

RESEARCH ARTICLE

Workplace stress and discrimination effects on the physical and depressive symptoms of underrepresented minority faculty

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Abstract

Evidence-based research and interventions to address systemic institutional racism have never been more urgent. Yet, underrepresented minority (URM) professionals in research institutions who primarily produce that evidence have remained abysmally low for decades. This unique study of URM university professors assesses factors—vocational strain, role overload, discrimination, coping strategies—that contribute to health and well-being, research productivity, and ultimately their retention in high impact research positions. We administered a web-based survey assessing demographics, workplace stressors, perceived discrimination, life events, coping strategies, and physical and depressive symptoms. Study participants include 404 faculty of whom 254 are African Americans, 99 are Mexican Americans, and 51 are Puerto Ricans. Hierarchical regression analyses were employed to assess the associations between workplace stress, coping strategies, and symptoms. Results show that perceived discrimination, vocational strain, role overload, and life events directly affected physical symptoms, with self-care ($p < 0.001$) moderating these effects. Vocational strain and life events had direct effects on depressive symptoms with self-care ($p < 0.05$) and social support ($p < 0.001$) moderating these effects. Findings inform health care providers and university leaders about work stress and health conditions that may explain early morbidity and premature departures of URM faculty, and proffer institutional interventions to retain these faculty.

KEYWORDS

coping strategies, discrimination, historically underrepresented minority (URM) faculty, physical and depressive symptoms, workplace stress

1 | INTRODUCTION

Many workplace stressors are associated with the pervasive challenges faced by research university faculty from their daily interactions with colleagues and students to the institutional demands related to teaching, research, scholarship, and service. For traditionally and historically underrepresented minority (URM) faculty members, additional sources of professional stress in academia include (1) tokenism, lack of diversity and unwelcoming work environments (Evans & Moore, 2015; Hassouneh, Lutz, Beckett, Junkins, & Horton, 2014); (2) experiences of marginalization and 'devalorization' of research agenda (Essien, 2003; Feagin, 2013); and (3) the absence of institutional supports and inadequate mentoring (Espino & Zambrana, 2019; Turner & González, 2015; Turner, González, & Wood, 2008). Given these institutional conditions, URM faculty are less likely to seek help from their peers and supervisors (Pearlin, Schieman, Fazio, & Meersman, 2005). Moreover, URM faculty are more likely to be asked to assume additional institutional diversity demands, referred to as a 'minority tax', than their White counterparts. These experiences contribute to high levels of anxiety, a sense of not belonging, and diminished self-concept, which together may impact job satisfaction and research productivity (Campbell, Rodríguez, Brownstein, & Fisher, 2016; Harvey-Wingfield & Alston, 2014; Rodríguez, Campbell, & Pololi, 2015). As Molina and Simon (2014) noted, coping with these stress-inducing work-roles and experiences without adequate institutional support may contribute unevenly to risk of ill health among people of colour but the relationship varies across the socioeconomic spectrum' (p. 876).

Evidence-based research and interventions to address systemic institutional racism have never been more urgent. However, the numbers of URM professionals in research institutions who primarily produce that evidence have remained abysmally low for decades. In fall 2017, of the 1.5 million faculty in degree-granting postsecondary institutions, including resident and non-citizen faculty, 53% were full-time, and 47% were part-time. Of all full-time faculty in degree-granting postsecondary institutions, 5.5% were African American, and 4.7% were Latino. URM faculty represent about 10.2% of university faculty across over 4000 institutions, with a small percentage employed in 329 U.S. doctoral-granting research-intensive universities (U.S. Department of Education, 2018). URM faculty include four major groups in the United States: African American, Mexican American, Puerto Rican and American Indian (AI)/Alaska Native (AN). The former three groups are the focus of this study, while a separate analysis is available regarding the experience of AI/AN faculty (Walters, Maliszewski Lukszo, Evans-Campbell, Burciaga Valdez, & Zambrana, 2019). These racial/ethnic groups remain underrepresented in higher education institutions relative to their proportion in the general U.S. population. They also share a history of involuntary incorporation via slavery, colonization, or territorial acquisition, which delimited their economic and social opportunities. A substantial body of scholarship demonstrates the myriad ways in which URM professional groups experience discriminatory practices and the coping strategies they employ to manage these challenges (Brondolo, Halen,

Pencille, Beatty, & Contrada, 2009; Chávez, 2011; Niemann, Gutiérrez y Muhs, & González, 2020; Williams, Lawrence, & Davis, 2019). However, few studies have examined the impact of these experiences on physical and mental well-being among URM professionals.

Within the academy, forms of exclusion and discrimination heighten URM's reliance on adverse coping mechanisms of hypervigilance and anticipatory stress (Griffin, Pifer, Humphrey, & Hazelwood, 2011; Hassouneh et al., 2014; Robinson, 2014). These response-driven coping mechanisms may increase workplace stress (e.g., vocational strain and role overload), which impact health and research productivity. Research on stress reveals that perceived stress and inadequate social support increases the risk of physical and mental health conditions and decreases opportunities for success (Brondolo, Libretti, Rivera, & Walsemann, 2012; Pearlin et al., 2005; Thoits, 2011). However, high levels of social support from peers and supervisors have protective effects on mental health and reduce the risk of illness-related absences. In contrast, low levels of support increase the risk of psychiatric disorders (Williams, Neighbors, & Jackson, 2003).

Self-care activities such as getting enough sleep, exercise, spiritual-related activities, and relaxation techniques reduce stress and improve health (Ellis, Griffith, Allen, Thorpe, & Bruce, 2015; Saint Onge & Krueger, 2011). These coping techniques may not effectively mediate the impact of persistent work stress and discrimination on health and well-being. Race discrimination models share three elements that inform how experiences of racism may influence URM health: (1) stratification serves to maintain discrimination in social spaces; (2) life-course effects result in adverse health conditions, despite increasingly better opportunities or social advantages; and (3) chronicity and magnitude of discrimination (e.g., life events, micro-aggressions, reduced opportunities via exclusion and social isolation) contribute to stress that negatively affects health (Mays, Cochran, & Barnes, 2007; Paradies et al., 2015). Research has rarely examined the variations among URM faculty in experiences of discrimination, coping mechanisms, health, and well-being (Wallace, Nazroo, & Bécares, 2016; Williams et al., 2019).

