Race-Related Stress, Quality of Life and Coronary Heart Disease (CHD) Risk in Middle-Class African American Men

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Dedication

For the African American men who persevered with dignity and strength

……*In loving memory of my father*

For the hope, promise, and potential of a life fulfilled

……*To my nephews; Khaliff, Justice, Amir, and Markief*

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I extend a special thank you to family and friends for love and support, to my brother for inspiration, and to Buster for wonder and amazement. This research is presented:

In Honor of the Truth

Love always protects, always trusts, always hopes, and always perseveres.

Love never fails…and now these three remain: faith, hope, and love.

But the greatest of these is love

…….*Beauty beyond measure, thank you mother*

For God has not given us a spirit of fear, but of power, and of love, and of a sound mind.

…….*Wisdom and grace, thank you my sister*

Let all things be done decently and in order

…….*To serve, thank you Jamiece*

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Abstract

Race-Related Stress, Quality of Life and Coronary Heart Disease (CHD) Risk in Middle-Class African American Men

Sandra L. Davis

There is a growing urgency to increase understanding of the complex factors that account for persistent cardiovascular health disparities. Much of the coronary heart disease (CHD) disparities research that involves African American men focuses on poverty and lack of access to care despite evidence that racial/ethnic disparities persist after controlling for SES. This descriptive quantitative study examined the interrelationships of race-related stress and health-related quality of life (HRQOL) on CHD risk in a cohort of middle-class African American men who belonged to a Greek-letter African American fraternity. The best predictors of CHD risk for this cohort of middle-class African American men were age and two HRQOL indices, namely physical functioning and general health. The novel findings in this study highlight the significance of social, environmental, and psychosocial factors that impact CHD and CHD risk in middle-class African American men. Ongoing research is needed to elucidate pathways by which social, environmental, and psychosocial factors mediate CHD in African Americans. The results of this study have implications for the role of the nurse-clinician educator in education and clinical practice.

Chapter 1: Introduction

Unprecedented twentieth century advances in biology, medicine, and science have given adults, living in the United States (U.S.), the opportunity to live not only healthier but also longer lives (Carnethon et al., 2006; Ford, Chaoyang, Zhao, Pearson, & Capewell, 2009; LaVeist, 2002; Smedley, Stith, & Nelson, 2002; Wyatt et al., 2003). However, the opportunity for a better quality of life, a healthier life, and/or a longer life is not equal for all U.S. adults (Brondolo, Gallo, & Myers, 2009; Farmer & Ferraro, 2005; Franks, Muennig, Lubetkin, & Haomiao, 2006; Gorman, & Ginsberg, 2004; James, 2003; Krieger, 2001; Smedley et al., 2002; Smith et al., 2005; Smith, Wentworth, Neaton, R. Stamler, & J. Stamler, 1996; Wong, Shapiro, Boscardin, & Ettner, 2002; Williams, Neighbors & Jackson, 2008; Williams & Jackson, 2005; Wyatt et al., 2003).

Racial/ethnic differences in coronary heart disease (CHD) mortality have steadily increased over the past 20 years and this trend is expected to persist (Cooper, 2005; Mensah, Mokdad, Ford, Greenlund, and Croft, 2005; Smith, Neaton, Wentworth, R. Stamler, & J. Stamler, 1998). CHD mortality rates are higher in African American men and women than Caucasian men and women and are highest in African American men. In 2006, CHD death rates per 100,000 population was 206.4 for African American males, 176.3 for Caucasian males, 130.0 for African American females, and 101.5 for Caucasian females (AHA, 2010).

In the late1980s the rate of decline in CHD mortality slowed for African American men compared to Caucasian men. African American men now have a 30% higher CHD mortality rate than Caucasian men. The mortality gap between African

American and Caucasian men will not be eliminated unless African American men are targeted (Clark et al., 2001; Smith et al., 1998).

The elimination of racial/ethnic disparities has been a national research agenda for the past twenty years (National Center on Minority Health and Health Disparities [NCMHD], 2002). Research efforts aimed at the underlying differences in CHD mortality between African American and Caucasian men have been hampered by the lack of data on the prevalence and implications of CHD in African Americans (Keller, 1990; Scott & Heslin, 2003). However, results from the studies that have been conducted, were consistent in reporting four factors that influenced the differences between African American and Caucasian men: (a) socioeconomic status (SES), (b) health-related quality of life (HRQOL), (c) cardiac risk factors, and more recently (d) CHD risk prediction.

African American men are a heterogeneous group. However, they are disproportionately represented at lower socioeconomic levels in the United States. Much of the CHD literature from the past twenty years that involved African American men was conducted as part of the nation's health promotion campaign and focused on men living in poverty (Brondolo, Brady ver Halen, Pencille, Beatty, & Contrada, 2009; D. R. Williams, 2003; Woodard, Hernandez, Lees, & Petersen, 2004). Caution must be taken when applying results to African American men at higher socioeconomic levels.

D.R. Williams (2003) posited that middle-class African American men are understudied, yet at high risk for morbidity and mortality due to a unique set of psychosocial and socio environmental stressors. There is an association between emotional factors and the experience of chronic stress in the development of CHD. In

addition, lifestyle behaviors such as smoking and physical activity promote CHD. CHD is a disease of lifestyle and environment that occurs over the life course.

Primary and secondary prevention involving the use of accurate, appropriate, and culturally targeted educational and interventional strategies for middle-class African American men will have direct mortality implications. The purpose**s** of this quantitative descriptive study were to establish the extent of CHD risk in a cohort of middle-class African American men and to investigate the interrelationships of race-related stress and HRQOL on CHD risk in these individuals.

Specific aims of this study were to: (a) advance research on CHD risk in an understudied subgroup of African American men to fill the gap in the literature in this area of inquiry, (b) to advance understanding of biologic, psychologic, and physiologic pathways by which psychosocial, sociocultural, and socioeconomic factors mediate CHD, and (c) examine HRQOL from a sociocultural perspective to provide evidence for future investigations into the broader social, political, cultural, and economic contributors to racial/ethnic health disparities.

Racial/Ethnic Health Disparities

Statistical indicators demonstrate a stark contrast between steady inclines in the overall health profile of U.S. adults and persistent health disparities among particular racial groups (AHA, 2006; Carnethon et al., 2006; Cooper et al., 2000;*"Health Disparities", 2005*; Hozawa et al., 2007; Kawachi, 2004; Llyod-Jones et al., 2009; Myers, 2009; Nash, 2003; D. R. Williams, 2003; D. R. Williams & Collins, 1995; Woolf, Johnson, Fryer, Rust, & Satcher, 2004; Wong et al., 2002). Disparities in health

emanate from a confluence of behavioral, social, economic, biological, and environmental factors (Brondolo et al., 2009; R. Clark et al., 1999; Franklin-Jackson & Carter, 2007; Geronimus, Bound, Waidman, Hillemeir, & Burns, 1996; Krieger & Sidney, 1996; Mayberry, Mili, & Ofili, 2002; Myers, 2009; D. R. Williams & P. B. Jackson, 2005; Williams & Mohammed, 2008). More specifically health and health outcomes in the U.S. are dependent upon gender, race, ethnicity, age, culture, politics, economics, society, and the environment (Albert et al., 2008; Byrd & Clayton, 2000, 2002; Diez-Roux, Northridge, Morabia, Bassett, & Shea, 1999; Dobbins & Skillings, 2000; Geronimus et al., 1996; Gillium et al., 1998; Kaplan & Keil, 1993; Krieger, 2003; Marmot & Wilkinson, 2001; Mays, Cochran, & Barnes, 2007; Myers, 2009; Paradies, 2006; Smedley et al., 2002; Thomas, Eberly, Smith, Neaton, & J. Stamler, 2005; D. R. Williams, 2003; D. R. Williams, Neighbors, & Jackson, 2003; W. J. Wilson, 2003; Winkleby et al., 1992).

The Institute of Medicine (IOM), appointed by the federal government in 2002 to investigate disparities in US health care, condensed the possible causes for health disparities into three broad categories: (a) patient causes, (b) provider causes, and (c) health system causes (Smedley et al., 2002). While several studies have examined the problem of CHD in African American men from the perspective of the health system or the perspective of the provider, few studies have investigated this problem from the patient's perspective.

Eliminating health disparities was one of two main goals for the nation's Health People 2010 Health Promotion and Disease Prevention initiative. Based upon current

research, trends in health outcomes, and lessons learned from Healthy People 2010 the identification of *the social determinants of health* has been added as a focused objective for the nation's Healthy People 2020 goal of eliminating health disparities (Krisberg, 2008; Raphael, 2000; U.S. Department of Health and Human Services [HHS] 2000).

Social determinates of health are the social and economic conditions in which people are born, grow, live, work and age (Commission on Social Determinants of Health [CSDH], 2008; Raphael, 2000). Social determinants of health are shaped by the inequitable distribution of money, power, and resources and cause health disparities. These conditions influence the HRQOL for society, individuals, communities, and nations (CSDH, 2008).

National consensus is emerging on the definition and identification of the social determinants of health. However, social scientist and researchers dismayed by the persistent and pervasive nature of health disparities in this country, over the last 20 years, have identified and examined three major social determinants of health; namely race, gender, and SES. CHD is a disease of the environment that develops over the life-course. The literature is replete with studies that examine the associations between race, gender, SES, CHD, and CHD risks. Lifestyle or behavioral CHD risk factors, such as smoking and physical activity, account for a small proportion of the variance in mortality when compared to SES. Moreover, some studies have found that when SES is controlled racial disparities persist.

Classic CHD risk factors such as hypertension and high cholesterol account for only 50% of the variance in CHD mortality. Some researchers believe that racism and

race-related stress should be vigorously pursued as a potential CHD risk factor. Smith, Hart, Blane, and Hole (1998) posited that racism is the missing variable in research on African American and Caucasian differences in morbidity and mortality.

African America Men and Heart Disease

The greatest evidence of disparities in health care can be found in the cardiovascular literature (Byrd & Clayton, 2002; Keller, 1999; Scott & Heslin, 2003). Significant differences exist between the health indices of African American men and Caucasian men with coronary heart disease (CHD) and CHD risk factors revealing the most striking disparities (Barnett, Braham, Casper, Elmes, & Halverson, 2001; Bridges, 2003; Cooper, 2001; Wallace et al., 2004). The prevalence of hypertension is among the highest in the world for African American men living in the United States. In 2006 the death rate from hypertension was 49.7% for African American men and 14.9% for Caucasian men (AHA, 2006). The death rate from diabetes was 50.5% for African American males and 26.8% for Caucasian males (AHA, 2006). Moreover, African American men have a greater clustering of the risk factors for CHD such as hypertension, diabetes, and obesity than Caucasian men (AHA, 2006; Clark et al., 2001; Ferdinand, 2004; Hozawa et al., 2007). The age of onset of CHD is earlier in African Americans than Caucasians. Sudden cardiac death rates are three times higher in African American men than in Caucasian men (Clark et al., 2001).

The literature states that African American men are less likely to receive evidence-based high quality cardiac care due to factors such as historical bias and low access to quality care (Canto et al., 2000; Felix-Aaron et al., 2005; Hannan et al., 1999).

The burden of CHD morbidity and mortality in African American men must be examined within the context of the history of African Americans in the United States.

The rise of CHD, to epidemic proportions, began in the 1930s with little known about the causes of the disease or how to prevent it (Capewell et al., 2010; Marmot & Elliot, 2005). Despite scientific research, national attention, and governmental funding directed at combating the disease that had become the nation's number one killer, prevalent scientific belief during the 1930s and 1940s precluded the recognition of CHD in African Americans (Byrd & Clayton, 2000, 2002; Jackson & Weidman, 2005; Keller, 1990; Marmot & Elliott, 2005; Rosenberg, 1995). Chest pain was the diagnostic indicator of CHD at that time. African Americans were thought to have inferior cardiovascular and nervous systems and therefore could not experience chest pain (Clayton & Byrd, 2000, 2002; Jackson & Weidman, 2005; Keller, 1990; Marmot & Elliott, 2005; Rosenberg, 1995; Scott & Heslin, 2003). Gillum and Liu (1984) published a report entitled Coronary Artery Disease Mortality in the United States, 1940-1978 Trends and Unanswered Questions and warned that continuation of myths and the lack of accurate information concerning African Americans and CHD would be detrimental to this population.

Cardiac risk factors. In the year 1948 the U.S. Public Health Service selected the residents of Framingham, Massachusetts to participant in a large-scale, long-term study to investigate causes, risks, and prevention strategies for CHD (Epstein, 2005; Grundy et al., 1998; W. B. Kannel, 1988; J. Stamler, 2005). The landmark Framingham Heart Study became one of the most important epidemiologic studies in medicine as it provided

an understanding of the development and progression of heart disease and its risk factors (Epstein, 2005; Grundy et al., 1998; W. B. Kannel, 1988; J. Stamler, 2005). Much of what is known about CHD was established by the Framingham Study, prospective CHD trials started in the late 1940s, and interventional CHD trials in the 1960s. These trials did not include African Americans (Byrd & Clayton, 2000, 2002; Cooper, 2005; Epstein, 2005; Keller, 1990; Scott & Heslin, 2003). Risk factors for CHD include hypertension, high cholesterol, diabetes, smoking, obesity, diet, sedentary lifestyle, and a family history of heart disease (Stamler, Neaton, Garside, & Daviglus, 2005).

Coronary heart disease risk prediction. Risk prediction has become a standard of care in the fight against CHD (Bernam & Wong, 2004; Ford, Giles & Mokdad, 2004; Marma & Lloyd-Jones, 2009; Vasan & Kannel, 2009). Risk prediction tools determine the 10-year CHD risk of having a heart attack, dying from CHD, and/or having a cardiac procedure. Patients are categorized as low, intermediate, or high risk and the level of risk guides management and treatment (Bernam & Wong, 2004).

Behavioral cardiology. Behavioral cardiology, an emerging field of clinical practice, recognizes that chronic life-stress can promote atherosclerosis and adverse cardiac events (Gallo et al., 2004; Redford, 2008; Rozanski et al., 2005; Wielgosz & Nolan, 2000). People across every socio-demographic and socio-economic strata experience life stressors but for African Americans there are unique person-environment transactions involving race that cannot be ignored (Harrell et al., 2003; Pieterse & Carter, 2007; Wyatt et al., 2003). Racism is entrenched in the history of the U.S. and African-Americans have experienced racism and acts of discrimination for over 400 years

(Bonilla-Silva, 2006; Byrd & Clayton, 2000, 2002; Fegin & Spikes, 1994; Jones, 1997; La Veist, 2002; Utsey & Ponterotto, 1996; West, 2001).

Race-Related Stress

Race matters in the United States (Byrd & Clayton, 2000, 2002; Krieger, 2001, 2003; Smedley et al., 2002; West, 2001; D. R. Williams, 2003). In addition, race plays a significant role as a determinant of health in the U.S. (Byrd & Clayton, 2000, 2002; R. Clark et al., 1999; Dobbins & Skillings, 2000; Krieger & Sidney, 1996; LaVeist, 2002; Mays, Cochran, & Barnes, 2007; Myers, 2009; Myrdal, 1944; Paradies, 2006; Pascoe & Richman, 2009; Peters, 2004; Smedley et al., 2002; D. R. Williams, 2003; Williams & Mohammed, 2009; Wyatt et al., 2003).

Jones (1993) described the Blind Spot Phenomenon as the refusal of the U.S. to seriously consider race and class issues as legitimate scientific and health issues. Jones criticized the U.S. for remaining oblivious to the effects of institutional and scientific racism on health. In addition, he chastised the U.S. health system for overlooking these practices and behaviors and not labeling them as wrong. There is increasing scientific interest in examining the extent to which racism and racial discrimination are stressful life experiences that can adversely affect health (Brondolo et al., 2009; R. Clark et al., 1999; Dobbins & Skillings, 2000; Farmer & Ferraro, 2005; Harrell, 2000; Krieger, 2001; Krieger & Sidney, 1996; Mays et al., 2007; Myers, 2009; Paradies, 2006; Pascoe & Richman, 2009; Peters, 2004; Utsey, Payne, Jackson, & Jones, 2002; Utsey & Ponterotto, 1996; D. R. Williams, 2003; D. R. Williams et al., 2003). Stress has been labeled as a determinant of health (Folkman, Lazarus, Drunkel-Schetter, Delongis, & Gruen, 1986;

Gallo, Ghaed, & Bracken, 2004; Redford, 2008; Rozanski, Blumenthal, Kaplan, 1999; Rozanski, Blumenthal, Davidson, Sabb, and Kubzansky, 2005; Utsey et al., 2002; Utsey & Ponterotto, 1996; D. R. Williams, 2003; D. R. Williams et al., 2003). For decades it has been recognized that stress causes disease (Gallo et al., 2004; Lazarus et al., 1986; Logan & Barksdale, 2007; Marmot & Wilkinson, 2001; McEwen, 2000, 2007; Redford, 2008; Rozanski et al., 1999; Rozanski et al., 2005).

Studies have found that the association between self-reported racism and health is completely or partially mediated by stress (Brondolo et al., 2009; R. Clark et al., 1999; Danoff-Burg, Prelow, & Swenson, 2004; Din-Dzietham, Nembhard, Collins, & Davis, 2004; Dobbins & Skillings, 2000; Fang & Myers, 2001; Franklin-Jackson & Carter, 2007; Harrell, 2000; Harrell, Hall, & Taliaferro, 2003; Paradies, 2006; Pascoe & Richman, 2009; Pieterse & Carter, 2007; Thompson, 2006; Utsey, Giesbrecht, Hook, & Stanard, 2008; Utsey & Hook, 2007; Utsey, Ponterotto, Reynolds, & Cancelli, 2000; D. R. Williams & Mohammed, 2009; D. R. Williams et al., 2003; Wyatt et al, 2003). Racism has been associated with the onset of several stress-related diseases, including hypertension and CHD (Carlson & Chamberlain, 2004; C. P. Jones, 2000; Logan & Barksdale, 2008; Massey, 2004; McEwen, 2007; Paradies, 2006; Pascoe & Richman, 2009; Peters, 2004; Roberts, Vines, Kaufman, & James, 2008; Steffen, McNeilly, Anderson, & Sherwood, 2003; Utsey, Chae, Brown, & Kelly, 2002; D. R. Williams, 2003; Williams & Mohammed, 2009).

Experiences of racism are embedded within interpersonal, collective, cultural-symbolic, and socio-political contexts and are sources of stress. Lazarus and Folkman's

(1984) definition of psychological stress formed the basis for Harrell's (2000) multidimensional construct of racism-related stress. Harrell (2000) defines race-related stress as: the race-related transactions between individuals or groups and their environment that emerge from the dynamics of racism, and are perceived to tax or exceed existing individual and collective resources or threaten well being.

Socioeconomic Status (SES)

Given the unique historic and contemporary nature of the construct of race in the United States, race has multiple confounders, with SES being the one most associated with racism and race-related stress. Some researchers have found that socioeconomic status (SES) is positively related to stress for middle-class African American men (Black et al., 2006; Cole & Omari, 2003; Cooper, 2001; Davis, 1995; Erbe, 1975; Farmer & Ferraro, 2005; George, 2006; Govil, Weidner, Merritt-Worden, & Ornish, 2009; Hunter, Frerichs, Webber, & Berenson, 1979; Jackson & Stewart, 2003; James, Strogatz, Wing & Ramsey, 1987; Martin, 2010; McEwen, 2000 ; Maty, James, & Kaplan, 2010; Smith et al., 1996; D. R. Williams, 2003; G. Wilson, 2007; Winkleby et al., 1992).

Middle-class status does not provide African American men with the normally expected reductions in health risks (Black et al., 2006; Byrd & Clayton, 2000, 2002; Cole & Omari, 2003; Cooper, 2001; Davis, 1995; Erbe, 1975; Farmer & Ferraro, 2005; George, 2006; Jackson & Stewart, 2003; Maty et al., 2010; Martin, 2010; D. R. Williams, 2003; G. Wilson, 2007). Not only is it possible that different racial groups might have different social experiences that affect health, different subpopulations within racial groups may experience different social experiences that affect health (Black et al., 2006;

Brondolo et al., 2009; Cole & Omari, 2003; Farmer & Ferraro, 2005; Feagin & Spikes, 1994; George, 2006; Myers, 2009; D. R. Williams, 2003; G. Wilson, 2007).

D. R. Williams (2003) described three factors that may be responsible for the higher level of stress and its adverse consequences on middle-class African American men. (a) Exposure to racial discrimination is an added burden faced by middle-class African American men. These perceptions of discrimination are stressors that can adversely affect physical and mental health. (b) Middle-class status is often recent, tenuous, and marginal for African Americans. College educated African American men are four times more likely than Caucasians to experience unemployment. Middle-class African Americans have markedly lower levels of wealth than Caucasians of similar income and are often involved in the provision of material support for poorer relatives. They are also less likely than Caucasians of similar income to translate their higher economic status into desirable housing and neighborhood conditions. (c) A unique source of stress and alienation may be unfulfilled expectations because their investment in education has not provided parallel gains in income.

SES is a major contributor to differences in mortality between African Americans and Caucasians. Smith et al. (1998) posited that differences in mortality reflect not only differences in income but also differences in environmental exposures, lifetime socioeconomic conditions, racism, sociocultural factors, and biologic factors.

Health-Related Quality of Life (HRQOL)

Improving quality of life is a main goal of the nations' HHS (2000) agenda as outlined in the Healthy People 2010 report (HHS, 2000). Health-related quality of life

refers to the perception of physical and mental health and the ability to respond to the physical and social environments (Carr, Gibson, & Robinson, 2001; Finlayson, Moyer, & Sonnad, 2004; Guyatt, Feeny, & Patrick, 1993; HHS, 2000). Over the past decade the added value of the patient's perspective in determining health and health outcomes has been recognized (Carr et al., 2001; Franks, Muennig et al., 2006; Hofer, Lim, Guyatt, & Olddrige, 2004; Lalonde, Clarke, Joseph, Mackenzie, & Grover, 2001; Mommersteeg, Donollet, Spertus, & Pedersen, 2009; Ohldin et al., 2004; Thompson & Yu, 2003; Wolinsky, D. K. Miller, Andersen, Malmstrom, & P. J. Miller, 2004).

Wilson and Cleary (1995) conceptualized a model of HRQOL that accounts for not only biologic and physiologic factors but also psychosocial and behavioral factors that are out of the control of health care providers and health care systems. Mommersteeg et al. (2009) posited that the patients' assessment of their health status does not necessarily correlate with that of the health care provider. HRQOL blends the biomedical paradigm with the social science paradigm where the biomedical paradigm focuses on etiology, pathology, biology, physiology and clinical outcomes and the social science paradigm focuses on functioning, overall well-being, behaviors, feelings, and the environment (Wilson & Cleary, 1995).

Racial /ethnic differences in HRQOL are not well documented. Xie et al. (2008) attributed differences in HRQOL between African Americans and Caucasians to quality of care and access to care for African Americans. In 1998 the Centers for Medicare and Medicaid Services (CMS) identified HRQOL as the primary outcome measure for evaluating managed care delivery (Haffer & Bowen, 2004; Wolinsky et al., 2004).

Therefore, research on HRQOL in African Americans is very important.

Self-rated poor physical health has been associated with adverse CHD prognosis in patients with CHD (Mommersteeg et al., 2009). HRQOL has been examined in patients with chest pain, heart failure and in patients after having a heart attack and after heart surgery (Govil et al., 2009; Lalonde, Clarke, Joseph, Mackenzie, & Grover, 2001, 2009; Mommersteeg et al., 2009; Ohldin et al., 2004; Xie et al., 2008). In addition, individual risk factors for CHD have been examined in relationship to HRQOL (Lalonde et al., 2001). To date, the perceived burden of CHD risk has not been examined.

Conceptual Framework

Identification of the psychosocial and socioeconomic variables that strongly influence racial/ethnic health disparities in this country offers the possibility of developing more highly tailored and effective interventions for improving CHD mortality outcomes (Carlson & Chamberlain 2005; R. Clark et al., 1999; Krieger, 2003; Logan & Barksdale, 2008; Massy, 2004; Mayberry et al., 2002; Mays et al., 2007; Smedley et al., 2002). A number of researchers have postulated models and frameworks for studying race-based discrimination and health outcomes (R. Clark et al., 1999).

R. Clark et al., (1999) developed a biopsychosocial model to study racism as a stressor for African Americans. The main tenet of this model is that the perception of an environmental stimulus as racist results in exaggerated psychological and physiological stress responses that are influenced by constitutional factors, socio-demographic factors, psychological factors, behavioral factors, and coping responses. Over time these stress responses influence health outcomes.

