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Everyday Discrimination and Nocturnal Blood Pressure Dipping in Black and White Americans

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Abstract

Objective—Attenuated nocturnal blood pressure (BP) dipping is closely linked to cardiovascular morbidity and mortality. Self-reported experiences of everyday discrimination have also been associated with negative cardiovascular health outcomes. This study investigated whether an association exists between experiences of everyday discrimination and BP dipping in a biracial sample of Black and White adults.

Methods—Seventy-eight hypertensive and normotensive women and men (30 Black and 48 White) reported on their experiences of everyday discrimination (the Everyday Discrimination Scale) and underwent two separate 24-hour ambulatory blood pressure monitoring (ABPM) sessions approximately one week apart.

Results—Correlation analysis revealed that higher endorsement of everyday discrimination was significantly associated with less diastolic blood pressure (DBP) and systolic blood pressure (SBP) dipping (p <0.05). Subsequent hierarchical regression analyses indicated that everyday discrimination explained 8-11% of the variance in SBP and DBP dipping above and beyond other demographic and lifestyle-related factors including race, age, 24-hour BP, body mass index (BMI), and current socioeconomic status (SES). The relationship between discrimination and dipping was significantly stronger on the second night of monitoring. Finally, analyses revealed that everyday discrimination mediated the relationship between race and BP dipping.

Conclusions—These findings suggest that experiences of everyday discrimination are associated with less nocturnal SBP and DBP dipping above and beyond the effect of known covariates. The use of multiple ABPM sessions may facilitate the detection of relationships between psychological variables and BP dipping.

Introduction

When compared to their White counterparts, Black Americans are at a substantially higher risk for developing cardiovascular disease (CVD) (1). One of the mediating factors in the development of CVD is likely related to differences in nocturnal blood pressure (BP) and BP dipping. BP dipping is defined as the difference in BP from average waking to sleeping measurement and is closely linked to cardiovascular morbidity and mortality even after controlling for daytime BP (2,3). A major review of the literature revealed significant differences in daytime and nighttime BP between Black and White Americans with Black

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adults evidencing higher diastolic and systolic BP both in the day and night (4). Black adults show higher nocturnal BP than White adults and evidence less BP dipping (4). In fact, research has consistently shown that Black Americans are more likely to be classified as nondippers (defined as evidencing less then a 10% reduction in BP from day to night) than White Americans (5-9).

The pattern of BP dipping in Black adults living in African countries is similar to that of White adults living in the US (7). This raises the question of whether differences in psychosocial and socioeconomic factors between Black and White Americans are playing a role in explaining ethnic differences in BP dipping.

BP Dipping and Psychosocial Stress

Nighttime BP and nocturnal BP dipping are associated with environmental and psychosocial stressors as well as personality factors. Lower socioeconomic status (SES; both current and childhood levels) has been associated with decreases in dipping (10-12). Attenuated BP dipping has also been linked to exposure to neighborhood violence and individual personality factors such as hostility and anger (13-15).

There is an emerging body of work linking perceived unfair treatment to BP dipping. Previous investigations have focused on the impact of perceived racism and BP dipping in Latino and Black American populations (16-18). A study of Black men and women who wore an ambulatory blood pressure monitor (ABPM) for 24-hours found that perceived racism was related to both higher daytime systolic blood pressure (SBP) and diastolic blood pressure (DBP), but was not related to nocturnal BP or levels of BP dipping (18). In a study of African American college students, perceived racism in an academic setting was associated with higher waking and nocturnal DBP, but was not associated with waking or nocturnal SBP (17). Finally, in a study of American-born Blacks and Latinos, perceived racism was associated with BP dipping even after controlling for personality factors (e.g., hostility) and SES. Findings from this study indicated that with each increase of one standard deviation in perceived racism, the odds of being a nondipper increased by 40% (16).

Although these studies of perceived racism among minority samples are informative, individuals may perceive mistreatment due to factors other than race. To date, no studies have examined how perceptions of receiving generally unfair treatment in day-to-day life may influence nocturnal blood pressure dipping. Unlike discrete incidents of overt discrimination (e.g., racially-based traffic stops by police) “everyday” discrimination is often subtle or ambiguous and frequently occurs in situations that seem mundane or normal (19,20). Research indicates that self-reported experiences of everyday discrimination are associated with a number of negative health outcomes, including carotid intima-media thickness and the development of coronary artery calcifications (21-24). With the exception of Troxel and colleagues (24), these studies of everyday discrimination and cardiovascular health have focused on entirely minority samples. To date, no studies have examined everyday discrimination as it relates to BP dipping among White and Black subjects.