This study examined the relationships between workplace stress, discrimination, coping strategies, and physical and depressive symptoms among early and mid-career URM faculty in research universities. We tested three hypotheses: (1) Racial/ethnic differences in workplace stressors, perceived discrimination, and physical and depressive symptoms exist; (2) Role overload, vocational strain, perceived discrimination in the workplace, and significant life events will contribute to the presence of physical and depressive symptoms; and, (3) positive coping strategies will moderate the harmful effects of physical and depressive symptoms.

2 | METHODS

2.1 | Participants and procedures

We invited 2048 potential respondents to participate in the study. The invitation included the purpose of the study, stressed confidentiality

by reporting all data in aggregate form, and gave approximate time to complete the survey (30 min). Eligibility criteria for this study were as follows: (1) U.S.-born men and women who self-identify as African American, Mexican American, and Puerto Rican, and (2) tenure-track assistant or tenured associate professors at a Carnegie-defined very high/high research-extensive university (McCormick & Zhao, 2005). Multiple sampling techniques (e.g., network and peer sampling) were employed to recruit study participants. For example, we received referrals from peer academic contacts and a predominantly senior URM faculty advisory board.

We used the Robert Wood Johnson Foundation's New Connections mentoring program LISTSERVs, announced the study at conferences; asked survey participants for names of other potential respondents; searched university websites; and scoured professional organizations membership lists. The use of multiple sampling techniques reflects efforts to reach a small number of URM faculty employed in research universities. The research was approved according to the IRB procedures at the University of Maryland College Park for research involving human subjects.

Participants were able to save, close, and return the 143-item survey for up to 60 days from the initial attempt and provide informed consent online. Additionally, each web-based survey was password protected. The surveys were collected over ten months in 2010. Among the 679 returned surveys, 28 were incomplete, and 70 were ineligible due to rank and non-URM identity. Our final response rate (31.5%) is comparable to the response rate for web-based surveys (Cook, Heath, & Thompson, 2000).

3 | MEASURES

3.1 | Social status and demographics

Self-reported *race and ethnicity* were ascertained using two questions: (1) 'What is your race?' and (2) 'Are you of Hispanic/Latino origin?' An affirmative response to the Hispanic origin item then asked respondents to specify their specific ethnic group. *Sex* is measured by a dichotomous variable (1 = female, 0 = male). *Marital status* is measured as living with spouse/partner (1 = yes, 0 = not living with spouse/partner). The number of *children* is dichotomized to any children (1 = yes, 0 = no). Employment status is measured by *academic rank* (0 = Tenure-Track Assistant Professor, 1 = Tenured Associate Professor).

3.2 | Workplace stressors

To assess workplace stress, we employed two subscales of the Occupational Stress Inventory-Revised (OSI-R), an instrument widely-used to assess workplace stress among professionals (Lease, 1999; Osipow, 1998). *Role overload* measures the extent to which job demands exceed resources (personal and workplace) and how the individual can accomplish workloads ($\alpha = 0.765$). Examples of

items include, 'I am expected to do too many different tasks in too little time', 'I am expected to perform tasks on my job for which I have never been trained'. *Vocational strain* measures the extent to which an individual has problems in work quality and output and attitudes towards work ($\alpha = 0.787$). Examples of items include, 'Lately I dread going to work', 'I can concentrate on the things I need to do at work'. Each subscale included 10 items ranging from 1 = rarely or never true to 5 = true most of the time, and scores ranged from 10 to 50 with a higher score representing higher levels of stress.

Discrimination in the workplace was measured using a scale adapted from the National Faculty Survey (Robert Wood Johnson Foundation, 1995). Participants were asked to respond to seven items that asked: 'If in your professional career, you have encountered gender, racial/ethnic, and/or class discrimination by a superior or colleague', and 'If in your professional career, you were ever left out of opportunities for professional advancement based on gender, race/ethnicity, and/or class' (three items). Response options were on a 4-point scale from 1 = never to 4 = always with scale scores ranging from 6 to 24 with higher scores indicating higher perceptions of bias and discrimination ($\alpha = 0.900$).

The 13-item Life Events Inventory measured stressful *life events* that occurred in the past year. Examples of events included 'spouse or partner death', difficulty with colleagues, and 'major problems with money'. Response options were: 1 = No, 2 = Yes. For participants who responded Yes, they were asked to assess how much they were upset by their life events using three additional response options: it upset me not too much = 2; it upset me moderately = 3, and it upset me very much = 4. Scores ranged from 13 to 52 with higher scores indicating a higher number and intensity of upsetting life events (Berkman & Syme, 1979).

Measures of *coping strategies* included two subscales in the OSI-R (Osipow, 1998). *Self-Care* measures the extent to which the individual regularly engages in personal activities that reduce or alleviate chronic stress ($\alpha = 0.785$) such as exercise, healthy eating. For example, 'I get regular physical check-ups'. *Social Support* measures the extent to which the individual feels support and help from those around them ($\alpha = 0.881$). For example, 'There is at least one sympathetic person with whom I can discuss my problems'. Each subscale included 10 items with response options ranging from 1 = rarely to 5 = true most of the time. The scores ranged from 10 to 50, with higher scores indicating higher personal and social coping strategies.

The measure of *mentorship* consisted of five items from the National Faculty Survey (Robert Wood Johnson Foundation, 1995). Participants responded to questions regarding the extent to which a mentor is available to provide the following: 'a critique of scholarly work, promote visibility outside the institution, advise about criteria for promotion, advise about progress to meet criteria for promotion, and emotional support and inspiration in an academic career' ($\alpha = 0.922$). The response options ranged from 1 = never to 5 = always with a scale range from 5 to 25, with higher scores indicating more mentorship activity.