McEwen (2000) postulated allostasis and allostatic load to conceptualize the deleterious effects of race-based discrimination over time. Allostatic load refers to the price the body pays for being forced to adapt to adverse psychosocial or physical situations (McEwen, 2000). It represents the presence of too much stress or the inefficient operation of the stress hormone response system which must be turned on and then turned off again after the stressful situation is over. There is not an exact one-to-one correlation between subjective experiences of stress and the elevation of the physiological stress hormones or mediators (Mays et al., 2007). If stressed over long periods of time, these mediators participate in pathological changes causing immunosuppression, obesity, hypertension, and atherosclerosis.

McEwen's (2000) model uses the terms homeostasis and allostasis to explain adaptation and pathophysiology as related to the stress mediators. Allostasis refers to the process of adaptation to acute stress, involving the output of stress hormones. These stress hormones act in ways to restore homeostasis in the face of a challenge. McEwen's (2000) model uses racially discriminatory behavior in social interactions as stressors that send the body into allostasis. Homeostasis is the internal process that regulates the body's responses to challenges and demands. Allostasis is the body's response to those challenges. The focus is on the link between cognitive processes and physiosiologic responses.

In McEwen's (2000) model, race based discrimination creates a chronic biological challenge to the human regulatory system. McEwen (2000) theorizes that when chronic or excessive stressors are placed on the body's regulatory systems, over time these

systems will lose their ability to effectively and efficiently respond to stressors leading to pathology.

Recent evidence indicates that psychosocial stress increases vulnerability to infections. Immune system function is also a target of psychosocial stress (Carlson & Chamberlain, 2005; R. Clark et al., 1999; Logan & Barksdale, 2008; Mays et al., 2007; McEwen, 2000). McEwen (2000) found that moderate challenges to the cardiovascular system actually mobilize the cardiovascular system to propel energy by activating the sympathetic nervous system thus enhancing the immune response. When the stress challenge to the cardiovascular system is prolonged and excessive to the point of allostasis, immunity is suppressed; atherosclerosis can develop, resulting in coronary artery disease.

The rationale for this study is based on the diminishing returns hypothesis for middle-class African American men. There is growing evidence for patterns of morbidity and mortality across the entire range of SES that cannot be explained simply by access to health care or individual factors such as smoking (Carlson & Chamberlain, 2005; James, 1984; Kasl, 1984; Krieger, 2003; Logan & Barksdale, 2008; Massy, 2004; Mayberry et al., 2002; Mays et al., 2007; McEwen, 2000, Smedley et al., 2002). These gradients of health across the range of SES relate to a complex array of risk factors that are differentially distributed in human society and which have a cumulative impact on behavioral and physiological allostatic load.

Myer (2009) proposed a biopsychosocial model of cumulative vulnerabilities to account for health disparities. Myer's hypothesized that repeated exposure to adversities

and the clustering of risk factors and/or adversities work additively and/or synergistically over time to create vulnerabilities in health. These cumulative biopsychosocial vulnerabilities over the life course are mediated through negative cognitive emotional processing, clustering of health risk behaviors, reduced psychosocial reserve for coping; inadequate health care and excess allostatic load (Myers, 2009).

This study was framed within a biospychosocial model with emphasis on McEwen's (2000) conceptualization of allostatic load to encompass the highly complex interactions amongst biological, physiological, psychological, and social variables that occur over time (R. Clark et al., 1999; McEwen, 2000, 2007; Myers, 2009).

Identification of the Problem

The persistent CHD mortality gap between African American and Caucasian men has catalyzed a growing urgency to understand the complex factors that account for persistent cardiovascular racial/ethnic health disparities (Abell et al., 2008; Barnett et al., 2001; Bridges, 2003; Byrd & Clayton, 2000, 2002; Carlson & Chamberlain, 2005; R. Clark et al., 1999; Cooper, 2001; Gillium et al., 1998; Hozawa et al., 2007; Krieger & Sidney, 1996; Logan & Barksdale, 2008; McEwen, 2007; Peters, Muennig et al., 2006; Redberg, 2005; Smith et al., 1996; R. Wallace et al., 2004; Wyatt et al., 2003). With just 50% of the variance in CHD explained by classic cardiac risk factors such as hypertension and high cholesterol, some researchers believe that social experiences should be the first hypotheses when examining racial/ethnic inequalities in health (Cooper, 2001; Farmer & Ferraro, 2005; Muntaner, Nieto, & O'Campo, 1996).

Despite the known legacy of how race and racism in America has oppressed and persecuted the African American male in both subtle and overt ways, examination of racism in relation to CHD health and CHD health outcomes in African American men has not been vigorously perused. It is well known that racism impacts the stress process and adversely affects health (Gallo et al., 2004; Lazarus et al., 1986; Redford, 2008; Rozansk et al., 1999; Rozanski et al., 2005; Utsey et al., 2002; Utsey & Ponterotto, 1996; D. R. Williams, 2003; D. R. Williams et al., 2003). For decades it has been recognized that stress causes disease (Gallo et al., 2004; Lazarus et al., 1986; Logan & Barksdale, 2007; Marmot & Wilkinson, 2001; McEwen, 2000, 2007; Redford, 2008; Rozansk et al., 1999; Rozanski et al., 2005). In addition, it is well known that certain psychosocial factors such as chronic stressors lead to CHD. The research to link race-related stress to CHD is lacking.

The overrepresentation of African American men at lower economic levels in the United States has led to a skewed body of scientific literature that dose not include African American men from higher socioeconomic levels. It has been hypothesized that middle-class African American men are at increased risk for CHD due to the race-related stressors associated with not experiencing the same returns, as Caucasian men, for their investment in higher education. (Black et al., 2006; Cole & Omari, 2003; Farmer & Ferraro, 2005; George, 2006; D. R. Williams, 2003; G. Wilson, 2007).

Income does not equal wealth in the United States. African American men working year round full time have 72% of the average earning of comparable Caucasian men (Rogers, 2008). Numerous researchers reported disparities in CHD risk factors and

CHD mortality between African American men and Caucasian men after adjusting for SES (Abell et al., 2008; Albert et al., 2008; Barnett et al., 2001; Bridges, 2003; Byrd & Clayton, 2000, 2002; R. Clark et al., 1999; Cooper, 2001; Farmer & Ferraro, 2005; Gillium et al., 1998; Hozawa et al., 2007; Krieger & Sidney, 1996; Ohldin et al., 2004; Redberg, 2005; Smith et al., 1996; R. Wallace et al., 2004; Winkleby et al., 1992; Wyatt et al., 2003). Although some researchers attribute CHD mortality differences between African Americans and Caucasians to SES there are still other forces undertow that cannot be ignored. The complex and intertwined influences of racism, lifetime socioeconomic conditions, lifestyle, and sociocultural factors that must be acknowledged and examined in order to eliminate the CHD mortality gap. The ultimate goal is to influence the undergirding policies, practices, and systems to improve health and health care outcomes.

Numerous researchers have reported a SES gradient for CHD outcomes in African American men. However there are two outcomes that remain as a constant across the SES gradient; African American men die sooner and they are less likely to be diagnosed with CHD (Black et al., 2006; Cole & Omari, 2003; Cooper, 2001; Davis, 1995; Erbe, 1975; Farmer & Ferraro, 2005; George, 2006; Govil et al., 2009; Hunter et al., 1979; Jackson & Stewart, 2003; James et al., 1987; Martin, 2010; Maty et al., 2010; McEwen, 2000 ; Smith et al., 1996; Smith et al.,1998; D. R. Williams, 2003; G. Wilson, 2007; Winkleby et al., 1992). The patient's perception of health through assessment of HRQOL may give insight into pathways for CDH not recognized by the health care provider. The important sociocultural, socioeconomic, and psychosocial influences on

health may be captured through assessment of HRQOL. Self-rated poor physical health has been associated with adverse CHD prognosis in patients with CHD (Mommersteeg et al., 2009).

The unique psychosocial and socioeconomic stressors of middle-class African American men have appeared in the literature for decades. However, few empirical studies have been done on middle-class African American men and CHD. The key to minimizing inconsistencies and uncertainties associated with race, class, SES, and racial/ethnic health disparities in CHD research lies in first establishing the much needed foundational information such as the cardiac risk profile and the 10-year risk prediction for subgroups of African American men. Without this basic information it is impossible to compare and contrast within and across groups. In addition, it is necessary to investigate the relationships among race, SES, HRQOL CHD. A biomedical model that focuses on health promotion at the level of the individual has contributed to persistent racial/ethnic disparities in health. A biopsychosocial model with the conceptualization of allostatic load is an appropriate model from which to study CHD in African American males. Such a model takes into account the history of slavery, racial discrimination and its residual effects on the individual, families, the community, the health care provider, the health care system, national policies and practices. The health of African American men impinges on the combined and concerted efforts of science and politics to eliminate the CDH mortality gap that is preventable and therefore unacceptable.

The descriptive findings from this study will provide the much needed groundwork for understanding CHD in middle-class African American men. In addition

the findings from this study should provide the impetus for future studies to compare CHD outcomes within subgroups of African American men and between subgroups of African American men and Caucasian men.

Research Questions

1. What is the CHD risk for middle-class African American men?
2. What is the relationship between race-related stress (measured by the index of race-related stress) and risk for CHD in middle-class African American men?
3. What is the relationship between health-related quality of life and CHD risk in middle-class African American men?
4. To what extent do these variables in combination (race-related stress and HRQOL) explain/predict the CHD risk in middle-class African American men?

This study addressed the need to provide CHD data for middle-class African American men. It is the first quantitative descriptive investigation of CHD risk in a cohort of middle-class African American men. This study described the 10-year CHD risk prediction for a cohort of educated, employed, middle-class African American men and examined relationships between race-related stress, CHD risk and perceptions of CHD risk on HRQOL.

The descriptive findings from this study will provide the much needed groundwork for understanding CHD in middle-class African American men. In addition the findings from this study should provide the impetus for future studies to compare CHD outcomes between African American men and Caucasian men and within African

American men.

The main purposes of this study were to identify the 10-year CHD risk prediction for a cohort of middle-class African American men and to examine the association between race-related stress and health-related quality of life (Independent Variables) and CHD risk (Dependent Variable) in middle-class African American men. As shown in figure 1, risk factors for CHD as determined by the Personal HEART score will be used as the dependent variable and HRQOL and race-related stress will be used as independent variables.

Definitions

African American. The definition of African American used for this study is the definition use by the U.S. Census Bureau: A person having origins in any of the Black racial groups of Africa. It includes people who indicate their race as "Black, African Am., or Negro," (U.S. Census, 2008)

Caucasians or whites. This is a person having origins in any of the original peoples of Europe, the Middle East, or North African. This individual is defined as a person of northern, southern, eastern, and western European descent, excluding people with Asian, African, or American Indian ancestry (U.S. Legal Definitions, 2001-2010).

Risk factors for coronary heart disease (CHD). The risk factors for CHD consisted of the indices used within the Personal Heart Early Assessment Risk Tool (HEART) score and include: Family history of CHD, Hypertension, High Cholesterol, Diabetes, Smoking, and Physical Activity, Height and Weight (measures of obesity). Body mass index (BMI), an indication of obesity status, was calculated using height and

weight but not added into the calculation of the Personal HEART score (Mainous et al., 2007).

Known coronary heart disease (CHD). Known CHD for this study was defined as having CHD. Diagnosis of Heart Disease will be ascertained through the following questions:

1. Have you ever had a heart attack (also known as myocardial infarction)?
2. Have you ever had open heart surgery?
3. Have you ever had balloon angioplasty?
4. Balloon angioplasty with stent procedure (Mainous et al., 2007)?

Socioeconomic status (SES). SES may be defined as solely education, income, or occupation, it may be defined as all three together, or it may be defined as any combination of the three (Albert et al., 2008; Erbe, 1975; Jackson & Stewart, 2003; Kaplan & Keil, 1993; Smith et al., 1996; Strogatz et al., 1997; Utsey et al., 2008; Williams & Mohammed, 2008; Winkleby et al., 1992; Wyatt et al., 2003). This study defined SES as a combination of all three factors. Socioeconomic level as it appears on the Demographic, Health, and Health Care Questionnaire for this study is used as an income indicator.

Middle-class household income.

Generally middle-class is considered a household income two to six times the poverty rate, depending on household size (Reed & Thomas, 2005).

SINGLE: $19,290 to $57,870 (Poverty: $9,645)

TWO PEOPLE: $24,668 to $74,004 (Poverty: $12,334)

THREE PEOPLE: $30,134 to $90,402 (Poverty: $15,067)

FOUR PEOPLE: $38,614 to $115,842 (Poverty: $19,307)

FIVE PEOPLE: $45,662 to $136,986 (Poverty: $22,831)

SIX PEOPLE: $51,576 to $154,728 (Poverty: $25,788)

Numeric income ranges were not given as response choices, rather participants were asked to rank their childhood vs. current income as being lower, middle, or upper socioeconomic level. The intent of this study was not to create subgroups of middle-class African American men based upon income.

Middle-class African American men. A college education and a professional career have been well known defining characteristics of Greek-letter African American fraternity alumni chapter membership. African American men belonging to Greek-letter African American fraternity alumni chapters were chosen as the sample of convenience for this study because this population of men is representative of middle-class African American men (Ross, 2000).

The U.S. Census Bureau (2007) does not have an official definition of middle-class. Middle-class generally represents Americans with incomes between approximately 200 percent of the federal poverty threshold and those of the nation's top 5 percent income earners—roughly $25,000 to $100,000 a year (U.S Census Bureau, 2007). It is recognized that there are divisions within the middle-class: elite middle, upper-middle (e.g. $75,000 – $200,000), middle-middle, and

lower middle. This study will use the term middle-class to encompass all subdivisions.

Health-related quality of life (HRQOL). Quality of life incorporates physical, emotional, and social well being and refers to the impact that health conditions and their symptoms have on an individual's experience and self-perception in areas such as physical function, emotional function, social functions, role performance, pain, and fatigue (Thompson & Yu, C. 2003). The 12 item Short Form Health Survey (HRQOL) will be used to measure the quality of life as an independent variable.

Race-related stress. The race-related transactions between individuals or groups and their environment that emerge from the dynamics of racism and/or discrimination, that are perceived to tax or exceed existing individual and collective resources or threaten well being. Race-related stress is harmful whether real or perceived (S. Harrell, 2000). The Short Form of the Index of Race-related Stress will be used to measure an individual's self-reported perception of this variable (Utsey, 2009).

Delimitations of the Study

This study addressed middle-class African American men, ranging in age from 19 to 83, who belonged to an African American Greek-letter fraternity and attended an Eastern Regional African American Fraternity Convention. Therefore, this study represented a subset of the population of middle-class African American men in the United States. There were two delimitations to this study. First, limiting the study sample to only one group of middle-class African American men (those who belong to an

African American Fraternity) reduces the ability to generalize the results to middle-class African American men who do not belong to an African American Fraternity group. Second, recruiting subjects only from an Eastern Regional Conference was a delimiting factor. By recruiting participants from this region only, the ability to generalize the findings of this study to participants from other areas of the country was reduced. However, by applying the principle of Trochim's (2001) gradient of proximal similarity, it can be concluded that to the extent that African American men in this study are similar to African American men in general, the results can be generalized.

Limitations of the Study

This study relied on a sample of African American men from an African American Fraternity convention who volunteered for participation in the study. The identified limitations include: (a) Difficulty could have been encountered as participants at a convention may not have wished to volunteer their time. (b) There may have been unique characteristics of men who volunteer, that the researcher may not be able to control. (c) Some participants may not have been able to read, thus not volunteering to participate. (d) Some participants may have had difficulty following instructions. (e) Some participants may have difficulty comprehending the questions. (f) Factors such as shame, guilt, fear, mistrust may prohibit participants from responding honestly to the questions. (g) Some participants may have adopted an apathetic coping style in response to racism (Harrell, 1979). In this style individuals make the decision not to cope with the stress of racism.

Conclusion

African American men suffer a disproportionate burden of disease morbidity and mortality in this country. CHD is the main disease where the mortality trend has widened and the trend is expected to continue. Numerous inconsistencies exist in the literature on race and SES. However a preponderance of evidence supports the investigation of social, environment, psychosocial, and political influences when examining racial/ethnic differences.

Social scientists have long posited that the stress experienced by middle-class African American men from not having received equal returns in life, as Caucasian men, for their investment in education leads to stress related diseases such as CHD (Black et al., 2006; Cole & Omari, 2003; Farmer & Ferraro, 2005; Feagin & Spikes, 1994; George, 2006; D. R. Williams, 2003; G. Wilson, 2007). Although hypothesized, very little empirical research has been done to test this assertion (Brondolo et al., 2009; Farmer & Ferraro, 2005; D. R. Williams, 2003).

The damaging residual effects of slavery, racism, and legal racial discrimination are pervasive. Cultures vary along the African American male SES gradient. The degree to which these in group differences are influencing the African American/Caucasian CHD mortality gap is not known. However the answer is vital to saving individuals, families, communities, and generations. African American men, regardless of SES die from CHD at an earlier age and they receive less quality care than Caucasian men (Smith et al., 1998). Socioeconomic and psychosocial influences on CHD mortality cannot be ignored.

This quantitative descriptive survey research study established CHD risk and examined associations between CHD risk, race-related stress, and health-related quality of life in a cohort of middle-class African men who belonged to a Greek-letter African American fraternity and were attending a three-day Greek-letter African American fraternity convention. Participants completed a packet of surveys that contained three measurement instruments, the Index of Race-Related Stress–Brief Version (IRRS-B), the 12-Item Short Form Health Survey SF-12v2 (HRQOL), and a Demographic, Health, and Health Care Questionnaire. Closing the persistent gap in CHD mortality between African American men and Caucasian men has become not only a national health care initiative but also a moral imperative (James, 2003; Krieger, 2001, 2003; Marmot & Wilkinson, 2001). The nurse practitioner in the role of nurse-clinician, educator, and researcher is uniquely posited to bridge science and politics; the key to narrowing the gap.

In summary, this research addressed gaps in the literature resulting from under-representation of middle-class African American men in research and clinical trials, unrecognized socioeconomic, cultural, environmental, and psychosocial determinants of health. The goal of this study was to add novel information to the scarce body of literature on middle-class African American men and CHD. The ultimate goal is to influence change in damaging social and environmental determinants of health through education, awareness, research, and practice.

Chapter 2: Review of the Literature

CHD is the number one killer of all Americans. The CHD mortality rate is highest for African American men (AHA, 2010). The gap in CHD mortality between African American men and Caucasian men has been widening over the past 20 years (Cooper, 2005). In addition, compared to Caucasian men, African American men have an earlier onset of CHD, die earlier from CHD, and are less likely to be diagnosed with CHD (Clark et al., 2001; Ferdinand, 2004). African American men must be targeted in the elimination of racial/ethnic CHD disparities.

The African American population has been underrepresented in CHD clinical trials (Byrd & Clayton, 2002; Ferdinand, 2004; Smedley et al., 2002; Smith et al., 1998). Much of the CHD literature that is available for African Americans focused on men from lower socioeconomic levels (Clark et al., 1999; Farmer & Ferraro, 2005; D. R. Williams, 2003). However, middle-class African American men may be at risk for CHD as a result of particular socioeconomic and psychosocial influences unique to middle-class men as a whole (Clark et al., 1999; D. R. Williams, 2003).

Results from studies that examined differences in health outcomes between African American and Caucasian men consistently reported socioeconomic status (SES), health-related quality of life (HRQOL), cardiac risk factors, and more recently CHD risk prediction as four factors that influenced those differences. These four constructs provide the underpinnings for the purposes of this study which are: (a) to establish the cardiac risk factor profile and risk prediction for a cohort of middle-class men and (b) to examine the association between CHD risk and race-related stress. Racial/ethnic differences in CHD as well as intra-group differences cannot be fully understood outside of

socioeconomic, psychosocial, and political contexts.

This chapter will provide current and, where appropriate, historical information from the literature on the four main constructs of this study. It will also provide an in-depth description of the CHD risk factor profile and CHD risk prediction for African American men. It will present the body of evidence on race-related stress, HRQOL, and CHD risk. Special attention will be given to the relationships between the constructs relevant to both between group and in group differences such as morbidity, mortality, access to care, and quality of care. The rationale for this study is based on the diminishing returns hypothesis for middle-class African American men. This review will be framed within a biopsychosocial model with integration of McEwen's (2000) concept of allostatic load. This will allow for the integration of the broad scope of biomedical, psychological, social, economic, and political perspectives for this study.

Demographics, Health, and Health Care for African American Men in the United States

There are 17.3 million African American men in the United States. African American men represent 48% of the African American population (The Kaiser Foundation, 2007). African American men have the lowest life expectancy and highest death rate compared to men and women in any other racial group in the United States. African American men who work full time earn 72% of earnings for Caucasian men (Rogers, 2008). Fifty three percent of African American men had employment-based health care coverage compared to 70% of Caucasian men. In 2005, 38% of African American men with a high school diploma were enrolled in College compared to 46% of

Caucasian men. Regardless of level of education, African American men tend to earn less than Caucasian men (The Kaiser Foundation, 2007).

African American men are twice as likely as Caucasian men to say their usual source of care is an emergency department. They are less likely to have had an office or outpatient visit. Farmer and Ferrero (2005) posited that African American men may receive less health care at early stages of disease development possibly owing to employment, insurance, or other circumstances that effectively limit access. In addition, Farmer and Ferrero (2005) purported that African American and Caucasian men are highly segregated within the U. S. health care system. African American men are more likely to visit doctors who are not board certified and less likely to have access to high quality specialists and high quality diagnostic imaging.

Smith et al. (1998) found that CHD mortality differences between African Americans and Caucasians could be eliminated by controlling SES. However, African American men, regardless of SES, died sooner and were less likely to be diagnosed with CHD. Xie et al. (2008) found that controlling for SES differences in HRQOL minimized but did not totally eliminated racial/ethnic CHD mortality differences. Xie et al. suggested that unexplained residual effects were related to quality of care and access to care issues for African Americans.

Access to care is most associated with lower socioeconomic levels. However access to care is of particular relevance to African American men enrolled in managed care plans. African Americans enrolled in managed care plans report greater barriers to care than Caucasians with managed care plans (Smedley et al., 2002). Moreover, research

suggests that managed care gatekeeper policies may pose greater barriers to care for African American patients than Caucasian patients (Smedley et al., 2002).

Racial/Ethnic Health Care Disparities

History of health care for African Americans in the United States. The pattern of inferior, inconsistent, and unfavorable healthcare for African American people in the United States can be traced back to the landing of Black salves on the shores of a New World (Byrd & Clayton, 2000). For this very reason, Byrd and Clayton believed that health and health care delivery in the United States (US) cannot be fully understood outside of the context of the nation's social, political, and economic environments.

The examination of CHD and middle-class African American men must be framed within the science and politics of America. Health care and health outcomes of middle-class African American men cannot be fully appreciated outside of this nation's history. This section chronicles health, health care, and the epidemiology of CHD in African Americans in the United States. It provides the context for understanding racial/ethnic disparities in the United States.

Africans brought into North American for slavery during the slave trade in the sixteen, seventeen, and eighteen hundreds were in a *deficient situation* with regards to their health. This *slave health deficit* was due to the stresses and trauma of the slave trade. This included slave round ups and storage in slave castles on the African continent, deplorable conditions on ships during the Middle Passage across the Atlantic, and a harsh breaking-in period once on the shores of the New World (Byrd & Clayton, 2000).

During the colonial period, laws clearly mandated the difference in treatment

between White servants and Black slaves (Higginbotham, 1980).

> In addition to the prohibition against publicly whipping a naked white Christian servant, masters were admonished to "find and provide for their servants wholesome and competent diet, clothing and lodging, by the discretion of the county court." Church wardens were authorized to provide for servants who became so sick or lame that "he or she cannot be cold for such value…..as shall satisfy the fees and other incident charges accrued. (Source, p. #)

Detailed statues outlined for the treatment of White servants did not exist for Black slaves. The law was silent when it came to the care and treatment of Blacks. Masters were allowed to feed, clothe, and nurse their slaves in whatever manner they saw fit (Higginbotham, 1980). Hospitals were not favored by the colonist. The sick were cared for at home. Public almshouses provided a minimal level of care and quarantine for the worthy and unworthy poor. These poorhouses were overcrowded and racially segregated. The waiting lists for Blacks were extremely long. Thus, Black slaves took care of their own health care needs through a *slave heath system* composed of midwives, root doctors and spiritual healers (Byrd & Clayton, 2001).

The early colonist's belief of White superiority and Black separateness and inferiority was affirmed by an influx of pseudoscientific writings from the European medical and scientific community known as scientific racism (Scott & Heslin, 2003). Writings of Black biological, psychological, and intellectual inferiority proclaimed that Blacks were not expected to have normal medical outcomes. As a result Blacks suffered detrimental effects on health and health care in the seventieth and eighteenth centuries.

