

EXAMINING THE RELATIONSHIP BETWEEN THE ENDORSEMENT OF RACIAL/ETHNIC STEREOTYPES AND EXCESS BODY FAT COMPOSITION IN A NATIONAL SAMPLE OF AFRICAN AMERICANS AND BLACK CARIBBEANS

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Using the National Survey of American Life, a nationally representative household survey of non-institutionalized US Blacks, our study examined whether the endorsement of racial/ethnic stereotypes was associated with excess body fat composition among African Americans ($n = 3,265$) and Black Caribbeans ($n = 1,332$) living in the United States. We used ordinary least squares and multinomial logistic regression analyses controlling for potential confounders. Results from the linear regression suggested that the endorsement of racial/ethnic stereotypes was associated with increased body mass index and weight among African American males ($b = .57, P < .05$) and females ($b = .50, P < .05$). Further, results from the adjusted multinomial logistic regression suggested that African American males who endorsed racial/ethnic stereotypes were more likely to be obese (odds ratio = 1.33, $P < .05$), than African American males who did not endorse racial/ethnic stereotypes. Surprisingly, a positive relationship was not found among Black Caribbeans. Future studies should examine the relationship between internalized discrimination and endorsements of negative racial/ethnic stereotypes and excess fat accumulation among ethnically heterogeneous samples of Blacks. (*Ethn Dis.* 2013;23[4]: 462–468)

Key Words: Discrimination, Stress, Psychological, Obesity, Body Weight Changes

INTRODUCTION

The obesity rate in the general US population is at epidemic proportions, as approximately 34% of US adults are obese.¹ While the prevalence rate of obesity is high in the general population, it masks some important variation among racial/ethnic groups. For

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example, Black Americans, at 44%, have the highest prevalence rate of obesity when compared to non-Hispanic Whites, at 33%, and Hispanics, at 38%.¹ As the rates of obesity have increased to epidemic proportions within the past three decades,² some researchers are looking beyond the traditional risk factors associated with obesity to examine the role of psychosocial stressors, like interpersonal discrimination.^{3,4} Interpersonal discrimination, a hypothesized psychosocial stressor, has been found to be related to various health related risk factors including obesity^{5–7} and related comorbidities like hypertension and cardiovascular disease.^{8–10}

Although the complete pathway is unknown, some suggest that psychosocial stressors, like discrimination, inhibit the body's control of the hypothalamic pituitary axis (HPA).^{3,4,11} As a fundamental component of the physiological stress reaction pathway, the HPA can be altered as a result of constant dysregulation in response to external challenges.¹¹ One potential result of the constant adaptation to external challenges is excess body fat.^{3,4} Consistent with the larger stress literature on the harmful effects of psychosocial stress, several studies have highlighted the association between various forms of discrimination and obesity.^{5–7,12–15}

Jones¹⁶ and others propose that three forms of discrimination, interpersonal, institutionalized, and internalized, work synergistically to produce adverse health outcomes and may in fact explain some of the differences in health between Blacks and other racial/ethnic groups. While these forms of discrimination have been hypothesized to be related to adverse health and racial/ethnic differences in health,^{16–20} only interpersonal and internalized discrimination have

been well represented in the literature. Furthermore, the most widely studied type of discrimination in the community-based studies and obesity/excess fat literature is self-reported interpersonal discrimination.^{17,19,21} The majority of these empirical studies do suggest a positive association between interpersonal discrimination and excess fat among various racial and ethnic populations.^{5,6,12,22,23}

Internalized discrimination, a suggested defeatist mindset, has been studied on a limited basis in mammalian models and humans.^{14,15,24–26} Study findings suggest that a socially subordinate status among mammals was associated with weight gain, as a defeatist mindset may suppress immunological functioning.^{24,25} Similar relationships between subordinate status and obesity in mammalian animal models were borne out in empirically based studies of humans. In particular, the studies have demonstrated this relationship among Afro-Caribbeans females^{14,15,26} using Taylor's Nadanoltization Scale,²⁷ a measure of the extent to which Blacks identify with racist stereotypes about Blacks.²⁷ Findings from these studies found that among Afro-Caribbean women internalized racism was associated with increased waist circumference and body mass index (BMI).^{14,15,26}

