

RELATIONSHIP OF INTERNALIZED RACISM TO ABDOMINAL OBESITY AND BLOOD PRESSURE IN AFRO-CARIBBEAN WOMEN

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Racism is associated with increased psychosocial stress and blood pressure in blacks. However, little is known of the relationship of racism to other features of insulin resistance syndrome. This study examined the relationship of internalized racism to abdominal obesity and elevated blood pressure in a population of black Caribbean women aged 20-55 years. One hundred thirty-three randomly selected women from the island of Barbados comprised the study sample. Data collected included anthropometric and blood pressure measurements, and information about internalized racism, anxiety, and depression.

The stress measures including anxiety, depression, and internalized racism were significantly correlated with waist circumference ($r=.25$, $r=.21$, and $r=.25$). After adjusting for age, education, anxiety, and depression, internalized racism remained significantly correlated with waist circumference. The odds ratio associated with development of abdominal obesity among those with high internalized racism (OR=2.4 [95% CI, 1.1,5.3]) was significant ($P<.05$) after adjusting for age, education, and body mass index. Blood pressure was not independently related to internalized racism. Studies comparing black-white differences in diseases for which abdominal obesity is a risk factor (eg, diabetes and cardiovascular disease) should take into account the potential role of internalized racism in defining the differences between ethnic groups. (*J Natl Med Assoc.* 1999;91:447-452.)

Key words: racism ♦ obesity ♦ blood pressure
♦ Afro-Caribbean women

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It has been hypothesized that psychosocial stress (ie, behavioral and social) and associated neuroendocrine disturbances may play a role in the pathogenesis of insulin resistance syndrome.¹ Measures of psychosocial stress (eg, anger, hostility, depression, and anxiety) are associated with components of insulin resistance syndrome including hypertension, hyperlipidemia, alterations in glucose and insulin homeostasis, and abdominal obesity.²⁻⁵ In many populations, including those of African descent in the United States and Caribbean,^{6,7} abdominal obesity is a risk factor for type 2 diabetes. Thus, psychosocial stress may be an important contributor to type 2 diabetes risk through its influence on abdominal fat deposition.²

Table 1. Characteristics of the Study Population

No. women	129
Mean (\pm SD) age (yr)	34.7 \pm 9.6
Mean (\pm SD) body mass index	27.6 \pm 7.3
% overweight	43.4
% hypertensive	15.5
% with education <high school	19.4

Studies have shown that racism is associated with higher levels of psychosocial stress among blacks.⁸⁻¹² Racism may manifest as episodes of discrimination perpetrated against others⁸⁻¹⁰ or as the internalization by individuals of racist stereotypes about their ethnic group.^{11,12} It is suggested that the chronic stress resulting from racial discrimination may contribute to the higher levels of stress-associated illness observed in the US black population.¹³ A number of studies have shown that racial discrimination is related to higher blood pressure levels among black Americans.^{14,15} The effect of racism on blood pressure in blacks appears to be greater for those who internalize their responses to racism.¹⁶

As previously noted, increased blood pressure is one feature of insulin resistance syndrome. Therefore, it is possible that internalization of responses to racism and of racist stereotypes about blacks by blacks also may be related to other features of insulin resistance syndrome. This study examined whether internalized racism and other measures of psychosocial stress were associated with abdominal fat and blood pressure levels in an Afro-Caribbean population residing in Barbados.

MATERIALS AND METHODS

Study Population

Participants in this study were women age 20 to 55 who resided in the parish of Christ Church in Barbados. The parish of Christ Church is divided into health districts that are served by local public health inspectors and nurses. For this study, one health district (health district 4) was randomly selected as the primary sampling unit. A systematic sample of households was then chosen from the neighborhoods (Scarborough, Keiser Hill, Gall Hill, and Silver Hill) that comprise health district 4, and each household was queried to determine if an eligible woman was in residence. Eligible subjects were

Table 2. Correlation Coefficients Relating Psychosocial Variables to Measures of Abdominal Obesity and Blood Pressure

Variable	Abdominal Obesity		Blood Pressure	
	Waist	WHR	Systolic	Diastolic
Age	.33*	.38*	.48*	.42*
Anxiety	.25†	.24‡	.11	.07
Depression	.21‡	.21‡	.09	.05
Education	-.23‡	-.21‡	-.26‡	.23‡
Internalized racism	.25†	.25†	.19‡	.12
Self-rated health	-.21‡	-.22‡	-.10	-.13

* $P < .001$.

† $P < .005$.

‡ $P < .05$.

women between the ages of 20 and 55 years without a history of diabetes who were able to sign an informed consent form. Households were visited at different times of the day to increase the likelihood of finding someone at home. For homes with eligible subjects, one individual was randomly selected and invited to participate in the study. Each participant signed a consent form approved by the faculty of medical sciences at the University of the West Indies and the Barbados Ministry of Health.

