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United States counties with low black male mortality rates

Robert Levine, MD,

Department of Family and Community Medicine, Meharry Medical College, Nashville, TN

George Rust, MD, MPH,

Morehouse School of Medicine, Atlanta, GA

Muktar Aliyu, MD, PhD,

Vanderbilt University School of Medicine, Nashville, TN

Maria Pisu, PhD,

University of Alabama School of Medicine at Birmingham; Birmingham, AL'

Roger Zoorob, MD, MPH,

Meharry Medical College, Nashville, TN

Irwin Goldzweig, MS,

Meharry Medical College, Nashville, TN

Paul Juarez, PhD,

Meharry Medical College, Nashville, TN

Baqar Husaini, PhD, and

Tennessee State University, Nashville, TN

Charles H. Hennekens, MD, DrPH

Florida Atlantic University, Boca Raton, FL; Nova Southeastern University; University of Miami Miller School of Medicine

Abstract

OBJECTIVE—In the United States, young and middle-aged black men have significantly higher total mortality than any other racial or ethnic group. We describe the characteristics of US counties with low non-Hispanic Black or African American male mortality (ages 25-64 years, 1999-2007).

METHODS—Information was accessed through public data, the US Census, the US Compressed Mortality File, and the Native American Graves Repatriation Act military database.

Corresponding author: Charles H. Hennekens, MD, DrPH Sir Richard Doll Research Professor Charles E. Schmidt College of Medicine Florida Atlantic University 777 Glades Road Research Park, Building 3848, Suite 310 Boca Raton, FL 33432, USA Telephone: 561-393-8845 Fax: 561-620-2182 chenke@fau.edu.

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RESULTS—Of 1307 counties with black mortality rates classified as reliable by the National Center for Health Statistics (at least 20 deaths), 66 recorded lower mortality among black men than corresponding US whites. Most notable, 97% of the 66 counties were home to or adjacent a military installation versus 37% of comparable US counties (P .001). Blacks in these counties had less poverty, higher percentages of elderly civilian veterans, and higher per capita income. Within these counties, national black:white disparities in mortality were eliminated for ischemic heart disease, accidents, diseases of the liver, chronic lower respiratory diseases, and mental disorder from psychoactive substance use. Application of age-, race-, ethnicity-, gender-, and urbanization-specific mortality rates from counties with relatively low mortality would reduce the black:white mortality rate ratio for black men aged 25 to 64 years from 1.67 to 1.20 nationally and to 1.00 in areas outside large central metropolitan areas.

CONCLUSIONS—These descriptive data demonstrate a small number of communities with low mortality rates among young and middle-aged black/African American men. Their characteristics may provide clinical and public health insights to reduce these higher mortality rates in the US population. Analytic epidemiologic studies are necessary to test these hypotheses.

Keywords

low mortality; black men; clinical characteristics

Introduction

In the United States, black men up to age 64 years have significantly higher total mortality rates than any other racial or ethnic group.¹ In 2007, the average life expectancy for black men was 70.0 years, a figure approximately comparable to that of white men in 1977.² Life expectancy for white men in 2007 was 75.9 years.² However, data are sparse regarding the existence and characteristics of communities with low black male mortality rates. This brief report identifies and describes the characteristics of 66 US counties with low black male mortality rates among those aged 25 to 64 years and formulates hypotheses that may reduce or eliminate disparities.

MATERIALS AND METHODS

We used the US Centers for Disease Control and Prevention's public Wide-ranging Online Data for Epidemiologic Research (WONDER) Internet site.^{3,4} We first identified 1307 counties with black male mortality rates classified as reliable by the National Center for Health Statistics (i.e., those with at least 20 deaths during the observation period³). Of these 1307 counties, we identified 66 US counties in which age-adjusted mortality among black men aged 25 to 64 years was lower than mortality among their white counterparts (i.e., an age-adjusted mortality rate of 424.5 per 100,000 population from 1999 to 2007). Statistical comparisons between yearly overall age-adjusted mortality among black men aged 25 to 64 years in other US counties were performed via failure to detect overlap in 95% confidence intervals for these rates as provided by the Centers for Disease Control WONDER.⁴

All 66 counties were outside large central metropolitan areas. As defined by the US Office of Management and Budget, large central metropolitan areas are counties in a metropolitan statistical area of 1 million or more population that fulfill 1 of the 3 following criteria: that contain the entire population of the largest principal city of the metropolitan statistical area, whose entire population resides in the largest principal city of the metropolitan statistical area, or that contain at least 250,000 of the population of any principal city in the metropolitan statistical area.⁵ We compared the 66 counties with all 3013 US counties outside counties with large central metropolitan areas to minimize bias that might accrue