While the issues of obesity prevalence among African Americans is well noted,^{1,2} little is known about obesity among Black Caribbean Americans. Findings on obesity among Black Caribbean American adolescents', for example, suggest that they have a lower prevalence of obesity and a lower BMI compared to their African American peers.²⁸ However, to the authors'

knowledge, there are no empirical studies on the issues of obesity among Black Caribbean American adults living in the United States. Obesity rates among Caribbean adults residing in the Caribbean region are increasingly high, as the rates range from 33%–52% for Caribbean women and 9%–38% for Caribbean men.^{2,28}

Using the National Survey of American Life (NSAL), the purpose of our study was to examine the relationship between internalized discrimination and obesity among a sample of African American and Black Caribbeans residing in the United States. African Americans and Black Caribbeans, due to similarities in skin complexion and other physical features, may encounter similar treatment. Despite commonalities, Black Caribbeans' perceptions of and potential reaction to unfair treatment due to their perceived racial status in the United States may be quite different due to their often strong identification as a West Indian, not as African American.²⁹ Thus, identifying the relationship between internalized discrimination and excess body fat is important as broad racial/ethnic categorization may overlook important within racial group differences. Given that differences between excess fat and discrimination exist, we also explored sex differences in the proposed relationship. Previous studies on the

proposed association only explored the relationship among a sample of Afro-Caribbean females,^{14,15,26} thus it is unknown if internalized discrimination has a similar influence among males.

METHODS

Data from NSAL was used to explore the relationship between the endorsement of racial/ethnic stereotypes and excess body fat related measures. Part of a larger series of concurrent national psychiatric epidemiologic studies, NSAL was designed to explore the intra- and inter-group racial and ethnic differences in mental health disorders, psychological distress, and the use of formal and informal help among adults aged ≥ 18 years.³⁰ The data were collected between February 2001 and March 2003, through face-to-face and telephone interviewing with a 72.3% overall response rate.³⁰

Our study used the African American ($n = 3570$) and Black Caribbean ($n = 1621$) subsamples to explore the relationship between the endorsement of racial/ethnic stereotypes and excess body fat measures.³⁰ Study respondents were classified as Black Caribbeans if they self-identified as Black, and affirmatively reported one of the following: 1) of West Indian or Caribbean descent, 2) from a Caribbean area or country, or 3) related to parents or grandparents who were born in a Caribbean country.³⁰ Black Caribbeans residing in the United States have the potential to be overlooked due to the commonly used broad racial coding of Black populations.

Measures

Excess Body Fat

Three measures were used to characterize excess body fat, all self-reported: continuous BMI (weight in kilograms divided by height in meters squared);³¹ BMI categorized into three groups: underweight/normal (BMI < 24.9),

overweight (BMI 25.0 to 29.9), and obese (BMI ≥ 30); and continuous weight (lbs).

Endorsement of Racial/ethnic Stereotypes

A scale based on the responses to questions about Black/Caribbean stereotypes was used as a proxy of internalized discrimination. African Americans and Black Caribbeans responded to questions ascertaining their agreement with stereotypes about their own racial/ethnic group. The following three questions, previously used in a study of African American men,⁹ were included: 1.) How true Blacks/Caribbean are lazy? 2.) How true Blacks/Caribbean give up easily? 3.) How true Blacks/Caribbean are violent? The response options to the items were measured using a four-point scale (1 = not true, 2 = somewhat true, 3 = a little true, 4 = very true). The scale was created by dividing the sum of the three questions by three to reflect the original scale of the questions. The scale theoretically ranges from 1 to 4, with higher scores representing higher levels of endorsement of racial/ethnic stereotypes. The Cronbach's alpha, a measure of internal consistency, was .70 for African Americans and .67 for Black Caribbean; both in the acceptable range.³²

Covariates

Several potential sociodemographic, behavioral, mental and physical health covariates that may confound the association between the endorsement of racial/ethnic group attitudes and obesity were used in the analyses.¹⁷ Those sociodemographic characteristics were: marital status (married vs non-married), age (in years), age squared (to control for the curvilinear relationship between age and weight gain), education (binary coded for <12 years: yes vs no), and income (binary coded for >\$30,000: yes vs no). Caribbean Blacks received additional covariates based on US nativity (binary coded for US born: yes vs no) and time spent in the United

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States. (five categories: US born, < 5 years, 5–10 years, 11–20 years, and >20 years).