3.3 | Health measures: Physical and depressive symptoms

Two instruments focused on physical and mental health symptoms. *Physical symptoms* were measured with the 18-item Physical Symptoms Inventory (PSI; Spector & Jex, 1998). They were assessing physical and somatic health symptoms associated with psychological distress. Each is a condition/state about which a person would likely be aware (e.g., headache and stomach). For each symptom, respondents were asked, 'During the past 4 weeks, did you have any of the following symptoms? If you did have the symptoms, did you see the doctor about it?' Response options include: No; Yes, and I saw a doctor; and Yes, but I didn't see a doctor. We used the total symptom scores, ranging from 0 to 18, with higher scores indicating a higher number of stress-related physical symptoms.

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was the measure of *depressive symptoms*. The CESD has satisfactory internal validity ($\alpha = 0.86$), sensitivity (74.6%), and specificity (73.6%; Knight, Williams, McGee, & Olan, 1997) and has been widely used with women and racial/ethnic groups. Scoring is based on an 8-item Likert-type scale using options ranging from 0 = rarely to 3 = most days and scores ranging from 0 to 24. Higher scores indicate higher levels of depressive symptoms. A score greater than or equal to seven suggests a clinically significant psychological distress ($\alpha = 0.871$).

3.4 | Analyses plan

Among the 485 eligible participants, 404 had complete data for these analyses. Data are from web-surveys completed by participants identified as African American, Mexican American, or Puerto Rican. Descriptive statistics (i.e., frequencies, means, and standard deviations) are evaluated for all variables. To examine patterns of similarity and difference across African American, Mexican American, and Puerto Rican respondents, we performed ANOVA tests for the continuous variables and Chi-squared tests for categorical variables. We conducted a series of hierarchical multiple regression analyses to assess the association of study variables with each health outcome separately (physical symptoms and depressive symptoms).

Hierarchical regression models include dummy variables for each race/ethnic group with African Americans as the referent category. For each model, we first entered social status and demographic factors. Model 1 presents the association of social status and demographic factors with the health outcome. In Model 2, we added workplace stress indicators (role overload, vocational strain and discrimination) and life events to assess the variance explained by social status and demographics. In Model 3, we added coping strategies (self-care, social support, and mentoring) to assess whether these factors moderated the effects of workplace stressors on health outcomes. Variables entered into regressions remained in the model throughout the addition of each step. Statistical significance was set at the 0.05 level. Beta coefficients and *p*-values are presented for each model.

4 | RESULTS

The participant sample was 63% African American/Black ($N = 254$), 25% Mexican American ($N = 99$), and 13% Puerto Rican ($N = 51$). Table 1 presents the descriptive statistics for all variables for the total sample and by race/ethnicity. Sixty-two percent of the sample was female, 66% were married, 57% reported having children, and 47% held the rank of associate professor. Close to 90% received their doctorates from very high/high research activity universities, and an equal number were employed in these institutions. The sample had national geographic distribution, with about 20% from each of five major regions: Northeast, Midwest, Southeast, Southwest, and West/Northwest. Although no statistically significant differences were observed in social status and demographic characteristics, there were statistically significant differences in role overload and physical symptoms by race/ethnicity. Mexican Americans and Puerto Ricans reported higher role overload than African Americans ($F = 5.17$, $p < 0.01$). Mexican Americans reported higher total physical symptoms than African Americans and Puerto Ricans ($F = 5.15$, $p < 0.01$). Furthermore, among Mexican American respondents, the PSI score (Mean = 5.17; SD = 3.73) was higher than the PSI score for the U.S. population norm (Mean = 4.8; SD = 3.5). There were no between-group differences in depressive symptoms, and group scores did not reach clinically depressed levels. However, some individuals in every group may have experienced clinical depression based on score standard deviations.

4.1 | Predictors of physical symptoms

Hierarchical regression models estimating physical symptoms as a function of social status, workplace stressors, and coping strategies are displayed in Table 2. In Model 1, academic rank is statistically significant ($\beta = -0.89$, $p < 0.01$), indicating that higher academic rank (i.e., tenure status) is associated with fewer total physical symptoms. Mexican Americans had significantly more physical symptoms compared to African Americans ($\beta = 1.14$, $p < 0.01$), although there was no difference in symptoms between Puerto Ricans and African Americans ($\beta = 0.83$, $p = 0.51$). In Model 2, we added workplace stressors, including role overload, vocational strain, life events, and perceived discrimination on physical symptoms. The results from Model 2 show that academic rank ($\beta = -1.10$, $p < 0.001$) for Mexican Americans compared to African Americans ($\beta = 0.87$, $p < 0.01$) remained statistically significant. In addition, role overload ($\beta = 0.06$, $p < 0.01$), vocational strain ($\beta = 0.14$, $p < 0.001$), life events ($\beta = 0.18$, $p < 0.001$) and perceived discrimination ($\beta = 0.08$, $p < 0.05$) were also statistically significant and positively associated with physical symptoms. In Model 3, we tested the effect of moderating variables (i.e., self-care, social support, and mentoring). After adding moderating variables, role overload ($\beta = 0.05$, $p < 0.05$) vocational strain ($\beta = 0.11$, $p < 0.01$), life events ($\beta = 0.18$, $p < 0.001$) and perceived discrimination ($\beta = 0.08$, $p < 0.05$) continued to have a direct effect on physical symptoms, with self-care ($\beta = -0.09$, $p < 0.001$) moderating role overload and vocational strain.

TABLE 1 Percentages and means (standard deviations) for study variables, total sample and by race-ethnicity

	Total sample (n = 404) 100%	African American (n = 254) 63%	Mexican American (n = 99) 25%	Puerto Rican (n = 51) 13%	Level of significance
Sex (1 = female)	62%	63%	63%	53%	0.37
Married/living with partner (1 = married)	66%	63%	73%	69%	0.21
Children (1 = yes)	57%	57%	56%	57%	0.96
Academic rank (1 = Associate professor)	47%	50%	38%	47%	0.13
Role overload	32.46 (7.58)	31.57 (7.48)	33.59 (7.97)	34.71 (6.69)	0.01**
Vocational strain	18.77 (5.73)	18.89 (5.77)	18.99 (5.80)	17.75 (5.34)	0.39
Life events	17.01 (3.78)	16.87 (3.72)	17.25 (4.00)	17.24 (3.71)	0.62
Discrimination	14.29 (4.81)	14.27 (4.92)	14.20 (4.51)	14.59 (4.87)	0.90
Self-care	28.74 (7.39)	28.74 (7.61)	28.74 (7.08)	28.78 (6.99)	0.99
Social support	41.30 (7.91)	41.21 (8.30)	40.96 (7.77)	42.39 (5.95)	0.56
Mentoring	13.30 (5.86)	13.41 (5.93)	13.16 (5.65)	13.02 (5.97)	0.88
Physical symptoms	4.36 (3.34)	3.97 (3.12)	5.17 (3.73)	4.76 (3.35)	0.01**
Depressive symptoms	4.19 (4.64)	4.13 (4.51)	4.19 (4.91)	4.43 (4.86)	0.92