Data for the study were collected in the homes of participants between July 1, 1996 and August 21, 1996. A standardized questionnaire was used to collect information on study variables including education, marital status, date of birth, and self-rated health status. Psychosocial stress-related variables included anxiety and depressive symptoms. Self-rated health status was measured as a categorical variable rated on five levels from excellent to poor. Anxiety and depressive symptoms were assessed using Taylor's measures for black populations.¹⁷ The Nadanolitization Scale was used to measure internalized racism, the extent to which blacks identify with racist stereotypes of blacks.¹⁸

Anthropometric measurements that were performed on each participant included weight, height, and waist and hip circumference. Weight was measured on an electronic digital scale with subjects in light clothing and no shoes. Height was measured with a wall-mounted ruler. The waist and hip circumference of each individual was measured at the

umbilicus and at the widest point around the buttocks, respectively, using a Gullic tape measure.¹⁹ Body mass index (BMI), a measure of overall obesity, was calculated as weight in kilograms (kg) divided by height in meters squared (kg/m^2). A BMI >27.3 was classified as overweight.²⁰ Abdominal fat was measured by the waist circumference and by the ratio of the waist to hip circumference (WHR). To determine the frequency of abdominal obesity, a WHR level $>.80$ was considered abnormal. This cut point has been used in other studies of abdominal obesity in black Caribbean populations⁶ and is recommended by the US Department of Agriculture for determining cardiovascular disease risk in women.²¹

Systolic and diastolic blood pressure were measured with a standard sphygmomanometer, with subjects resting for 5 minutes prior to the readings. The presence of hypertension was established by a systolic blood pressure >140 mmHg or diastolic blood pressure >90 mmHg or the use of antihypertensive medication.

Statistical Analysis

Measures of psychosocial stress were dichotomized into high and low levels by dividing scores at the median. Spearman rank correlation was used to examine univariate relationships between the study variables. The frequencies of dichotomous variables were compared using odds ratios (OR) with 95% confidence intervals (95% CI). Multivariate associations of psychosocial variables with measures of abdominal obesity and blood pressure were assessed with partial correlations and multiple logistic regression. Differences in variable means were determined using the *t* test. All analyses were performed using SAS software.²²

RESULTS

A total of 133 Afro-Caribbean women aged 20-55 years were recruited for the study with a participation rate of 74%. Of these, four did not complete the Nadanolitization questionnaire and were excluded from further analyses. Characteristics of the remaining sample of 129 women are presented in Table 1.

The correlation coefficients for comparisons between psychosocial variables and measures of abdominal fat and blood pressure are presented in Table 2. Each of the measures of psychosocial stress including anxiety ($r=.25$), depression ($r=.21$), and internalized racism ($r=.25$) were significantly correlated with waist circumference. Similar correlations

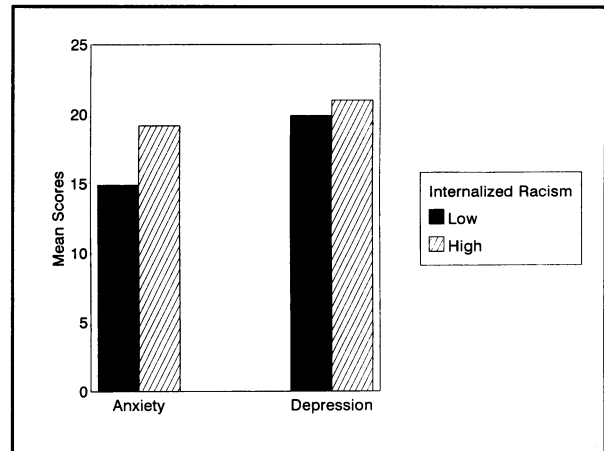


Figure 1. Levels of anxiety and depression for Barbadian women aged 20-55 years with high and low levels of internalized racism.

were found with WHR. After adjusting for other variables (ie, age, anxiety, depression, and education), internalized racism remained significantly ($P<.05$) correlated with waist circumference. Among the measures of psychosocial stress, only internalized racism was significantly ($P<.05$) correlated with blood pressure ($r=.19$ versus systolic). However, after adjusting for educational level, the correlation between systolic blood pressure and internalized racism was no longer significant.

When individuals with high ($n=66$) and low ($n=63$) levels of internalized racism were compared, those with high internalized racism were less likely to have completed high school than those with a low level (74.2% versus 87.3%; $P=.06$, respectively) and had a slightly higher mean age (high= 35.7 ± 9.8 years versus low= 33 ± 8.8 years; $P=.09$). The mean BMI for subjects with high internalized racism was significantly greater than for those with low internalized racism (29.1 ± 8.3 versus 26.1 ± 5.7 ; $P<.05$). However, the difference in mean WHR between the groups did not reach statistical significance (high= 0.87 ± 0.37 versus low 0.79 ± 0.07 ; $P=.072$).