Physical activity, a behavioral variable, was assessed using a continuous physical activity scale (scale ranging from 0 to 9, with higher values indicating higher frequency of engaging in gardening, walking and exercising/playing sports). Three mental health covariates were included in analysis: self-esteem (a 10-item scale), major life stress (a count of major chronic stressors), and a summary variable that was a count of *Diagnostic and Statistical Manual of Mental Health Disorder, Fourth Edition (DSM IV)*³³ past-twelve month diagnoses of alcohol abuse and dependence, drug abuse and dependence, major depression, bipolar disorder, hypomania, dysthymia, current and past cigarette use status (a 10-item scale).³⁴ Responses to the measure of self-rated health question (ranging from excellent to poor), as it has been shown to be a good predictor of overall health, was also included on the analyses.³⁵

Data Analyses

All of the analyses in the study were weighted using the prescribed sampling and analytic weights. Bivariate analyses were conducted to explore the relationship between the outcome variable and each of the covariates of interest. Multivariable ordinary least squares (OLS) regression analysis was used to estimate the relationship between the endorsement of racial/ethnic stereotypes and continuous BMI, and weight (lbs). Multivariable multinomial logistic regression analysis was used to assess the relationship between the endorsement of racial/ethnic stereotypes and categorical BMI. The Chow Test was used to determine if the coefficients from the outcome variable for the OLS and multinomial logistic regression statistically differed between the African American and Black Caribbean subgroups analysis.

Table 1. Sample weighted characteristics of the African American (n= 3,265) and Black Caribbean (n=1,332) respondents (N=4,597) National Survey of American Life

	African American (n = 3,273)	Black Caribbean (n = 1,353)	P
BMI ^a , mean (SD)	28.77 (.12)	27.58 (.21)	e
Underweight/normal, %	29.59	37.40	d
Overweight, %	34.64	35.80	d
Obese, %	35.77	26.79	e
Weight, lbs, mean	183.78	177.37	e
Endorsing racial/ethnic stereotypes, 1–4, mean (SD)	2.21 (.02)	1.70 (.05)	
Marital Status, %			
Married	41.67	50.05	d
Non-married	58.33	49.94	d
Age, %			
<55	78.83	78.70	d
>55	19.95	18.70	d
Educational status, %			
<12 yrs		22.25	d
>12 yrs		77.75	d
Income, %			
<30,000	52.70	39.85	d
>30,000	44.67	56.97	d
Exercise, 0–9, mean (SD)	5.10 (.06)	5.36 (.13)	d
Self-esteem, 1–40, mean (SD)	36.13 (.13)	36.48 (.27)	d
Major stress, 0–9, mean (SD)	1.73 (.05)	1.56 (.10)	e
12-mo DSM-IV mental disorder ^b , %	58.26	45.50	e
Self-rated health, 1–5, mean (SD)	3.40 (.02)	3.59 (.07)	d
Years in United States, %			
US Born	98.74	35.70	
Foreign	1.26	64.30	
<5 yrs	.82	8.18	
>20 yrs ^c		26.25	

^a BMI: underweight (< 18.5 kg/m²), normal (18.5–24.9kg/m²), overweight (25.0–29.9 kg/m²), and obese (≥30.0 kg/m²).

^b Past-twelve month diagnoses of alcohol abuse and dependence, drug abuse and dependence, major depression, bipolar disorder, hypomania, dysthymia, current and past cigarette use status.

^c The majority of the African American respondents were US born, thus there were none that were foreign born who have been in the United States >20 yrs.

^d P≤.01.

^e P≤.001.

A series of analyses were conducted adding the covariates in an iterative manner however, only the final models are presented here. All of the analyses for the study were performed in STATA version 12 (StataCorp LP, College Station, TX).

RESULTS

Table 1 shows the descriptive characteristics for the African American and Black Caribbean subpopulations. The mean BMI for African Americans (28.77 kg/m²) was higher (P<.001)

than the mean BMI of Black Caribbeans (27.58 kg/m²). More African Americans (35.77%) were obese compared to Black Caribbeans (26.79%) (P<.01), and African American respondents (183.78 lbs.) weighed more than Black Caribbeans (177.37 lbs.) (P<.001). The mean of the endorsing racial/ethnic stereotypes scale was 2.21 for African Americans and 1.70 for Black Caribbeans.