The Chain of Being idea ranked races as higher or lower, with White Europeans who devised it being on the top. This belief contributed to a failure to recognize the incidence of CHD in the African American population. Papers from that time period claimed that, African Americans as compared to Caucasians, had inferior cardiovascular and nervous systems (Keller, 1990). In the 1930's and 1940's the diagnosis of CHD was based on the presence or absence of chest pain. Thus, it was thought that CHD did not exist in African Americans.

Misconceptions lasted well into the 1970s with clinicians believing that African Americans were resistant to chest pain. The seminal work of Gillum and Liu (1984) urged the medical community to objectively examine the facts related to African Americans and CHD.

Gillum and Liu provided factual information to dispute several commonly believed misconceptions about African Americans and CHD such as:

Myth: CHD is uncommon in African Americans

Fact: CHD is the leading cause of death in U.S. African Americans

Myth: African Americans rarely have myocardial infarction

Fact: Myocardial infarction hospitalization rates are high in African Americans, with higher case fatality rates than for Caucasians

Myth: Caucasians have much more CHD than African Americans in the U.S.

Fact: CHD mortality and prevalence rates are similar in African American and Caucasian males.

Myth: African Americans are immune to CHD

Fact: African Americans are relatively susceptible to CHD, but it is surprising that they do not have rates even higher than those observed.

The era of Jim Crow laws and legal discrimination during the late 1800s into the early 20th century created another damaging legacy for the health and health care of African Americans. Disparities in health may also occur at the health care system level: the health system as a whole, health care providers, or health care plan managers. Bias, stereotyping, prejudice, and clinical uncertainty on the part of health care providers may contribute to racial and ethnic disparities in health care (Smedley et al., 2002). Schulman (1999) published an article in the New England Journal of Medicine that documented racial and gender bias distorting providers' clinical decision making. Nelson believed that a greater understanding of the prevalence and influence of these processes is needed and should be sought through research.

Hypertension was recorded in African Americans in the rural south in the 1930s. The migration of African Americans from the isolated farmlands of the south to crowded cities in the north during the 1950s created a shift in lifestyle that impacted CHD disease and risk factors. Migration to the north increased African American exposure to consumerism and exploitive markets such as the tobacco industry (Cooper, 2005).

It has been difficult to reliably track trends in CHD among African Americans due to a lack of data, inaccurate mortality reporting, and bias in the research literature (Keller, 1990).

The important clinical trials conducted in the 1940s that established the risk factors for

CHD and the prevention trails of the 1960s did not include African American. Much of the data that is available comes from smaller community setting trials. Inadequate recordings of vital statistics have also contributed to an unclear picture of CHD in African Americans (Byrd & Clayton, 2001). Before 1940, death rates were grouped for whites and nonwhites. Non-whites were not only African Americans but also Native Americans, and Asian/Pacific Islanders. Race has been used as a proxy in large amounts of official health data. Many health indicators are categorized by race and not by SES. Much of the CHD data on African Americans does not take into account SES.

In 1944, Gunner Myrdal published *An American Dilemma*, a writing which documented the conflicts between the nation's idealized American creed of hard work, equal opportunity, and fair treatment of all citizens and the U.S. realities of racial segregation, discrimination, and domination by White society. In 1996, Obie Clayton Jr. published *An American Dilemma Revisited*, a follow-up look at Myrdal's 1944 seminal work. Clayton, Jr. stated that despite significant advances, strong economic and social barriers persist, and in many ways the plight of African Americans remains as acute now as it was then.

According to Byrd and Clayton (2001) many of the health issues Myrdal (1944) pointed out in his work remain unaddressed today. Byrd and Clayton (2001) believed that today's African American Health care professionals are either silent about the health crisis in the African American community as they pursue other agendas or are marginalized when they speak up. Byrd and Clayton (2002) believed that the few who do investigate, research, and articulate these issues usually go unrecognized, unfounded,

underfunded, or even ostracized by mainstream professionals.

Elimination of health care disparities in the United States. Over the last two decades the United States has become more demographically diverse, especially in the number of people of color (LaVeist, 2002; Smedley et al., 2002). Many individuals belonging to racial/ethnic groups are of lower SES and experience poorer heath outcomes (Brondolo et al., 2009). The striking disparities in health across ethnic/racial lines forced policymakers to recognize and address the issue. In 1998 President Clinton committed the nation to the elimination of health disparities by the year 2010 (Smedley et al., 2002).

In 2002, The Institute of Medicine's Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care reported that the existence of disparities in health care was largely unrecognized. From the evidence it gathered, the committee concluded that disparities could be partly attributed to a complex and economically driven health care environment. The committee therefore recommended that steps be taken to increases awareness of racial/ethnic disparities in health care among health care providers, the general public, and policy makers.

Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care, a report from the Institute of Medicine (2003), indicated that minorities tend to receive lower-quality health care than whites; even when insurance status, income, age, and severity of conditions are comparable (Smedley et al., 2002). In addition, the report stated that these differences in health care occur in the context of broader social and economic inequalities.

Disparities may occur at the patient level, the provider level or at the level of the

health care system. Smedley et al. (2002) stated disparities on the patient level might stem from preferences, beliefs, mistrust, or treatment refusal. Smedley et al. recommend that researchers should assess patient's attitudes and preferences toward healthcare providers and services. In addition, an examination of the extent of these influences on the quality of care and treatment decisions should be conducted.

Disparities may also occur at the health care system level: the health system as a whole, health care providers, or health care plan managers. Bias, stereotyping, prejudice, and clinical uncertainty on the part of health care providers may contribute to racial and ethnic disparities in health care (Smedley et al., 2002). Schulman (1999) published an article in the New England Journal of Medicine that documented racial and gender bias distorting providers' clinical decision making. Nelson (date) believed that a greater understanding of the prevalence and influence of these processes is needed and should be sought through research.

Healthy People 2010 is an exhaustive report issued by the US Department of Health and Human Services that delineates the health care directives for the twenty-first century (HHS, 2000). Healthy People 2010 was built upon health care priorities initiated over the past twenty years (HHS, 2000). Two goals provide the framework upon which objectives were formulated and outcomes will be measured. The two goals were to improve quality and years of healthy life and to eliminate health care disparities. In a special report prepared from the National Conference on Cardiovascular Disease Prevention, Cooper et al., (2003) reported on areas where new or better data are needed to attain the Healthy People 2010 (HHS, 2000) health objectives. Three key

recommendations are:

1. Provide adequate data to monitor levels and trends in population subgroups, as defined by race/ethnicity, socioeconomic status, and geography.
2. Allow differences within the population in mortality, morbidity, incidence, and risk factor levels to be better understood.
3. Design research to improve risk factor detection and management in primary care settings based on a better understanding of the behavior at the patient, provider, and organizational levels, and specifically, acquire knowledge about the intensity of interventions required to activate behavior change, better measures of outcomes to monitor these behavior changes, and means to maintain beneficial behavior changes.

The elimination of health disparities appears again as an overarching goal for this nation on the evolving Healthy People 2010 (HHS, 2000) agenda. This time the goal has attached to it an objective that focuses on the social determinants of health. While consensus is mounting on identifying the social determinates of health for the nation, social scientists, historians, and researchers have been tackling social and environmental influences on health for decades.

Byrd and Clayton (2002) investigated issues concerning race, racism, class, ethnicity, culture, gender, and the problems, stereotypes and biases they generate in the health care system. Byrd and Clayton concluded that a myriad of sources contribute to racial and ethnic disparities in health care.

Middle-Class African American Men

African American men are a diverse group of people with different social histories, job opportunities, and work place experiences. The existing CHD literature for African American men, focuses primarily on the plight of the most economically disadvantaged (Courtenay, 2003; Felix-Aaron, Moy, Kang, Patel, Chesley, & Clancy, 2005; D. R. Williams, 2003). The elimination of excessive CHD morbidity and mortality in African American men requires investigations into the complex and interrelated biological, psychological, and social factors that uniquely impact the cardiovascular health of African American men across all sectors of the population. Generalizations and extrapolation of data obtained from one particular segment of the African American male population will not yield credible solutions.

This section discusses middle-class African American culture. Knowledge of the cultural context and the value health is essential to understanding the decisional processes that direct individual health behaviors (Fleury, 1996). Cultural values reflect personal beliefs about illness and illness treatment (Fleury, 1996). Cultural values also affect symptom patterns and perceived well-being (Fleury, 1996).

A renewed focus on the unique characteristics and nuances of culturally and socioeconomically diverse populations has been developing in recent years (Glanz et al., 2002). The emphasis on cultural diversity is being fueled by the persistence of health disparities despite remarkable advances in medicine. Discussions of cultural diversity usually emphasize differences between racial/ethnic groups. However, it is important to recognize the cultural diversity within groups. Failure to appreciate the heterogeneity

within ethnic groups can lead to *ethnic glossing* (Glanz et al., 2002).

The sociology of the African American middle-class is complex and must be understood within a historical context. There is a homogeneous mindset that constitutes this group but heterogeneity exists in terms of incomes, educational levels, and occupations. The group is diverse with a range of incomes, educational levels, and occupations (Coner-Edwards & Spurlock, 1988; Jackson & Stewart, 2003). The spectrum encompasses the lower middle, middle, upper middle, and elite middle-class (Coner-Edwards & Spurlock, 1988). Jackson and Stewart (2003) stated that the African American middle-class has always included (a) bourgeoisie, (b) professionals, and (c) officials. The bourgeoisie own and control the means of production as well as the labor of others. Successful business owners may belong to this group. Within the bourgeoisie category, there is a subgroup known as the petit bourgeoisie who own the means of production but perform the labor rather than control the labor of others. Some professional athletes may be considered members of the petit bourgeoisie. Entertainers, entrepreneurs and business owners may also belong to this group. The professional class generally includes doctors, lawyers, and other white-collar professionals. The African American community has given occupational prestige to those who have symbolic power namely, pastors and politicians. Religious and political officials may not have objective characteristic such as income, yet they are considered middle-class members. Pastors and those who hold public office are examples of those belonging to the class of officials (Coner-Edwards & Spurlock, 1988; Jackson & Stewart, 2003).

The African American middle-class is also divided into the nouveau and the

established middle-class (Jackson & Stewart, 2003). Established middle-class members are descendents of established, prominent African American families whose ties can be traced back through the generations to families who were free before the Civil War or were freed during the war. Status within this group was further defined by whether one's ancestors were house servants or field hands and the darkness of one's skin. Members of this group may trace their roots back to African immigrants who were indentured servants, ancestors who were born to free African American mothers or ancestors who were born free to Caucasian mothers. Children in these cases often were educated and their parents were allowed to work in specified jobs. Members of the established middle-class have a deep sense of belonging. They do not worry about losing their middle-class status (Coner-Edwards & Spurlock, 1988).

Many African Americans supported the belief that darker skinned African Americans were inherently inferior to lighter skinned African Americans (Neal & Wilson, 1989). Since colonial times African Americans with lighter skin and Caucasian features were granted certain advantages. Light skin color and Caucasian features were evidence of White ancestry and thus light-skinned Blacks were considered genetically superior to dark skinned or Negroid-featured Blacks (Mydral, 1996). During slavery, light-skinned Blacks were assigned coveted positions such as house servants and craftsmen and skilled laborers. After the civil war light-skinned men continued in high status positions and they were the ones who were given educational advantages and the ones who rose to power (Neal & Wilson, 1989). The segregated relationship that existed between the races continued into the twentieth century under the "separate but equal"

law. The segregation between the races accentuated the divisions within the African American population as skin color played a significant role in determining various classes. African Americans of varying skin complexions were found in different classes. Dark skin became associated with lower status while light skin became associated with high status (Neal & Wilson, 1989). Although it was possible for dark-skinned males to advance to a different socio-economic class by way of education and hard work, the path to advancement was easier for the light-skinned male. A dark-skinned male in a professional occupation was viewed favorably but his status was definitely enhanced if he was married to a light-skinned female (Neal & Wilson, 1989). Throughout the 1950s and 1960s there was slight movement away from obsession with skin-tone within the African American population. The Civil Rights movement of the sixties emphasized Black is Beautiful and Blacks were turning their attention away from skin-color and toward justice and equality for all African Americans (Neal & Wilson, 1989). It was not simple to undo years of deeply ingrained beliefs, attitudes, and feelings associated with the Caucasian standard of beauty and attractiveness (Neal & Wilson, 1989).

The nouveau African American middle-class moved into the middle-class from families of lower socioeconomic status (Coner-Edwards & Spurlock, 1988). Members of the nouveau middle-class are usually first or second-generation middle-class and have attained this status on their own or by the efforts of their families. The nouveau African American middle-class do not have a sense of belonging. They worry about loss of status or stability. The nouveau middle-class may handle their racial identity in one of four ways:

1. They have not focused on racial issues and have concentrated on education, advancement, and success of the dominant culture.
2. They are acutely aware of racial discrimination in society. Although angry about it they channel their energies into achievement and success.
3. They are acutely aware of racial issues and display an enormous amount of anger. They proceed with boldness as well as contempt for the dominant society
4. They move into middle-class status by the consistent push and encouragement of their families. These individuals, unlike the members of the other groups, lack an inner locus of control. They emerge into middle-class status passively without commitment or determination.

Despite the heterogeneity of the African American middle-class, there are six homogeneous core characteristics that comprise this group.

1. Implicit or explicit embracing of the dominant culture.
2. A strong belief in the work effort.
3. The delay of gratification
4. A strong sense of self and empowerment
5. A sense of importance of their African American heritage
6. Improving quality of life

Coner-Edwards and Spurlock (1988) found that attainment of middle-class status might produce psychological consequences. When middle-class African Americans are able to combine the duality of activities in the dominant culture with activities in the African American community their lives are enriched (Coner-Edwards & Spurlock,

1998). If this synthesis does not occur identity confusion may rise. Some middle-class African Americans want to be accepted by not only the dominant culture but also by those African Americans who have not achieved middle-class status. Some may never feel comfortable in either world. Guilt may be another psychological consequence for middle-class achievement. Many African Americans have left behind family members who are in lower class status and even poverty.

The strong sense of the work ethic may lead to psychological consequences through unbalanced lives. Some middle-class African Americans feel as if they have achieved their status through hard work and must work even harder to maintain it. Anxiety and insecurity about maintaining middle-class status is another psychological consequence. Many middle-class African Americans find a lack of nurturance in their lives. In addition they find a lack of affection, acceptance, caring, and connectedness which may in part be attributed to shifts in families (Coner-Edwards & Spurlock, 1998).

Studies have found that when education, family income, and disease risk factors were controlled, discrepancies between African American and Caucasian morbidity and mortality rates still persisted (Krieger, Rowley, Herman, Avery, & Phillips, 1993). D. R. Williams (2003) stated that differential exposure to racism and different coping responses following perceptions of racism may account for the variability in health outcomes in African Americans. D. R. Williams found that for African American men, middle-class status is not associated with the expected reductions in excessive morbidity and mortality. Studies have found that when education, family income, and disease risk factors were controlled, discrepancies between African American and Caucasian morbidity and

mortality rates still persisted (Krieger et al., 1993). D. R. Williams reported that an increased level of psychosocial stress among middle-class African American men might contribute to the increased hypertension risk experienced by this group. D. R. Williams described three factors that may be responsible for the higher level of stress and its adverse consequences on middle-class African American men. (a) Exposure to racial discrimination is an added burden faced by middle-class African American men, and these perceptions of discrimination are stressors that can adversely affect physical and mental health. (b) Middle-class status is often recent, tenuous and marginal for African Americans. College educated African American men are four times more likely than Whites to experience unemployment. Middle-class African-Americans have markedly lower levels of wealth than Caucasians of similar income and are often involved in the provision of material support to poorer relatives. They are also less likely than Whites of similar income to translate their higher economic status into desirable housing and neighborhood conditions. (c) Unfulfilled expectations because their investment in education has not provided parallel gains in income may be a unique source of stress and alienation. Fang and Myers (2001) and Winkby, Flora, and Kraemer (1994) suggested that studies that focus on race are needed as they may capture the social factors or the exposure to common social experiences such as the experience of racism or discrimination.

Race-Related Stress and African American Men

This section will discuss racism, race-related stress, mediators of the stress response, perceptions of race-related stress, health, CHD, and African American men.

The risk for CHD cannot be explained in full by traditional risk factors such as hypertension, diabetes, and smoking (Marmot & Elliott, 2005; Treiber, Kamarck, Schneiderman, Sheffield, Kapuku, & Taylor, 2003; Wyatt et al., 2003). Controversy exists as to the exact amount of unexplained variance in risk for CHD but numbers range from 20% to 50% (Marmot & Elliott, 2005: Treiber et al., 2003; Wyatt et al., 2003). Some investigators believe that racism/discrimination is the long-known missing variable that may account for some of the unexplained variance in risk for CHD (Bronodolo, Gallo, & Meyers, 2009; Clark et al., 1999; Geronimus et al., 1996; Meyers, 2009; Marmot & Wilkinson, 2001; Smith et al., 1996).

Harrell (2000) defines race-related stress as: the race-related transactions between individuals or groups and their environment that emerge from the dynamics of racism, that are perceived to tax or exceed existing individual and collective resources or threaten well being. Harrell emphasizes that racism related stress is harmful whether real or perceived. Harrell (2000) and Utsey (1999) both caution that with the conceptualization and assessment of race-related stress particular attention must be given to the multi-dimensional and ubiquitous nature of racism. Jones (1972) presented a model of racism. According to Jones, racism may occur on three levels: individual, institutional, and cultural. *Individual racism* refers to racial prejudice that occurs in the context of face-to-face interactions. Essed (1991) extended the individual realm of racism to include collective racism. *Collective racism* occurs when organized or semi organized Caucasians or non African Americans seek to restrict the rights of African American. *Institutional racism* refers to racial prejudice embedded within social institutions that manifest in

social policies, norms and practices. *Cultural racism* refers a patterned way of thinking that perpetuates the belief that the cultural values, traditions, and beliefs of one's own cultural/ethnic group are superior to those of other cultures.

Thiots (1991) proposed that African Americans while living with greater exposure to everyday stressors and chronic strains must also endure those stressors that are unique to their racial group membership. It has been suggested that exposure to racism, prejudice, and discrimination contributes to the higher incidence of hypertension in African Americans (Armstead, Lawler, Gorden, Cross, & Gibbons, 2003; Kreiger, 1990; Patrick, McNeilly, Anderson, & Sherwood, 2003). In addition, the literature has implemented racism in the development of stress-related diseases such as CHD (Utsey, Payne, Jackson, & Jones, 2002). Protracted racism has been linked to increased levels of depression and lowered life-satisfaction (Broman, 1997; Fernando, 1984). Studies have found reduced quality of life ratings, in African Americans, as a result of chronic exposure to racism and discrimination (Utsey et al., 2002).

Utsey et al. (2002) indicated that middle-class African American men have significantly higher levels of race-related stress due to institutional and collective racism. Diez-Roux, Northridge, Morabia, Bassett, and Shea (1999) studied a group of African American men in Harlem. They found that although men who held college degrees had the lowest levels of cigarette smoking, physical inactivity, and overweight status they had the higher levels of hypertension than high school graduates. It is well documented in the literature that higher socioeconomic levels are positively related to stress for African American men (James, Keenan, Strogatz, Browning, & Garrett 1992; Strogatz et al.,

1997). Stress leading to poor health despite improved living conditions and access to care in middle-class men is a compelling reason to look at the role racial oppression may play. Cooper (2001) suggested that racism, social inequality, and wage inequality should be conceptualized as social determinants of excess CHD mortality in African Americans; thus paving the road for prevention strategies.

Perceived racism includes both objective and subjective experiences of prejudice and/or discrimination (Clark et al., 1999). Clark et al., (1999) posited that self-report measures of race-related stress are of major significance and should not be discredited based upon the subjective nature of the tool. The subjective component of the perception of the experience is more important to initiating a stress response than the objective component as the objective component may or may not be perceived as stressful (Clark et al., 1999; Lazarus & Folkman, 1984; Outlaw, 1993).

The conceptualization of the perception of race-related stress is grounded in Lazarus and Folkman's (1984) model of stress and coping (Clark et al., 1999; Outlaw, 1993; Utsey & Ponterotto, 1996). As framed within this theory, race-related stress is a product of the transaction between aspects of the situation/environmental stimuli and aspects of the person (Lazarus & Folkman, 1984).

Outlaw (1993) extended Lazarus and Folkman's model of stress and coping to African Americans and their experiences with racism/discrimination. In this model, the perception of environmental stimuli involving racism/discrimination evokes a stress response; therefore these experiences are considered stressors.

The response to the stressor is dependent upon both evaluation of the seriousness

of the event and the coping response (Clark et al., 1999; Franklin-Jackson & Carter, 2007; Lazarus & Folkman, 1984; Outlaw, 1993; Thompson, 2006; Utsey & Payne, 2000; Utsey, Porterotto, Reynolds, & Cancelli, 2000). Cognitive appraisal is the process by which individuals determine: (a) if a stressful stimulus is a threat to their well-being, (b) if they have the ability to cope with the stressful stimulus and, (c) if the they have the resources to cope with the stressful stimulus (Brondolo et al., 2009; Clark et al., 1999; Outlaw, 1993; Lazarus & Folkman, 1984; Thompson, 2006; Utsey, Porterotto, Reynolds, & Cancelli, 2000). When encountering racism/discrimination, African Americans make a cognitive appraisal of their encounter (Outlaw, 1993). All encounters are viewed as a threat, harm, loss, or a challenge. They are never assessed as being indifferent, benign, or positive (Outlaw, 1993).

Numerous studies have shown how coping strategies buffer the deleterious effects of racism (Danoff-Burg, Prelow, & Swenson, 2004; Thompson, 2006; Utsey & Payne, 2000; Utsey, Porterotto, Reynolds, & Cancelli, 2000; D. R. Williams et al., 2003). Coping strategies are used to decrease stress and are generally divided into four categories: problem focused, emotion focused, avoidance, and social support (Brondolo et al., 2009; Lalonde et al. (2001); Pieterse & Carter, 2007; Utsey, Ponterotto, Reynolds, & Cancelli (2000).

Findings from studies that examined the coping strategies of African Americans are inconsistent (Brondolo et al., 2009; Krieger & Sidney, 1996; Lalonde et al., 2001; Pieterse & Carter, 2007; Plummer & Slane, 1996; Utsey, Ponterotto, Reynolds, & Cancelli, 2000). Plummer and Slane (1996) reported that African Americans use more

emotion focused and problem focused. Krieger (1996) reported that African-Americans use avoidance as a coping strategy. Lalonde et al. (2001) and Utsey, Ponterotto, Reynolds, and Cancelli (2000) reported that African Americans who had experiences with racial discrimination preferred telling others about the event. Fegan and Spikes (1994) and Jones (1997) reported that when African-Americans are confronted with less tangible forms of racism such as cultural racism, social support was the only viable solution for coping with the events.

African American fraternities are a major source of social support for college-educated men (McClure, 1996). All of the men in this study belonged to an African American Greek Fraternity. There are five African American Greek Fraternities that make up the National Pan-Hellenic Council (National Pan Hellenic-Council, 2010). Most African American fraternities were founded in the early 1900s on principles of brotherhood and support (National Pan Hellenic-Council, 2010). Racism had prevented African American men from joining already existing Caucasian fraternal organizations. As a result of this exclusion, African American male students formed fraternities to enhance their college experiences and to deal with political and social issues facing the African American Community (National Pan-Hellenic Council, 2009).

The support received from the fraternity collectively or from individual fraternity friendships may serve to buffer some of the harmful effects of racism/discrimination (Allen, 1992; McClure, 2006). McClure (2006) interviewed middle to upper middle-class males who belonged to African American Greek Fraternities and attended large predominately-Caucasian universities to examine how these men developed a masculine

identity in the face of the contradictory race, class, and gender expectations. Studies have found that masculine identity differs by race (Franklin, 1992; Price, 2000; Wade, 1996). Research has also shown that African American masculine identity varies by social class (Feagin & Sikes, 1994; Smith & Moore, 2000). Franklin (1992) and Price (2000) posited that middle-class men across racial lines are more likely to stress success and achievement based upon their increased access to resources. Consistent with the work of Franklin (1992) and Price (2000) the men in McClure's study emphasized the importance of success and achievement both during and after college. Fraternity memberships for the men in McClure's study reflected both the Afro-centric model of corporation and connectedness and the mainstream (Caucasian model) ideals of individuality and the necessity to be self-sufficient. Although social support has been hypothesized as a buffer of the effects of racism on aspects of psychological and physical health, few empirical studies have actually demonstrated the direct role of social support as a buffer of the effects of racism (Clark, 2003; Clark & Gochett, 2006; Findh & Vega, 2003; Fisher & Shaw, 1999; McNeilly et at. 1995; Noh & Kaspar, 2003; Sanders & Thompson, 2006).