Reliability and Ambulatory Blood Pressure Monitoring

ABPM evaluates BP variations during everyday conditions and readings have produced stronger and more predictive results of cardiovascular morbidity and mortality than those obtained via clinic measurements (3). ABPM is the standard assessment tool used to assess BP dipping; however, work from our lab, and others, has found variability in dipping status over consecutive nights (25,26). The reproducibility of dipping status is especially poor when classifying ‘dippers’ as per the traditional definition of evidencing less then a 10% reduction in BP from day to night (26). Conversely, when BP dipping is defined as a continuous, rather

than categorical variable, less fluctuation in dipping is observed over repeated nights (27). To address the issue of dipping variability, the use of repeated ABPM sessions utilizing continuous measures of dipping has been called for (26). Additionally, there is some evidence that utilizing multiple nights of ABPM facilitates the detection of links between psychosocial measures and BP dipping (12).

Overview of the Present Study

The goal of the present study was to examine the impact of everyday discrimination on two, 24-hour ABPM sessions in a group of Black and White American adults. To our knowledge, this is the first study to examine the impact of discrimination on continuous measures of BP dipping over multiple nights. This is different from dipping studies examining perceived racism, as everyday discrimination is a measure of generally feeling one is the recipient of unfair treatment that is not specifically due to race or ethnicity. Further, this study addressed perceptions of everyday discrimination among a sample that included both White and Black Americans, allowing us to investigate whether everyday discrimination mediated the relationship between race and BP dipping. We hypothesized that levels of everyday discrimination would be inversely associated with BP dipping such that as everyday discrimination increased, nighttime BP dipping would decrease.

Methods

Participants

Participants were recruited from the San Diego, California area as part of a larger research study examining relationships between ethnicity, stress and health. All data were collected between 2005 and 2008. The sample consisted of 91 employed (≥30 hours/week) men and women recruited from the local community via advertisements and referrals. Thirteen participants were excluded from all analyses due to missing data from the second night of ABPM, yielding a final sample size of 78 participants. There were no significant differences between those who did versus did not have day 2 data in terms of age, gender, years of education or SES, (p's > .05). Those who did not complete the 2nd period of ABPM had a higher mean body mass index (BMI) and were more likely to be Black (p <.05). The final sample consisted of thirty Black (14 women, 16 men) and 48 White (22 men, 26 women) adults. While 10.3% of the participants were diagnosed with hypertension, participants were otherwise healthy. Three hypertensive patients were accepted into the study after being weaned off their antihypertensive medications by the study physician and maintaining BP >140/90 but < 170/105 mm Hg for 3 weeks. Participants were excluded from participating if they had a diagnosis of a major clinical illness as determined by a physical evaluation, were diagnosed with a sleep disorder, had a blood pressure ≥170/105 mm Hg, or had history of psychosis. Participants who had a BMI ≥ 40 kg/m^2 were also excluded from the study. In addition, women taking hormonal contraceptives or hormone replacement therapy, women who were pregnant, or women with self-reported premenstrual syndrome were excluded from the study. The project was approved by the Institutional Review Board of the University of California, San Diego and all participants provided written informed consent before entering the study.

Procedures

Participants came to the hospital for two screening visits during which time: their physical health and medical history was evaluated by a physician, resting BP was assessed, BMI was measured and a number of demographic and psychosocial questionnaires were filled out. Subjects were equipped with an ABPM device that they wore over a 24-hour period and then returned. Approximately one week after their first session, participants returned to the lab and were equipped for a second 24-hour period of ABPM.

Measurements

SES—SES was determined using the clinician-rated, Hollingshead 2-Factor Index of Social Position. This scale assesses participant's current occupation and level of education. The two factors are summed, weighted and combined into a continuous measure of social index. Scores range from 11 to 77 with lower social index scores indicating higher SES (28).