Table 2 depicts the results from the OLS regression analysis on the association between the endorsement of racial/ethnic stereotypes and continuous BMI among African Americans and Black

Table 2. Results from OLS^a regression analysis depicting the association between self-reported internalized racial/ethnic stereotypes and continuous BMI among African Americans (n= 3,265) and Black Caribbeans (n= 1,332): National Survey of American Life

	African American		Black Caribbean		Chow Test
	B	SE	B	SE	F (x,y)
Model 2.1 ^{a,b}					
Females	.71 ^f	-.24	.07	-.81	1.00 (2, 53)
Males	.54 ^e	-.24	.10	-.48	4.54 ^e (2, 53)
Model 2.2 ^{a,c,d}					
Females	.50 ^e	-.23	-.06	-.48	10.24 ^f (2, 53)
Males	.57 ^e	-.22	.18	-.44	.42 (2, 53)

^a Ordinary least squares regression.

^b Analyses controlled for age and age-squared.

^c Analyses controlled for age, age-squared, marital status, education, income, US status, physical activity, self-esteem, major life stress, 12-month mental disorders, and self-rated health status.

^d Black Caribbeans received an additional covariate for time spent in the United States.

^e P≤.05.

^f P≤.01.

Caribbeans stratified by sex. Model 2.1 was adjusted for age and age-squared, and Model 2.2 was additionally adjusted for all the other covariates listed in Table 1. In Model 2.1, both African American males and females had a positive association between the endorsement of racial/ethnic stereotypes and BMI, with females having a .71 increase in BMI (P<.05) and males having a .54 increase (P<.05). In Model 2.2, the endorsement of racial/ethnic stereotypes remained significantly associated with an increased BMI for African American

females and males (b=.50 P<.05; b=.57 P<.05, respectively). None of the models were statistically significant among Black Caribbeans. The results from the Chow Test of Model 2.1 were significant for the males (P<.05), controlling for age and age-squared. However, the Chow Test does suggest that the difference between African Americans and Black Caribbeans females were statistically different, controlling to all the covariates.

Table 3 presents the results from the OLS regression analysis between the

endorsement of racial/ethnic stereotypes and continuous weight. Model 3.1 was adjusted for age and age-squared, and Model 3.2 was adjusted for all of the additional covariates shown in Table 1. The endorsement of racial/ethnic stereotypes was associated with an increase in weight (lbs.) among African American females (b=3.78 P<.05) but not Black Caribbean females. Adjusting for the covariates in Model 3.2, the endorsement of racial/ethnic stereotypes was associated with an increase in 2.87 lbs. for African American females and 3.81 lbs. for African American males (P<.05, respectively). The results from the Chow Test comparing African American and Black Caribbean males were statistically significant for males in Model 3.1, however it was no longer statistically significant after adjusting for all of the covariates (Model 3.2). The endorsement of racial/ethnic stereotypes was not significantly associated with weight among Black Caribbeans in either of the models.

Table 4 presents the multinomial odds ratio (MOR) and 95% confidence intervals from the multinomial logistic regression analysis between the endorsement of racial/ethnic stereotypes and categorical BMI. In Model 4.1, adjusted for age and age-squared, African Americans who endorse racial/ethnic stereotypes had increased odds of being obese (MOR=1.27, P<.001). Likewise, both African American females and males who endorse racial/ethnic stereotypes were more likely to be obese (MOR=1.23 P<.05, MOR=1.28 P<.05, respectively) when compared to their counterparts who endorsed lower levels of racial/ethnic stereotypes. Interestingly, in Model 4.2, only African American males who had endorsed racial/ethnic stereotypes were more likely to be obese (MOR=1.33, P<.05). Similar to the previous analyses presented in Tables 2 and 3, no significant findings emerged for Black Caribbeans. The results from the Chow Test were significant for males in Model 4.1, but not in Model 4.2.

Table 3. Results from OLS^a regression analysis depicting the association between self-reported internalized racial/ethnic stereotypes and continuous weight among African Americans (n= 3265) and Black Caribbeans (n= 1332): National Survey of American Life

	African American		Black Caribbean		Chow Test
	B	SE	B	SE	F (x,y)
Model 3.1 ^{a,b}					
Females	3.78 ^f	1.48	-3.97	5.16	1.97 (2, 53)
Males	2.03 ^f	2.07	-.30	3.05	8.86 ^f (2, 53)
Model 3.2 ^{a,c,d}					
Females	2.87 ^e	1.32	-.94	2.85	3.08 (2, 53)
Males	3.81 ^e	1.62	-.94	3.02	.71 (2, 53)

^a Ordinary least squares regression.

