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Race, Social and Environmental Conditions, and Health Behaviors in Men

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Abstract

Although understanding race differences in health behaviors among men is an important step in reducing disparities in leading causes of death in the United States, progress has been stifled when using national data because of the confounding of race, socioeconomic status (SES), and residential segregation. The purpose of this study is to examine the nature of disparities in health behaviors among African American and White men in the Exploring Health Disparities in Integrated Communities Study-Southwest Baltimore (EHDIC-SWB) which was conducted in a racially a racially-integrated neighborhood of Baltimore to data from the 2003 National Health Interview Survey (NHIS). After adjusting for age, marital status, insurance, income, educational attainment, poor or fair health, and obesity status, African American men in NHIS had greater odds of being physically inactive (odds ratio [OR] =1.48, 95% confidence interval [CI] 1.29, 1.69), reduced odds of being a current smoker (OR= 0.77, 95% CI 0.65, 0.90), and reduced odds of being a current drinker (OR= 0.58, 95% CI 0.50, 0.67). In the EHDIC-SWB sample, African American and white men had similar odds of being physically inactive (OR = 0.79, 95% CI 0.50, 1.24), being a current smoker (OR = 0.86, 95% CI 0.60, 1.23), or being a current drinker (OR = 1.34, 95% CI 0.81, 2.21). Because race disparities in these health behaviors were ameliorated in the sample where African American and white men were living under similar social, environmental and SES conditions, these findings suggest that social environment may be an important

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determinant of health behaviors among African American and White men. Public health interventions and health promotion strategies should consider the social environment when seeking to better understand men's health disparities.

Keywords

health disparities; health behaviors; African American; segregation; socioeconomic status

INTRODUCTION

African American and other marginalized males have arguably the worst health profile of any race and gender group in the United States. National level data indicate that minority and poor males have been disproportionately burdened with high chronic disease morbidity and mortality.¹⁻⁶ Multiple pathways have been specified through which biologic and non-biologic factors elevate disease and premature death risks among these males and that health behaviors, such as physical inactivity, unhealthy eating patterns, smoking, and excessive alcohol consumption contribute to their development.⁷⁻¹⁰ However, it remains unclear if racial disparities in health outcomes among males are a function of disparities in modifiable health behaviors between black and white men.¹¹⁻¹⁴

Progress in understanding differences in health behaviors among men using national data has been stifled by the confounding of race and socioeconomic status (SES).¹⁵ Recent studies also indicate that health behavior can vary by race. For example, racial minorities are more likely to be physically inactive than non-Hispanic whites,¹⁶ and non-Hispanic white men tend to engage in more leisure-time physical activity than African American men.¹⁷ Current alcohol use is higher among non-Hispanic white males than among non-Hispanic African American males.^{5,6} Health and social science research has shown that health behaviors also vary by status with poor individuals being more likely to engage in unhealthy behaviors.¹⁸⁻²² Yet, the relative effects of race and SES are difficult to estimate because economic disadvantage has often been part of the experience of racial minorities in the United States. Thus, it is unknown whether "race *and* SES status" or "race *or* SES status" comprise the primary determinants of disparities in men's health behaviors.^{15,18,23-25}

Racial residential segregation is another source of confounding in understanding disparities in men's health behaviors. The social and physical environments in which people live can influence health behaviors by promoting or constraining the initiation and continuation of healthy behaviors.^{26,27} Moreover, segregated neighborhoods impact individuals' health both by offering differential social influences on health-related beliefs and behaviors and by constraining access to resources.²⁸ It is therefore possible that residential segregation exacerbates race and/or SES disparities by concentrating or limiting health-promoting resources in particular communities, such as access to healthy foods, alcohol, tobacco, and safe places for physical activity. Racially segregated black neighborhoods are less likely to have grocery stores than racially integrated or white neighborhoods, and poor neighborhoods are less likely than wealthy neighborhoods to have grocery stores.²⁹