Discrimination—Discrimination was assessed using the Everyday Discrimination Scale (29). In contrast to more overt experiences of racism (i.e. being denied a job based on race) "everyday discrimination" refers to subtle experiences of discrimination (19,20). The scale was intentionally framed in the context of unfairness vs. race so that it could be administered to a variety of racial groups (29). The scale consists of 10-items which ask participants to indicate the frequency that minor experiences of unfair or interpersonal mistreatment have occurred in their day-to-day life over the past 12-months. Examples include, "You are treated with less courtesy than other people" and "People act as if they think you are dishonest." The frequency of each type of treatment was assessed with a 6-point scale, ranging from "never" to "almost every day." Items were summed and averaged yielding a total score. Scores range from 0 to 5 with higher scores indicating higher levels everyday discrimination. The scale has shown high levels of internal consistency and convergent and divergent validity in samples of African and European American men and women (29-32). In this sample, the scale showed high internal consistency ($\alpha = .91$).

Marlowe-Crowne Social Desirability Scale (MC)—The scale is composed of 33 true/ false items representing behaviors that are considered socially desirable but have a low probability of occurrence (33). High scores on the measure reflect a propensity to over-report information that respondents believe will be positively evaluated by others and to under-report information that may be negatively evaluated, such as distress (34). Scores range from 0 to 33 with higher scores indicating higher levels of social desirability. Levels of social desirability are inversely associated with reported discrimination and there have been calls to control for social desirability when studying discrimination and health (35-37).

Ambulatory Blood Pressure Monitoring—In this study, ambulatory monitoring was performed over two non-consecutive 24-hour periods during the work week. During daytime hours, participants were instructed to go about their normal daytime activities. The monitor (Spacelabs model 90207, Redmond, WA) was programmed to obtain BP measurements every 15 minutes between 6am and 10pm and every 30 minutes between 10pm and 6am. Nighttime BP was determined by the participant's self-reported bedtime and awakening. Artifacts were determined through standard Spacelab default as well as visual inspection. Any BP readings differing by >35 mmHg from one reading to the next reading were deleted. Mean waking, sleeping and dipping BP were calculated by taking the average of awake and sleep readings across the two ABPM sessions. Sleeping SBP dipping and DBP dipping were defined as continuous variables calculated as waking average BP minus sleeping average BP.

Physiological Covariates

Racial group membership, gender and age were collected through self-report. BMI was calculated by taking weight and height measurements (to the nearest 0.1kg and 0.1cm) on a calibrated scale. BMI was computed as the ratio of body weight in kilograms divided by the square height in meters (kg/m^2).

Data Analysis

Baseline characteristics of Black and White participants were compared using independent samples *t*-tests for continuous variables, $\chi 2$ tests for multicategorical measures, and Fisher

exact tests for binary measures. Gender was coded 0 for men, and 1 for women. Race was coded 0 for Blacks and 1 for Whites. Hierarchical regression analysis was used to investigate the association between everyday discrimination and BP dipping. Separate analyses were performed to investigate the impact of discrimination on ambulatory SBP and DBP dipping respectively. Considering the available statistical power, we included between-person covariates that were of theoretical importance in a study of blood pressure dipping, race and discrimination. These variables were: age, race, BMI, SES, Marlowe-Crowne (MC) score and mean 24-h SBP or 24-h DBP (4,11,38).

In follow-up analyses, hierarchical regression was used to examine the impact of discrimination on SBP and DBP dipping separately for each night of monitoring. Next, a number of covariates that were not investigated in the primary analysis were considered in exploratory analysis, these included: hostility, marital status, weekly consumption of alcoholic beverages, and smoking. Finally, we explored whether the relationship between race and BP dipping was mediated by experiences of everyday discrimination.

Results

Demographic and Health Characteristics

Demographic information about the sample is listed in Table I. Black participants were significantly older (p <.001) and had higher BMI's than White participants (p = .01). Black participants also reported less formal education (p = .02) and there was a trend indicating they had lower SES (p = .07). Black participants also endorsed higher levels of everyday discrimination than Whites (p = .03). There were no differences between groups in terms of gender, hypertensive status, smoking or marital status.

There were no significant differences in daytime or sleeping SBP between Blacks and Whites in the sample. Blacks had significantly higher sleeping DBP (F(1,76) =9.03, p < .01) than Whites. In terms of BP dipping, Blacks had marginally less SBP dipping (F(1,76) =3.81, p=. 06) and significantly less DBP (F(1,76) =4.33, p=.04) dipping.