Studies examining the effects of racial identity on distress suggested that the pride and belonging dimensions of racial identity may produce more general feelings of well being even though the positive dimensions were not sufficient to offset the impact of perceived racism on distress and depressive symptoms (Brondolo et al., 2009; Pieterse & Carter, 2007; Utsey, Porterotto, Reynolds, & Cancelli, 2000). Relevant to this study, Brondolo et al. (2009) posited that a well developed racial identity may be associated with historical knowledge about one's own group and social position. Men belonging to

historically Black Greek Fraternities learn the history of the organization's founding fathers who in most cases fought racism, prejudice, and discrimination to successfully obtain a college degree (National Pan Hellenic-Council, 2010). Membership in historically Black Greek Fraternities may buffer some of the harmful effects of racism by fostering a well-developed racial identity in those who are members.

A significant body of literature exists on African American college students who attended predominately-White colleges and universities (PWCUs) vs. historically Black colleges or universities (HBCUs) (Chism & Satcher, 1998; Phinney & Onwughalu, 1996; McClure, 2006; Smith & Moore, 2000; Steward, Jackson, M.R., & Jackson, J.D., 1990). Students with negative racial identities perceived more racial stress in either college environment (Chambers et al., 1998, Neville et al., 1997). Similar to African American fraternities, HBCUs have a tradition of preparing African American students to define and meet their goals regardless of factors that may present greater challenges for them (Chambers et al., 1998; Neville et al., 1997; Utsey & Ponterotto, 2000). African American students attending HBCUs often perceive a supportive environment concerning their status as African Americans (Chism & Satcher, 1998). African American students at HBCUs also demonstrated higher self-esteem and self-image due to increased leadership opportunities when compared to African American students at PWCUs.

Ward (1991) posits that the integration of the individual's personal identity with one's racial identity is a necessary and inevitable developmental task growing up Black in White America. Pertinent to this study, Hall and Carter (2006) and Helms (2001) posited that the way in which an African Americans identifies with his or her race may

influence his or her perception of individual, institutional, or cultural racism. Black racial identity consists of four statuses: (a) Pre-encounter: a status in which one denies the salience of one's race and racial group; (b) Encounter: a status in which one confronts an experience that makes race more salient, leading to a state of transition and confusion; (c) Immersion-Emersion: a status that involves an active process of learning about one's race and culture; (d) and Internalization: a status wherein one integrates race and its meaning with one's personal identity. Watts and Carter (1991) examined racial identity, discrimination, and institutional racism and found that higher SES and Internalization racial of identity predicted psychological well being. They also found that African Americans with high levels of Pre-encounter status attitudes had the most favorable perceptions of the racial climate and did not perceive themselves to be subject to personal discrimination in the workplace. Pascoe and Richman (2009) performed a meta-analysis of perceived racism and health. Fifteen studies used group identification as a modifier of the relationship between discrimination and health. Of the studies that were significant, 60% revealed that high group identification was more likely to alleviate the negative effects of perceived discrimination whereas the remaining 40% showed the opposite effect (Pascoe & Richman, 2009). The conditional nature of the results suggested that the benefits of high group identity may vary by coping style, level of discrimination and or stress, and the complexity of identity (Pascoe & Richman, 2009).

In addition to coping styles, self-esteem, social support, and racial/ethnic identity, other mediators or modifiers of race-related stress have been identified in the literature. They include vulnerability or resilience to other stressors, emotional support, perceived

control, personality, psychological states such as anxiety and depression, early childhood traumatic experiences, religion, spirituality, John Henryism, confrontation, anger, hostility, and skin color.

Skin color may act as a possible psychosocial mediator of perceived racism and health. Skin color in the U.S. has long been known to carry considerable social significance with lighter skinned African Americans having higher SES (Sweet, McDade, Kiefe, & Liu, 2007). Some researchers hypothesize that African Americans with dark skin and high material status may experience status incongruity. Sweet et al. found that as SES increased blood pressure decreased for lighter skinned African Americans. This protective gradient of income was not observed to the same degree in darker skinned African Americans. Sweet et al. suggested that psychosocial stressors such as racial discrimination may play a role. Sweet et al. posited that darker skinned African Americans with higher incomes may have had to overcome more barriers to reach their economic position than those with lighter skin due to more daily experiences of racism in a social class dominated by Caucasians (Sweet et al., 2007). Consistent with Dressler (1991) also found higher blood pressures in a sample of dark skinned African Americans with high material status compared to African Americans with lighter skin.

Gallo and Matthews (2003) combined models of stress and coping to formulate the Reserve Capacity Model as a framework for examining psychosocial factors, SES, and health disparities. The premise of the model is that stressful environments vs. positive experiences are distributed unequally according to SES. Moreover, social status may shape appraisals in a way that further increases stress or decrease stress. This

research supports the need to test this hypothesis in middle-class African American males.

The three proposed pathways most frequently cited in the literature for understanding how racism/discrimination might affect health are: a) the responses to the stress of racism and discrimination can generate psychological distress that adversely affects health; b) the behavioral and coping responses used to manage the stress of racism/discrimination can lead to the initiation of unhealthy behaviors such as tobacco, alcohol, and or substance abuse; and c) the psychological and behavioral responses to acute and chronic racial stressors can lead to structural and functional changes in multiple physiological systems, including the neuroendocrine system autonomic, and immune systems.

A significant body of research has documented perceived racism/discrimination as a psychosocial stressor that imparts harmful effects on the mental health of African American men (Bronodolo et al., 2009; Clark et al., 1999; Dobbins & Skillings, 2000; Fand & Meyers, 2001; Franklin-Jackson, & Carter, 2007; Harrell, 2000; Pascoe & Richman, 2009; Pieterse & Carter, 2007; Utsey, Giesbrecht, Hook & Stanard, 2008; Utsey & Payne, 2000; Williams & Mohammed, 2009; Wyatt et al., 2003; D. R. Williams, 2003).

However, the research findings on racism/discrimination and its potential deleterious effects on physical health are inconsistent and unclear (Din-Dzietham, Nembhard, Collins, & Davis, 2004; Harrell et al., 2003; Paradies, 2006; Redaford, 2008; Trieber, Kanarck, Schneiderman, Sheffield, Kapuku, & Taylor, 2003; D. R. Williams et

al., 2003).

Some researchers suggest that perceptions of racism/discrimination may have a more negative impact on mental health than physical health (Meyers, 2003; Paradies, 2006). Although Pascoe and Richman (2009) performed a comparative analysis of studies on perceived racism/discrimination and mental health and perceived racism/discrimination and physical health, they found no significant differences in the two. Some researchers posited that racial/ethnic discrimination is a form of chronic stress that might impact CHD (Albert et al., 2008; Brondolo et al., 2009; Clark et al., 1999; Hemingway & Marmot, 1999; Harell & Tailaferro, 2003; Krieger, 2003; Redford, 2008; Wyatt et al., 2003; D. R. Williams, 2003; Williams & Mohammad, 2008; Wulsin & Singal, 2003).

Marmot and Wilkinson (2001) posited that the evidence to support increased attention, research, and funding for the association between perceived racism/discrimination and CHD is compelling: (a) Research provides strong support that some psychosocial risk factors such as low social support, hostility, anxiety, and depression are related to CHD risk (Redman, 2008), (b) Studies have shown that low control and low variety at work as well as low social support follow a social gradient (Karasek, Theorell, Schwartz, Schnall, Pieper, & Michela, 1988), (c) Low control in the workplace predicted CHD independent of social status (Bosma et al., 1997). Marmot and Wilkinson hypothesized that the poorer health of African Americans must have more to do with racism/discrimination as a psychosocial stressor than the effects of the material conditions themselves. Marmot and Wilkinson (2001) argued that in spite of compelling

empirical evidence pointing to the need to study racism/discrimination as a psychosocial risk factor for CHD scientists, researchers, and policymakers are reluctant to commit to fully recognizing the deleterious effects of racism/discrimination on the health of individuals, whole populations, and generations.

There is experimental evidence to suggest that stressful and potentially harmful environmental stimuli create lasting changes in cholinergic gene expression. It also suggested that cholinergic receptor regulation resulted in physiologic adaptive responses to stress and threatening stimuli over time (Myers, 2009). There are two epidemiologically know facts concerning the development of CHD: it develops over a lifetime and it is a disease very much related to lifestyle. Myers (2009) proposed that chronic exposure to social adversities exert their harmful effects through mediation pathways. The adverse effects of race-related stress, for example, are mediated through cognitive-emotional processing, clustering of health risk behaviors, reduced psychosocial reserve capacity for coping, excess allostatic load, inadequate health care and inadequate quality health care. This leads to cumulative biopsychosocial vulnerabilities over the lifespan, which ultimately result in greater burden of medical morbidity and mortality.

Socioeconomic Status (SES)

Social economic status (SES) is defined and measured in multiple ways in both the social science and medical literature (Albert et al., 2008; Jackson & Stewart, 2003; Smith et al., 1996; Kaplan & Keil, 1993; Strogatz et al., 1997; Clark et al., 2001; Utsey, Giesbrecht, Hook, & Stanard, 2008; Williams & Mohammed, 2008; Winkleby, Jatulis, Frank, & Fortmann, 1992; Wyatt et al., 2003). The variability in the measurement of

SES is mainly due to the complex issues involved in the conceptualization of SES (Kaplan & Keil, 1993; Winkleby et al., 1992). Conceptually, SES is a combination of financial, occupational, and educational influences (Winkleby et al., 1992). These influences are interrelated yet they contain distinct individual and societal factors related to health and disease (Kaplan & Keil, 1993; Winkleby et al., 1992).

The literature on race/ethnicity and SES is inconsistent. Some studies reported persistence in racial/ethnic differences in morbidity and mortality despite controlling for SES. Other studies found that controlling for SES eliminates racial/ethnic morbidity and mortality differences. Still other studies have found that racial differences may be explained by SES for some measures of health status and disease but not for others.

An extensive body of literature identified SES as s powerful predictor of morbidity and mortality (Albert et al., 2008; Jackson & Stewart, 2003; Smith et al., 1996; Kaplan & Keil, 1993; Strogatz et al., 1997; Clark et al., 2001; Utsey, Giesbrecht, Hook, & Stanard, 2008; Williams & Mohammed, 2008; Winkleby et al., 1992; Wyatt et al., 2003). Numerous research studies have reported a strong inverse association between total family income and risk of death (Kaplan, 1974; Pappas, Queen, Hadden, & Fisher, 1993; Mommersteeg et al., 2009; Rogot, Sorlie, Johnson, & Schmidt, 1992).

Income. Income reflects spending power, housing, diet, and medical care. Occupation measures prestige, responsibility, physical activity, and work exposures. Education indicates the necessary skills needed for acquiring positive social, psychological, and economic resources (Winkleby et al., 1992). Pappas et al. (1993) found that lower SES groups had higher all cause mortality rates than

did higher SES groups irrespective of whether income, education, or occupation was used as a measure of SES.

Thomas et al. (2005) compared income and major CHD risk factors between African American men and Caucasian men in 1973 and 25 years later in 1998. After adjusting for CHD risk factors and income, they did not find evidence of an elevated CHD risk in African American men. Feldman, Kleinman and Cornoni-Huntley (1989) and Gillium, Mussolino and Madans (1998) found low family income to be an independent risk factor for CHD in African-Americans. Keil, Sutherland, Knapp, and Tyroler (1992) found that a cohort of high SES African American men recruited into the Charleston Heart Study had CHD rates half that of lower SES men in the study.

Inconsistent with data from the Charleston Heart Study, the 1960 Evans County Heart Study reported similar CHD risks and mortality between both high SES African American men, low SES African American and low SES Caucasian men (Crook et al., 2003; Hames, Rose, Knowles, Davis, & Tyroler, 1993; Tyroler, Knowles, Wing, Logue, Davis, Heiss, Heyden, & Hames, 1984).

Education. Education is the most widely used measure of SES in epidemiologic studies (Kaplan & Keil, 1993). Education is strongly correlated with health status in the United States (Byrd & Clayton, 2000). Wnkleby, Danus, Frank and Fortmann, (1994) suggested that higher education may be the strongest and most consistent predictor of good health. Byrd and Clayton (2000) believed that education is the key to acquiring a privileged position in the competitive and unequal occupational structure in the United

States.

The U.S. National Longitudinal Mortality Study conducted between 1979 and 1985 demonstrated a steady decline in mortality as the educational levels increased (Rogot et al., 1992). Data from the first National Health and Nutrition Examination Survey (NHANES I) of the U. S. National Center for Health Statistics reported a strong association between educational level and all-cause mortality (Feldman, Kleinman, Cornoni-Huntley, 1989). The inverse relationship between education and CHD is also well established in the literature (Albert, Ravenell, Gillium, Mussolino, Madans, 1998; Albert et al., 2008; Kaplan & Keil, 1993; Keller, 1990; Redford, 2008; Wyatt et al., 2003).

An association between education and CHD morbidity and mortality has been reported in the literature. Lower levels of educational attainment are associated with increased CHD morbidity and mortality (Albert et al., 2008; Kaplan & Keil, 1993; Keller, 1990; Wyatt et al., 2003). In three different epidemiologic studies, Liu et al. (1982) reported an inverse relationship between education and long-term risk of CHD. The Systolic Hypertension in the elderly Program reported low education as a significant predictor of MI (Siegel, Kuller, Lazarus, Black, Feigal, Hughes, Schoenberger, & Hulley, 1987).

The U.S. National Longitudinal Mortality Study conducted between 1979 and 1985 demonstrated a steady decline in mortality as the educational levels increased (Rogot et al., 1992). For all race-gender groups there was an inverse relation of CHD mortality with education. Data from the first National Health and Nutrition Examination

Survey (NHANES I) found low educational attainment to be an independent risk factor for CHD in men ages 25 to 74. NHANES I listed less than 12 years of education as a traditional CHD risk factor.

Gillium, Mussolino, and Madans (1998) found that African-Americans with lower levels of education were more at risk for CHD. Gillium et al. (1998) and Liu et al. (1984) found educational attainment to be an independent risk factor for CHD in African-Americans. Most recently, Albert et al. (2008) found that higher educational attainment was associated with lower odds of elevated C-reactive protein (CRP) an inflammatory maker described as an emerging risk factor for CHD in African Americans.

Health Related Quality of Life (HRQOL)

This section presents the framework conceptualizing HRQOL in this study, current literature on HRQOL, and the importance of assessing HRQOL in middle-class African American men and CHD. It is well documented in the literature that an individual's quality of life can be affected by the development of CHD (CDC, 2003; Hofer, Lim, Guyatt, & Oldridge, 2004; Ohukainen, Kaukoranta, and Ala-kokko, 2000; Lalonde et al., 2001; Thompson & Yu, 2003). It is equally important to understand HRQOL in terms of CHD risk and risk factors that may lead to CHD. Berra (2003) stated that risk factors for disease are not isolated entities and should be examined in the context of their overall influence on an individual's life. Knowing the perceived burden that psychosocial and socioeconomic influences have on CHD and CHD risk is crucial to guiding policy, education, and interventions to better improve the CHD morbidity and mortality in the African American male population.

Two events over the last ten years highlight the importance of African American male inclusion in HRQOL research. In 1998 the Centers for Medicare and Medicaid Services (CMS) identified HRQOL as the primary outcome measure for evaluating managed care delivery (Haffer & Bowen, 2004; Wolinsky et al., 2004). The evaluation of measurement criteria for African Americans and the comparison of outcomes both between and within racial/ethnic groups are essential. More recently, results from a study by Mommersteeg et al. (2009) reported HRQOL as a predictor of CHD mortality in patients with CHD.

HRQOL is the impact that health conditions and their symptoms have on an individual's quality of life (Berra, 2003). HRQOL assesses an individual's perception of their physical and mental health. In addition, it assesses the perceived burden of an individual's self-reported chronic diseases and risk factors for disease (Berra, 2003). Berra (2003) stated that risk factors:

- Are chronic conditions requiring considerable time and attention,
- Are asymptomatic in many cases,
- Require significant lifestyle and behavioral changes,
- Can require life-long medical therapies,
- Can produce side effects secondary to medical interventions,
- Are costly in time and financially,
- Can greatly limit life choices.

Wilson and Cleary's (1995) model of health-related quality of life (HRQOL) suggests that in addition to biologic and physiologic factors, psychosocial and socio-environment factors also affect HRQOL. The Wilson and Clearly (1995) model of health related quality of life highlights factors that are out of the control of the health care systems and its providers that affect patient outcomes (Wilson & Cleary, 1995). More importantly, this model focuses on patient perceived health status or HRQOL. Mommersteeg et al. (2009) posited that the patient's evaluation of his or her own HRQOL does not necessarily concur with that of the health care provider. Health care providers often fail to report functional disabilities reported by patients (Mommersteeg et al., 2009).

As shown in Figure 9, the Wilson and Cleary (1995) conceptual model describes health as existing on a continuum. At one end of the continuum are biological measures of patient outcomes, at the other end are more complex, and interrelated measures such as physical functioning and general health perceptions. The model has five levels or measures of health outcome: (a) biological and physiological factors, (b) symptoms, (c) functioning, (d) general health perceptions, and (e) overall quality of life. Traversing from left to right on the continuum involves moving from basic biology or the cellular level of an individual to the individual's interactions in society. In addition, the model illustrates important causal relationships between and among the measures. According to Johnson (2004), the relationship between biology and the environment is very important.

The far left of the Wilson and Cleary (1995) model represents the biological and

physiological factors of an individual. Biological processes consist of the basic functioning of cells and organisms. Physiology is the functioning of the organism or organ system as a whole. The functioning of biologic and physiologic states can be measured. Body weight is a measure of biologic and physiologic states. Abnormalities or disruptions in the cells or the functioning of an individual are assessed through numbers and measurements such as blood pressure reading in hypertension and blood sugar levels in diabetes.

Symptoms represent the next level in the model. Symptoms represent the functioning of the organism as a whole. A symptom is defined as a patient's perception of an abnormal physical, emotional, or cognitive state. Patient reported symptoms are the accounts of subjective experiences that summarize and integrate information from a number of varying sources. Physical symptoms are defined as "a perception, feeling, or even belief about the state of our body" (Wilson & Cleary, 1995, p. #). It is important to note that certain biological and physiological measurements may be abnormal with the individual having no symptoms at all. Remedies directed at biological or physiological causes alone may be ineffective in symptom relief due to the inconsistent nature of the relationship between symptoms and biology and physiology. Patient symptoms are also influenced by demographic and cultural factors. Thus, the relationship between biological or physiological variables and symptoms is complex.

Functioning is the next level in the Wilson and Cleary (1995) model. Function is defined as the ability of an individual to perform certain defined tasks (Wilson & Cleary, 1995). Four domains of function are measured. They are, physical function, social

function, role function, and psychological function. Functioning is influenced by biological variables, physiological variables, symptoms, personality, and motivation. Family and friends also influence functioning.

General health perceptions represent the merging of all the health concepts proposed in the model. In addition, it includes other influences such as mental health and social factors. An Individual's preferences or values play an important role in determining general health perceptions. For an individual, certain symptoms are more burdensome than others are.

Quality of life measures are subjective feelings of well-being, happiness, or satisfaction with life (Wilson & Cleary, 1995). General measures of life satisfaction or happiness are not strongly related to objective life circumstances. Lower levels of functioning do not necessarily mean lower levels of satisfaction. People change their expectations and aspirations as circumstances change. Economics, social factors, and spiritual factors influence perceptions of quality of life. Individual perceptions also play a role in overall quality of life.

Emotional or psychological factors are also represented in the Wilson and Cleary (1995) model. Making difficult decisions or handling stressful situations requires inquiry into psychological health. The Wilson and Cleary model not only takes into account the presence of certain emotional or psychological symptoms but also looks at how these symptoms impair the performance of particular tasks. Thus, the model takes into account a bidirectional, not linear relationship, between emotional or psychological factors and other factors in the model.

Johnson (2004) stated that it is necessary to understand how biology interacts with the environment when analyzing the racial differences in CHD mortality. Thus, explanations for racial/ethnic disparities in health may be found in the gap created by the failure to recognize, uncover, and study important psychosocial influences and determinants of health such as racial oppression (Johnson, 2004). There is a growing body of literature in racial/ethnic differences in HRQOL (Wolinsky et al., 2004).

Spertus, Safley, Gang, and Peterson (2005) compared African Americans and Caucasians admitted to the hospital with the diagnosis of Acute Coronary syndrome and found that both groups had similar HRQOL scores with physical functioning being slightly less for African Americans. One year later both groups had improved HRQOL scores but the improvement was significantly less for African Americans and physical functioning decreased for African Americans.

Ohldin et al. (2004) examined differences in HRQOL between African American and Caucasian veterans with CHD. Despite a higher prevalence of CHD risk factors, African Americans reported higher physical functioning (PF), role functioning (RF), and vitality (VT), scores but lower role-emotional (RE) and mental health score (MH). In addition the mental health composite score (MCS) and the physical health composite scores (PCS) were higher for African Americans. However, the findings were not consistent across geographic locations suggesting that other socio-demographic variables influence discrepancies in HRQOL.

SES has been shown to be a predictor of HRQOL (Kaplan & Keil, 1993; Jackson, Leelere, & Getting, 2005; Winkleby, Cubbin, & Kraemer, 1999; Wolinsky, Miller, D.,

Anderson, Malmstrom, & Miller, P., 2004). Wolinsky, Miller, D., Anderson, Malmstrom, and Miller, P. (2004) compared HRQOL to SES in a cohort of middle aged African Americans. Consistent with findings from studies done in the Caucasian populations, Wolinsky, Miller, D., Anderson, Malmstrom, and Miller, P. (2004) found that lower SES African American respondents reported lower HRQOL compared to middle-class African Americans. Wolinsky, Miller, Anderson, Malmstrom, and Miller (2004) posited that the predictive ability of SES for HRQOL reflects the heterogeneity within the African American population. Wolinsky, Miller, Anderson, Malmstrom, and Miller suggested that racial disparities in health were likely a result of SES inequalities in American society.

Govil, Weidner, Merritt-Worden, and Ornish (2009) examined SES, improvements in CHD risk factors, and HRQOL. Govil et al. did not find differences in HRQOL in lower SES study participants compared to higher SES study participants but did find less favorable health behaviors and CHD risk factor profiles in the lower SES group. Grover (2001) compared HRQOL in patients with and without high cholesterol. Scores were similar for the two groups, with the exception of lower general heath (GH) scores for the group with high cholesterol. The findings of Lalonde et al. (2001) suggested that people may confuse a risk factor with actual disease and label themselves as unhealthy.

Xie, Wu, Zheng, Sullivan, Zhan, and Labarthe (2008) conducted the first national level study to quantify HRQOL in patients with and without CHD. Xie et al. found that

CHD patients had consistently worse quality of life than patients without CHD did. The most prominent differences were found in the physical health score. In addition, Xie et al. found that African Americans and younger patients were most likely to report poor quality of life.

Wolinsky, Miller, D., Anderson, Malmstrom, and Miller, P. (2004) compared the scores from their sample of African Americans to norm-based scores for the U.S. population. All of the scores for African Americans were below the national average with the exception of vitality (VT) and mental health (MH) scores. Based upon their findings, Wolinsky et al. suggested that despite experiencing poorer physical well being, African Americans coped with their limitations better than Caucasians.

There are several inherent limitations associated with the study of HRQOL, (a) HRQOL is not a constant and it may vary over time, (b) HRQOL varies from person to person, and (c) Measurements do not consider how people arrive at judgments of HRQOL. The relationship between symptoms and HRQOL is not simple nor is it direct. Patients with severe disease may not report poor HRQOL (Carr et al., 2001). Carr et al. (2001) describe HRQOL as a comparison of expectations and experience. Expectations are learned from experience and may be highly specific. In addition, expectations are subject to differences in social, environmental, psychological, socioeconomic demographic cultural and racial/ethnic factors.

Coronary Heart Disease

CHD is caused by atherosclerosis of the coronary arteries (Asher, Topol, Moliterno, & Jacobs, 1999; Murtagh & Anderson, 2004; Speroff, Walsh, & Moriarty,

2002). New discoveries in science and medicine within the last decade have led to a steadily evolving view of the atherosclerotic process. It is now known that atherosclerosis is a lifelong process. This process often begins in childhood with the development of fatty streaks in the coronary arteries. The progression of the fatty streaks into a full-blown plaque or atheroma occurs earlier in men (Speroff et al., 2002). It was believed that atherosclerosis was due only to a buildup of plaque or lipids (cholesterol) on the coronary arteries. Discoveries within the last ten years have revealed that atherosclerosis is a very active complex process involving multiple processes (Dzau, Ruediger, Braun-Dullaeus, & Sedding, 2002). Atherosclerosis involves endothelial dysfunction, inflammation, vascular proliferation and matrix alteration (Dzau et al., 2002).

