

Health Disparities in Hypertension: a comparison between blacks and whites in the United States and South Africa.

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Introduction

Disparities in health between blacks and whites in the United States are well documented but poorly understood. In a broad range of health measures across all domains of health, blacks in the U.S. lag behind whites. Many explanations have been suggested for these differences in health, but a clear understanding of the mechanisms leading to these health disparities or even the primary factors contributing to them is currently lacking. Dressler, et al (2005) discuss five theoretical models that have been proposed to explain U.S. health disparities: a racial-genetic, health behavior, socioeconomic, psychosocial stress and structural-constructivist. However, none of these models has adequately explained racial disparities in health in general or in any specific health measure such as hypertension although hypertension is one of the most well studied marker of health disparity (i.e., Barksdale et al 2009; Zhao et al 2008). Further, disparities outside of the United States have not been well studied. Understanding how health disparities work in other populations may help us understand the underlying issues associated with health disparities. The goal of this research is to examine the difference in blood pressure and hypertension prevalence between blacks and whites in the United States and South Africa.

Methods

Data

This research explores differences in blood pressure and hypertension rates in blacks and whites in the United States using data from the National Social Life, Health and Aging Project (NSHAP), and data from South Africa from the World Health Organization's Study of Global Aging and Adult Health (SAGE). The National Social Life, Health and Aging Project is a nationally representative, population-based sample. 3,005 community dwelling adults ages 57-85 in the United States were interviewed during

2005-2006. The NSHAP employs a multistage area-probability design drawn from the Health and Retirement Study (HRS) sampling frame. In order to ensure adequate representation of particular demographic groups, respondents were oversampled by race, age, and gender. SAGE – South Africa is a part of the larger SAGE multi-country study. In South Africa, a nationally representative sample of 3,840 adults, age 50 and above was interviewed in their homes.

Measures

In both studies, blood pressure was measured by trained data collectors using automated blood pressure cuffs. Multiple measures were taken and the average of systolic and diastolic blood pressure was determined and used in this analysis. In addition, individuals were asked if they had been diagnosed with hypertension. To include both controlled and uncontrolled diagnosed hypertension as well as undiagnosed hypertension, individuals were classified as hypertensive if average systolic blood pressure was ≥ 140 mmHg or average diastolic blood pressure was ≥ 90 mmHg or the individual had reported being diagnosed with hypertension.

Statistical Analysis

In order to compare the two samples by age group, only individuals in the SAGE study between the ages of 57-85, corresponding to the age range of the NSHAP sample, were used in this analysis. In addition, only those identified as black or white were used in this analysis (NSHAP n=2804; SAGE n=1915). Statistical analysis was performed using STATA 11 (Statacorp, College Station, TX). Regression analysis was used to determine if the differences between the black and white samples were significant.

Preliminary Results

In the NSHAP sample, 224 of 1,357 males (16.5%) were identified as black or African American while 285 females (19.7%) were identified as black or African American. In the SAGE – SA sample, 664 of 747 males (88.9) were identified as black with 1,066 females (91.3%) identifying as black. A summary of

blood pressure measurements as well as total hypertension prevalence in the United States and South Africa are presented in **Table 1**.

Significant differences ($p < 0.05$) were observed between blacks and whites in the United States in average systolic blood pressure and average diastolic blood pressure for both men and women. Total hypertension rates were also significant for both men and women in the United States. In South Africa, both systolic and diastolic blood pressure was significantly higher in blacks than in whites for both males and females. However, the percentage of hypertension was not significantly different between blacks and whites in either males or females. (**Table 1**).

Patterns of hypertension by age group for men are presented in **figure 1** and for women in **figure 2**. The elevated blood pressure in both black and white South African and the similar patterns of disparity in hypertension prevalence suggest that purely racial-genetic models of health disparities may not hold since these populations are genetically distinct. More plausible explanations might be found in other models which take into consideration economic, social and/or cultural factors. However, more analysis is needed to begin to understand the specific factors within these domains that may contribute to disparities in blood pressure and hypertension in these populations.