LaVeist and Wallace found that low-income, segregated, predominately African American neighborhoods in Baltimore, Maryland, have approximately eight times as many liquor stores per capita than other communities in metropolitan areas.³⁰ Segregation can restrict disadvantaged residents to neighborhoods with limited access to resources for health-promoting behaviors while simultaneously permitting liberal access to institutions that encourage risky behaviors like alcohol and tobacco use.^{13,16,25,31} In contrast, segregation enables the racial and/or economically-advantaged to live in areas with green spaces, connected sidewalks and other environmental opportunities for physical activity.^{32,33} These areas tend to have considerable access to grocery stores and gardens. As a result, fruit and vegetable consumption tend to be higher in the more affluent areas.³⁴ Understanding the ramifications of residential segregation is vital to advancing health disparities research because the social and environmental context in which people live may be a stronger determinant of health behavior than individual characteristics.³⁵ Ignoring the role of segregation in producing differential social and environmental exposures can lead researchers to draw inaccurate and incomplete conclusions when making comparisons between Black and White men in their health behaviors.³⁶

Data sources that afford researchers the opportunity to disentangle race, SES, and segregation are uncommon. The purpose of this study is to examine the nature of disparities in health behaviors (physical inactivity, current smoking and current drinking) among Black and White men who live in similar social and environmental conditions. These findings will be compared to disparities among Black and White men in a nationally representative sample that does not account for social and environment exposures.

METHODS

Study Design and Sample

Exploring Health Disparities in Integrated Communities (EHDIC) is an ongoing multisite study of race disparities within communities where African Americans and non-Hispanic whites live together and where there are no race differences in SES (as measured by median income). EHDIC-SWB was a cross-sectional face-to-face survey of the adult population (age 18 and older) of two contiguous census tracts. The sample was economically homogenous, racially balanced and well integrated with approximately equal proportions of African American and non-Hispanic white residents. The racial distribution was 51% African American and 44% non-Hispanic white, and the median income for the study area was \$24,002. The census tracts were block listed to identify every occupied dwelling in the study area. During block listing, 2,618 structures were identified. Of those, 1,636 structures were determined to be occupied residential housing units (excluding commercial and vacant residential structures). After five attempts, contact was made with an eligible adult in 1,244 occupied residential housing units. Of that number, 65.8% were enrolled in the study resulting in 1,489 study participants (41.9% of the 3555 adults living in these two census tracts recorded in the 2000 Census). The survey had similar coverage across each census block group in the study area; therefore, the bias related to geographic locale and its relationship with socioeconomic status should be minimal.³⁷

Comparisons to the 2000 Census for the study area showed that the EHDIC-SWB sample included a higher proportion of Blacks and women, but was otherwise similar with respect to other demographic and socioeconomic indicators.³⁷ For instance, EHDIC-SWB was 59.3% African American and 44.4% male, whereas the 2000 Census data showed the population was 51% African American and 49.7% male. Age distributions in EHDIC-SWB and 2000 Census data were similar with respect to the median age for both samples falling between 35 and 44 years. The lack of race difference in median income in the census, \$23,500 (African American) vs. \$24,100 (non-Hispanic white), was also reflected in the EHDIC sample with median incomes of \$23,400 (African American) vs. \$24,900 (non-Hispanic white).

The survey was administered by a trained interviewer and consisted of a structured questionnaire that included demographic and socioeconomic information, self-reported health behaviors and chronic conditions, and three blood pressure (BP) measurements. More detail on the EHDIC study is available in other publications.^{37,38} The Institutional Review Board at the Johns Hopkins Bloomberg School of Public Health approved the study and informed consent was obtained from all participants. A total of 628 African American and non-Hispanic white males participated in this study.

The National Health Interview Survey (NHIS) is an annual health survey of the civilian, non-institutionalized households of the U.S. conducted by the National Center for Health Statistics.³⁹ U.S. Census Bureau interviewers administer the survey in the respondents' homes. Adults aged 18 and over are eligible to participate in the "Sample Adult" survey. NHIS oversamples African Americans and Hispanics to ensure reliable estimates for these groups. The analyses presented in this study included the 10,455 male adults in the 2003 NHIS who identified themselves as white (8,904) or African American (1,551).

Measures

Questions from the NHIS were replicated in the EHDIC-SWB study to facilitate comparison across studies. Each measure included in these analyses was coded similarly in both datasets.