Table II shows the simple correlations between study variables. Of note, higher endorsement of everyday discrimination was significantly associated with less DBP and SBP dipping (p's < .05). In accord with previous findings (37,38), socially desirable responding was correlated with lower endorsement of everyday discrimination (p < .01).

Discrimination and Blood Pressure Dipping

Next, a hierarchical regression analysis examining the relationship between discrimination and SBP and DBP dipping was conducted. As displayed in Table III, the results revealed significant relationships between discrimination and both SBP and DBP dipping such that higher levels of discrimination predicted lower levels of dipping. Scores of discrimination accounted for 7% of the variance in SBP dipping (p = .03) and 7% of the variance in DBP dipping (p= .02) above and beyond the effect of the covariates race, age, BMI, 24-hour BP, SES, and social desirability, none of which were significantly associated with dipping. In this sample the everyday discrimination scale scores ranged from 0 to 3.9. The Beta values for discrimination shown in Table 3 indicate that for every one unit increase in everyday discrimination, taken in the context of the other variables in the model, both systolic and diastolic nocturnal BP dipping decreased by over 2 mm Hg.

Analysis of First and Second ABPM Session

Recent literature has pointed to the diminished ability to detect associations between psychosocial variables and dipping, based on a single 24-hour period of monitoring (12). In

this sample, ABPM measurements across the two 24-hour periods of observation were all highly correlated (*p's* < .001). Consistent with the previous literature, day and night time measures were more highly correlated across sessions than dipping measurement (40,41). Average daytime SBP and DBP had r values ≥.69, sleeping measures of SBP and DBP had r's ≥.65 and SBP and DBP dipping had r's ≥.36. We also examined the reliability of BP measures across days using Cronbach's alpha. Similar to the correlation data presented above, average day and night BP readings over two days were more reliable than BP dipping. Average daytime SBP and DBP had Cronbach's alpha values ≥.82, sleeping measures of SBP and DBP had Cronbach's alpha values ≥.78 and SBP and DBP dipping had Cronbach's alpha values ≥.53. Using the regression analysis described above, we conducted separate analyses to examine the impact of discrimination on dipping at night 1 and night 2. While the pattern of results was similar on night 1 (higher reported discrimination was associated with less BP dipping), discrimination did not significantly predict either SBP (B = -1.40, SE = 1.30, p = .29, ΔR^2 = .02) or DBP dipping (B = -1.33, SE = 1.13, p = .24, ΔR^2 = .02). In contrast, discrimination was significantly associated with SBP dipping (B = -3.51, SE = 1.21, p <.01, ΔR^2 = .11) and DBP dipping (B = -3.00, SE = 1.01, p < .01, ΔR^2 = .10) on the second night of monitoring.

Race and Blood Pressure Dipping, Evidence of the Mediational Effect of Everyday Discrimination

Next, we investigated whether experiences of everyday discrimination mediated the relationship between race and BP dipping in the sample. Given that significant associations between discrimination and BP dipping were only detected for the second night of monitoring, further analyses utilized data from the second monitoring session as the outcome measure. The first set of analyses examined the potential mediational effect of discrimination on race and DBP dipping, while the second set of analyses focused on race and SBP dipping. According to Baron and Kenny (42) three conditions must be met to establish a variable as a mediator. First, the predictor variable (race) must be related to the mediator (everyday discrimination). As previously reported, race is significantly associated with everyday discrimination (p = .03). Second, the predictor variable must be related to the outcome variable (DBP dipping). In our sample race was significantly related to DBP dipping (p = .04). To control for suspected covariates of DBP dipping, we entered age, gender, BMI, MC score, SES, and average DBP in the first step of a regression analysis and race in the second step. Covariates accounted for 9% of the variance in DBP dipping (p > .05), race accounted for an additional 5% of the variance (B = 3.54, SE = 1.82, p = .06). The third step necessary to show mediation states that when the outcome variable is regressed onto the mediator and predictor variable, a stronger relationship must exist between the mediator and the outcome variable than the predictor and outcome variable. In the next step of the mediational analysis, we entered everyday discrimination and race into a regression model predicting DBP dipping simultaneously. The full model accounted for 24% of the variance in DBP dipping. There was a complete mediation of the relationship between race and DBP dipping by everyday discrimination (B = -2.95, SE = 1.01, p < .01). When discrimination was entered into the regression simultaneously, race no longer significantly predicted DBP dipping (B = 2.27, SE = 1.78, p = .21).