Risk Factors for CHD

The term, risk factors, describes certain characteristics that are related to the development of CHD (Elisaf, 2001). Thomas et al. (2005) rendered three suggestions to account for risk factor differences between African American men and Caucasian men: (a) African American men may have less access to screening and preventive services causing them to be less aware of and respond appropriately to health concerns, (b) differences in health-related behaviors, or (c) the cumulative effect of stress and other psychosocial factors over time.

The term, risk factors, describes certain characteristics that are related to the development of CHD (Elisaf, 2001). The Framingham heart study (1948) was the seminal work that identified the major risk factors for CHD. The classic risk factors for

CHD are hypertension, dyslipidemia (abnormal cholesterol and lipids) diabetes, obesity, physical inactivity, and smoking. Of the classic risk factors for CHD physical activity or exercise, obesity/diet, and smoking are also termed behavioral risk factors for CHD. The classic CHD risk factors undermine the endogenous defenses of the vascular endothelium contributing to endothelium dysfunction. The endothelium is the innermost (lumenal) layer of the coronary artery wall. It protects against the atherosclerotic process and subsequent thrombotic events. Thrombic events cause Acute Coronary Syndromes such as angina, unstable angina, and heart attack (myocardial Infarction (MI)).

The field of vascular cell biology, which studies the vascular system, has grown exponentially, over the past ten years. It is now known that endothelial cells are responsible for numerous vascular functions including regulating vascular permeability, regulating interactions of platelets and maintenance of normal homeostasis, regulating leukocyte or white blood cell adhesion to blood vessel walls, participating in immune responses and inflammatory mechanisms, modulating lipid oxidation, regulating vascular structure, and maintaining vascular tone. Many of these functions can only operate if the endothelium is intact. Thus, a function may be referred to as an endothelium-dependent function or process. Research indicates that exercise, dietary modification, and smoking cessation improve endothelium-dependent dilation to the coronary arteries.

Hypertension. The relationship between hypertension and CHD mortality is continuous, graded, strong, independent, and statistically significant (AHA, 2008; Stamler, Neaton, Garside, & Daviglus, 2005). The prevalence of hypertension in African

American men is 44% and the prevalence of hypertension in Caucasian men is 34% (AHA, 2009). There are major hypotheses to account for the disparity in hypertension rates (Whitfield & McClearn, 2005; Wyatt et al., 2003).

The first hypothesis suggests that genetic factors related to sodium retention are dominant in determining blood pressure in African Americans (Whitfield & McClearn, 2005). The second suggests that environmental factors such as racism and economic stress mediate blood pressure in African Americans (Clark et al., 1999; Whitfield & McClearn, 2005; Wyatt et al., 2003). Brondon et al. (2003) used data from the Carolina African American Twins Study of Aging to analyze both assertions. Their findings suggest that genes do impact blood pressure but environmental factors play a larger role in determining differences in blood pressure.

To date, the research on blood pressure in middle-class African American men compared to lower SES African American men is inconsistent. Some hypertension studies report an inverse relationship between blood pressure and SES in African American men (Curtis et al., 1997; Geronimus et al., 1996; Heymsfield, Kraus, Lee, McDill, & Stamler, R., & Watson, 1977; Kaplin & Keil, 1993).

In 1988 researchers from Meharry Medical College and Johns Hopkins University Medical School combined to conduct an investigation of CHD and CHD risks in a cohort of medical students enrolled in classes from 1927 through 1964 (Scott & Heslin, 2003). The researchers complied 30 years of follow-up data on 435 African American medical students from Meharry and 580 medical students from Johns Hopkins. The African American doctors had a 40% greater incidence of CHD. In addition, the African

American doctors had and an overwhelmingly higher mortality rate; 51.5% vs. 9.4% for the Caucasian doctors (Scott & Heslin, 2003).

The strongest predictors of CHD in Caucasian doctors were cigarette smoking, cholesterol, and parental history while in African American doctors the strongest predictor was hypertension (Scott & Heslin, 2003). The Meharry-Hopkins researchers found the prevalence of hypertension in the cohort of African American physicians to be 10% higher than that of the African American male population at large. The Meharry-Hopkins investigators concluded that education and affluence did not provide the expected protection against CHD risk, because excess risk of hypertension in African American men persisted when the education and income were minimized (Scott & Heslin, 2003).

Consistent with the Meharry-Hopkins Study of 1988, data from The Hypertension Detection and Follow-up Program of 1971 reported that African Americans with a college degree had slightly higher levels of hypertension than those with some college education (Heymsfield et al., 1977; Kalb, Marazon, & Snow, 2002; Scott & Heslin, 2003). In addition, Geronimus et al. (1996) studied a group of African American men in Harlem and found that men with a college degree had the lowest levels of cigarette smoking, physical inactivity, and overweight status but had higher levels of hypertension than high school graduates had.

Cholesterol. The relationship between total cholesterol and CHD mortality is continuous, graded, strong, independent, and statistically significant (AHA, 2008; Stamler, Neaton, Garside, & Daviglus, 2005). The prevalence rate of high cholesterol is

36% for African American men and 42.1 % for Caucasian men (AHA, 2010).

Although African American men have lower total cholesterol levels, they have lower levels of HDL or the good cholesterol (AHA, 2008; Carnethon et al., 2006; Clark et al., 2001; Cooper, 2005; Ferdinand, 2004). Higher levels of the good HDL cholesterol protect the heart (AHA, 2008; Ferdinand, 2004). In addition, African American men have slightly higher elevations in the LDL cholesterol than Caucasian men (AHA, 2008; Ferdinand, 2004).

Large-scale clinical trials have demonstrated that lipid-modifying medications reduce risk in both patients with and without established CHD (Clark et al., 2001; Ferdinand, 2004). There is evidence in the literature suggesting that African Americans do not receive adequate lipid-modifying treatments (Clark et al., 2001; Ferdinand, 2004). Moreover, the majority of large-scale clinical trials that have demonstrated the effectiveness of lipid-modifying agents have not had sufficient numbers of African Americans for outcome analysis in subgroups of the population (Clark et al., 2001; Ferdinand, 2004).

Diabetes. A significant independent relationship exists between diabetes and CHD death (AHA, 2008; Stamler et al., 2005). The prevalence of diabetes in African American men is 14.9% and the prevalence of diabetes in Caucasian men is 5.4% (AHA, 2009). The prevalence of diabetes in African Americans is 2 to 3 times higher than in Caucasians.

The National Cholesterol Education Program Adult Treatment Panel III (NCEP/ATP III) guidelines contain a CHD risk prediction and stratification tool for

calculating the 10-year risk of developing CHD (NCEP, 2001). The NCEP/ATP III risk prediction tool stratifies individuals into low, intermediate, and high CHD risk categories. Individuals with known CHD or CHD risk equivalents are considered high risk for developing CHD within 10 years (NCEP, 2001).

Diabetes is a CHD risk equivalent (NCEP, 2001). Diabetes is no longer considered a major risk factor for CHD; it is now considered the equivalent of having CHD because of the associated high risk of cardiovascular disease and morbidity (NCEP, 2001). Patients with diabetes present with first myocardial infarction (MI) at a younger age, experience greater mortality during the acute phase of an MI, and experience more complications then those without diabetes (Clark et al., 2001; Cooper, 2005). Metabolic syndrome, a condition associated with diabetes, is characterized by insulin resistance, glucose intolerance, low HDL cholesterol, hypertension, and high triglycerides and is often unrecognized (Clark et al., 2001; Cooper, 2005). This study demonstrates the need for increased education and awareness of CHD risks in African American men for improved CDH outcomes.

Smoking. The relationship between smoking and CHD mortality is strong, graded, independent, and significant (AHA, 2008; Stamler et al., 2005). Smoking significantly increases CHD morbidity and mortality (Katzung, 2003). The adverse effects of smoking are directly related to the amount of tobacco smoked daily and the duration of smoking. Smoking is an important risk factor for cardiovascular disease. Cardiac ischemia is 5 times more likely when patients smoke then when they are not smoking. The risk of MI in smokers is significantly higher than the risk in non-smokers

with more extensive CHD. The risk of sudden death increases tenfold in men who smoke. Cigarette smoking is associated with impaired endothelium-dependent vasodilatation. Data suggests that nitric oxide (NO) the primary vasodilator produced by endothelial cells is affected by cigarette smoking (Szczech, Hering, & Narkiewicz, 2004).

The prevalence of smoking in the African American male population is 26.1% and the prevalence for Caucasian men is 23.5% (AHA, 2009). Findings in the literature reported higher cigarette use among those who have lower incomes and are less well-educated (Kaplin & Keil, 2009; Paradies, 2006; Shields et al., 2005; Williams & Mohammed, 2009; Winkleby et al., 1992). Forty percent with a GED diploma are daily smokers. However, only 8.4% of adults who earned a master, professional, or doctorate degree are daily smokers (Kaplin & Keil, 2009; Shields et al., 2005).

In the 1950s and 1960s, smoking was far less prevalent among African Americans than Caucasians (Shields et al., 2005). Tobacco companies saw this as an opportunity and aggressively targeted African American with a tailored products and marketing (Shields et al., 2005). A menthol market was created within the African American communities (Shields et al., 2005). Currently African Americans are two to four times more likely to develop lung cancer than Caucasians (Shields et al., 2005).

There are disparities in smoking behaviors among African Americans and Caucasians (Landrine & Klonoff, 2000; Lerman et al., 1999; Shields et al., 2005). The literature offers conflicting reports related to race and smoking. Moreover, recent advances in genomics have lead researchers to question whether race variables should or should not be used in genetic studies of smoking. Patterns of differences include: African

Americans are less likely to have smoked cigarettes at some point in their lives; African Americans smoke fewer cigarettes per day, African Americans are less likely to progress from occasional to regular smokers and African Americans find it harder to quit smoking (Landrine & Klonoff, 2000; Shields et al., 2005).

Physical activity. Twenty-three percent of the African American men engaged in regular leisure time activity and 34% of Caucasian men engaged in regular leisure time activity (AHA, 2009). Several researchers who investigated physical activity and CHD in middle-aged men reported that men that are more active, experience significantly lower rates of CHD (Berlin & Colditz, 1990; P. Williams, 2001).

The literature states that regular physical exercise promotes cardiovascular health and reduces risk in patients with established CHD (Dimmler & Zeiher, 2003; Myers, Prakash, Froelicher, Partington, & Atwood, 2002). The cardio protective mechanism of exercise is not absolutely delineated. Several possible mechanisms have been studied including physiologic adaptations, altered autonomic function, and metabolic adjustments (Laughlin, 2001). In 1995, the National Institutes of Health (NIH) reported that physical activity decreases known risk factors for CHD and has beneficial effects that combat atherosclerosis (NIH, 1995). Regular physical activity is associated with favorable modification of CHD risk factors such as diabetes, obesity, and high cholesterol (Dimmeler & Andreas, 2003; Laughlin, 2001). It is also known that the reduction in CHD mortality associated with exercise is independent of other coronary risk factors. An individual's fitness level is a more important predictor of cardiovascular death than other known risk factors such as hypertension, diabetes, smoking, obesity, and total cholesterol

(Dimmeler & Zeiher, 2003; Laughlin, 2001).

The beneficial effects of exercise, not mediated by its effects on other known cardiac risk factors, are believed to occur due to the effect of exercise on the vascular wall of coronary arteries. Research indicates that exercise improves endothelium-dependent dilation. By increasing the mechanical shear forces on the luminal surface of the endothelial monolayer, exercise-induced increases in blood flow and enhances the vasodilatory capacity of the coronary arteries (Dimmeler & Zeiher, 2003; Laughlin, 2001). Dilation of a coronary vessel is critical to preventing acute coronary syndromes such as angina, myocardial infarction, and sudden death. This effect is greater in the early stages of CHD but it is also apparent in individuals with advanced CHD (Laughlin, 2001). Researchers have found that on a molecular level exercise enhances endothelial vessel wall dilation by increasing NO, a potent vasodilator substance. Dimmeler and Zeiher (2003) found that exercise induced improvement of NO in patients with CHD occurs through transcriptional upregulation of endothelial NO synthesis (eNOS) and posttranscriptional activation of eNOS.

Physical inactivity is associated with an adverse effect on the risk of death from all causes and CHD (NIH, 1995). Moderate physical activity may have a beneficial effect on CHD morbidity and mortality through its influence on bodyweight, lipids, and blood pressure.

Barriers to exercise have been identified as (a) poor exercise self-efficacy, (b) failure to exercise in the past, (c) lack of control over exercise behaviors and scheduling, (d) unfavorable self-concept, (e) anxiety, (f) low fitness level and endurance, (g) physical

environment not conducive to exercise, (h) lack of knowledge, (i) time and financial barriers, (j) perceiving health status as poor, (k) transportation difficulties, (l) fear of adverse events, and (m) not valuing exercise benefits (Chyun, Amend, Newlin, Langerman, & Melkus, 2003).

Chiuve, McCullough, Sacks, and Rimm (2006) conducted a 16-year study to examine the benefits of healthy lifestyle choices in middle aged and older professional men taking medications for high blood pressure or high cholesterol. Healthy behaviors such as regular exercise reduced blood pressure and high cholesterol compared to medication alone (Chiuve et al., 2006). Some researchers have found a direct relationship between SES and physical activity (Kaplan & Keil, 1993; Kaplan, Lazarus, Cohen, & Leu, 1991).

Overweight and obesity. Obesity is associated with increased cardiovascular disease morbidity and mortality (Clark et al., 2001). There are 73.7 % African American men who are overweight, and 36.8% are obese compared to 72.4% Caucasians men who are overweight, and 32.3% who are obese (AHA, 2009).

With the increasing prevalence of obesity in the US, public health officials are now labeling it as epidemic (CDC, 2004). Overweight in adults is defined as a Body Mass Index (BMI) > 25. Obesity in adults is defined a BMI > 30. A recent report of the National Health and Nutrition Examination Survey stated that one-third of US adults are obese (Hedley et al., 2004).

The atherosclerotic process begins in childhood. Environmental factors such as an excess of energy-dense foods with carbohydrates and high saturated fat and

insufficient consumption of fruits and vegetables are known to contribute to the problem of overweight and obesity (Gielen & Hambrecht, 2004; Woo et al., 2004). Obesity is associated with a relative adjusted risk of 3.4 for diabetes, 3.5 for hypertension, 1.9 for high cholesterol, and 1.8 for poor health. Diabetes, hypertension, and high cholesterol have all been shown to promote atherosclerosis by their cumulative effects on the vascular endothelium (Gielen & Hambrecht, 2004; Woo et al., 2004).

Woo et al. (2004) demonstrated that vascular dysfunction associated with obesity in children is partially reversible by even a short program of dietary modification. Results of this study revealed that after 6 weeks of intervention significant improvements in endothelium dependent dilation were evident. Obesity does not cause endothelial dysfunction. Rather the hyper-caloric high-fat diet precedes the weight gain. A single high fat meal impairs vasoreactivity in men with normal cholesterol levels for up to 4 hours (Gielen & Hambrecht, 2004).

Hypertriglyceridemia is related to oxidative stress (Bohlen & Lash, 1999). It is proposed that central obesity is accompanied by increased cytosolic triglyceride storage and high intracellular concentrations of long-chain acylcoenzyme A esters. These esters inhibit mitochondrial adenine nucleotide translocators, leading to adenosine diphosphate (ADP) deficiency within the mitochonrria. Oxidative stress in turn, causes premature NO degradation to peroxynitirite and endothelial dysfunction (Bohlen & Lash, 1999).

In obese adults, a low calorie diet can improve flow-mediated vasodilatation of the brachial artery by 60% and reduce body weight by 11%. Researchers have found that central obesity is associated with increased cyrosolic triglyceride storage. This increase

in triglyceride storage results in high concentrations of long-chain acylcoenzyme A esters. These esters inhibit adenine nucleotide translocators in the mitochondria leading to ADP deficiency. ADP deficiency leads to oxidative stress causing premature NO degradation and endothelial dysfunction. Increases in serum levels of vasoconstrictive prostaglandins, proinflammatory cytokines, and adiponectin and changes in lipoproteins, high LDL, and low HDL have all been implicated in the pathogenesis of obesity (Gielen & Hambrecht, 2004; Woo et al., 2004).

The effects of an unhealthy diet manifest as dyslipidemia, hypertension, and obesity. Barriers to healthy eating and weight control have been identified as (a) cultural beliefs, (b) socioeconomic status, (c) social and personal life, (d) stress, (e) racism, and (f) multiple care-giving roles (Chyun, 2003). Stevens et al. (1992) reported a significant correlation between level of education and obesity in African American men. Low educational level increased the predictive value of anthropometric measurements for all cause mortality. In the Charleston Heart Study BMI was predictive of CHD mortality in African American men but not in Caucasian men (Stevens et al., 1992).

The findings of Mora, Yanek, Moy, Fallin, Becker L., and Becker, D. (2005) suggest that overweight and obesity may substantially increase the risk of CHD in individuals with a family history of premature CHD. Siblings from families with premature CHD demonstrated a high prevalence of high BMI, especially those at high risk for CHD (Mora et al., 2005).

Additional findings by Mora et al. (2005) compared the heritability of BMI in African American and Caucasians. The heritability of BMI was 29% for African

Americans and 52.4% for, Caucasians suggesting that for African Americans lifestyle and environmental factors appear to have greater influence in the development of overweight and obesity. Children and siblings in families with a history of premature CHD need to be especially aware of the impact of lifestyle and environmental factors on the development of CHD. Weight gain in infancy and childhood appear to have significant effects on the CHD risk later in life. There is evidence to suggest that the abdominal pattern of obesity, indicative of visceral adiposity, increases CHD risk, and therefore waist circumference measurement are a more specific predictor of CHD risk than BMI (Clark et al., 2005).

Clustering of risk factors. African Americans are 1.5 times more likely to have multiple risk factors than Caucasians. The presence of multiple risk factors increases CHD risk synergistically. Bell and Kravitz (2008) found that patients with the most risk factors for CHD received the same amount of counseling as those with lower CHD risk. There are inconsistencies in the literature regarding the pattern and strength of the association between risk factors and mortality in CHD for African Americans and Caucasians (Carnethon et al., 2006). Earlier studies suggested differences but more evidence reported a similar pattern and strength of association between risk factors and mortality in African Americans and Caucasians (Carnethon et al., 2006).

Hozawa, Folsom, Sharrett, and Chambless (2007) found that optimal and borderline control of risk factors was associated with lower all-cause mortality rates. In addition, they concluded that the higher rate of all cardiovascular diseases in African Americans might be due a higher frequency of elevated risk factors compared to

Caucasians.

Coronary Heart Disease Risk Prediction

Risk prediction has become a standard of care in the fight against CHD (Bernam & Wong, 2004; Ford, Giles & Mokdad, 2004; Marma & Lloyd-Jones, 2009; Vasan & Kannel, 2009). Although recommended in national clinical practice guidelines, many risk prediction tools have not been validated in African Americas (Clark et al., 2005). Researchers have determined that the Framingham Risk Score (FRS) prediction tool can be applied to African Americans (Ferdinand, 2004). The Personal Heart Score (PHS) prediction tool used in this study is a modified version of the 1998 FRS and has similar predictive value (Mainous, Koopman, Diaz, Everett, Wilson, & Tilley, 2007).

There are several self-reported multivariate risk prediction tools used in clinical practice to predict the 10-year or absolute risk of having a heart attack, dying from CHD, and/or having a cardiac procedure. Each tool has its limitations and no one tool is perfect (Bernam & Wong, 2004).

Most risk prediction tools categorize or stratify the 10-year CHD risk of having a heart attack, dying from CHD, and/or having a cardiac procedure as low (<10%), intermediate (10% to 20%), and high (>20%)(Bernam & Wong, 2004; Ford, Giles & Mokdad, 2004; Marma & Lloyd-Jones, 2009; Vasan & Kannel, 2009). The intensity of risk factor treatment is guided by the absolute risk of CHD (Bernam & Wong, 2004).

Recent advances in atherosclerosis and acute coronary syndromes suggest that African Americans may be at an even higher risk for MI and cardiac death because of non-obstructive coronary artery disease and unstable atherosclerotic lesions. A high

percentage of African Americans have symptoms of CHD with angiographically normal or near normal coronary arteries. These finding underscore even more the need for both increased patient and provider education on CHD in African Americans.

Conceptual Frameworks

Identification of psychosocial, socioeconomic, and cultural variables that strongly influence health disparities in this country offers the possibility of developing more highly tailored and effective interventions (Mays, Cochran, & Barnes, 2007). A number of researchers have postulated models and frameworks for studying race-based discrimination and health outcomes. Clark et al. (1999) developed a biopsychosocial model to study racism as a stressor for African Americans. The main tenet of this model is that the perception of an environmental stimulus as racist results in exaggerated psychological and physiological stress responses that are influenced by constitutional factors, socio-demographic factors, psychological factors, behavioral factors, and coping responses. Overtime these stress responses influence health outcomes.

Within this model, Clark et al. (1999) identify several constitutional factors that may influence the relationship between acute and chronic stress and health outcomes, namely: skin tone, occupational status, personal income, and family history of hypertension. Socio-demographic factors that may cause exaggerated psychological and physiological stress responses leading to adverse health outcomes include age, gender, socioeconomic status (SES), the cognitive appraisal process, coping responses, and stress responses. Of these socio-demographic factors, socioeconomic status (SES) is the most relevant socio-demographic variable in the proposed model.

Much of the research done on perceived racism and health outcomes has explored SES. Clark et al. (1999) suggested that the relationship between SES and perceived racism is complex. Some research has found a positive relationship between SES and discrimination whereas other research suggests that SES is inversely related to experiences of racism and discrimination among African Americans. With measures that examine subtle expressions of racism, it is likely that higher SES African Americans report perceiving their environments as more discriminatory because they navigate environments where racism is less overt. Lower SES African Americans may be more sensitive to overt racism and report more racism with measures that assess more overt expressions of racism.

Research has found that African Americans at comparable educational levels to Caucasians have a higher prevalence of hypertension and all cause mortality (Williams & Collins, 1995). There are at least two explanations for this phenomenon. First, within socioeconomic groups, the distribution of wealth among African Americans and Caucasians is not equitable. Second, African Americans report exposure to more stressors than do Caucasians. This increases the likelihood of resource strain, behavioral exhaustion, and psychological and psychological distress (Clark et al., 1999). Barnett and Halverson (2000) reported unexpectedly high rates of premature CHD for African Americans in major metropolitan regions despite favorable levels of SES resources.

Psychological and behavioral factors may influence how individuals perceive and respond to racism and discrimination (Clark et al., 1999). Type A personalities, cynical hostility, neuroticism, self-esteem, obsessive-compulsive disorder, hardiness, perceived

control, and anger expression-suppression are among the psychological and behavioral factors that are purported to influence the stress process, cardiovascular outcomes, and immune functioning (Clark et al., 1999).

Research has suggested that the usual ways by which African Americans cope with anger, are related to cardiovascular reactivity and resting blood pressure (Armstead, Lawler, Gorden, Cross, & Gibbons, 1989). Studies of self-reported experiences of racial discrimination and cardiovascular reactivity among African Americans suggest that exposure to racial discrimination at work and internalized response to racial discrimination are associated with elevated blood pressures (Din-Dzietham, Nembhard, Collins, & Dans, 2004; Krieger & Sidney, 1996;). Armstead et al. (1989) conducted experimental research and found that exposure to racial stressors lead to increased cardiovascular reactivity among African Americans. These researchers found greater mean arterial pressure reactivity to racial stressors than to either neutral or anger-provoking film clips. This was the first evidence of a singular effect of racist material over other forms of stress in the laboratory.

Massey (2004) developed a biosocial model of racial stratification. Massey's upstream/downstream process starts with two factors: residential segregation and social inequality. These chronic stressors evoke a biological response resulting in elevated levels of cortisol and other gulcocorticoid hormones. This leads to premature wearing down of the body and a greater tendency to develop specific disease processes.

Wallace et al. (2004)theorized that a cultural history of psychosocial and socioeconomic stressors played out as racism, wage inequity, and exaggerated social

disparity take part in the dynamics of plaque formation through a process they label as Immunocultural Condensation (ICC).