from the need to use National Center for Health Statistics– defined reliable rates to identify the 66 counties. Specifically, counties with black mortality that was lower than overall white mortality might have been excluded from the list of 66 counties because the small population size precluded generation of the 20 deaths required for a reliable rate. However, these counties would not be excluded when aggregated in the counties with no large central metropolitan areas. If anything, this produces bias against detection of observations of higher black mortality rates in the group of 3013 counties versus the group of 66 counties, and observations of higher white mortality rates in the group of 3013 counties versus the group of 66 counties would be minimal. In the entire United States, 60% of blacks reside in these 3,079 counties.⁴ We looked at proximity to military bases⁶⁻⁸ and black per capita income, percentage of blacks with annual income below poverty, black:white poverty rate ratio, percentage of black men aged 25 years not graduating high school, percentage of black male civilian veterans ages 18 to 64 and 65 years (using GeoLytics software; GeoLytics, Inc., East Brunswick, NJ⁹ and residential segregation (black isolation index¹⁰). We looked at specific causes of death among 25- to 44- year-olds and 45- to 64-year-olds (CDC WONDER).³ Because 1979 represented the earliest available CDC WONDER data, we also compared mortality rates from that date forward.^{3,4}

Last we estimated the impact on US disparities in mortality if rates found in the 66 counties were to occur throughout the United States. To do this, we applied age-, race-, ethnicity-, and urbanization-specific mortality rates from the 66 counties with low black male mortality rates to the 3013 counties with the more usual high black male mortality rates.

RESULTS

Of 1307 counties with reliable black male mortality rates, there were only 66 (4.9%) with lower rates among blacks than whites aged 25 to 64 years. These 66 counties were located in 30 states (Figure 1). Of these 66 counties, 64 (97.3%) were the site of a military installation or had a military installation in an immediately adjacent county. In the 3013 US counties, only 1074 (36%) had or were adjacent to a military installation ($p < .001$). Moreover, as shown in Figure 2, black men ages 25 to 64 years residing in the 66 counties have had consistently lower mortality rates than all US whites for approximately 3 decades (1979-2007) and lower mortality rates than US white men aged 25 to 64 years since 1998, with the difference being statistically significant from 1999 (black = 383/100,000 population; 95% confidence interval [CI], 354-413; white = 429 [95% CI, 427-431]) to 2007 (black = 344, 95% CI, 324-365; white 417, 95% CI, 416-419). In addition, the black:white mortality rate ratio declined from 0.89 to 0.83 from 1999 to 2007, whereas the black-white mortality risk difference increased from 51 per 100,000 population to 73. As shown in Table 1, for these 66 counties there are no significant disparities in mortality between black and white men aged 25 to 64 years for ischemic heart disease, diseases of the liver, transport and other external accidents, chronic lower respiratory disease, and mental disorder due to psychoactive substance abuse. If the age-, race-, and sex-specific mortality rates in these 66 counties also had occurred among 25- to 64-year-old black men residing in other US counties outside counties with large central metropolitan areas, black:white disparities in mortality among men aged 25 to 64 years would have been eliminated.

Table 2 compares and contrasts the demographic and social characteristics of the 66 counties with the 3013 counties. The 66 counties with low black male mortality rates had significantly greater black per capita income and black male educational attainment, and a lower percentage of blacks with annual income below poverty. They also had a higher percentage of black male veterans aged 65 plus years. There was no statistically significant difference for income inequality as measured by the black:white poverty rate ratio.

DISCUSSION

In these descriptive data, of 1,307 counties with reliable black male mortality rates among those aged 25 to 64 years from 1999 to 2007, 66 (4.9%) had a significantly lower overall age-adjusted mortality than their white counterparts. In these 66 counties, blacks had greater proximity to military bases and higher percentages of elderly civilian veterans. There also was less poverty, higher per capita income, and greater educational attainment. Overall, if the age-specific mortality experience of these 66 counties had occurred throughout the entire United States, disparities in mortality would be eliminated for young and middle-aged black men in 3079 US counties (where 60% of the black population resides) and would be reduced by 48% in counties with large central metropolitan areas.

The sustained period of time over which the 66 counties have experienced low black mortality and its consistently better outcomes relative to US whites since 1998 support the hypothesis that community outcomes are more likely to reflect factors particular to these geographic areas and less likely to represent cohort effects or regression to the mean.

These data have several potential limitations. First, at least in theory, biased selection of healthy black men in the 66 counties is a plausible alternative explanation for the findings. Second, the findings are subject to limitations of mortality data,¹¹ including the fact that exposure information is based on populations rather than individuals.

CONCLUSIONS

Despite these and other limitations, we believe the most plausible interpretation of these descriptive data to be that they demonstrate the presence of a small number of US counties with low mortality rates among young and middle-aged black men. Analytic epidemiologic studies designed a priori to do so are necessary to test the many hypotheses formulated from these descriptive data. For example, such studies might use populations from counties outside those with large central metropolitan areas where the age-adjusted death rate for whites exceeds that for blacks at varying quantitative cut-points. Individuals from counties with a range of differences in the black:white mortality rates (ie, from somewhat to considerably greater) could then be studied for possible differences between counties with low mortality (case) and counties with high mortality (comparison). Further, the characteristics of these counties may provide clinical and public health insights to reduce these higher mortality rates among young and middle-aged black men in the US population.

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Clinical Significance

1. In the United States (US) black men have very high mortality rates
2. We identified 66 US counties in which black men have low mortality rates
3. These black residents have less poverty and greater educational attainment, income, percentage of elderly civilian veterans, and proximity to military installations.
4. Their low mortality rates, if applied to the entire US population, would eliminate disparities between black and white men.