In our sample, there was a trend indicating that race was related to SBP dipping (p = .06); despite the marginal significance of this finding we investigated whether controlling for discrimination further attenuated the relationship. The covariates mentioned above were controlled for on the first step of a regression analysis where SBP dipping was the outcome measure; race was entered on the second step. Covariates accounted for 2% of the variance in SBP dipping (p > .05), race accounted for an additional 6% of the variance (B = 4.41, SE = 2.23, p = .05). In the next step of the mediational analysis, we entered everyday discrimination and race into a regression model predicting SBP dipping simultaneously. The full model accounted for 18% of the variance in SBP dipping. There was a complete mediation of the

relationship between race and SBP dipping by everyday discrimination (B = -3.51, SE = 1.21, $p < .01$). When discrimination was entered into the regression simultaneously, race no longer significantly predicted SBP dipping (B = 2.91, SE = 2.18, p = .19). Everyday discrimination mediated the association between race and BP dipping. Regardless of racial identification, participants who reported more everyday discrimination demonstrated less SBP and DBP dipping.[1]

Exploratory Analyses

In order to better understand the relationship between everyday discrimination and dipping, we investigated a number of covariates known to be associated with BP dipping. A set of hierarchical regression analyses were conducted (analyses not shown) in which the models for SBP and DBP dipping were altered to include the original set of covariates (age, race, BMI, SES, Marlowe-Crowne score and mean 24-h SBP or 24-h DBP) plus one of 4 potential covariates. The covariates, each of which have been linked to BP dipping, included hostility (assessed with the Buss-Durkee Hostility subscales: Expression of Anger and Experiences of Anger) (13,45), alcohol consumption (15), smoking (10) and marital status (12,39). The addition of each of these covariates had virtually no impact on the relationship between discrimination and either SBP or DBP dipping ($p's$ = ns).

Much of the work linking everyday discrimination and cardiovascular outcomes has been conducted in samples of Black women (23) and there is some evidence suggesting that the impact of everyday discrimination is greater in Black Americans than Whites (24). Acknowledging that we have a limited number of Black women in the dataset (n=14), using hierarchical regression analysis, we investigated whether there was a significant interaction between (1) gender and everyday discrimination and (2) race and everyday discrimination in the prediction of SBP and DBP dipping. We included the original set of covariates in the model as well as centered everyday discrimination scale scores and an interaction term. Our results showed no significant interactions between gender and everyday discrimination (SBP: B = -3.33, SE = 2.23 p = .14, ΔR^2 = .03; DBP: B = -2.44, SE = 1.88 p = .20, ΔR^2 = .02) or race and everyday discrimination (SBP: B = 3.12, SE = 2.39, p = .19, ΔR^2 = .02; DBP: B = 1.01, SE = 2.00, p = .61, $\Delta R^2 < .01$) in the prediction of dipping.

Discussion

This study examined the relationship between experiences of everyday discrimination, or perceptions of unfair treatment, and BP dipping in a biracial sample of Black and White American adults. Our results indicate that increases in everyday discrimination are linked to decreased SBP and DBP dipping above and beyond the effect of known covariates. While this relationship accounts for a small proportion of variance in our model (approximately 8-11%), it is important to note that perceptions of everyday discrimination emerged as the most significant predictor of BP dipping.

Black Americans consistently report experiencing more everyday discrimination than Whites, which may explain differences observed in dipping across races (18,38). Our results lend support to this hypothesis, suggesting that everyday discrimination works as a mediator between race and BP dipping. We also investigated whether an interaction existed between

[1]The mediational impact of everyday discrimination on BP dipping was also assessed using a bootstrapped multivariate test of mediation developed by Preacher and Hayes (43,44). The strategy compares the indirect effects of X on Y (through M) while taking covariates into consideration. The resulting confidence intervals provide a test of significance that evaluates whether the theorized mediator statistically accounts for a significant part of X's prediction of Y. The analysis revealed that the total indirect effect (i.e., the difference between total and direct effects) of race on BP dipping through the mediator variable (everyday discrimination) was significant ($p < .05$). Bootstrapped, bias-corrected and accelerated 95% confidence intervals for the mediational effect of everyday discrimination on DBP was .09 to 2.68 and on SBP was .06 – 2.85.

race and discrimination in the prediction of BP dipping. In this sample, no interaction was detected. While these findings suggest that experience of everyday discrimination is equivalently harmful for both Black and White Americans, it is important to note the sample size under investigation was small and power issues may have limited our ability to detect an interaction where one potentially exists.