Outcomes

The primary outcome variables were all binary and included current smoking status (1=current smoker; 0=non-smoker or former smoker), current drinking status (1=current drinker; 0=non-drinker or former drinker), and physical inactivity. Participants were current smokers or drinkers if they reported drinking alcohol or smoking cigarettes within the past 30 days, and were identified as physically inactive if they reported no instances of vigorous exercise per week. Vigorous activities might include walking or bicycling quickly, jogging or running, swimming strenuously, participating in sports, dancing aerobically and strenuous gardening tasks.

Main independent variable

The main independent variable was a binary measure of race based on respondent self-identification as non-Hispanic white or African American (1=Black; 0=White).

Covariates

The covariates that were included in our analysis were informed by the literature on the determinants of health behaviors. Demographic variables included in the models were age in years, marital status (married or not), insurance status (insured or not) educational attainment (less than high school graduate, high school graduate or GED equivalent, or greater than high school education), and income category (<\$35,000, \$35,000–\$75,000, or > \$75,000). Health-related characteristics included obesity status (1=obese; 0=not obese) and poor/fair health status (1=yes; 0=no). Obesity status was determined using the body mass index by dividing self-reported weight in kilograms by height in meters squared. Poor/fair health status was defined as self-reporting either poor or fair health status.

Statistical analyses

The mean and proportional differences between African American and white men for the demographic and health-related characteristics were evaluated by using Student's t-tests and Chi-square tests, respectively. Multiple logistic regressions were used to examine the association between race and current smoking, current drinking and physical inactivity for each dataset. The odds ratios for the race variable were compared to determine the extent to which findings from the EHDIC-SWB differed from NHIS. All analyses using the NHIS accounted for the complex multistage sampling design by using the Taylor linearization procedures. P-values less than 0.05 were considered to be statistically significant. Analyses were conducted using STATA statistical software, version 11.⁴⁰

RESULTS

The distribution of demographic variables of male participants in NHIS and EHDIC-SWB by race is presented in Table 1. Of the 10,455 men in NHIS, African American men (14.8%) were on average four years younger; a smaller proportion of African American men were married and a smaller proportion had incomes greater than \$75,000. In addition, although a slightly larger proportion of African American men in NHIS were high school graduates or had a GED, a smaller proportion of African American men in NHIS had an education beyond high school compared to white men in the national sample. Of the 628 men in EHDIC-SWB, African Americans (60.6%) were on average four years younger. Similarly, a smaller proportion of African American men in EHDIC-SWB were married compared to whites. Income levels did not differ significantly between African American and white men in this sample. However, a larger proportion of white men had less than a high school education whereas a larger proportion of African American men had a high school diploma, GED, or higher education.

The age-adjusted proportions for health characteristics and preventive health screenings of the men in EHDIC-SWB and NHIS are displayed in Table 2. Among men in NHIS, a smaller proportion of African American men had health insurance, identified as current drinkers, and reported heart disease relative to white men. In contrast, a larger proportion of African American men were physically inactive, obese, reported fair/poor health, hypertension, and diabetes than white men. Among men in the EHDIC-SWB, some trends were reversed and a larger proportion of the African American men had insurance compared

to white men. There were no differences between African American and white men with respect to being physically inactive, being a current smoker, being a never, former, or current drinker, being obese, or reporting fair/poor health, hypertension, diabetes, or heart disease.

The association between race and health behaviors is presented in Table 3 for NHIS and EHDIC-SWB. After adjusting for age, marital status, insurance, income, educational attainment, poor or fair health, and obesity status, African American men in NHIS had greater odds of being physically inactive (odds ratio [OR] =1.48, 95% confidence interval [CI] 1.29, 1.69), reduced odds of being a current smoker (OR= 0.77, 95% CI 0.65, 0.90), and reduced odds of being a current drinker (OR= 0.58, 95% CI 0.50, 0.67). In the EHDIC-SWB sample, which accounts for the social and environmental condition in which these men live, African American and white men had no significant difference in odds of being physically inactive (OR = 0.79, 95% CI 0.50, 1.24), being a current smoker (OR = 0.86, 95% CI 0.60, 1.23), or being a current drinker (OR = 1.34, 95% CI 0.81, 2.21).