Selected References

- Barksdale D.J., E.R. Ferrung, and K. Harkness. (2009). Racial Discrimination and Blood Pressure: Perceptions, Emotions, and Behaviors of Black American Adults. *Issues in Mental Health Nursing*. 30: 104 – 111.
- Dressler W.W., K.S. Oths and C.C. Gravlee. (2005). Race and Ethnicity in Public Health Research: Models to Explain Health Disparities. *Annual Review of Anthropology*. 34: 231-52.
- Zhao G., E.S. Ford, A.H. Mokhdad. (2008). Racial/Ethnic Variation in Hypertension-related Lifestyle Behaviors among U.S. Women with Self-reported Hypertension. *Journal of Human Hypertension*. 22:608 – 616.

| Group | Average Systolic (mmHg) | Average Diastolic (mmHg) | Hypertension Prevalence (%) |
|--------------------|-------------------------|--------------------------|-----------------------------|
| U.S. Males | 137.6 | 80 | 73.2 |
| S. A. Males | 146.7 | 96.4 | 76.4 |
| U.S. White Males | 137.0 | 79.7 | 71.3 |
| U.S. Black Males | 140.9 | 81.8 | 81 |
| S.A. White Males | 141.8 | 92.9 | 71.6 |
| S.A. Black Males | 149.2 | 98 | 78.3 |
| U.S. Females | 136.7 | 81.5 | 74.9 |
| S.A. Females | 148.9 | 96.3 | 82.7 |
| U.S. White Females | 135.8 | 81.2 | 72.4 |
| U.S. Black Females | 140.7 | 83.6 | 84.9 |
| S.A. White Females | 144.9 | 91.1 | 81.6 |
| S.A. Black Females | 150.4 | 97.3 | 84.4 |

Table 1: Comparison of blood pressure and hypertension prevalence in black and white males and females

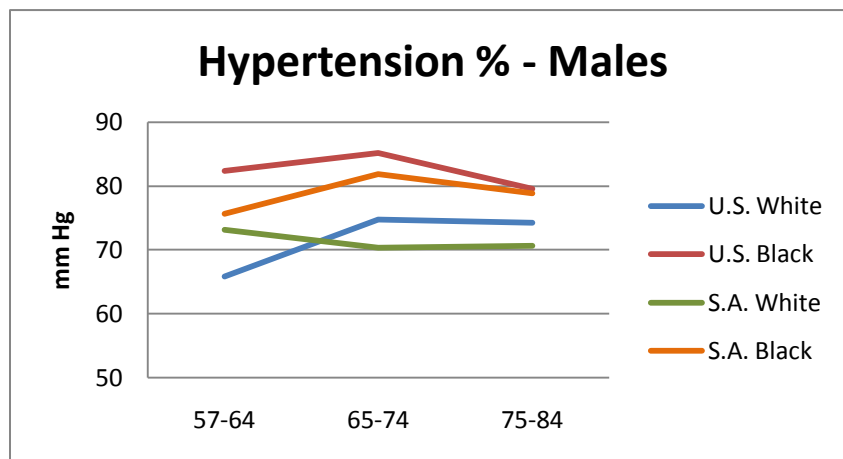


Figure 1: Hypertension prevalence by age group for males.

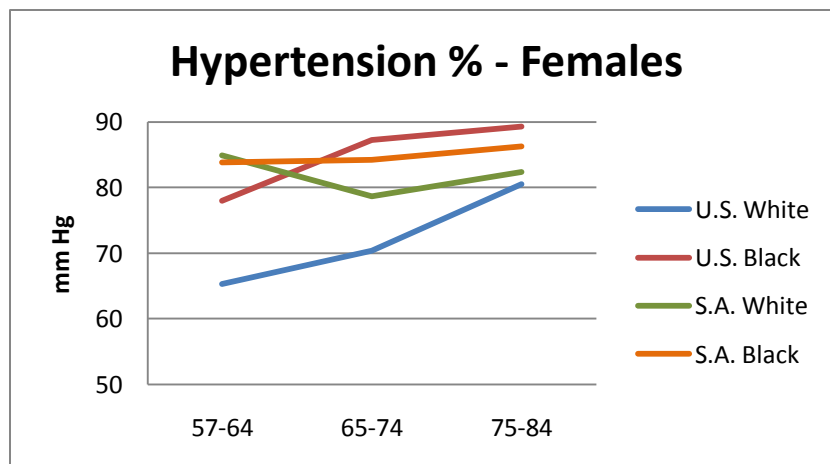


Figure 2: Hypertension prevalence by age group for females.