Previous work in this area has focused on the relationship between perceived racism and BP dipping (16,18). While studies of perceived racism among minority samples are valuable, individuals may perceive unfair treatment associated with a variety of factors other than race. Our findings extend a body of literature showing that experiences of perceived unfair treatment, or everyday discrimination, are linked to negative health outcomes (21-24). Using a biracial sample of Black and White participants adds a new dimension to the discrimination and dipping literature.

An interesting aspect of our study was the use of two nights of ABPM. The field is becoming uncomfortably aware that a significant amount of variance exists in dipping status from one night to the next (26). Our results show that multiple ABPM sessions increased our ability to detect a relationship between discrimination and dipping. Utilizing a single ABPM session in this sample would have limited our power to detect a relationship. While a trend on the first night of monitoring was suggestive of a relationship between the two constructs, a much larger sample size would have been necessary to detect a significant association. In contrast, the second night of monitoring revealed a clear, significant relationship between discrimination and BP dipping. These findings align with previous work showing that improving the reliability of BP dipping measurement via repeated monitoring increases the ability to detect associations between dipping and psychosocial variables (12). While the cause of variation in BP dipping has not been fully elucidated, the use of ABPM equipment has been shown to significantly increase BP during sleep and to disrupt sleep quality in some individuals (25,41,46-49). While this is true on the first night of monitoring, some habituation to ABPM has been evidenced after two nights (46). BP variations due to sleep disruptions from the first night of ABPM may disrupt normal dipping patterns across all participants, thus obscuring the association between dipping and discrimination. Potentially, habituation to the monitor on the subsequent testing night facilitated detection of the association between discrimination and dipping.

If experiences of everyday discrimination are contributing to decreased BP dipping, the next question must be “what mechanisms underlie the association?” Our findings suggest that the association is independent of factors such as age, BMI, alcohol consumption, and smoking. While the pathways underlying the discrimination and dipping association are likely to be multifaceted, neuroendocrine factors may potentially link the two constructs. In particular, elevations in daytime cortisol levels have been independently linked to stressors such as discrimination as well as reduced BP dipping 50,51). Another potential mechanism influencing the association between discrimination and dipping is sleep. One of the most consistent markers of stressors on sleep is a reduction in the amount of time spent in slow wave sleep (SWS) (52). Individuals who display attenuated BP dipping also tend to experience more fragmented sleep and spend more time in light versus SWS (53,54). Future research clarifying mechanisms by which discrimination reaches out into the night to disrupt dipping could help focus interventions aimed at attenuating some of the negative health effects that result from experiences of discrimination.

This study contributes to the growing body of research aimed at elucidating racial differences in cardiovascular health. Overall, our findings support the hypothesis that the experience of everyday discrimination is associated with reduced BP dipping in Black and White American adults. In addition, the findings suggest that the relationship is not a function of age, BMI, current SES, marital status, gender, alcohol consumption, or smoking. Finally, our study points

to the importance of using multiple nights of monitoring when investigating associations between dipping and psychosocial variables.