DISCUSSION

Understanding race differences in health behaviors is an important step in reducing disparities in the leading causes of death in the United States. In this study we examined the nature of three disparities associated with increased morbidity and mortality—physical inactivity, current smoking, and current drinking—among Black and White men living in similar social and environmental conditions. In addition, we compared our findings to those from the 2003 National Health Interview Survey that does not account for social and environment exposures. In EHDIC-SWB, there were no race differences observed with regard to physical inactivity, current drinking, and current smoking among African American and White men. In 2003 NHIS, race differences were observed with respect to all of the health behaviors among African American and White men. Our findings provide insight into how social and environmental conditions established and maintained by segregation can contribute to the pattern of health disparities among Black and White men. The social environment, particularly place, is an important determinant of health and should be considered in developing health promoting interventions health, social, and public policies.

The results suggest that the racial disparities in physical inactivity among Black and White men found at the national level may be a function of differences in social and environmental milieu. Prior research using NHIS demonstrated differences in physical inactivity across racial and ethnic groups^{17,41} but these studies did not account for the role of racial residential segregation or social environment. To our knowledge, no study to-date has examined racial differences in exercise behavior among adult men living in the same social and environmental conditions. Social environments may influence physical activity levels through several mechanisms, such as resource availability and the degree to which the neighborhood facilitates outdoor exercise.^{42–44}

Our analysis of NHIS data indicates that Black men also have lower odds of being current smokers than White men; however, among the men that we surveyed in EHDIC-SWB, no significant difference was apparent. Studies using other nationally representative samples,

such as the Tobacco Use Supplement to the Current Population Survey, have also found that Black men have lower odds of smoking than White men.⁴⁵ In contrast to our NHIS findings and other studies examining racial disparities in smoking at the national-level,^{45,46} we found no significant disparities in the odds of being a current smoker among men living in the same social environment, suggesting a need to consider the ways in which where populations live influence health practices.

Similarly, our analysis of national-level data yielded results comparable to existing studies on drinking behaviors.⁴⁷⁻⁴⁹ We found that White men have higher odds of drinking alcohol regularly compared with Black men. However, these disparities were attenuated when examining men living in the same social and environmental conditions. While minimal research has focused on disparities in alcohol use among those living in the same social environments,⁴⁸ neighborhood disadvantage has been found to play a substantial role in explaining disparities in completions rates in publicly-funded alcoholism treatment programs⁵⁰ and exposure to social disadvantage may contribute to problematic drinking behaviors.⁵¹ Even though Black men are no more likely than White men to be current alcohol consumers, it should be noted that their health consequences of drinking may be more problematic,⁵² as alcohol-related injury rates have been found to be disproportionate to the prevalence of regular drinking among non-White populations.⁵³ Understanding the influence of the social environment on drinking behaviors is particularly important for populations at heightened risk.

The social and physical environments that most African American and white men typically live in are markedly different; this can facilitate differences in their health risk exposures as well as the quality of and type of care these men can access. Studies of racial residential segregation have found that upwards of 60% of African Americans would need to move to a different census tract in order for complete integration between African Americans and non-Hispanic white Americans to be achieved.⁵⁴ National samples such as NHANES and NHIS do not account for segregation. Consequently the observed race differences in health behaviors might be erroneously ascribed to race rather than place.

The EHDIC study represents a unique approach to health disparities research, one which accounts for unmeasured environmental heterogeneity that is associated with race but not accounted for in most research studies or statistical analyses.^{36,37} Additionally EHDIC-SWB accounted for the confounding of race and SES that is present in many national datasets including NHIS. Nevertheless, interpretation of these results should be considered with the following caveats. EHDIC-SWB was conducted in a low-income urban population; therefore, the generalizability of our results may differ in rural, suburban and higher SES groups. Because EHDIC-SWB only included African American and white men, it remains unknown if the nature of these disparities hold true for other ethnic groups of men. Despite these limits, this study contributes to our understanding of race disparities in health behaviors among Black and White men by using a study design that significantly minimizes the confounding of race, SES, and residential segregation.

