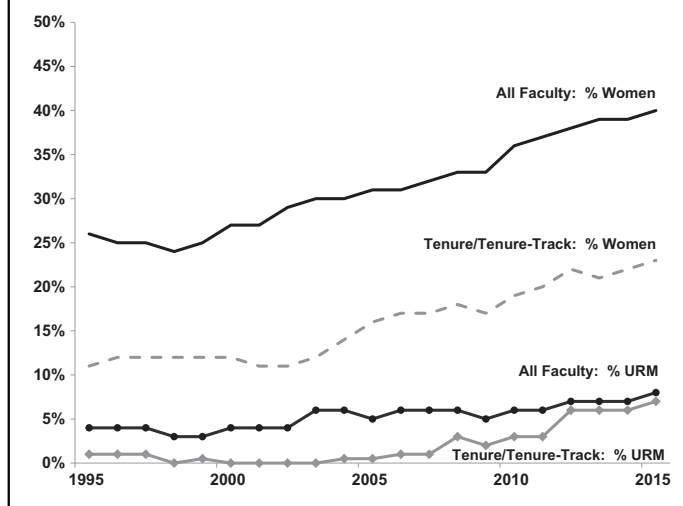
Salary equity studies conducted in 2005 and 2015 have documented that women faculty continue to be paid less than men. However, there has been an almost 50% decline

in the gender discrepancy in salary between 2005 and 2015 (23%–12%) (Table 2).

Faculty behavior

Reports of observing or experiencing three or more instances of inappropriate behavior or comments by faculty members over the past year, declined between 2012 and 2015.⁶ As summarized in Table 2, there was a significant improvement in four areas: derogatory comments or inappropriate jokes, diminished work productivity, anger outburst and hostile email or verbal communication. There was no significant change in three areas: intimidating or bullying behavior, unwelcome sexual innuendo or behavior, and behavior that might have jeopardized patient

Figure 2. Change in proportion of women and underrepresented minorities (URM) among all faculty and among tenure/tenure-track faculty, UC San Diego Health Sciences (1995–2015).



care.⁶ Women reported observing or experiencing inappropriate behavior more than men in 2012 and while there was significant improvement in behavior, women still reported observing or experiencing more inappropriate behavior than men in 2015.⁶

Climate

Based on climate surveys in 2011 and 2015, satisfaction with resources, mentoring and several aspects of the environment improved. The proportion of faculty feeling well informed about expectations for academic advancement increased from 73% in 2005 to 80% in 2015 ($P < .01$). The proportion of faculty who felt well informed about negotiating for resources, who reported adequate resources for teaching and fair distribution of teaching workload, who reported adequate and equitable research space allocation, and who felt mentoring was adequate improved by 10–20% ($P < .05$) (Table 2).

DISCUSSION

Organizational culture is a set of rules - values, beliefs, behaviors, customs, attitudes - that shapes how people behave within organizations and is defined as the shared perceptions of and meaning attached to the policies, practice, procedures that employees experience. Organizational climate is the perception and feeling of each regarding the culture of a particular organization^{7,8} and is taught to newcomers as the proper way to think and feel about the institution.⁷ The examination of both culture and climate has been deemed essential for creating environments that support enhanced faculty diversity, as well as improving faculty retention in academic medicine.^{2,5,9–18}

We previously reported that organized faculty development programs improve the retention of faculty in academic medicine at UCSD Health Sciences.^{5,19} Periodic measurement of our campus climate combined with strategic interventions focused on improving institutional faculty behavior was shown to be successful in decreasing faculty's reports of disruptive behavior in Health Sciences at UCSD.⁶ The present longitudinal study demonstrates that a series of policy and programmatic interventions (data collection and dissemination, family friendly policies, training, and faculty development programs) was associated with increases in faculty diversity, equity, respectful behavior and improved faculty climate.

Periodic measurement of institutional climate allows an institution to identify current issues impacting faculty satisfaction within their environment. We measured our institutional climate every 4–5 years to assess faculty satisfaction and used this information to drive new faculty development programs. In addition, periodic monitoring of institutional climate highlighted institutional policies that could be enhanced to improve faculty life. Given that the University of California is governed by system-wide policies, several mandates instituted system-wide affected certain family friendly policies; however, other changes were local implementations of policy including salary oversight and equity reviews, demographic data measurement and dissemination. In addition, efforts were implemented to widely disseminate information about existing university policies that many faculty were unaware of, including retirement, family friendly policies, and rules governing good behavior. Shauman et al. recently reported that usage of family friendly policies is dependent on both availability of information as well as leadership support.²⁰ The development of workshops highlighting new policy information and wide support from leadership through the Office of Faculty Affairs led to improvement in climate around these issues.