** $p < 0.01$.

TABLE 2 Regression of physical symptoms on social status, workplace stress, and coping strategies for total sample

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Sex (1 = female)	0.36	0.34	-0.13	0.32	0.06	0.32
Married/living with partner (1 = yes)	-0.36	0.36	0.10	0.33	0.14	0.34
Children (1 = yes)	0.05	0.35	0.12	0.31	-0.06	0.31
Academic rank (1 = Associate professor)	-0.89**	0.34	-1.10***	0.30	-0.84**	0.30
Race/Ethnicity						
African American = 0 vs. MA	1.14**	0.39	0.87**	0.35	0.93**	0.34
African American = 0 vs. PR	0.83	0.51	0.64	0.45	0.69	0.44
Workplace Stress						
Role overload	-	-	0.06**	0.02	0.05*	0.02
Vocational strain	-	-	0.14***	0.03	0.11***	0.03
Life events	-	-	0.18***	0.04	0.18***	0.04
Discrimination	-	-	0.08*	0.04	0.08*	0.04
Coping Strategies						
Self-care	-	-	-	-	-0.09***	0.02
Social support	-	-	-	-	-0.02	0.02
Mentoring	-	-	-	-	0.04	0.03
Constant	4.38	0.44	-4.19	0.93	-0.58	1.54
	$F=3.36**$	$df = (6, 397)$	$14.41***$	$df = (10, 393)$	$13.37***$	$df = (13, 390)$
Adjusted R square	0.03	-	0.25	-	0.29	-

Abbreviations: df, degree of freedom; MA, Mexican-American; PR, Puerto Rican; SE, standard error.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 3 Regression of depressive symptoms on social status, workplace stress, and coping strategies for total sample

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Sex (1 = female)	0.23	0.48	-0.55	0.41	-0.24	0.41
Married/living with partner (1 = yes)	-0.96	0.51	-0.24	0.43	0.27	0.44
Children (1 = yes)	-0.33	0.49	-0.12	0.41	-0.23	0.40
Academic rank (1 = Associate professor)	-1.38**	0.47	-1.64***	0.39	-1.42***	0.39
Race/Ethnicity						
African American = 0 vs. MA	-0.02	0.55	-0.34	0.46	-0.35	0.44
African American = 0 vs. PR	0.33	0.71	0.32	0.59	0.46	0.58
Workplace stress						
Role overload	-	-	0.04	0.03	0.03	0.03
Vocational strain	-	-	0.33***	0.04	0.27***	0.04
Life events	-	-	0.26***	0.06	0.24***	0.05
Discrimination	-	-	0.08	0.05	0.05	0.05
Coping strategies						
Self-care	-	-	-	-	-0.06*	0.03
Social support	-	-	-	-	-0.12***	0.03
Mentoring	-	-	-	-	0.02	0.03
Constant	5.48***	0.62	-7.65***	1.21	0.20	2.00
	$F=2.58^*$	$df = (6, 397)$	21.46^{***}	$df = (10, 393)$	19.51^{***}	$df = (13, 390)$
Adjusted R square	0.02	-	0.34	-	0.37	-

Abbreviations: df, degree of freedom; MA, Mexican-American; PR, Puerto Rican; SE, standard error.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

4.2 | Predictors of depressive symptoms

Hierarchical regression models estimating depressive symptoms as a function of social status, workplace stressors, and coping strategies are presented in Table 3. In Model 1, we test the relationship of demographics and social status with reports of depressive symptoms. No statistically significant associations are observed between depressive symptoms and race/ethnicity, gender, marital, or parental status.

However, academic rank (i.e., tenure status; $\beta = -1.38$, $p < 0.01$) was significant in the model, with higher rank associated with fewer depressive symptoms. Model 2 adds workplace stressors measures to the model. The results reveal that academic rank ($\beta = -1.64$, $p < 0.001$) remains significant and vocational strain ($\beta = 0.33$, $p < 0.001$) and life events ($\beta = 0.24$, $p < 0.001$) were significantly and positively associated with reported depressive symptoms. Model 3 adds moderating variables (i.e., self-care, social support, and mentoring) that may mitigate depressive symptoms. After adding moderating variables, academic rank ($\beta = -1.42$, $p < 0.001$), vocational strain ($\beta = 0.27$, $p < 0.001$), and life events ($\beta = 0.24$, $p < 0.001$) continue to have direct effects on depressive symptoms, with self-care ($\beta = -0.06$, $p < 0.05$) and social support ($\beta = -0.12$, $p < 0.001$) moderating vocational strain and life events.

5 | DISCUSSION

We drew on three bodies of scholarship to interpret these findings: (1) effect of work demands on perceived stress; (2) the impact of perceived discrimination in higher education institutions on URM faculty; and (3) a robust set of qualitative studies assessing the impact of stressors and the role of coping resources on physical and mental health. We proposed three hypotheses. Our first hypothesis that racial/ethnic differences would exist in workplace stressors, perceived discrimination, and physical and depressive symptoms was partially supported.

Mexican American and Puerto Rican respondents report higher levels of role overload than African Americans. Mexican American respondents also report more physical symptoms than African Americans and Puerto Ricans. Higher role overload and physical symptoms reported by Mexican American respondents may be explained by social status differences (the intersection of race, ethnicity, and class) and additional family obligations. Our Mexican American participants report close to 40% of their parents with less than a high school education compared to 15.7% for African Americans and 11.8% for Puerto Ricans. Respondents who reported maternal education less than high school compared to those who had

college-educated mothers reported a lower number of social networks, higher economic and social obligations to their family of origin, and fewer experiences of perceived discrimination in the workplace. In contrast, Mexican American respondents with college-educated parents reported higher levels of discrimination. These data suggest that respondents who had families of origin with higher education levels most likely had more interactions with and exposure to dominant culture individuals in their life course, and in turn higher sensitivities to discrimination (Zambrana et al., 2017a).