^b Analyses controlled for age and age-squared.

^c Analyses controlled for age, age-squared, marital status, education, income, US status, physical activity, self-esteem, major life stress, 12-month mental disorders, and self-rated health status.

^d Black Caribbeans received an additional covariate for time spent in the United States.

^e P≤.05.

^f P≤.01.

Table 4. Multinomial analysis depicting the association between internalized racial/ethnic stereotypes and BMI status among African Americans (n=3,265) and Black Caribbeans (n=1332): National Survey of American Life

	African Americans	Black Caribbeans	Chow Test ^e
	MOR (95% CI)	MOR (95% CI)	F (x,y)
Model 4.1 ^{a,b,c}			
Overweight			
Females	1.05 (.90–1.21)	.98 (.61–1.58)	.75 (2, 53)
Males	1.16 (.92–1.45)	1.15 (.52–2.54)	3.30 ^f (2, 53)
Obese			
Females	1.23 (1.03–1.46) ^f	1.15 (.96–1.37)	
Male	1.28 (1.03–1.60) ^f	1.33 (1.05–1.69)	
Model 4.2 ^{a,b,d}			
Overweight			
Females	1.03 (.89–1.20)	.98 (.65–1.47)	.42 (2, 53)
Males	1.21 (.95–1.54)	1.13 (.55–2.28)	.38 (2, 53)
Obese			
Females	1.15 (.96–1.37)	1.07 (.72–1.59)	
Male	1.33 (1.05–1.69) ^f	1.08 (.49–2.42)	

MOR, multinomial odds ratio; CI, confidence interval.
 BMI: underweight (< 18.5 kg/m²), normal (18.5–24.9kg/m²), overweight (25.0–29.9 kg/m²), and obese (≥30.0 kg/m²).
^a Weighted to be nationally representative.
^b Multinomial logistic regression; the comparison group was underweight/normal.
^c Analyses controlled for age and age-squared.
^d Analyses controlled for age, age-squared, marital status, education, income, nativity, physical activity, self-esteem, major life stress, and 12-month mental disorders.
^e Due to the inability to run a Chow Test on a multinomial regression, a logistic regression was completed with overweight and obese collapsed into one outcome variable.
^f P≤.05.

DISCUSSION

Overall the study supports the relationship as proposed in the literature between internalized discrimination and excess fat composition.^{15,26} As expected, the endorsement of racial/ethnic stereotypes was positively associated with excess body fat measures (lbs. and BMI), at least among African American. This suggests that the relationship between the endorsement of racial/ethnic stereotypes and continuous BMI differ between African American and Black Caribbeans under certain conditions. Interestingly, in the adjusted multinomial analysis, internalized racial/ethnic stereotypes was only positively associated with obesity (≥35 kg/m²) for African American males (P<.05). This finding suggests that there may be sex differences in the association between the endorsement of

racial/ethnic stereotypes and obesity among African Americans.

Surprisingly, a significant association was not found in the Black Caribbean subsample, although findings from previous studies have suggested that internalized discrimination was associated with excess body fat among Black women living in the Caribbean.^{14,15,26} One potential factor that may explain the lack of significant findings in our study was the measure for internalized discrimination used. The previous studies^{14,15,26} used the Nadanolitization scale, a validated measure of internalized racism among Black college and high school students.²⁷ Our study, however, used a proxy of internalized racial/ethnic discrimination. Although, the psychometric properties of the items used in our study have not been well established we do believe that it holds face validity. As previous social-psychological theories

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have suggested, an individual’s identity, in this case, internalized discrimination, may be influenced in part by the values attached to the individuals social group as ascribed by the larger society.^{36–38} Nonetheless, this particular measure has been used previously including a recent study that examined the role of acceptance of negative stereotypes between discrimination and cardiovascular disease.⁹

A second reason why our findings were not significant among Black Caribbeans may be due to the contextual meaning of stereotypes of Black Caribbeans, especially in a non-native context. For example, the more time Black Caribbeans in the NSAL spent in the United States the less likely they were to endorse negative stereotypes about Black Caribbeans (data not shown). However, it is unclear if it is age or period effect. In other words, given that African American culture has been exported to many countries, including the Caribbean, more recent immigrants from the Caribbean are more likely to identify with African American culture.²⁹ However, the older generations of Black Caribbeans who have been in the United States for a longer period of time, as suggested by Waters,²⁹ have always maintained a strong distinct group identity, separate from the African American identity. This, in part, may explain why Black Caribbeans do not endorse the stereotypes in our study.