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Abbreviations

BP	blood pressure
ABPM	ambulatory blood pressure monitoring
DBP	diastolic blood pressure
SBP	systolic blood pressure
BMI	body mass index
SES	socioeconomic status

Table I

Sample Characteristics

	Total ***N = 78***	**Blacks** ***N = 30***	**Whites** ***N = 48***	***p***
	(46% Women)	(47% Women)	(46% Women)	.49
Hypertensive (%)	10.3	10.0	10.4	1.00
Current smoker (%)	9.0	16.7	4.2	.10
Martial Status				.52
Married	12	6	6	
Unmarried	66	24	42	
	M ± SD	**M ± SD**	**M ± SD**	
Everyday Discrimination	1.20 ± .80	1.44 ± .96	1.05 ± .65	.03
SES	39.8 ± 14.7	43.5 ± 13.0	37.4 ± 15.00	.07
MC Social Desirability	18.1 ± 6.1	19.1 ± 6.9	17.4 ± 5.4	.26
Education (years)	14.6 ± 2.4	13 .8± 1.8	15.1 ± 2.6	.02
Age	35.0 ± 10.4	41.0 ± 7.8	31.2 ± 10.1	<.01
BMI	25.5 ± 3.9	27.1 ± 3.5	24.4 ± 3.8	.01
ABPM Day SBP (mm Hg)	120.5 ± 8.0	119.9 ± 7.5	120.8 ± 8.4	.63
ABPM Day DBP (mm Hg)	74.8 ± 6.5	76.2 ± 6.5	73.9 ± 6.4	.13
ABPM Night SBP (mm Hg)	107.3 ± 8.3	108.5 ± 7.5	106.6 ± 8.8	.32
ABPM Night DBP (mm Hg)	61.5 ± 7.3	64.5 ± 6.7	59.6 ± 7.1	.01
SBP day-night dipping (mm Hg)	13.2 ± 6.4	11.4 ± 6.9	14.3 ± 5.9	.06
DBP day-night dipping (mm Hg)	13.3 ± 5.4	11.7 ± 5.7	14.2 ± 5.0	.04

SBP = systolic blood pressure; DBP = diastolic blood pressure; ABPM = ambulatory blood pressure monitoring; SES = socioeconomic status; MC = Marlowe-Crowne

Table II

Correlations of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Discrimination	–	-.24*	-.26*	-.25*	-.02	.09	.20	-.37**	-.01	.02	.05	.06
2. DBP dipping		–	.82**	.23*	-.21	-.12	-.10	-.17	-.07	-.16	.09	-.05
3. SBP dipping			–	.22†	-.11	-.08	-.09	-.05	-.05	-.14	-.07	-.05
4. Race				–	-.46**	-.34**	-.21	-.13	-.03	-.28*	-.08	-.21
5. Age					–	.50**	.04	.21	.20	.39*	.04	.15
6. BMI						–	-.23*	.65	.39**	.46**	.12	-.05
7. SES							–	.02	-.02	-.04	.01	.11
8. MC								–	.19	.16	-.18	-.01
9. Mean SBP									–	.73**	-.33**	.13
10. Mean DBP										–	-.09	.27*
11. Gender											–	-.01
12. Smoking												–

* $p < .05$;

** $p < .01$;

† $p = .06$ (two-tailed)

DBP = diastolic blood pressure; SBP = systolic blood pressure; BMI = body mass index; SES = socioeconomic status (higher scores represent lower SES); MC = Marlowe-Crowne Social Desirability Scale

Table III

Hierarchical Regression of Discrimination Predicting BP Dipping

DV	Step	Predictor	*B*	SE	*t*	*P*	R^2	ΔR^2
SBP dipping (mm Hg)	1	Race	1.68	1.90	.88	.38	.05	
		Age	-.04	.09	-.39	.70		
		Gender	-1.20	1.66	-.72	.47		
		BMI	.19	.27	.73	.47		
		SES	.03	.06	.57	.57		
		Average SBP	-.09	.12	-.70	.49		
	2	MC Social Desirability	-.15	.14	-1.11	.27	.05	<.01
	3	Discrimination	-2.52	1.01	-2.39	.02	.13	.08
DBP dipping (mm Hg)	1	Race	.77	1.56	.50	.62	.08	
		Age	-.07	.08	-.90	.38		
		Gender	.65	1.29	.50	.62		
		BMI	.13	.21	.61	.55		
		SES	.02	.05	.31	.76		
		Average DBP	-.09	.12	-.73	.47		
	2	MC Social Desirability	-.20	.12	-1.76	.08	.08	.02
	3	Discrimination	-2.20	.88	-2.49	.02	.16	.08

DV = dependent variable; SE = standard error; SBP = systolic blood pressure; SES = socioeconomic status (higher scores represent lower SES); BMI = body mass index; MC = Marlowe-Crowne; DBP = diastolic blood pressure.