The second hypothesis that role overload, vocational strain, life events, and perceived racial discrimination would be associated with physical and depressive symptoms was supported for physical symptoms and partially supported for depressive symptoms. The significant predictors of physical symptoms for all respondents were vocational strain, role overload, life events, and perceived discrimination. For all groups, role overload was associated with additional responsibilities in the workplace. Examples of role overload included the service role of 'diversity representative' at public institutional venues and race-content teaching obligations in unwelcoming classrooms. Expectations of mentoring URM students, with limited or no institutional reward, served as a 'minority tax' on study respondents (Essien, 2003; Pittman, 2010; Young, Furchman, & Chesler, 2014). Life events and perceived discrimination were predictors of physical symptoms for all respondents. The top life events included family losses (i.e., death, illness and divorce) and negative interactions with work colleagues, students, and mentors. Family life outside the workplace bears weight in understanding vocational strains and overload. URM professionals often have larger families, more family obligations, a fear of using family leave policies, additional household time demands, and a 'wealth gap' that disallows the outsourcing of domestic services (Castañeda et al., 2015; Hamilton & Darity, 2010).

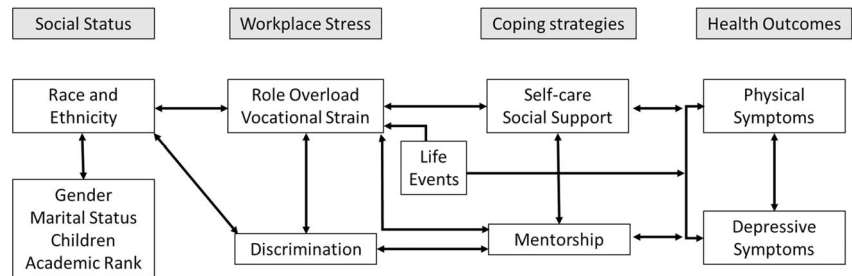
Across the sample, chronic workplace stress in conjunction with adverse life events and perceived discrimination were omnipresent. Discriminatory encounters with colleagues or students exacerbate a sense of exclusion, not belonging, and hypervigilance (Chávez, 2011; Griffin et al., 2011; Zambrana et al., 2017b). The everyday stress of discriminatory experiences depletes respondents' physical and mental energies. They expend high levels of emotional labour (Harvey-Wingfield, 2010), often termed 'racial battle fatigue' (Smith, 2008). Furthermore, it diminishes opportunities to engage in the intellectual labour required to advance their careers (Harvey-Wingfield & Alston, 2014; Rodríguez, Campbell & Pololi, 2015; Rodríguez, Campbell, Fogarty, & Williams, 2014). Prior studies employing biological markers reveal that the brain's biological response to repeated acts of discrimination and racism—whether real or perceived—raises an individual's cortisol levels (Krieger, 2012) that can increase inflammation that causes heart disease, diabetes, infection, and obesity. Moreover, multiple and simultaneous stressors without adequate coping strategies often manifest in physical conditions, such as increased susceptibility to infections, or psychological conditions, including anxiety, burnout, and depression (Lewis, Cogburn, & Williams, 2015; Priest et al., 2013; Williams et al., 2019).

Our findings signal fresh insights and essential questions for further research. These include, 'What are the effects of stress-inducing work roles on chronic illnesses over the life course of URM professionals?' Also highlighted in these findings, yet often omitted in studies of stress and health, is the central role of race/ethnicity and institutional practices in shaping health and depression, which vary by sex. In our data, women had higher mean discrimination scores than their male counterparts, with Mexican American women having the highest mean score. They were also the most likely to report discrimination incidents as 'extremely/very upsetting (58%)' compared to African American and Puerto Rican women. The least likely to report the incidents as upsetting were African American men (40%) and Mexican American men (39%), which we speculate could represent a 'normalizing' of daily microaggressive encounters. All respondents were most likely to report experiencing racial/ethnic discrimination and being left out of opportunities based on race/ethnicity rather than gender or class discrimination (Zambrana et al., 2017b). Our findings suggest that enduring structural factors of embedded discriminatory practices in the workplace increase vocational strain, role overload, and susceptibility to physical and depressive symptomatology (Brondolo et al., 2012; Burgard & Lin, 2013), and may impact men and women differently.

The third hypothesis that mentoring and positive coping strategies moderate the adverse effects of physical and depressive symptoms among respondents was partially supported in that self-care moderated the effects of vocational strain and role overload on physical symptoms. Self-care practices (e.g., exercise and meditation) and social support (family and friends) moderated the effects of depressive symptoms. Self-care operated to decrease physical symptoms while self-care and social support both decreased depressive symptoms. Not surprisingly, respondents used a range of strategies such as ignoring, suppressing, and responding (with humour or confrontation), building external relationships, managing stereotypes through modified behaviour. They also used spiritual practices; engaging in service, particularly with students; and using the hostile campus climate as a source of motivation as others have also observed (Griffin et al., 2011; Hassouneh et al., 2014; Robinson, 2014).

For many respondents, self-care and the support of family and friends were central supports, all of which are external to the institution—mentoring as institutional support did not moderate physical nor depressive symptoms for any group. A robust corpus of work in the last decade on mentoring modalities is available, but limited research has been forthcoming about their effectiveness or strife in mentoring relationships (Beech et al., 2013; Espino & Zambrana, 2019; Rodríguez et al., 2014). Conflictual mentoring relationships imbued with perceived discrimination, devalorisation of the early-career faculty research agenda, or disinterest constitutes maltreatment and contributes to hyper-vigilance and other stress-related responses that can debilitate one's health and mental well-being. In unsupportive environments, the fulfilment of work demands and obligations without guidance and mentoring may contribute to, rather than alleviate, role overload and vocational strain. As Brondolo et al. (2009) observe, 'Most models fail to explicitly incorporate

FIGURE 1 Associations of workplace stress on health outcomes



strategies designed to manage the interpersonal conflict associated with ethnicity-related maltreatment as well as with its emotional sequelae' (p. 66).