McEwen's (2000) model of allostatic load provides the conceptual framework for this study. Although McEwen's model is not specific to African Americans, it identifies a number of health effects that are expected to result from challenges of race-related stress (Mays, Cochran, & Barnes, 2007). This model offers insight into the manner in which chronic experiences with racial discrimination might exert harmful effects on the health of African Americans. Allostatic load refers to the price the body pays for being forced to adapt to adverse psychosocial or physical situations (McEwen, 2000). It represents the presence of too much stress or the inefficient operation of the stress hormone response system, which must be turned on and then turned off again after the stressful situation, is over.

Numerous researchers have noted that chronic exposure to racial stress has negative physical and psychological effects on African Americans (Clayton & Byrd, 2001; Harrell, 2000; Outlaw, 1993; Utsey, 1999; Utsey & Hook, 2007). Clark et al. (1999) found indexes of psychological well-being to be negatively correlated with stress due to racial discrimination among African Americans. In addition, they found that the stress related to acute and chronic exposure to racism has been implicated in the onset of depression. Holder and Vaux (1998) found that job satisfaction among African Americans decreased with the increased perceptions of race-related stressors in the workplace. Utsey and Hook (2007) in their study on psychological distress and race-related stress found that African American men were at an increased risk for experiencing

psychological consequences associated with exposure to racism. African American men historically have been more vulnerable to the deleterious consequences of racism (Utsey & Hook, 2007). McCord and Freeman (1990) found that chronic exposure to racism was linked to higher incidences of stress-related diseases in African American men. These stress related diseases were related to increased morbidity and mortality characteristic of the African American male population (Utsey & Hook, 2007)

In summary, studies have shown that the experience of stressful racial discrimination puts African Americans at an increased risk for developing hypertension and carotid plaque and both are related to the development of atherosclerosis and other cardiovascular diseases (Krieger & Sidney, 1996). The conceptual theory of allostatic load provides the basis for understanding connections among the etiology of systemic illnesses such as cardiovascular disease and psychosocial and environmental factor such as racial oppression. The conceptual theory of allostatic load transcends the individual organ systems and requires an appreciation of multiple interactions. There is evidence of stress-linked parameters of allostatic load that vary across SES. These gradients of mortality and morbidity across the full range of SES cannot be explained simply by access to care or individual factors such as smoking. These gradients of health across the range of SES are believed to be related to complex psychosocial and environmental factors that are differentially distributed in human society and which have a cumulative impact on behavioral and physiological allostatic load. Cardiovascular disease is the most prominent disorders showing a SES gradient. This model might also facilitate an understanding of one of the important gaps in the literature: The expected health gains of

middle-class African American men are not a reality. The extent to which race-related stress underlies this health disparity is not fully known. A pathway model with correlations among quality of life, race-related stress, and risk factors for CHD might hold a plausible link in the existing gaps.

The purpose of this study was to determine the CHD risk for middle-class African American men and to investigate the relationships among race-related stress, quality of life, and CHD risk in middle-class African American men. The aim of this study was to: (a) establish CHD risk for middle-class African American men; (b) establish CHD risk for an understudied subgroup of African American men, and (c) examine associations amongst SES middle-class African American men, race-related stress, perceptions of health, and psychosocial risk factors for CHD in middle-class African American.

The ideology of race as a sociopolitical construct and the legacy of slavery and racial discrimination have created damaging social and environment influences on the CHD morbidity and mortality of African American men. Inconsistencies abound in the research literature on race and SES. However, SES is a strong determinant of CHD outcomes between African American men and Caucasian men. The investigation of CHD and middle-class African American men is essential to the generation of knowledge, which is currently non-existent in the literature.

Chapter 3: Methodology

The purposes of this quantitative descriptive study were to establish the extent of CHD risk in a cohort of middle-class African American men and to investigate the interrelationships of race-related stress and HRQOL on CHD risk with these individuals. Specific aims of this study were to: (a) advance research on CHD risk in an understudied subgroup of African American men to fill the gap in the literature in this area of inquiry, (b) utilize a biopsychosocial model with emphasis on McEwen's conceptualization of allostatic load to advance understanding of the biologic, psychologic, and physiologic pathways by which psychosocial, cultural, and socioeconomic factors mediate CHD, and (c) investigate self-perceptions of the societal burden of CHD risk on functional status and well-being by examining the relationship between HRQOL and CHD risk.

There are two prevailing hypotheses for examining the interaction between African American health outcomes, race, and SES (Farmer & Ferrraro, 2005). One is based on African American poverty and the unique disadvantages experienced by African Americans living in poverty (Billings, 1992; Farmer & Ferrraro, 2005; Willie, 1979, 1987; Wilson, 1987). The other is based African American attainment of education and higher SES and the stress of not experiencing the same returns in life as Caucasians for their educational investment.

Most of the scientific research has focused on individuals living in poverty and access to care for the impoverished (Farmer & Ferrraro, 2005; Littles, Bowers, & Gilmer, 2000; D. R. Williams, 2003). Few studies have examined SES, race, and health outcomes in middle class African American men. Moreover, few studies have examined

CHD and CHD risks in middle-class African American men.

The dearth of available CHD and CHD risk factor outcomes data for middle-class African American men coupled with the in-depth investigation of this one particular subgroup of African American men necessitated a quantitative descriptive research methodology. Surveys were used to collect self-report measurements for 10-year predicted cardiac risk, self-perceptions of race-related stress, self-perceptions of HRQOL, and background demographic, health, and health care information.

This study described the CHD risk for a cohort of educated, employed, middle-class African American men with health care insurance. The descriptive findings from this study will provide much needed groundwork in this area. Correlations amongst self-reported race-related stress, self-reported HRQOL and CHD risk in middle-class African American men yielded novel information that should provide the impetus for future studies to compare CHD outcomes between subgroups of African American men and between African American and Caucasian men. This chapter presents the research questions, research design, sample, procedures, instrumentation, and statistical analysis for the study.

Research Questions

The four research questions for this study were:

1. What is the CHD risk for middle-class African American men?
2. What is the relationship between race-related stress and CHD risk in middle-class African American men?
3. What is the relationship between HRQOL and CHD risk in middle-class African

American men?

4. To what extent do these variables in combination (race-related stress and HRQOL) explain/predict the risk factors for CHD in middle-class African American men?

Sample

A sample of convenience of men who belonged to a Greek letter African American Fraternity and attended an Eastern Regional Fraternity Conference was selected for the study. The participants in this study were all active members of a Greek letter African American Fraternity and were recruited over a three-day period during the Eastern Regional Convention of a well-known and well-established African American Greek Fraternity. The Fraternity's Eastern Region encompassed twelve states from Virginia to Maine.

Based on personal and/or professional contacts it is known that the demographic makeup of Greek letter African American Fraternity alumni chapters encompasses men who completed college and are employed with various levels of occupational prestige. In addition, these groups contained a mixture of first generation and not first generation middle class men. All of the participants in this study were dues paying chapter members of the fraternity, as this was a criterion for conference attendance. Results from this study will generalize to other men who belong to an African American Greek Fraternity, live on the East Coast, and match on age, SES in formative years, current SES, occupation, and cardiac risk factors.

Research Design

For this research, a correlational descriptive design was used to describe the CHD risk

factor profile and CHD risk in middle-class African American men and to explain the relationships between the dependent variable; The Personal HEART score and the independent variables; race-related stress and HRQOL. The dependent variable for the study was CHD risk as measured by the Personal HEART score. The independent variables were race-related stress, measured by the Index of Race-Related Stress-brief version (IRRS-B) and HRQOL measured by the SF-12v2 Health Survey.

Demographic, health, and health care questions necessary to support the research questions were contained in the Demographic, Health, and Health Care Questionnaire. Background demographic questions were current income, income during formative years, level of education, and profession.

The Personal HEART score is used for patients without a history of CHD. The four health questions asked about history of a heart attack, open-heart surgery, and cardiac procedures. These questions served as exclusionary criteria for the Personal HEART score. Health care questions related to insurance status, last visit to a provider's office, and relationships with health-care provider were used as important ancillary data for the study.

Procedures and Data Collection

A convenience sample of Greek letter African American fraternity members attending an Eastern Regional Fraternity Convention in a major East Coast city was used for this study. The names of the organizations were not mentioned in this study to maintain anonymity and subject confidentiality. Approval to conduct this study was obtained from Drexel University's Non-Medical Institutional Review Board (IRB) in

June, 2008.

The participants in this study all belonged to a Greek letter African American fraternity and were recruited over a three day period during the Eastern Regional Convention of a well-known and well-established African American Greek Fraternity. The Fraternity's Eastern Region encompassed twelve states from Virginia to Maine.

The conference was held at a major hotel in the downtown area of a major east coast city. A table was set up within the Health Information section of the Convention's Exhibit Hall to solicit participants for the study. In addition, announcements were made, each day, in both the morning general session and the concurrent sessions throughout the day to encourage individuals to participate in the research study. Fraternity members walking through the Exhibit Hall area were also asked to participate in the study.

Participants received a brief verbal description of the study individually or within small groups. In addition, the same description was laminated on 8 ½ x 11 sheets of paper and was available on the table. There was no direct compensation for participation in the study but snacks were available during the administration of the survey.

Volunteers were asked to participate in the study by filling out a survey. Two hundred fifteen men filled out survey packets. Three packets were excluded from the data analysis due to the identification of their race as other than African-American. Men who reported having a known history of CHD were not included in the analysis. One hundred ninety-five subjects were used for data analysis.

A power analysis was done to compute a target sample size. The alpha level was .05. The effect size is based on prior research conducted on race-related stress. Utsey,

Payne, Jackson, and Jones (2002) found a correlation between race-related stress and mental health that was significant with a small effect size. In this study, the aim is for an effect size of 0.24. A power criterion of 0.70, which is reasonable for a descriptive study of this type, was selected. A power of 0.70 provides sufficient power to avoid a type II error (Cohen, 1988). Based on all these numbers, the tables in Kraemer and Thiemann's (1987) book were used to determine that a sample size of 105 people was needed to compute multivariate statistical analyses for this study.

Measurement Instruments

The index of race-related stress-brief version (IRRS-B). The IRRS-B is a 22-item, multi-dimensional measure of the race-related stress experienced by African Americans as a result of their encounters with racism (Utsey, 1999). Permission was granted by S. O. Utsey, PhD to use the IRRS-B for this study on March 14, 2008. The brief version of the IRRS was developed by Utsey in 1999 from the original 46-item instrument developed by Utsey and Ponterotto in 1996. Given that researchers often administer multiple survey questionnaires for a given study, Utsey (1999) found it prudent to develop a brief version so as not to impose undue burden on the collection of data and to obtain a better response rate. The items for the initial 46-item IRRS were derived from informal interviews with African American s from diverse backgrounds, a review of the literature, and the personal life experiences of the primary researcher, an African American male (Utsey, 1996). Through factor analysis and the elimination of items found to be geographically specific or extreme examples of racism that yielded low response rates, Utsey (1999) created an improved and more efficient IRRS-brief version.

The IRRS-brief version takes between five to fifteen minutes for completion compared to the original 46-item IRRS which takes 20 to 35 minutes for completion.

The tripartite model of racism proposed by Jones (1997) best represents the multi-dimensional nature of racism (Utsey, 1999). According to this model, racism can potentially occur in three domains of African American life: (a) Individual Racism which is based on the belief that one's own racial group is superior to others, (b) Institutional Racism which manifests in policies and practices of institutions that operate (institutionally or unintentionally) to restrict the rights, mobility, access, or privileges of members in a given racial group, and (c) Cultural Racism which is the individual and institutional expression of the belief that a given culture is superior to others. Essed (1991) extended Individual Racism to include Collective racism. Collective Racism occurs when organized (or semi-organized) Caucasians/non-African Americans seek to restrict the rights of African Americans.

The 22-item IRRS-B represents three domains: Cultural Racism has 10 items, Institutional Racism has 6 items, and Individual Racism has 6 items. It also contains one higher order Global Racism measure (Utsey, Payne, Jackson, & Jones, 2002). The Global Racism score is derived by converting each of the subscale scores to Z scores and then summing the scores. Respondents to the questionnaire will be asked to give their answers on a five point Likert-type scale: 0 = this never happened to me; 1 = this event happened, but did not bother me; 2 = this event happened and I was slightly upset; 3 = this event happened and I was upset; 4 = this event happened and I was extremely upset. See Appendix F.

IRRS-B: content validity. To assess the content validity Utsey (1996) used a two and a half hour focus group comprised of five African Americans who were not experts in the field. After completing the IRRS the group, facilitated by Utsey, discussed the structure of the IRRS, item clarity, item domain, and appropriateness. In addition to evaluating the content validity, they examined the IRRS for ease and efficiency of administration and for any potential harmful effects that might result from its completion. Utsey (1996) then asked five experts with research backgrounds on race, ethnicity, gender, and cultural issues to examine the IRRS items for clarity and domain appropriateness. The items receiving a mean rating of less than 3.0 on item clarity were rewritten or eliminated. The items that were rated as not being domain appropriate were also rewritten or eliminated.

IRRS-B: Factor validity. Utsey (1996) collected data on a national sample of 377 men and women. Utsey examined the factor structure based on Jones' (1997) three-tier model of racism and's (1991) four-tier model of racism. Utsey ran a principle-component analysis and forced a one, two, three, and four-component extraction using both orthogonal and oblique solution. The best solution was the three-component orthogonal solution. The first pass through the data eliminated eight items as they were not well correlated with the other items. The second pass through the data yielded the four-component orthogonal as the best solution. Component one was responsible for 23% of the common variance. These items represented the experience of racism on a cultural level. Component two was responsible for 8% of the common variance. These items represented the experience of racism on an institutional level. Component three

accounted for 4% of the common variance and the items were linked to racism on an individual level. The forth component represented collective racism and only accounted for 3% of the common variance. These results inferred that Component 1was the most important to understand. The third pass through the data using a higher criterion for factor loading resulted in a 22-item version with Collective racism eliminated and the three original IRRS factors; Cultural, Institutional, and Individual racism remaining as part of the IRRS-B.

IRRS-B: Reliability. Reliability was measured with Cronbach's alpha. The Cronbach's alphas were .78 for the Cultural Racism subscale, .69 for the Institutional Racism subscale, and .78 for the Individual Racism subscale, which are generally considered acceptable reliabilities for an instrument of this type.

IRRSB: Criterion validity. Utsey (1996) used Walsh and Betz's (1995) group differences approach using African American s and Caucasians. A multivariate analysis of variance comparing the African American sub-sample with the Caucasian sub sample produced significant results. The ability of the IRRS-B to effectively discriminate between African Americans and Caucasians suggests that it is measuring the unique experiences of African-Americans relating their encounters with racism.

The Racism and Life Experience Scales-Revised RALES-R (Harrell, 2000) is a comprehensive set of sub-scales intended to measure multiple dimensions of racism experienced by minority groups on a daily basis. Scores on the IRRS-brief version are similar to Harrell's (2000) RALES-R questionnaire with the average correlation between the two as: 0.54 Cultural Racism, 0.40 Institutional Racism, and 0.46

Individual Racism. The similarities add further validity to the IRRS as a measure of race-related stress.

IRRS-B: Readability index. The IRRS-B is written on a Grade Nine reading level. This is comparable to the reading level of Utsey and Ponterotto's (1996) original IRRS.

The 12-item short-form health survey (SF)-12v2 health status instrument. The SF-36 questionnaire is a widely used generic health status instrument used to assess HRQOL. It contains 36 items with two summary health measures: Physical Health or Physical Component Summary (PCS) and Mental Health or Mental Component Summary (MCS). One multi-item scale assesses eight health dimensions or concepts: (a) limitations in physical activities because of health problems, (b) limitations in social activities because of physical or emotional problems, (c) limitations in usual role activities because of physical health problems, (d) bodily pain, (e) general mental health (psychological distress and well-being), (f) limitations in usual role activities because of emotional problems, (g) vitality (energy and fatigue), and (h) general health perceptions.

The length of the SF-36 and the time required to complete the survey, often places a burden on both researchers and participants. Ware, Kosinski, and Keller (1994) developed a SF-12 shorter questionnaire reducing the items from 36 to 12. The SF-12 is generally completed in up to two minutes compared to the approximately six minutes or more that it takes to complete the 36-item form. Ware et al. (1994) tested the SF-12 in the general U.S. population and found that the SF-12 highly correlated with the SF-36. The 12-item short form can be scored to explain at least 90% of the variance in SF-36

physical and mental health summary measures. The SF-12 items that were best predictors of the proven SF-36 physical and mental health scales were: PCS: (a) physical functioning, (b) role-physical, and (c) bodily pain scales; MCS: (a) mental health, (b) role-emotional, and (c) social functioning scales. There are two items on the questionnaire for physical functioning, role-physical, role-emotional, and mental health. Bodily pain, general health, vitality, and social functioning each have one-item on the questionnaire. Improvements were made to the SF-12 after 10 years of experience and research on the SF-12 (Ware, Kosinski, & Dewey, 2000). The improvements to the SF-12v2 were made in a manner similar to improvements made to the SF-36. Improvements included improvements in instructions, questionnaire items shortened, wording simplified by making the questions more familiar and less ambiguous, improvement in layout and font, and five-level choices in place of place of 4 and 6 level choices

Cross-sectional and longitudinal norms were estimated for both the SF-12 and the SF-12v2 Health Survey versions using norm-based scores. Results collected using the improved SF-12v2 can compared to the original SF-12 with NBS algorithms. See Appendix E.

SF-12v2: Factor validity. Item scale correlations ranged from 0.45 to 0.79. There is a stronger inner correlation within the scales than across scales. This data provides evidence that the dimensions of the scales are discretely different constructs or factors.

SF-12v2: Reliability. Test-retests were performed on the parent SF-12 forms. Over a 2 week period consistent responses were found on the questionnaire. The test-

retest reliability coefficients were 0.87 for the PCS-12 and 0.765 for the MSC-12 were obtained. These reliabilities are generally accepted as reasonable for an instrument of this type.

SF-12v2: Criterion validity. Correlations between SF-12 and SF-36 versions of PSC and MSC were 0.951 and 0.969 respectively. The results suggested that norms interpretation guidelines published for the SF-36 would be useful in interpreting the SF-12. In addition, the fact that the SF-12 is a subset of the SF-36 increased its usefulness in comparing results across studies that use either form.

The SF-36 defines more levels of health and better represents the content of health measures than the SF-12. The eight scale SF-36 in particular gives more reliable estimates of individual health thus giving it an advantage over the SF-12 in smaller studies. However, in an effort to increase the response rate for this study the SF-12v2 version was selected. Volunteer participants would be more likely to complete the questionnaires with reasonable time demands.

Patients participating in the Medical Outcomes Study (MOS), (Stewart, Hays, & Ware, 1988) an observational study of variations in physician practice styles and patient outcomes, in different health care systems were asked to respond to 20 health-items that were embedded in the middle of a 75-item questionnaire. The twenty items were selected to represent six health concepts: physical functioning, role functioning, social functioning, mental health, health perceptions, and pain. The questionnaire was consistent with Ware's (1987) standards of content validity for comprehensive health measurements. People with more education and income tended to have better health

(Stewart et al., 1988). Older people tended to report poorer health than younger people on all measures except mental health, as expected. Non-Caucasians tended to report poorer health perceptions, poorer social function, and more pain than Caucasians (Stewart et al., 1988).

Personal Heart Early Assessment Risk Tool (HEART) score

The Personal HEART score is a CHD risk assessment tool that identifies 10-year CHD risk based on self-reported data (Mainous, Koopman, Diaz, Everett, Wilson, & Tilley, 2007). National guidelines recommend the use of scoring systems when assessing CHD risk in clinical practice (Expert panel on Detection, Evaluation, and Treatment of High Blood Cholesterol, 2001). The Framingham Risk Score (FRS) and the European Systematic Coronary Risk Evaluation (SCORE) are two CHD risk assessment scoring tools frequently used in large-scale randomized clinical trials but their use in everyday clinical practice is limited by the need for laboratory measurement and/or additional physical examination data (Mainous, Koopman, Diaz, Everett, Wilson, & Tilley, 2007).

Mainous et al. (2007) developed the Personal HEART score as a self-report CHD risk scoring system to facilitate ease of data collection and thereby increase the utilization of risk assessment tools by both practicing clinicians and the general public. Self-reported measures for risk assessment have been previously used with high reliability in a variety of settings (Daniels, Huang, Feuerstein, and Lopez, 2005; Mainous et al., 2007; Niccolai, Kershaw, Lewis, Cicchetti, Ethier, & Lckovics, 2005).

In addition, Mainous et al. (2007) developed The Personal HEART score as an improvement to the FRS and European SCORE. Advances in science and medicine

coupled with changing lifestyle patterns have shifted the significance of certain risk factors for the development of CHD. Mainous et al added three items to the Personal HEART score that are not included in the FRS and European SCORE, namely family history of CHD, obesity, and physical activity.

The Personal HEART score assesses the 10-year risk of: (a) a heart attack (myocardial infarction (MI)), (b) death from CHD, or (c) a cardiac procedure in persons without known CHD. The Personal HEART score for men is computed using the following CHD risk factors: age, history of diabetes, history of high cholesterol, family history of CHD, smoking, and physical activity as cardiac risk factors. Obesity is measured by calculating the body mass index (BMI) but it is not included in the calculation of The Personal HEART score for men. The Personal HEART score has the advantage of assessing both traditional CHD risk factors such as hypertension, diabetes, high cholesterol, behavioral risks such as smoking, and physical activity. The utility of the Personal HEART score is that respondents simply write in their age as a number and then report yes or no to having been told by a clinician of the presence of a risk factor item.

Each item in the Personal HEART score is assigned a weighted number. These numbers are then added together to give the overall Personal HEART Score. The Personal Heart Score is then used to categorize individuals into low, intermediate, or high CHD risk groups. Personal Heart Scores between zero and two correspond to a low CHD risk category, scores between three and five correspond to an intermediate CHD risk category, and scores between six and twelve correspond to a high CHD risk category.

Management and/or treatment decisions are made by practicing clinicians based upon the level of CHD risk.

Mainous et al. (2007) used data from the public use limited-access Atherosclerosis Risk in Communities (ARIC) Study to develop the Personal HEART Score Early Risk Assessment Tool (National Heart, Lung, Blood Institute, 2009). The Atherosclerosis Risk in Communities (ARIC) Study was a large-scale on-going prospective study that measured associations of established and suspected coronary heart disease risk factors in men and women from diverse geographic locations (National Heart, Lung, Blood Institute, 2009).

Mainous et al. (2007) used a cohort of men and women age 45 to 64 years who entered the study between the years 1987 through 1989. Follow-up examinations were conducted in 1990-1992, 1993-1995, and 1996-1998. ARIC study participants were classified as black or non-black with the non-black group consisting almost exclusively of whites (Mainous et al., 2007). Race/ethnicity was not factored into the computation of the Personal HEART score. The limits of the ARIC public use population sample prohibited the creation of scoring systems that were generalized to specific racial/ethnic groups (Mainous et al., 2007). Mainous et al selected cardiac risk factor variables believed to cut across ethnic/racial groups.

To date the Personal HEART score has been used almost exclusively within the Caucasian population on males and females ranging in age from 45 to 64. This study extends the use of the Personal Heart Early Assessment Risk Instrument to examine its predictive capability in a population of middle-class African American men without

known CHD. This at risk population has never been studied using the Personal HEART score. In addition this study examined the Personal HEART scores for men not only between the ages of 45-64, but for men younger than 45 and men older than 64.

The Personal HEART score: content validity. Numerous CHD risk factors have been identified. Not all CHD risks were considered for inclusion in the Personal HEART score. Conceptually the risk factors for inclusion in the Personal HEART score had to be based upon information easily retrieved from a patient by self-report and they had to reflect current trends in CHD risk. CHD risk factors for men included in the Personal HEART score were: age; examined in five year increments, family history; subjects reporting that a parent was 50 years of age or younger when told by a clinician that they had a heart attack, hypertension; based on whether the subject was ever told by a clinician that he or she had high blood pressure, high cholesterol; based on whether the subject was ever told by a clinician that he or she had high cholesterol; diabetes; based on whether the subject was ever told by a clinician that he or she had diabetes, smoking; self report of having never smoked, former smokers (smoked in the past but not now), or current smokers, physical activity; self report of exercising or playing sports during leisure time either never/seldom, sometimes, or often/very often. Obesity was defined as a body mass index (BMI = weight in kilograms divided by height in meters squared) >30.

The Personal HEART score: criterion validity. Mainous, Koopman, Diaz, Everett, Wilson, and Tilley (2007) used Cox regression analyses to determine the relationship of potential prognostically significant self-reported risk factors for CHD and 10-year risk for CHD. A similar strategy was used by Charlson, Pompei, Ales, and

MacKenzie (1987) to development the FRS.