Several studies highlighted that diversifying the faculty in academic medicine requires not only individual faculty skills and behavior but organizational changes that impact climate.^{2,9,12,18,21,22} Shauman et al. suggested that workers experiences highlight the need to focus on organizational change rather than on changing the behavior of workers.²⁰ Our efforts to address faculty diversity began by improving the skills of our faculty and enhancing their engagement with the institution through faculty development programs including NCLAM and HCOE. We then focused on policy changes and information dissemination as a way to affect both culture and climate. This combined strategy appears to have increased the diversity of our faculty, improved the retention of all faculty including men, women and URM,^{4,18} and resulted in improved climate.

Data from our early climate surveys indicated that faculty were unaware or misunderstood several existing policies and procedures. Dissemination and explanation of this information, including academic advancement, research space allocation, and availability of mentoring, was associated with an increase in faculty satisfaction with several aspects of the environment in the subsequent climate survey. Measuring demographics, providing bias training and disseminating the faculty diversity data may help faculty understand the culture at UCSD Health Sciences, and was associated with changes over time (e.g. increased tenure-track appointments for women and URM). Our early climate surveys also identified a high level of disruptive faculty behavior and targeted intervention strategies were aimed at improving individual faculty knowledge and understanding, department specific climate as well as system wide leadership training. Our most recent climate survey indicated improvement in faculty behavior, as well as knowledge and general satisfaction with the climate.

Historically, the first faculty intervention at UCSD Health Sciences was the creation and subsequent institutionalization of a structured faculty development program, NCLAM. NCLAM was initially supported through extramural funding from the Office of Women's Health and supporting funds from the Human Resources Services Administration HCOE program for URM faculty. We have studied and reported on NCLAM curriculum development, cost effectiveness and program outcomes.^{5,12,19,23,24} An increase in faculty retention was observed with faculty who participated in an organized faculty development program (NCLAM) compared to those who did not⁵ and was associated with improvement in URM retention¹⁸ Previous reports also demonstrated that faculty development programs improve faculty retention as well as satisfaction with academic medicine for all faculty.^{12,17,25,26} In our current longitudinal analysis, we found that the retention of women faculty throughout the institution has now reached parity with men and is better than national data on faculty retention.⁴ Many other studies have also reported the importance of culture and climate in recruiting and retaining women faculty^{2,13,15,16,27} as well as URM faculty.^{8,9,18} In particular, bias training has been shown to be crucial for diversifying the faculty through more consistent and fair review of candidates by search committees.^{28,29} The improvement in our culture coincided in time with the implementation of institutional salary reviews, dissemination of faculty demographic data, improved family friendly policies, and bias training of faculty search committees. Collectively, these changes were associated with increases in the proportion of women

and URM in tenure-track positions, and have been reported as an outcome of institutional policy changes.^{2,8,9,13,15,16,18,25,27} Overall the increases in the proportion of women and URM of tenure/tenure-track faculty observed over a ten-year period are slow because of the low turnover of faculty, despite increases in the proportion of new women and URM faculty hires.

In 2016, several additional family friendly policies were instituted at the University of California. Specifically, parental leave without pay was changed to family leave reflecting an expansion to include eldercare and caretaking for seriously ill family members. Deferrals, stopping the clock, and modified duties were expanded to include care for a seriously ill family member or eldercare responsibilities. A flexible workload program for family accommodation was expanded to include faculty of all ranks. We expect these changes to be associated with further improvements in the recruitment and retention of women faculty, as well as in improvements to the climate.

The 2012 behavior survey reported a high incidence of disruptive faculty behavior including anger outbursts, hostile email, and derogatory comments. A multifaceted response was implemented to improve climate including university-wide and department presentations of the behavior survey data, the creation of departmental workgroups, workshops to train faculty to recognize disruptive behavior and to intervene and improved NCLAM faculty development program. These intervention strategies resulted in improvement in the climate.⁶

The improvements to climate seen in the present study may not be directly related to the interventions described but may have occurred for other reasons or by chance. We believe, however, that the consistent improvement in so many domains and feedback from individual faculty members support a causal interpretation. In addition, the present study includes a longitudinal analysis of a single institution and may not apply to other schools. This study, however, covers a long follow-up period with a comprehensive intervention involving more than a single program. While the interventions were specific to our institutional needs, we believe that the approach of using institution-specific data to drive changes in policy and programming can have a major influence on the climate of the institution and can be used as a model by other institutions.

IMPLICATIONS

Ultimately, it is difficult to attribute the improvement in climate to any one particular intervention. Dissemination of information about institutional policies,^{20,30} communication about family friendly policies and changes in

policy,³¹ training faculty to diminish bias in recruitment^{28,29} as well as recognizing and intervening in disruptive behavior^{6,21,22} have all been shown to be related to improved faculty satisfaction. Culture change — policies, values, beliefs, behaviors, customs, and attitudes — precedes changes in climate — how people feel about the environment. Thus, careful attention to both culture and climate with periodic measurement of faculty satisfaction can drive the creation of a more inclusive, productive, and welcoming environment through changes in behavior and institutional policy.

This change in the environment facilitates and enhances faculty recruitment and improves faculty retention.

APPENDIX A. SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jnma.2018.05.004>.

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