5.1 | Limitations and contributions

Several limitations are acknowledged as we consider the implications of our findings for improving university work environments and retaining URM faculty. First, our findings are derived from a cross-sectional survey design. We assessed exposure to stressful work events, coping strategies, and symptomatology simultaneously, and therefore we cannot demonstrate the temporal relationship between exposures and outcomes.

Further, our use of nonrandom sampling procedures does not permit generalizability, and findings may not be representative of perceptions of all URM faculty in research universities. Furthermore, our respondents' voluntary participation exposes our findings to potential selection bias (e.g., those who either felt well suited to academia may have elected to participate or those dissatisfied may have elected not to participate). Other important factors in identifying discrimination were beyond what our survey could explore, such as colourism, participant's phenotype, numerous family characteristics (e.g., history of parent's economic and other resources), and political ideology. We also did not capture any undisclosed or undiagnosed disability (physical or mental) associated with the stress-health relationship.

Despite these limitations, our study is among only a few to compare URM in addressing workplace stress among university faculty. Our findings confirm other narrative and empirical work on URM faculty stressors (Evans & Moore, 2015; Niemann et al., 2020). Furthermore, it is the first study to our knowledge that provides a more comprehensive model to measure discrimination, workplace stress, and the moderating effects of coping strategies on health and depressive outcomes among URM professionals.

6 | CONCLUSIONS

The unique contributions of these analyses are identifying distinct institutional features that contribute to workplace stress, illustrating the role of structural factors in a research university context, and demonstrating its impact on physical and depressive symptomatology. Moreover, our findings signal a population health alert for the

medical professionals who treat URM high status professionals by illuminating prominent workplace stressors, particularly discrimination, that may impact chronic conditions such as hypertension, diabetes, and other immunosuppressing conditions. Figure 1 specifies a set of variables that predict the presence of physical and depressive symptoms in a work setting. Furthermore, the intersectionality of race, ethnicity, class and sex constitute historically embedded social statuses that produce intergenerational population disadvantage (Shapiro, 2017). Marmot (2006) argues that lower social status within any social group may hinder two fundamental human (work) needs: a sense of control and social participation in an established colour-driven hierarchical system. Participants in this study experienced high work demands, low institutional support, and high expectations for research productivity. Excessive work demands and structural racism frequently contribute to a perceived sense of 'not belonging', exclusion from participation in formal and informal networks, hyper-visibility, and hypervigilance. These workplace conditions create higher exposure to stereotype threat, less psychological safety, and higher interpersonal strain that impinges on coping strategies, which may lead to a 'shattered self' (Ellis et al., 2015). The experiences of workplace stress, fueled by patterns of discriminatory practices, contribute to role overload and vocational strain, which in turn become 'impossible burdens' (Evans & Moore, 2015; Zambrana, 2018). Although rank within this high-status group of faculty matters, respondents at the associate level continue to experience the chronic stress of vocational strain (Garrison-Wade, Diggs, Estrada, & Galindo, 2012). The threats and institutional devalorisation of their intellectual work are important drivers in the relationship between workplace stress and physical and depressive symptomatology.

Additionally, adverse life events in both home and work life (e.g., difficulty with colleagues) directly affect physical and depressive symptoms. Significant prior life events and responsibilities, such as family losses and caretaking responsibilities, are directly linked to available economic resources, and these associations are relatively absent in extant empirical work. The intergenerational economic disadvantages in family resources and economic strains ('wealth gap') could not be assessed in this study but do require further research (Hamilton & Darity, 2010; Telles & Ortiz, 2008). Although self-care and social support moderated the relationships between work stress and physical and depressive symptomatology, mentoring did not.

In sum, persistent institutional exposure to discrimination, and the inadequacy of responsive mentoring supports, adds to the cumulative life course stress of URM faculty. Mounting interdisciplinary

evidence suggests that stress plays a vital role in several chronic conditions, especially hypertension and cardiovascular disease progression (Rosenthal & Alter, 2012), musculoskeletal disorders, and psychological disorders. Exploring the strategies to decrease simultaneous work and life stressors on the health of URM faculty can contribute to decreasing premature departures from the research enterprise, early onset of chronic conditions, and extending quality of work-life and well-being. Even if perceived discrimination may underestimate racism's effect on health (Wallace et al., 2016), the measurement of perceived discrimination can illustrate the effects of institutional racism and shed light on interventions to reduce workplace stress to improve faculty retention (Moreno, Jackson-Triche, Nash, Rice, & Suzuki, 2013).

The reduction of harmful institutional stressors insists upon a broader acknowledgment of discriminatory institutional policies and practices. For example, in a recent study of 1.2 million doctoral recipients from 1977–2015, Hofstra et al. (2020) found a stratified system where underrepresented groups have to innovate at higher levels than majority groups to have similar career advancement to other groups. Their results suggest that underrepresented groups' scientific careers end prematurely despite 'their crucial role in generating novel conceptual discoveries and innovation' (p. 5). These data gesture to the continued importance of critically evaluating and addressing biases in faculty hiring, research assessments, and publication practices.

A synthesis of existing best practices and empirical evidence addressing racial/ethnic equity and inclusion strategies was compiled in a guidebook for higher education leaders (Zambrana et al., 2020). Institutional interventions to reduce the early onset of chronic conditions and URM faculty departure include: (1) acknowledgment of discriminatory institutional practices and their impact on health; (2) leaders voicing equity as an institutional value; (3) developing opportunities for publications and grant development; and (4) annual meetings with chairs and mentors to assess URM faculty progress, and proffering clear guidance and concomitant supports. If inhospitable environments continue, work stressors will erode the spirit and contributions of its URM talent pool. Nurturing URM's health and mental well-being, a significant intellectual, academic labour force, can strengthen research institutions. Equity driven solutions to promote success for URM faculty will drive success for the institution as a whole.

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CONFLICT OF INTEREST

The authors have declared that they have no conflicts of interest.