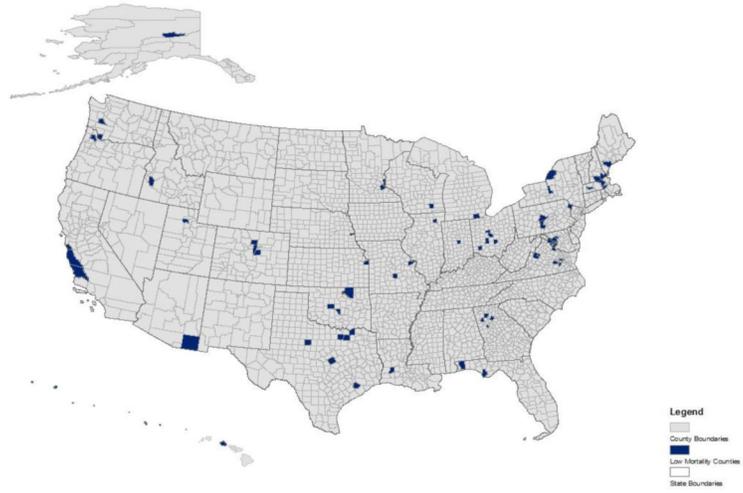


Figure 1.
Geographic Distribution of 66 US Counties with Low Black Male Mortality Rates.

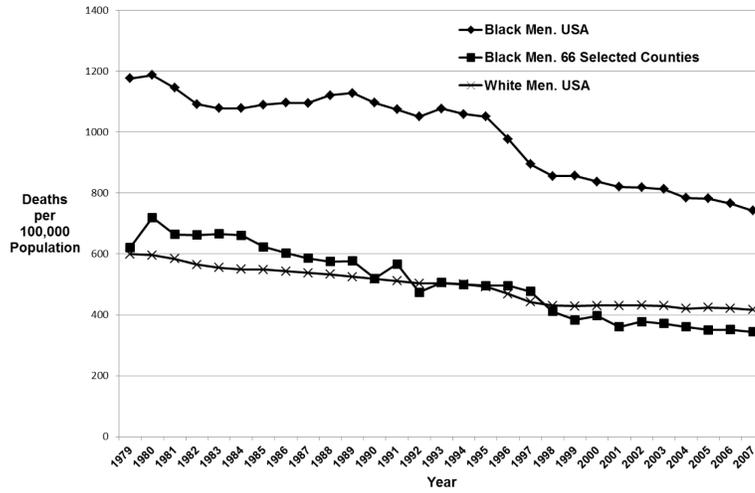


Figure 2. Age-adjusted (25-64 Years) Overall Race-Specific, Male Mortality in the US as a Whole and in 66 US Counties with Low Overall Age-adjusted Mortality Among Black Men Ages 25-64, 1979-2007.

Table 1

Black:White Mortality Ratios in US Counties with Low and High Black Male Mortality Rates. 1999-2007.

Cause of Death	US Counties with Low Black Rates (n = 66)			Other US Counties of Comparable Urbanization (n = 3,013)		
	Age-adjusted Mortality (95% Confidence Interval). 45-64 Years.	Ratio	Ratio	Age-adjusted Mortality (95% Confidence Interval). 45 to 64 Years.	Ratio	Ratio
	Black	White	Black: White	Black	White	Black: White
Ischemic Heart Disease	104 (97, 110)	105 (103,106)	1.0	219 (222, 224)	154 (154, 155)	1.4
Diseases of the Liver	19 (16, 22)	23 (23, 24)	0.8	40 (40, 42)	34 (34, 35)	1.2
Transport Accident	15 (12, 17)	15 (14, 15)	1.0	34 (33, 34)	23 (23, 23)	1.5
Other External Accident	15 (12, 17)	18 (17, 19)	0.8	36 (35, 37)	28 (28, 28)	1.3
Chronic Lower Respiratory Disease	12 (9, 14)	15 (14, 15)	0.8	28 (27, 28)	25 (25, 25)	1.1
Mental Disorder Due to Psychoactive Substance Abuse	6 (5, 8)	8 (8, 9)	0.8	18 (17, 19)	10 (10, 11)	1.8

Table2

Selected Demographic Features of US Counties Outside Large Metropolitan Areas With Low (n = 66) and High (n = 3013) Age-adjusted Black Male Mortality Rates

	Lower than US Whites (n=66)	Not Lower Than US Whites (n=3,013)*	t-test
DEMOGRAPHIC CHARACTERISTIC	ARITHMETIC MEAN		p
Black Per Capita Income	\$18,470	\$11,606	<0.001
Percent Black Annual Income < Poverty	16%	27%	<0.001
Percent Black Men 25+ Years <Less Than High School Graduation	20%	31%	<0.001
Percent Black Male Civilian Veterans Ages 65+ Years	59%	49%	<0.001
Black:White Poverty Ratio	2.6	2.5	ns
Residential Isolation Index(Black)	0.1	0.1	ns
Residential Isolation Index (White)	0.8	1.1	ns