CHD risk factors were selected based on conceptual significance. Those with $p > 0.05$ were removed from consideration. A model was computed based on the remaining variables. Variables that did not meet statistical significance or variables with adjusted relative risk ≤ 1.2 were dropped from consideration as part of the scoring system. The remaining variables were given scores based upon the relative risk of the variables. Variables with an adjusted relative risk >1.2 and <1.5 were assigned a score of 1. Variables with larger adjusted relative risks were rounded to the nearest whole number for their assigned weights. All variables were assessed during study visit 1 when subjects gave reports of having been told by a clinician that they had a cardiac risk factor such as hypertension or diabetes. Therefore self-reports occurred prior to examinations performed during the ARIC Study.

The Personal HEART score: convergent validity. A 30% random sample was taken from the total population sample prior to the development of the PHS risk score classification. The holdout sample was compared to the measurement construction sample to assess goodness of fit of the model. The c-statistic value was used to determine if subjects in the holdout sample could be correctly classified with respect to CHD risk based on the PHS, FRS, and European SCORE. The PHS has predictive value similar to the FRS and European SCORE. However in men the PHS did not differ from the European SCORE ($r= 0.55$) but it is not as good as the FRS ($r= 0.58$).

Demographic, Health, and Health Care Questionnaire

The Demographic, Health, and Health Care Questionnaire provided necessary

demographic, health, and health care background information to support the study's research questions.

The demographic questions were current socioeconomic level, socioeconomic level during formative years, level of education, and profession. Participants were not asked about socioeconomic level rather than SES to capture more of income as a variable rather than status by occupation as the variable.

Three health questions were used to determine whether study participants had a history of CHD. The questions were:

1. Have you ever had a heart attack?
2. Have you ever had open-heart surgery?
3. Have you ever had any of the following cardiac procedures: angioplasty, and/or angioplasty with stents?

Respondents who answered yes to one or more questions were excluded from the study, as inclusion criteria for the Personal HEART score was persons without known CHD.

The health care questions included on the survey were:

1. Do you have health care coverage?
2. When did you last visit a health care provider?
3. How would you describe your relationship with your health care provider?

Statistical Analyses

Descriptive statistics were used to provide the means, standard deviations, frequencies, ranges, and number of men in this study. The parametric test, Pearson Product Moment Correlation was used to determine relationships between race-related

stress, HRQOL, and level of CHD risk.

A stepwise multiple regression was used to determine the extent to which a combination of race-related stress and HRQOL explain and/or predict CHD risk. The data was analyzed using the Predictive Analytics SoftWare (PASW) statistics 17.

The research questions and statistical procedures were as follows:

1. What is the CHD risk for middle-class African American men?
    a. Descriptive statistics
2. What is the relationship between race-related stress and risk for CHD in middle-class African American men?
    a. Pearson Product Moment Correlation
3. What is the relationship between HRQOL and CHD risk in middle class African American men?
    a. Pearson Product Moment Correlation
4. To what extent do these variables in combination (race-related stress and HRQOL) explain/predict CHD risk in middle class African American men?
    a. Multiple Regression

Chapter 4: Results

The purposes of this quantitative descriptive study were to establish the extent of CHD risk in a cohort of middle-class African American men and to investigate the interrelationships of race-related stress and HRQOL on CHD risk in these individuals. The Biopsychosocial Model of health and McEwen's (2000) concept of allostatic load provided an overarching framework for determining the influence of complexly interwoven psychosocial, socioeconomic, cultural, biologic physiologic, and psychologic variables on CHD risk in middle-class African American men. A sample of convenience of 195 middle-class African American men responded to a compendium of three measurement instruments and a questionnaire consisting of: The Personal Heart Early Assessment Risk Tool (HEART) score (Personal HEART score), the Index of Race-Related Stress-Brief Version (IRRS-B), The SF-12v2 Short Form Health Survey (HRQOL), and the Demographic, Health, and Health Care Questionnaire.

As shown in Figure 1, the dependent variable for this study was CHD risk as measured by The Personal HEART score. The independent variables were race-related stress, measured by the IRRS-B and HRQOL, measured by the SF-12v2. Demographic, health, and health care information was obtained from the Demographic, Health, and Health Care Questionnaire and was used as descriptive and ancillary data to support and enrich the four main research questions. This chapter provides descriptive statistics, data analysis procedures, results, and summary. This chapter provides descriptive statistics, data analysis, and results for this study.

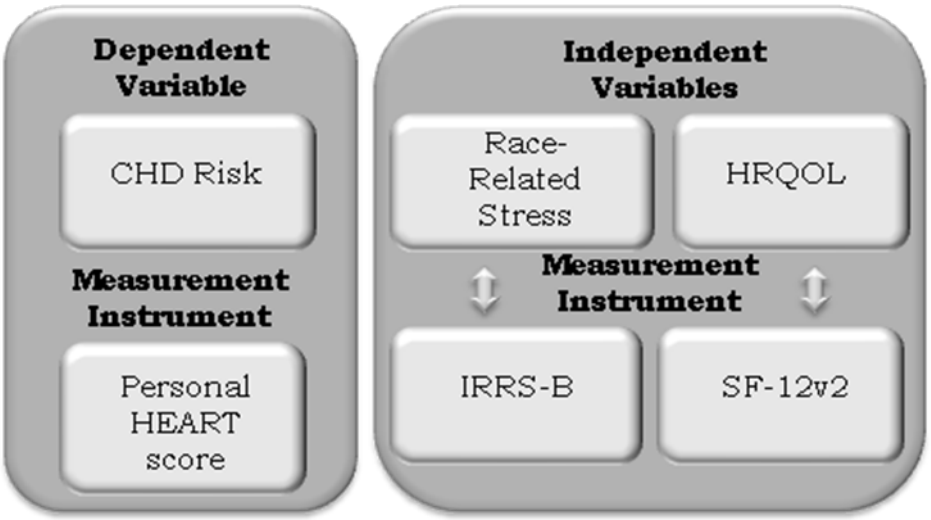

Figure 1. Dependent vs. Independent Variables

Note. Index of Race-Related Stress-brief version (IRRS-B); Coronary Heart Disease (CHD); Health Related Quality of Life (HRQOL)

Descriptive Statistics

Demographic, Health, and Health Care Questionnaire

Age. A sample of convenience of middle-class men belonging to a major Greek-letter African American fraternity and participating in an Eastern National Fraternity Convention was used for this study. Two hundred and fifteen men volunteered and filled out the survey compendium. Twenty participants did not meet inclusion criteria and were excluded from the study. One hundred ninety-five subjects were used for data analysis. Table 1 shows the mean, standard deviation, and range for age.

Table 1

Age Mean, Standard Deviation, and Range for Total Sample

	Mean (SD)	Range
Age	44.8 (14.6)	19 – 83

Note. SD= Standard Deviation

Level of education. Close to half of the participants or 45.6% (n = 89) held Master's degrees. Less than 5% were educated at an Associate's degree level or less. Approximately 15% held degrees higher than a Master's degree. Figure 2 shows the number and percentages for the level of education attained by study participants.

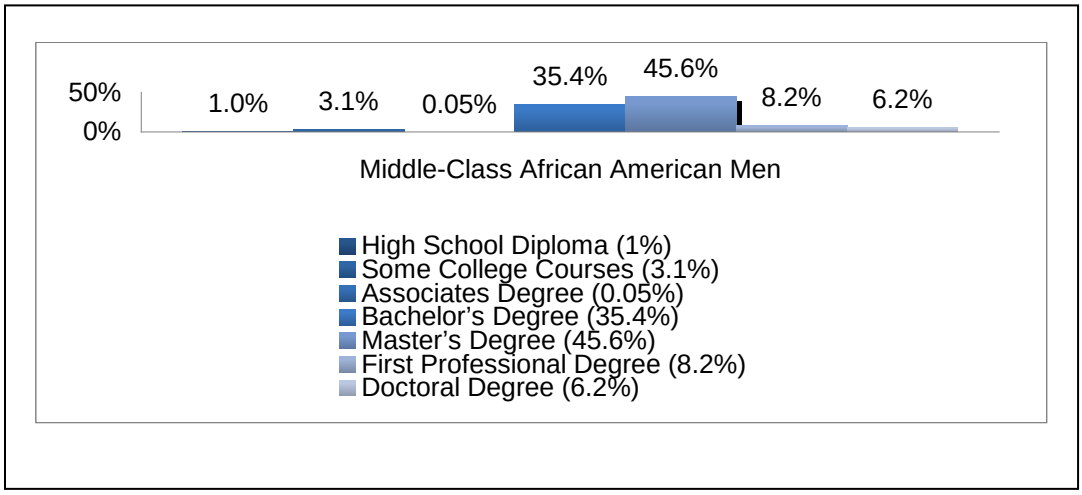

Figure 2. Educational Attainment of the Study Participants as a Percentage of the Total Sample

Childhood vs. current income. A little more than half or 56% (n = 110) of the participants in this study grew up in middle-class families. Approximately 6% (n = 12) rated their family income as being in the upper socioeconomic class during the formative years and 37.4% (n = 73) of men reported family income as being in the lower socioeconomic level during the formative years.

The majority of participants in this study or 68% (n = 132) rated their current income as middle socioeconomic level. Slightly over 26% (n = 51) believed their current income puts them in the upper socioeconomic level and 5.7% (n = 11) believed their income was in the lower socioeconomic level. Figure 3 presents the socioeconomic status data for both the formative years and the present time. While most of the men in this sample grew up at a middle socioeconomic level class, a significant number of men moved from a lower socioeconomic level while growing up to a current middle socioeconomic level χ^2 (4, n=194) = 30.7, P < .01).

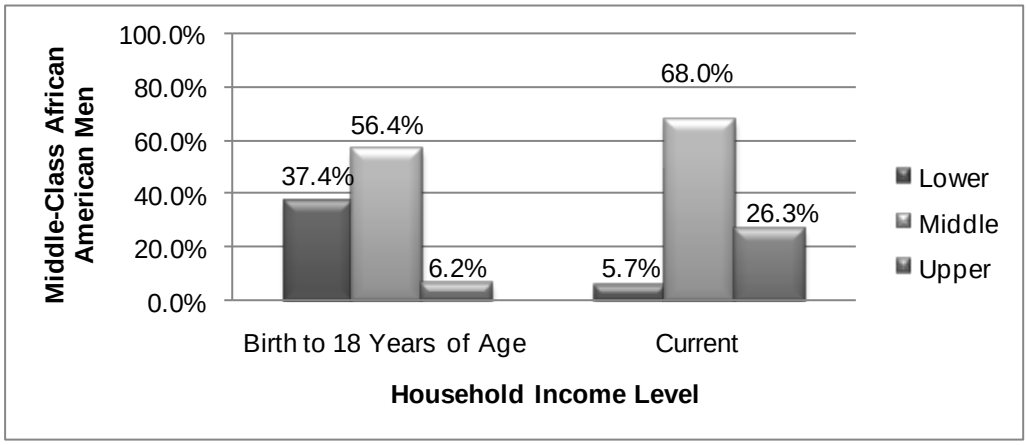

Figure 3. Income Level as a Percentage of the Total Sample

Profession. The profession most represented in this sample was administration/ management/ business with close to 40% (n = 78) of men in this area. The next highest profession represented in this sample was teaching/education with about 18% (n = 36) of men in this area. The remaining professions represented in this area were: computer professionals (12%, n = 24), other (13.9%, n = 27), scientist or researchers (9.2%, n = 18), self-employed (7.7%, n = 15), student (7.2%, n = 14), legal profession (4.6%, n =9), service industry (4.6%, n = 9), medical profession (3.6%, n = 7) Allied Health Care (1.5%, n = 3), Arts/Entertainment/Culture (1%, n = 2), unemployed (1.5%, n =3), and homemaker (0). Figure 4 presents the occupation of the participants.

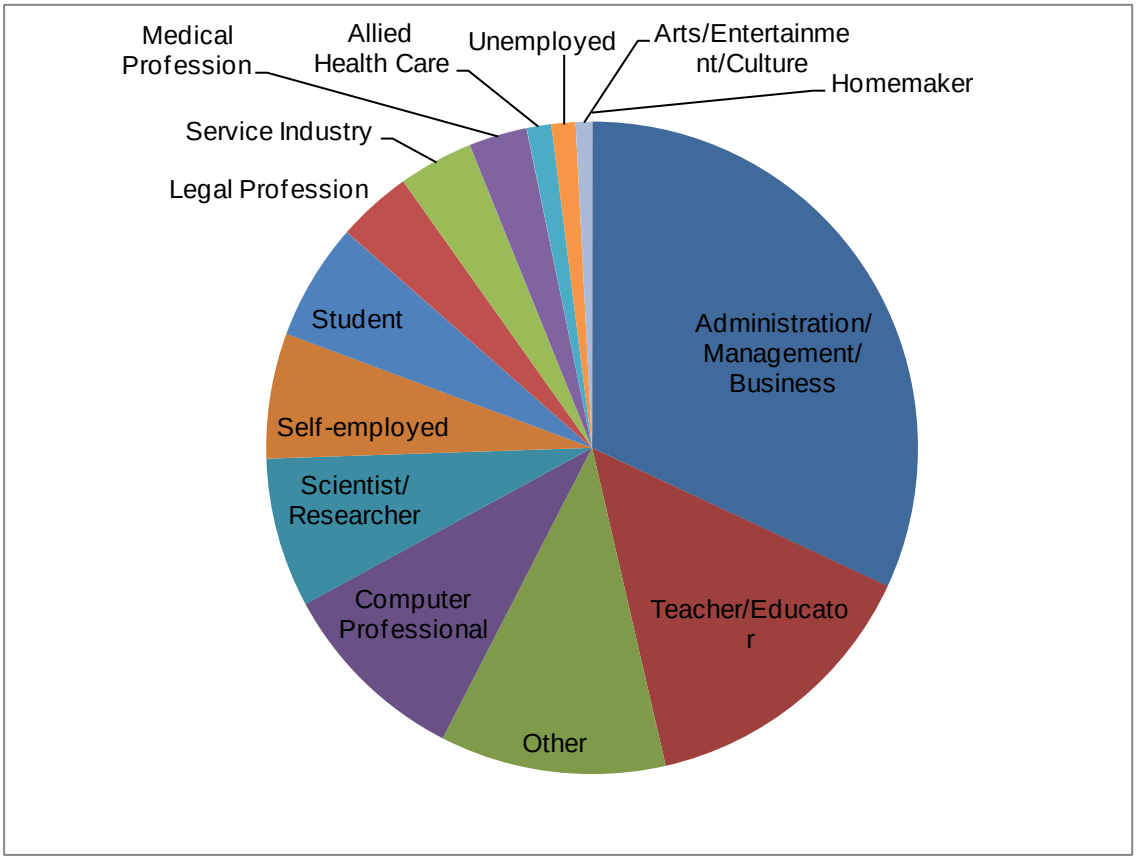

Figure 4. Professions as a Percentage of the Total Sample

Health care. Figure 5 shows that just over half or 51.5% (n = 95) of men in this sample last visited their health care provider within the last 3 months. Over 85% (n = 159) of men in this study had visited a health care provider within the last year. Only 2% (n = 4) had not visited a health care provider within the last five years.

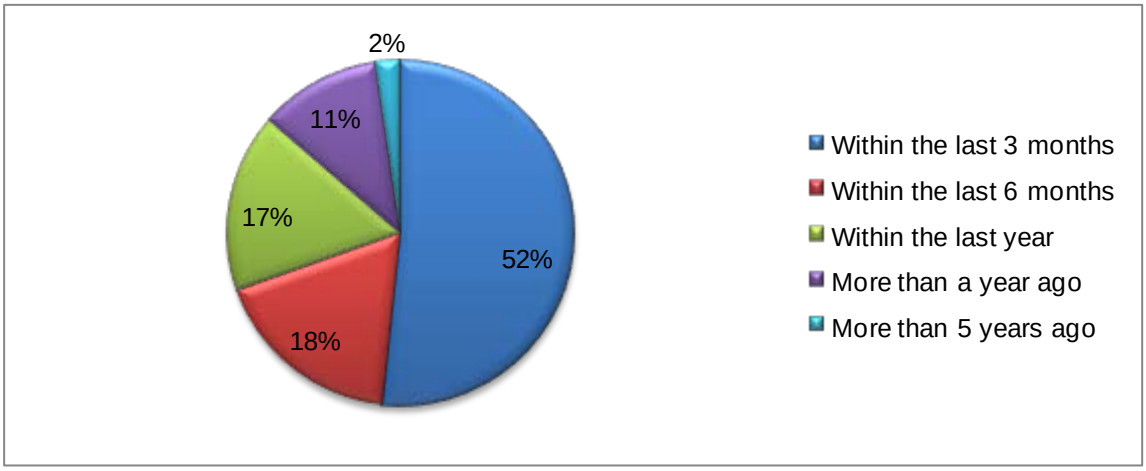

Figure 5. Last Visit to a Health Care Provider as a Percentage of the Total Sample

Figure 6 shows that when given the choice of good, not good, or indifferent, most participants or 74% (n = 142) rated the relationship with their provider as being good.

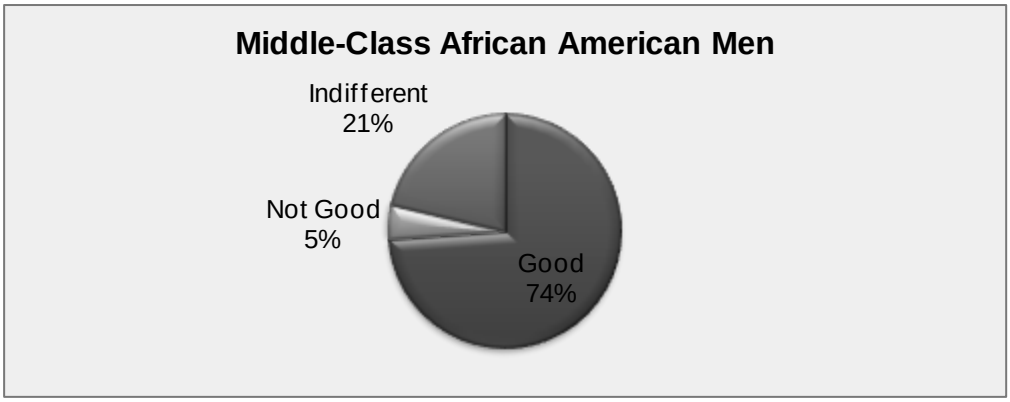

Figure 6. Relationship with Health Care Provider as a Percentage of the Total Sample

Note. Percentage of the Total Sample Population

Figure 7 shows that almost all of the participants or 93.8% (n = 183) had health care coverage.

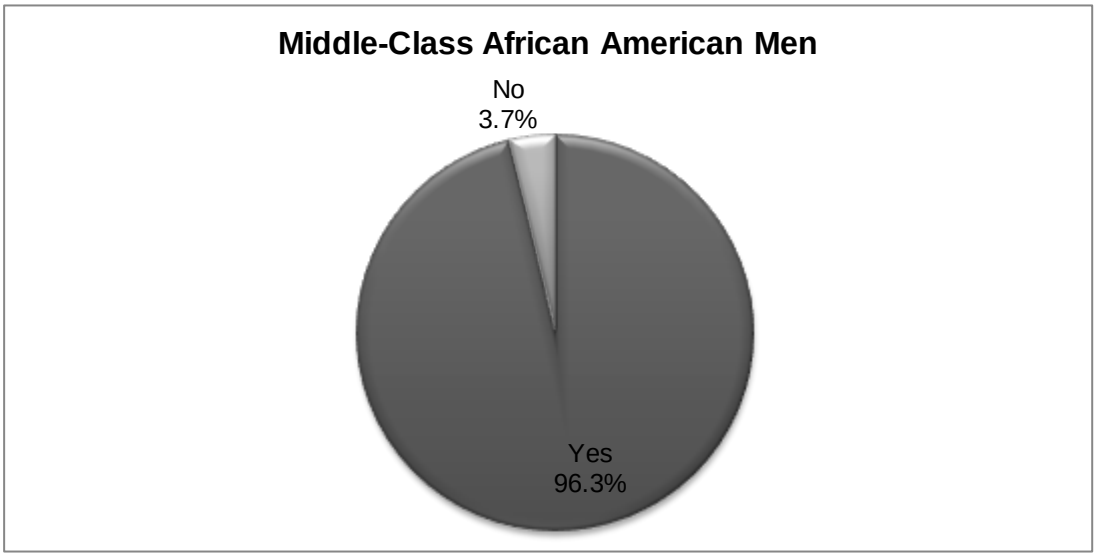

Figure 7. Participants Heath Care Coverage as a Percentage of the Total Sample

Measurement Instruments

The Personal HEART score. The predicted 10-year risk for CHD, with CHD being defined as a heart attack (myocardial infarction), death from CHD, or a cardiac procedure, was determined for this cohort of middle-class African American men using The Personal Heart Score Early Risk Assessment Tool (The Personal HEART score). The Personal HEART score is a simple self-report cardiac risk factor scoring system used in persons without known CHD to predict their chance of developing CHD within 10 years.

The Personal HEART score is similar in design and purpose to the widely used Framingham Risk Score (FRS) and the European Systematic Coronary Risk Evaluation

(SCORE). However, unlike the FRS and the SCORE risk assessment tools, the Personal HEART score is a self-report measure and it includes both traditional cardiac risk factors such as hypertension, diabetes, and high cholesterol and behavioral risk factors such as smoking and physical activities (Mainous et al., 2007).

To date the Personal HEART score has been used almost exclusively within the Caucasian population on males and females ranging in age from 45 to 64. This study extended the use of The Personal HEART score to examine its predictive capability in a population of middle-class African American men without known CHD. This at risk population has never been studied using The Personal HEART score. This study examined The Personal HEART scores for men not only between the ages of 45-64, but for men between the ages of 19 to 83 years.

10-year CHD risk prediction. The Personal HEART score is a number derived from the sum of weighted cardiac risk factors. The Personal HEART score for the men in this study is shown in Table 2. The calculated Personal HEART score is a number that is then used to identify individuals as being at low, intermediate, or high risk for developing CHD within 10 years. Practicing clinicians make management and treatment decisions based upon a patient's category of CHD risk.

Personal Heart scores between 0-2 correspond to a low risk category (less than 10% chance of developing CHD within 10 years), scores between 3-5 correspond to an intermediate risk category (10% to 20%), and scores between 6-12 correspond to a high risk category (>20%).

Stratification of men in this study into categories of risk revealed that 61% (N=115) were low risk, 29% (N = 54) were intermediate risk, and 10% (N = 19) were at high risk of developing CHD within 10 years. The entire sample of middle-class African American men had a low-to-intermediate risk for CHD. The 10-year risk prediction of CHD for participants in this study is shown in Table 3.

Table 2.

The Personal HEART Score Mean Score and Range for Total Sample

Mean (SD)	Range	
2.28(2.17)	0	12

Note. SD= Standard Deviation; Mean, Standard Deviation, Range for The Personal HEART score

Table 3.

10-Year Risk Prediction by Category of Risk as Percentage of the Total Sample with Mean Age and Age Range per Category of Risk

CHD Risk Category	Percentage of Total Population	Age Mean (SD)	Age Range
Low	61%	39.0 (11.8)	18 – 77
Intermediate	29%	52.4 (13.1)	24 – 83
High	10%	58.0 (14.4)	23 – 76

Table 3 (continued)

Note. SD= Standard Deviation; CHD=Coronary Heart Disease

Age Mean, Standard Deviation, Range, and Percentage for CHD Risk Category

Cardiac risk factor profile. The prevalence of major risk factors for the total sample was hypertension 39% (n = 76), high cholesterol 38% (n = 73), diabetes 15% (n = 30), smoking 2.6% (n = 5), family history of CHD 9.3% (n = 18), physical activity often or very often 45% (n = 88), overweight 44% (n = 86), and obesity 38% (n = 74). Figure 8 shows the cardiac risk factor profile stratified by category of CHD risk.