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REFERENCES

- Beech, B. M., Calles-Escandon, J., Hairston, K. G., Langdon, S. E., Latham-Sadler, B. A., & Bell, R. A. (2013). Mentoring programs for underrepresented minority faculty in academic medical centers. *Academic Medicine*, 88(4), 541–549.
- Berkman, L., & Syme, L. S. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *American Journal of Epidemiology*, 109(2), 186–204.
- Brondolo, E., Halen, N. B., Pencille, M., Beatty, D., & Contrada, R. J. (2009). Coping with racism: A selective review of the literature and a theoretical and methodological critique. *Journal of Behavioral Medicine*, 32, 64–88.
- Brondolo, E., Libretti, M., Rivera, L., & Walsemann, K. M. (2012). Racism and social capital: The implications for social and physical well-being. *Journal of Social Issues*, 68(2), 358–384.
- Burgard, S. A., & Lin, K. Y. (2013). Bad jobs, bad health? How work and working conditions contribute to health disparities. *American Behavioral Scientist*, 57(8), 1105–1127.
- Campbell, K. M., Rodríguez, J. E., Brownstein, N. C., & Fisher, Z. E. (2016). Status of tenure among black and Latino faculty in academic medicine. *Journal of Racial and Ethnic Health Disparities*, 4, 134–139.
- Castañeda, M., Zambrana, R. E., Marsh, K., Vega, W., Becerra, R., & Pérez, D. J. (2015). Role of institutional climate on underrepresented faculty perceptions and decision making in use of work-family policies. *Family Relations*, 64(5), 711–725.
- Chávez, M. (2011). *Everyday injustice: Latino professionals and racism*. Lanham, MD: Rowman & Littlefield Publishers, Inc.
- Cook, C., Heath, F., & Thompson, R. L. (2000). A meta-analysis of response rates in web or internet-based surveys. *Educational and Psychological Measurement*, 60(6), 821–836.
- Ellis, K. R., Griffith, D. M., Allen, J. O., Thorpe, R. J., & Bruce, M. A. (2015). "If you do nothing about stress, the next thing you know, you're shattered": Perspectives on African American men's stress, coping and health from African American men and key women in their lives. *Social Science & Medicine*, 139, 107–114.
- Espino, M. J., & Zambrana, R. E. (2019). "How do you advance here? How do you survive?" An exploration of under-represented minority faculty perceptions of mentoring modalities. *The Review of Higher Education*, 42, 457–484.
- Essien, V. (2003). Visible and invisible barriers to the incorporation of faculty of color in predominantly White law schools. *Journal of Black Studies*, 34, 63–71.
- Evans, L., & Moore, W. L. (2015). Impossible burdens: White institutions, emotional labor, and micro-resistance. *Social Problems*, 62(3), 439–454.
- Feagin, J. R. (2013). *The white racial frame: Centuries of racial framing and counter-framing*. New York, NY: Routledge.
- Garrison-Wade, D. F., Diggs, G. A., Estrada, D., & Galindo, R. (2012). Lift every voice and sing: Faculty of color face the challenges of the tenure track. *The Urban Review*, 44(1), 90–112.
- Griffin, K. A., Pifer, M. J., Humphrey, J., & Hazelwood, A. M. (2011). (Re) defining departure: Exploring black professors' experiences with and responses to racism and racial climate. *American Journal of Education*, 117, 495–526.
- Hamilton, D., & Darity, W., Jr. (2010). Can 'baby bonds' eliminate the racial wealth gap in putative post-racial America? *The Review of Black Political Economy*, 37(3–4), 207–216.