Implications for Research and Practice

These findings highlight the need to gather better local data on neighborhood environments that capture the resources that facilitate and hinder men's ability to engage in healthy behavior. While local interventions are often guided by population-specific needs identified by county, state and national data, health educators may consider the limitations of the built environment in neighborhoods of interest and how these contexts may affect groups of men differently. Although it is easier to identify intrapersonal and social barriers to engaging in healthy behavior, particularly among men, interventions to improve men's health behavior should more effectively incorporate place-based solutions that make access to alcohol and cigarettes more difficult or at least more costly and facilitate men gaining easier access to physical activity, healthier foods and ideally higher volume and quality of sleep. While there is a dearth of behavioral interventions to promote healthy behavior among men in general and African American men in particular,^{55,56} if these behavioral interventions are to be effective and sustainable, they will need to include some attention to the place where the interventions are set to occur. Health educators may consider using a community-based participatory approach to working with men to better understand the neighborhood strengths and limitations, as well as strategies that have been successful for men in communities of interest.⁵⁷

The results of this study further highlight the need to examine the role of segregation and social environmental conditions in race disparities in health behaviors among men. Because race disparities were ameliorated in the sample where African American and white men were living under similar social, environmental and SES conditions, these results suggest that environment may be more important to disparities than race or SES.

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Table 1
 Select demographics and health-related characteristics by dataset, NHIS and EHDIC-SWB, 2003^a

Variable	NHIS			EHDIC-SWB		
	Whites n=8,904	Black n=1,551	p-value	Whites n=247	Black n=381	p-value
Age, mean SE	46.2±0.2	41.9±0.5	<0.001	43.3±0.9	39.4±0.6	<0.001
Married, (%)	68.0	53.6	<0.001	25.1	16.3	0.007
Income (%)						
< \$35,000	22.7	33.0	<0.001	72.5	74.5	0.565
\$35,000–\$75,000	28.2	27.5	0.621	20.2	21.0	0.820
> \$75,000	24.4	12.8	<0.001	7.3	4.5	0.321
Did not respond	24.7	26.7	0.227			
Education level,						
Less than high school graduate	11.8	20.1	<0.001	44.5	34.9	0.016
High school graduate/GED	30.1	32.5	0.119	36.8	45.4	0.034
More than high school graduate	58.1	46.5	<0.001	18.6	19.7	0.742

^aPlus-minus values are means ± SD.

Table 2
Age-Adjusted Distribution of Health Related Characteristics among Men in NHIS and EHDIC-SWB, 2003

Variable	NHIS		EHDIC-SWB		p-value
	Whites n=8,904	Black n=1,551	Whites n=247	Black n=381	
Health Insurance (%)	89.7	84.3	50.3	58.9	0.039
Physical Inactivity (%)	29.9	43.8	18.6	14.6	0.182
Smoking Status (%)					
Never	47.0	53.4	18.6	27.3	0.014
Former	25.9	19.3	12.1	7.3	0.039
Current	23.4	22.9	65.4	62.4	0.453
Drinking Status (%)					
Never	14.3	26.1	11.9	15.3	0.240
Former	13.6	18.0	34.4	31.4	0.443
Current	70.7	53.9	53.4	53.1	0.926
Obese (%)	24.7	31.4	21.9	23.5	0.648
Fair/Poor Health (%)	8.7	16.7	32.4	27.5	0.204
Health Outcomes					
Hypertension	23.3	33.1	26.2	26.1	0.967
Diabetes	4.9	8.6	5.7	5.9	0.920
Heart Disease	6.1	5.1	12.6	8.7	0.103

Table 3

Association between Race and Health Behaviors by Dataset*

	NHIS	EHDIC-SWB
	O.R. (95% CI)	O.R. (95% CI)
Physically Inactive	1.48 (1.29–1.69)	0.79 (0.50–1.24)
Current Smoking	0.77 (0.65–0.90)	0.86 (0.60–1.23)
Current Drinking	0.58 (0.50–0.67)	1.34 (0.81–2.21)

*OR=odds ratio; CI=confidence interval; White adults are the reference category.

Only models that contained variables in both EHDIC and NHIS datasets were conducted. All estimates using NHIS data account for the stratified, multistage probability sampling design by applying the appropriate weights and strata variables. Models included race, age, marital status, insurance status, household income, education level, fair/poor health, obesity.

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