The findings from the Chow Test suggest that internalized discrimination

may operate differently between African American and Black Caribbean. This finding is of importance as it potentially demonstrates that there may be racial/ethnic nuances in the Black population in regard to the effects of, and experiences with, discrimination. The Black population in the United States is a heterogeneous group that includes several populations of African descent. Consequently, there is a need to understand the nuances in the relationship between endorsing racial/ethnic stereotypes and excess body fat measures among distinct groups within the Black population in the United States. Black Caribbeans are of particular importance because they make up the largest ethnic subgroup of Blacks living in the United States.³⁹ Based on the findings, African Americans and Black Caribbeans differ in their relationship between the endorsement of racial/ethnic stereotypes and excess fat measures. These differences may explain the disparities in the physiological effects, (ie, excess body fat) associated with reports of endorsing racial/ethnic stereotypes.

Interestingly, although the first set of empirically based evidence of the relationship between discrimination and obesity/excess fat was of internalized discrimination, the more recent evidence is of interpersonal discrimination and not internalized discrimination in US-based populations. Our study added to the literature on the endorsement of racial/ethnic stereotypes, a proxy for internalized discrimination, and excess body fat measures in two important ways. First, the previous studies were of Afro-Caribbean females residing in Caribbean countries,¹⁴ as such it was unclear if these results can be generalized to Black Caribbeans, males and females, living in the United States. The findings from our study demonstrate that internalized discrimination is associated with excess fat measures among African Americans, not Black Caribbeans. This suggests that internalized discrimination operates

differently between the two groups. Second, previous studies did not explore the endorsement of racial/ethnic stereotypes and obesity among males, therefore the association between internalized discrimination and obesity among men was unknown. Findings from our study suggest that internalized discrimination is associated with excess body fat measures for men, specifically for African American men.

Limitations

A major limitation to our study was the use of cross-sectional data. Like other cross-sectional studies, the data were unable to prove a causal relationship between endorsing racial/ethnic stereotypes and excess body fat measures. For example, the positive association between endorsing racial/ethnic stereotypes and obesity might indicate that obese individuals are more likely to report endorsing racial/ethnic stereotypes. This is plausible, however, our findings are congruent with previous studies that suggest internalized discrimination has an adverse effect on excess body fat measures.^{14,15,26} Longitudinal analyses with internalized discrimination measures would offer some clarity on this area of interest.

Additionally, endorsing racial/ethnic stereotypes, a proxy for internalized discrimination, was used in our study. Although used in a previous study,⁹ this scale has not been tested to determine its reliability, beyond the scale's internal consistency, and validity in measuring internalized discrimination. While this proxy has not been tested for reliability and validity, the items, like the Nadanolitization Scale used in previous studies,^{14,15,26} are positively associated with excess body fat measures at least among African Americans. Future research should empirically simultaneously study the relationship between internalized discrimination and endorsements of negative racial/ethnic stereotypes and excess fat accumulation among ethnically heterogeneous samples of Blacks.

Lastly, the use of self-reported measures of excess body fat was a limitation of the study. Self-reported data is always subject to response biases. For instance, weight is often underreported³⁷ which may suggest that results are biased downward, because the self-reported measures for excess body fat composition, (ie, BMI) in the NSAL sample are comparable to the national rates of BMI during 1999–2008, this particular concern may be fully warranted.¹

CONCLUSION

Despite the limitations, the findings from our study were consistent with previous studies, and buttress previous research, which suggests that there is a positive relationship between internalized discrimination and excess body fat measures. Future studies should explore possible mediators that may abate the adverse effects of internalized racial discrimination and the culmination of excess body fat. Our study also suggests that ignoring the ethnic heterogeneity in the Black population in the United States, particularly Black Caribbeans, may overlook the differing relationship in health and factors related to health. Ethnic differences are of importance to consider when designing public health interventions targeted to the Black population, as the interventions effectiveness might differ based on the ethnicity of the target population.

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