The mean levels of anxiety, depression, and waist circumference among individuals with high and low internalized racism are compared in Figures 1 and 2. Subjects with high internalized racism had higher mean scores for anxiety ($P<.0001$) and depressive symptoms ($P<.05$) compared with those with low internalized racism (Figure 1). The mean waist circumference of women with high internalized racism (88.1 ± 12.8 cm) was significantly greater ($P<.05$)

Table 3. Results of Logistic Regression Analysis Relating Internalized Racism to the Prevalence of Overweight, Abdominal Obesity (Abnormal WHR) and Hypertension Among Afro-Caribbean Women

	Univariate		Adjusted for Age		Adjusted for Age, Education	
	OR	95% CI	OR	95% CI	OR	95% CI
Overweight	2.2	1.1,4.6*	2.1	1.1,4.*	2	1,4.2
Abdominal obesity	3.1	1.5,6.3†	2.8	1.4,5.9†	2.8	1.3,6.1†
Hypertension	2.5	0.9,7.1	2.4	0.8,6.9	2.3	0.8,6.8

* $P < .05$.
 † $P < .01$.
 WHR=waist to hip circumference; OR=odds ratio; and CI=confidence interval.

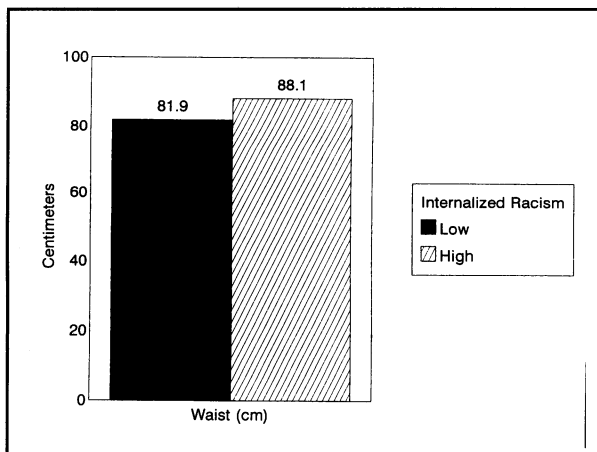


Figure 2. Levels of waist circumference and hypertension in Barbadian women aged 20-55 years with high and low levels of internalized racism.

than that of women with low internalized racism (81.9 ± 13.8 cm) (Figure 2).

The results of logistic regression analysis relating internalized racism to the prevalence of overweight, abdominal obesity, and hypertension are displayed in Table 3. When adjusted for age and education, having a high level of internalized racism was associated with a two times greater chance of being overweight (OR=2; $P=.06$). The odds of having abdominal obesity was 2.8 times greater ($P < .05$) for subjects with high internalized racism after adjusting for age and education. When BMI was added to the model, the OR relating abdominal obesity to high internalized racism was slightly reduced (OR=2.4 [95% CI=1.1,5.3]) but remained significant. While the percentage with hypertension appeared higher

for individuals with high internalized racism than for those with low internalized racism (21.2% versus 9.5%, respectively), the difference was not statistically significant (OR=2.5).

DISCUSSION

Studies that have demonstrated a relationship between measures of psychosocial stress (anger, anxiety, depression, and hostility) and the waist circumference or WHR have been primarily in white populations.^{2,3,5} In this study of black Caribbean women, a positive relationship was found between levels of stress-related variables (internalized racism, anxiety, and depression) and waist circumference and WHR. An association of internalized racism and waist circumference or WHR has not been previously established. In this study, the odds of abdominal obesity was 2.3 times greater for women with high internalized racism (scores above the median) than for those with low internalized racism. This effect was independent of age, education, and overall obesity.

The precise mechanism through which internalized racism may influence the development of abdominal obesity is unclear. However, it may relate to the way that individuals with high levels of internalized racism cope with stress. Björntorp¹ has suggested that neuroendocrine dysregulations associated with a defeat response to stress may result in increased cortisol secretion and decreased sex hormone secretion, leading to abdominal fat deposition together with other features of insulin resistance syndrome. Taylor et al¹¹ reported that black women with poor education and limited resources who subscribe to racist stereotypes that blacks are mentally defective experience high levels of depressive symp-

toms and low self-esteem. These individuals may be particularly susceptible to a defeat response when faced with social or economic challenges. It should be noted that because data on smoking habits and alcohol consumption were not collected in this study, the possibility that the relationship of internalized racism to abdominal obesity is confounded by these factors cannot be ruled out.

Several lines of evidence suggest a relationship between racism and blood pressure in blacks. Some have found that suppression of anger or other responses to racism is associated with increased blood pressure in black Americans.^{13,14} Studies that investigated the "John Henryism" hypothesis suggest that blood pressure levels in blacks may be highest among those who strive to overcome the effects of institutionalized racism but lack the resources to do so.²³⁻²⁵ In the cohort of women in this study, internalized racism was not independently related to blood pressure, as was seen when the univariate relationship of internalized racism with systolic blood pressure disappeared after adjusting for educational level. If internalized racism is a marker for physiological processes related to insulin resistance syndrome, then the lack of a relationship with blood pressure would be consistent with the observation that relationships between blood pressure and other features of insulin resistance syndrome that exist for whites do not always exist for blacks.²⁶

CONCLUSION

This study found a significant relationship between internalized racism and abdominal obesity. While these data are preliminary, they are consistent with other studies showing a relationship of racism to other adverse health outcomes. In addition, these results raise questions regarding the possible relationship of internalized racism to other features of insulin resistance syndrome and its contribution to the differential impact of abdominal obesity on the risk of diabetes for blacks and whites. Additional research in an African-American population is needed.

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