- Harvey-Wingfield, A. (2010). Are some emotions marked whites only? Racialized feeling rules in professional workplaces. *Social Problems, 57*(2), 251–268.
- Harvey-Wingfield, A., & Alston, R. S. (2014). Maintaining hierarchies in predominantly white organizations A theory of racial tasks. *American Behavioral Scientist, 58*(2), 274–287.
- Hassounah, D. S., Lutz, K. F., Beckett, A. K., Junkins, E. P., & Horton, L. L. (2014). The experiences of underrepresented minority faculty in schools of medicine. *Medical Education Online, 19*(1), 24768.
- Hofstra, B., Kulkarni, V. V., Galvez, S. M. N., He, B., Jurafsky, D., & McFarland, D. A. (2020). The diversity–innovation paradox in science. *Proceedings of the National Academy of Sciences, 117*(17), 9284–9291.
- Knight, R. G., Williams, S., McGee, R., & Olaman, S. (1997). Psychometric properties of the Centre for Epidemiologic Studies Depression Scale (CES-D) in a sample of women in middle life. *Behaviour Research and Therapy, 35*(4), 373–380.
- Krieger, N. (2012). Methods for the study of discrimination and health: An ecosocial approach. *American Journal of Public Health, 102*(5), 936–945.
- Lease, S. H. (1999). Occupational role stressors, coping, support, and hardiness as predictors of strain in academic faculty: An emphasis on New and female faculty. *Research in Higher Education, 40*(3), 285–307.
- Lewis, T. T., Cogburn, C. D., & Williams, D. R. (2015). Self-reported experiences of discrimination and health: Scientific advances, ongoing controversies, and emerging issues. *Annual Review of Clinical Psychology, 11*, 407–440.
- Marmot, M. (2006). Status syndrome: A challenge to medicine. *Journal of the American Medical Association, 295*(11), 1304–1307.
- Mays, V. M., Cochran, S. D., & Barnes, N. W. (2007). Race, race-based discrimination, and health outcomes among African Americans. *Annual Review of Psychology, 58*, 201–225.
- McCormick, A. C., & Zhao, C. M. (2005). Rethinking and reframing the Carnegie classification. *Change: The Magazine of Higher Learning, 37*(5), 51–57.
- Molina, K. M., & Simon, Y. (2014). Everyday discrimination and chronic health conditions among Latinos: The moderating role of socioeconomic position. *Journal of Behavioral Medicine, 37*, 868–880.
- Moreno, C., Jackson-Triche, M., Nash, G., Rice, C., & Suzuki, B. (2013). Independent investigative report on acts of bias and discrimination involving faculty at the University of California, Los Angeles. *Executive Vice Chancellor and Provost Scott L. Waugh, UCLA, October, 15, 25*
- Niemann, Y., Gutiérrez y Muhs, G., & González, C. (2020). *Presumed incompetent II: Race, class, power, and resistance of women in academia*. Logan: University Press of Colorado. <https://doi.org/10.2307/j.ctvzxxb94>
- Osipow, S. (1998). *Workplace stress inventory revised edition (OSI-R) professional manual*. Lutz, FL: Psychological Assessment Resources.
- Paradies, Y. C., Ben, J., Denson, N., Elias, A., Priest, N., Pieterse, A., ... Hills, R. K. (2015). Racism as a determinant of health: A systematic review and meta-analysis. *PLoS One, 10*(9), e0138511.
- Pearlin, L. I., Schieman, S., Fazio, E. M., & Meersman, S. C. (2005). Stress, health, and the life course: Some conceptual perspectives. *Journal of Health and Social Behavior, 46*(2), 205–219.
- Pittman, C. T. (2010). Race and gender oppression in the classroom: The experiences of women faculty of color with White male students. *Teaching Sociology, 38*(3), 183–196.
- Priest, N., Paradies, Y. C., Trenerry, B., Truong, M., Karlsen, S., & Kelly, Y. (2013). A systematic review of studies examining the relationship between reported racism and health and wellbeing for children and young people. *Social Science & Medicine, 95*, 115–127.
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychology Measurement, 1*(3), 385–401.
- Robert Wood Johnson Foundation. (1995). *National faculty survey*. Princeton, NJ: Robert Wood Johnson Foundation.
- Robinson, O. (2014). Characteristics of racism and the health consequences experienced by black nursing faculty. *ABNF, 25*(4), 110–115.
- Rodríguez, J. E., Campbell, K. M., Fogarty, J. P., & Williams, R. L. (2014). Underrepresented minority faculty in academic medicine: A systematic review of URM faculty development. *Family Medicine, 46*(2), 100–104.
- Rodríguez, J. E., Campbell, K. M., & Pololi, L. H. (2015). Addressing disparities in academic medicine: What of the minority tax? *BMC Medical Education, 15*(6), 1–5.
- Rosenthal, T., & Alter, A. (2012). Occupational stress and hypertension. *Journal of the American Society of Hypertension: JASH, 6*(1), 2–22.
- Saint Onge, J. M., & Krueger, P. M. (2011). Education and racial-ethnic differences in types of exercise in the United States. *Journal of Health and Social Behavior, 52*(2), 197–211.
- Shapiro, T. (2017). *Toxic inequality: How America's wealth gap destroys mobility, deepens the racial divide, & threatens our future*. New York, NY: Basic Books.
- Smith, W. (2008). Higher education: Racial battle fatigue. In T. Schaefer (Ed.), *Encyclopedia of race, ethnicity, and society* (pp. 615–618). Thousand Oaks, CA: SAGE Publications, Inc.
- Spector, P., & Jex, S. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology, 3*(4), 356–367.
- Telles, E. E., & Ortiz, V. (2008). *Generations of exclusion: Mexican-Americans, assimilation, and race*. New York, NY: Russell Sage Foundation.
- Thoits, P. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior, 52*(2), 145–161.
- Turner, C. S. V., & González, J. C. (Eds.). (2015). *Modeling mentoring across race/ethnicity and gender: Practices to cultivate the next generation of diverse faculty*. Sterling, VA: Stylus Publishing.
- Turner, C. S. V., González, J. C., & Wood, J. L. (2008). Faculty of color in academe: What 20 years of literature tells us. *Journal of Diversity in Higher Education, 1*(3), 139–168.
- U.S. Department of Education. (2018). National center for education statistics, Integrated Postsecondary Education Data System (IPEDS), fall 2005 and fall 2015, Completions component. See Digest of Education Statistics 2018, table 322.20.
- Wallace, S., Nazroo, J., & Bécarea, L. (2016). Cumulative effect of racial discrimination on the mental health of ethnic minorities in the United Kingdom. *American Journal of Public Health, 106*(7), 1294–1300.
- Walters, K. L., Maliszewski Lukszo, C., Evans-Campbell, T., Burciaga Valdez, R., & Zambrana, R. E. (2019). 'Before they kill my spirit entirely': Insights into the lived experiences of American Indian Alaska native faculty at research universities. *Race Ethnicity and Education, 22*, 610–633. <https://doi.org/10.1080/13613324.2019.1579182>
- Williams, D. R., Lawrence, J., & Davis, B. A. (2019). Racism and health: Evidence and needed research. *Annual Review of Public Health, 40*, 105–125.
- Williams, D., Neighbors, H., & Jackson, J. (2003). Racial/ethnic discrimination and health: Findings from community studies. *American Journal of Public Health, 93*, 411–447.
- Young, A. A., Furhman, M., & Chesler, M. A. (2014). How race and gender shape perceived challenges to classroom authority and expertise. In M. A. Chesler & A. A. Young (Eds.), *Faculty identities and the challenge of diversity* (pp. 45–63). Boulder, CO: Paradigm Publishers.
- Zambrana, R. E. (2018). *Toxic ivory and towers: The health consequences of work stress on the health of underrepresented minority faculty*. New Brunswick, NJ: Rutgers University Press.

- Zambrana, R. E., Allen, A., Higginbotham, E., Mitchell, J., Perez, D. J., & Villarruel, A. M. (2020). *Equity and inclusion: Effective practices and responsive strategies. A Guidebook for College and University Leaders*. College Park, MD: Consortium on Race, Gender and Ethnicity. Retrieved from <http://crge.umd.edu/wp-content/uploads/2020/07/SummitGuidebookFinal-June-8-2020.pdf>
- Zambrana, R. E., Dávila, B. A., Espino, M. M., Lapeyrouse, L. M., Valdez, R. B., & Segura, D. (2017a). Mexican American faculty in research universities: Can the next generation beat the odds? *Sociology of Race and Ethnicity*, 3(4), 458–473.
- Zambrana, R. E., Wingfield, A. H., Lapeyrouse, L. M., Dávila, B. A., Hoagland, T. L., & Valdez, R. B. (2017b). Blatant, subtle, and insidious: URM faculty perceptions of discriminatory practices

in predominantly white institutions. *Sociological Inquiry*, 87(2), 207–232.

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