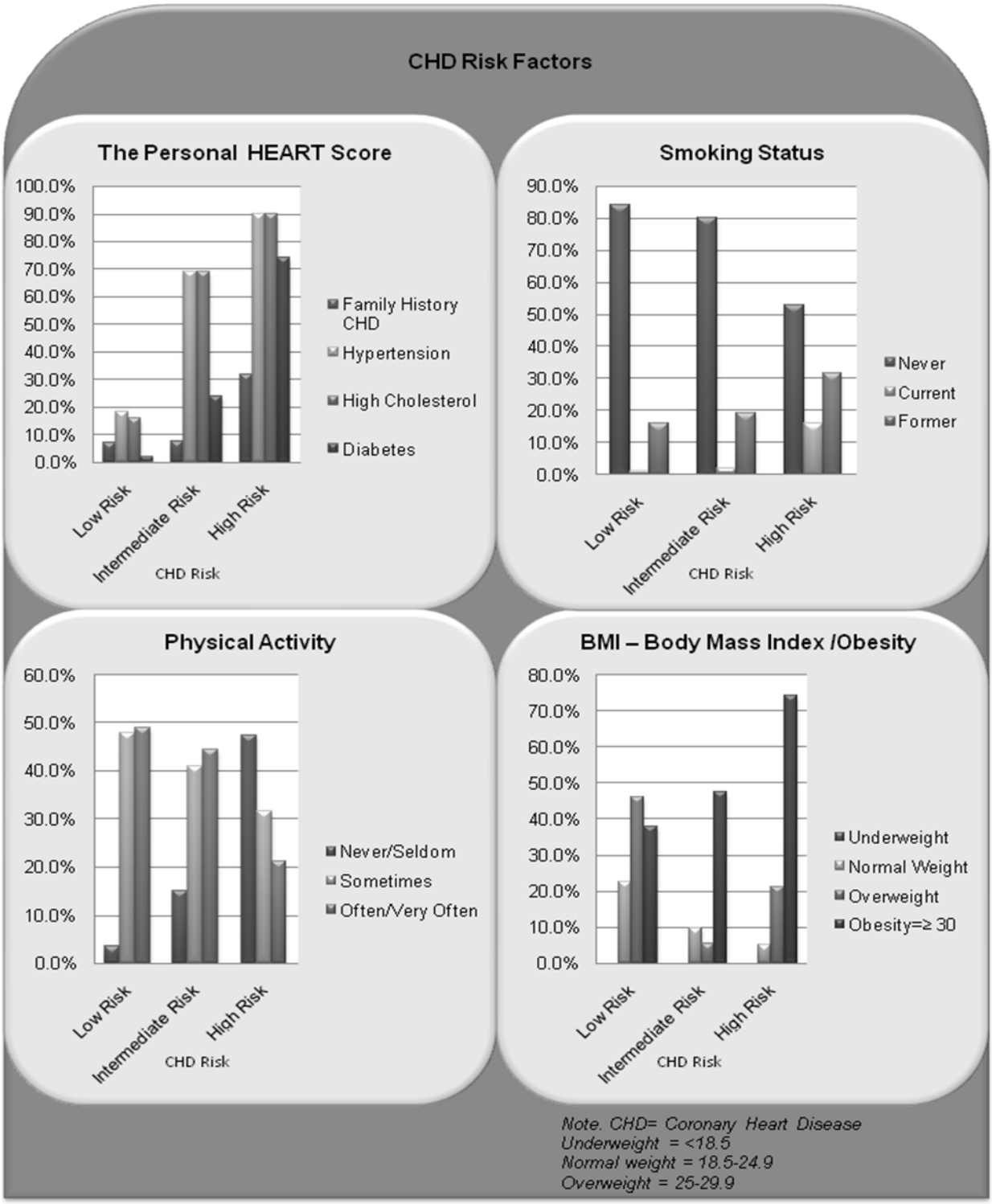

Figure 8. *CHD Risk Factor Profile of the Sample Participants by Level of CHD Risk*

Index of race related stress-B. Race-related stress was measured by the Index of Race-Related Stress-brief version (IRRS-B). The IRRS-B is a 22-item measure of the stress experienced by African Americans as a result of their chronic exposure to racism (Utsey, Payne, Jackson, Jones, 2002). It is a multidimensional measure of racism that consists of 3 subscales: (a) Cultural Racism, (b) Individual Racism, and (c) Institutional Racism. It also contains one higher order Global Racism measure (Utsey, Payne, Jackson, & Jones, 2002). The Global Racism score is derived by converting each of the subscale scores to z scores and then summing them. Individual responses to the questions were 0 = this never happened to me, 1= event happened but did not bother me, 2 = event happened and I was slightly upset, 3 = event happened and I was upset, 4 = event happened and I was extremely upset. Summing the items for each IRRS-B subscale produced a total score for the type of racial stress perceived. Higher scores on the IRRS-B indicate higher levels of race-related stress in each domain.

The possible range for each of the 3 IRRS-B subscales was 0 - 88. Table 4 shows the mean, standard deviation, and range for each race-related stress subscale. The scores for cultural racism ranged from 2-39 (possible range = 0-88) with a mean score of 21.4 (SD = 8.68). The scores for individual racism ranged from 0-23 with a mean score of 9.9 (SD = 5.45). The scores for institutional racism ranged from 0 to 23 with a mean score of 9.5 (SD = 5.08). Table 4 presents the scores for the total sample. Table 5 presents the scores by 10-year predicted CHD risk categories.

Table 4.

IRRS-B Means, Standard Deviations, for Total Sample

Multidimensional Measures of Racism	Mean (SD)	Range	
Cultural	21.4 (8.68)	2.0	39.0
Individual	9.9 (5.45)	0	23.0
Institutional	9.5 (5.08)	0	23.0
Global	0036 (2.66)	5.74	6.65

Note. SD= Standard Deviation; IRRS-B= Index of Race-Related Stress-brief version

Table 5.

IRRS-B Means, Standard Deviations, and Frequencies by 10-year CHD Risk Categories

	IRRS-B Categories of Racism							
	Cultural		Individual		Institutional		Global	
CHD-Risk Levels	M (SD)	Range	M (SD)	Range	M (SD)	Range	M (SD)	Range
Low	21.2 (8.6)	2 - 39	10.3 (5.4)	0 – 23	9.3 (5.1)	0 – 23	42.2 (17.0)	5 – 82
Intermediate	20.0	2 – 38	8.9 (6.0)	0 – 23	8.7 (4.8)	0 – 20	37.5	3 – 81

	(9.4)						(18.4)	
High	22.0 (7.0)	9 – 34	9.6 (4.3)	2 – 18	11.2 (5.6)	4 – 22	42.8 (15.1)	19 – 74

Table 5 (continued)

Note. SD= Standard Deviation; IRRS-B= Index of Race-Related Stress-brief version; CHD=Coronary Heart Disease

Health related quality of life. Health Related Quality of life (HRQOL) was measured using the SF-12v2 Health Survey. The SF-12v2 is a generic measure of health-related quality of life. The SF-12v2 subscales represent eight different dimensions of physical and psychological functioning: (a) Physical Functioning (PF), (b) Role-Physical (RP), (c) Bodily Pain BP), (d) General Health (GH), (e) Vitality (VT), (f) Social Functioning (SF), (g) Role-Emotional (RE), and (h) Mental Health (MH). Subjects responded to questions on physical or psychological functioning using a three or five point Likert scale. Two higher order component summary scales, Physical Component Summary (PCS) and Mental Component Summary (MCS), were derived by using z scores from the eight subscales in a two-factor solution. Four physical scales were appropriately assigned to the PCS score and the four mental scales were appropriately assigned to the MSC score. Higher scores on the SF-12v2 scales including the PCS and MCS reflect better physical and psychological functioning. Table 6 presents the scores for the total sample. Table 7 presents the scores by 10-year predicted CHD risk categories.

Table 6.

SF-12v2 Means, Standard Deviations, and Frequencies for Total Population

SF-12v2 Subscales	Mean (SD)	Range	
PF	36.40 (5.54)	22.11	41.46
RP	43.30 (7.36)	20.32	48.00
BP	21.19 (7.57)	16.68	57.44
GH	57.98 (4.06)	44.74	61.99
VT	41.71 (7.94)	27.62	67.88
SF	41.66 (7.17)	16.18	46.47
RE	38.69 (9.34)	11.40	44.90
MH	55.51 (9.92)	18.23	64.54
PCS	35.02 (4.21)	22.09	48.25
MCS	50.20 (7.20)	24.90	62.80

Note. Short Form Health Survey (SF-12v2); Standard Deviation (SD); PF=Physical Functioning; RP=, Role-Physical; BP= Bodily Pain; GH= General Health; VT= Vitality; SF= Social Functioning; RE= Role-Emotional; MH= Mental Health; PCS= Physical Component Summary; MCS= Mental Component Summary

Table 7.

SF12v2 Means, Standard Deviations, and Frequencies by 10-year CHD-Risk

	PF		RP		BP		GH	
CHD-Risk Levels	M (SD)	Range	M (SD)	Range	M (SD)	Range	M (SD)	Range
Low	37.4 (4.5)	22 – 39	44.2 (6.5)	20 – 48	20.1 (6.40)	16 – 47	58.8 (3.5)	45 – 62
Intermediate	35.3 (5.8)	22 – 40	42.6 (8.1)	20 – 48	22.7 (9.0)	17 – 57	57.5 (4.1)	45 – 62
High	34.0 (7.4)	22 – 41	41.2 (9.0)	20 – 49	23.1 (9.1)	17 – 47	55.8 (4.7)	45 – 62

	VT		SF		RE		MH	
CHD-Risk Levels	M (SD)	Range	M (SD)	Range	M (SD)	Range	M (SD)	Range
Low	42.5 (8.3)	28 – 68	42.0 (8.2)	26 – 46	39.1 (9.0)	11 – 44	55.6 (9.5)	18 – 64
Intermediate	40.1 (7.8)	28 – 58	42.0 (8.0)	16 – 46	38.2 (9.3)	11 – 45	54.8 (10.8)	18 -64

High	41.4 (6.9)	28 – 58	41.7 (7.8)	26 - 46	37.5 (11.0)	11 – 45	56.9 (10.6)	28 – 65

	PCS		MCS	
CHD-Risk Levels	M (SD)	Range	M (SD)	Range
Low	35.5 (4.4)	22 - 48	50.2 (6.9)	27 - 60
Intermediate	34.7 (4.0)	27 - 42	50.0 (7.9)	25 - 63
High Risk	33.5 (3.1)	29 – 41	51.0 (8.4)	29 - 60

Note. PF=Physical Functioning; RP=, Role-Physical ; BP= Bodily Pain; GH= General Health; VT= Vitality; SF= Social Functioning ; RE= Role-Emotional; MH= Mental Health; PCS= Physical Component Summary; MCS= Mental Component Summary, SF-12v2= Short Form Health; SD= Survey Standard Deviation; CHD= Coronary Heart Disease

Table 7 (continued)

Data Analysis

This section provides the data analysis for the study's four research questions. The research questions for this study were:

1. What is the CHD risk (measured by The Personal HEART score) for middle-class African American men?
2. What is the relationship between race-related stress (measured by the index of race-related stress-B) and CHD risk in middle-class African American men?

3. What is the relationship between HRQOL (measured by the SF-12v2) and CHD risk in middle-class African American men?
4. To what extent do these variables in combination (race-related stress and HRQOL) explain/predict CHD risk in middle-class African American men?

Research question 1: What is the CHD risk (measured by The Personal HEART score) for middle-class African American men? The Personal HEART score was used to compute the 10-year CHD risk. The cohort of middle-class African American men in this study had a low-to-intermediate risk of developing CHD within the next 10 years. As shown in Table 8, when stratified into levels of risk; 61% were low risk, 29% were intermediate risk, and 10% were high risk. The mean age for the low CHD risk group was 39 years (SD = 11.8) with ages ranging from 19 to 77. The mean age for the intermediate CHD risk group was 52.4 years (SD= 13.1) with ages ranging from 24-83. The mean age for the high-risk group was 58.0 years (SD = 14.4) with ages ranging from 23-76. There was a significant positive correlation between age and The Personal HEART score ($r = .606$, $p<.01$).

When the participants were stratified according to level of CHD risk, a significant finding emerged. Although Personal HEART score increased with age, men as young as 23 years of age were at high risk for CHD and men as old as 77 years of age were at low risk for CHD.

Table 8

Age of Study Participants by 10-year Predicted CHD Category of Risk

CHD Risk Categories	Mean (SD)	Range	
Low CHD Risk	39.0 (11.8)	19	77
Intermediate CHD Risk	52.4 (13.1)	24	83
High CHD Risk	58.0 (14.4)	23	76
Total Sample	44.8 (14.6)	19	83

*Note.*CHD= Coronary Heart Disease; SD= Standard Deviation

Research question 2: What is the relationship between race-related stress and CHD risk in middle-class African American men? A correlational analysis was conducted to assess the relationship between race-related stress and CHD risk. Table 9 provides the Pearson's correlation coefficients for the three IRRS-B subscores, the global racism score, and CHD risk as measured by The Personal HEART score. The IRRS-B subscale measures of racism and the global racism measure were not associated with The Personal HEART score. The IRRS-B subscale measures of racism and the global racism measure were not associated with The Personal HEART score.

Table 9.

Correlation Matrix for IRRS-B and the Personal HEART Score

	Variable				
10-year CHD-Risk Categories	1	2	3	4	5
1 Cultural	-	.723**	.715**	.940**	-.047
2 Individual		-	.667**	.875**	-.112
3 Institutional			-	.861**	.007
4 Global				-	-.05
5 The Personal HEART Score					-

Note. CHD= Coronary Heart Disease; IRRS-B= Index of Race-Related Stress-brief version

** Significant at <0.01level. IRRS-B Means, Standard Deviations, and Frequencies by10-year CHD-Risk Categories

Research question 3: What is the relationship between the quality of life and CHD risk in middle-class African American men? A correlational analysis was conducted to assess the relationship between HRQOL and CHD risk. Table 10 provides the Pearson's correlation coefficients for the eight HRQOL subscores, the two HRQOL overall component scores, and CHD risk as measured by The Personal HEART score. CHD risk was negatively associated with two of the eight HRQOL subscales, specifically GH ($r = -.185$, $p < .05$) and PF ($r = -.231$, $p < .01$) and 1 overall component score, the PCS ($r = -.150$, $p < .05$). Therefore, participants at higher CHD risk perceived

themselves as having lower general health, physical functioning, and a lower overall physical component score.

Table 10.

Correlational Matrix for HRQOL Subscales and Overall Composite Scales

	Variables										
10-year CHD-Risk Categories	1	2	3	4	5	6	7	8	9	10	11
1 PF	-	.344*	.310*	.207*	-	.195*	.368*	.171*	.381*	.117	-
2 RP		-	-	-	-1.92	.380*	.560*	.175*	.277*	.337**	-.092
3 GP			-	-.190*	.054	-	-	-.112	.217*	-.155*	-.100
4 GH				-	-.142	.151	.167*	-114	.351*	.094	-
5 VT					-	-	-	-.061	.136	.061	-.114
6 SF						-	.334*	.374*	-	.624**	.010
7 RE							-	.163*	-.101	.596**	-.002
8 MH								-	-	.806**	.032
9 PCS									-	-	-.150
10 MCS										-	.052
11 The Personal HEART											-

Note. PF=Physical Functioning; RP=, Role-Physical; BP= Bodily Pain; GH= General Health; VT= Vitality; SF= Social Functioning; RE= Role-Emotional; MH= Mental Health; PCS= Physical Component Summary; MCS= Mental Component Summary; SD= Survey Standard Deviation; CHD= Coronary Heart Disease; IRRS-B= Index of Race-Related Stress-brief version; HRQOL= Health Related Quality of Life; IRRS-B Means, Standard Deviations, and Frequencies by 10-year CHD-Risk Categories

** Significant ≤ .01, *significant ≤ .05

Research question 4: How do these variables in combination explain/predict risk factors for CHD in middle-class African American men? The summary scores for the IRRS-B (GR) and HRQOL (PCS and MCS) were used as predictor variables in a stepwise multiple regression to examine their relationship with CHD risk. Global racism and MCS were excluded from the model. PCS was a significant predictor of CHD risk ($F_{1, 161} = 4.34$, $p < .05$.). However, the regression was a poor fit ($R^2_{adj} = 2.0\%$).

A second stepwise multiple regression was conducted using the subscales of the measures of race-related stress and HRQOL to examine the influence of forms of race-related stress and dimensions of HRQOL on CHD risk. The first step PF was entered, as it accounted for most of the unique variance in the dependent variable. The final model that emerged from the stepwise analysis contained the four variables PF, RE, VT, and GH and accounted for 16% of the total variance of CHD risk. The regression was a poor fit ($R^2_{adj} = 13\%$), but overall the relationship was significant ($F_{4, 135} = 6.23$, $p < .001$). The beta weights for PF, VT, and GH were negative whereas the beta weight for RE was positive. Participants with higher CHD risk perceived lower PF, VT, and GH. Participants with higher CHD risk perceived higher RE functioning. The Standardized Beta Coefficients, Sig (*p*) values, and *t* values are shown in Table 11.

Table 11.

Stepwise Regression for HRQOL Subscales and IRRS-B Subscales on The Personal HEART scores

		Beta	t	p
Model 1				
	PF	-.240	-2.898	.004
Model 2				
	PF	-.306	3.597	.001
	RE	.216	2.539	.012
Model 3				
	PF	-.318	-3.772	.001
	RE	.190	2.224	.028
	VT	-.167	-2.041	.043
Model 4				
	PF	-.279	-3.811	.001
	RE	.193	2.291	.023
	VT	-.199	-2.425	.017
	GH	-.180	-2.170	.032

Note. PF=Physical Functioning; GH= General Health; VT= Vitality; RE= Role-Emotional; IRRS-B= Index of Race-Related Stress-brief version; HRQOL= Health Related Quality of Life.

In an effort to obtain a regression model that was a better fit for the data, age was added as a predictor variable. Although age is a CHD risk factor item in The Personal HEART score, age can be used as a demographic variable. A third stepwise multiple regression analysis was performed using age, IRRS-B subscales, HRQOL subscales, and the summary scores for IRRS and HRQOL as predictor variables.

This model was a better fit for the data (R^2_{adj} = 43%). Age was entered in the first step, as it contributed the greatest unique variance to the model (R^2_{adj} = 38%). The final model that emerged contained the three variables: age, GH, and PF ($F_{3, 136}$ = 35.4, *p* <.001.). The beta weights for PF and GH were negative, whereas the beta weight for age was positive. As age increased, CHD risk increased. Participants with higher CHD risk perceived lower PF, and GH. The Standardized Beta Coefficients, Sig (*p*) values, and *t* values are shown in Table 12.

Table 12.

Stepwise Regression for Age, HRQOL Subscales and Summary Component Scales and IRRS-B Subscales and Summary Scale on the Personal HEART Score

		Beta	t	p
Model 1				
	Age	.623	9.360	.001
Model 2				
	Age	.623	9.586	.001
	GH	-.183	-2.821	.006
Model 3				
	Age	.608	9.398	.001
	GH	-.150	-2.265	.025
	PF	-.135	-2.019	.045

Note. PF=Physical Functioning; GH= General Health; IRRS-B= Index of Race-Related Stress-brief version; HRQOL= Health Related Quality of Life

Results

In summary, this study reported the findings from a sample of convenience of middle-class; college educated, and fully employed African American men with health

care coverage who belonged to a Greek letter African American fraternity.

The results were as follows:

1. The 10-year CDH risk for this sample as measured by The Personal HEART score was low-to intermediate.
2. There was a positive association between age and The Personal Heart score.
3. The cardiac risk factor profile of this sample consisted of individuals who predominately reported hypertension, high cholesterol, diabetes, and obesity. However, this sample was less likely to smoke and participated in some type of physical activity.
4. A high percentage of this sample visited a health care provider within the last year. A high percentage rated the relationship with their health care provider as good.
5. A significant number of middle-class African American men in this study grew up in families that were at lower socioeconomic levels but moved into higher socioeconomic levels as adults.
6. Race-related stress, as measured by the IRRS-B, was not associated with CHD risk.
7. Three subscales of HRQOL: PF, GH, and PCS were negatively associated with CHD risk.
8. The best predictors of CHD risk in this sample were age, PF, and GH.

Chapter 5: Interpretation and Recommendations

This chapter discusses the results of this study by summarizing and interpreting the descriptive statistics and the findings for each research question. Included are the limitations, implications, and recommendations for future studies. The implications contain intervention strategies for the nurse practitioner as a clinician, educator, and researcher in addition to intervention strategies for patients, providers, and families, and communities and the nation. The ultimate goal of intervention is to influence change not only on an individual level but also on a broader social, cultural, economic, and political levels. The purpose**s** of this quantitative descriptive study were to establish the extent of CHD risk in a cohort of middle-class African American men and to investigate the interrelationships of race-related stress and HRQOL on CHD risk for these individuals.

Specific aims of this study were to: (a) advance research on CHD risk in an understudied subgroup of African American men to fill the gap in the literature in this area of inquiry, (b) to advance understanding of biologic, psychologic, and physiologic pathways by which psychosocial, sociocultural, and socioeconomic factors mediate CHD, and (c) examine HRQOL from a sociocultural perspective to provide evidence for future investigations to address how the broader social, political, cultural, and economic factors that contribute to persistent racial/ethnic health disparities can be influenced to change.

The Biopsychosocial Model of health and McEwen's concept of Allostatic Load provided an overarching framework for examining the influence of highly complex interactions among biological, physiological, psychosocial, sociocultural, and socioeconomic variables on CHD risk in middle-class African American men.

A convenience sample of 195 middle-class African American men responded to a compendium of instruments and surveys consisting of: The Personal Heart Early Assessment Risk Tool [HEART] score (Personal HEART score), the Index of Race-Related Stress-Brief Version (IRRS-B), The Short Form Health Survey (SF-12v2), and a Demographic, Health, and Health Care Questionnaire. Descriptive statistics, Pearson product-moment correlation, and multiple regression were used for data analysis. A summary of the results are listed in the following section.

Summary of Results

1. The cardiac risk factor profile for this sample of middle-class African American men consisted of individuals who predominately reported hypertension, high cholesterol, diabetes, and obesity. However, this sample was less likely to smoke and engaged in physical activity on a regular basis.
2. The 10-year CDH risk prediction for this sample of middle-class African American men as measured by The Personal HEART score was low-to-intermediate.
3. There was a positive association between age and The Personal Heart Score.
4. A high percentage of this sample visited a health care provider within the last year, a high percentage had health care coverage, and a high percentage rated the relationship with their health care provider as good.

5. A significant number of middle-class African American men in this study grew up in families that were at lower socioeconomic levels but moved into higher socioeconomic levels as adults.
6. Race-related stress as measured by the IRRS-B was not associated with CHD risk.
7. Three subscales of HRQOL: PF, GH, and PCS, were negatively associated with CHD risk.
8. The best predictors of CHD risk in this sample were age, PF, and GH.

Research Question 1: What is the CHD Risk for Middle-Class African American Men?

A surprising outcome of this study showed that CHD risk in this cohort of middle-class African American men was low-to-intermediate. The personal HEART scores for 90% of the participants ranged between low CHD risk and intermediate CHD risk. Only 10% of participants were categorized as high CHD risk suggesting these individuals, carried, a heavier burden of CHD risk. The literature frequently reports that African American males carry a heavier burden of CHD risk. However, it could be argued that African American males carry a heavier burden of CHD risk due to clustering of cardiac risk factors.

The literature frequently reports that African American males carry a heavier burden of CHD risk. However, it could be argued that African American males carry a heavier burden of CHD risk due to clustering of cardiac risk factors. Consistent with the literature, the findings in this study showed clustering of risk factors. African Americans

are 1.5 times more likely to have multiple risk factors than Caucasians and the presence of multiple risk factors increases CHD risk synergistically (AHA, 2009; Carnethon et al., 2006; Clark et al, 2001; Cooper, 2005; Ferdinand, 2004; National Center for Health Statistics, 2007). Moreover, the high prevalence rates for cardiac risk factors within the high CHD risk category demonstrated the synergistic effect of multiple cardiac risk factors. The prevalence rates for hypertension, high cholesterol, diabetes, and obesity, were consistent with the American Heart Association's prevalence rates for African American men at large (AHA, 2009). These findings support the hypotheses that higher education and income do not necessarily equal better health outcomes (Farmer & Ferrraro, 2005).

The prevalence rates for smoking and physical activity were not consistent with findings in the literature (AHA, 2009). The participants in this study had an overwhelmingly lower smoking rate than do both African American men at large and Caucasian men (AHA, 2009). In addition, the participants in this study were more active than were African American men at large and Caucasian men. The findings in this study are supportive of studies found in the literature that report higher smoking rates among those who have lower incomes and are less well-educated (Kaplin & Keil, 2009; Paradies, 2006; Shields et al., 2005; Williams & Mohammed, 2009; Winkleby et al., 1992).

The consistency of the findings in the study with empirical findings published in the literature on CHD risks in African American men at large lend support to the use of the Personal Heart Early Risk Assessment Tool [HEART] score in middle-class African

American men.

Unexpected Skewed findings for CHD Risk

Investigation of cardiac risk factors across levels of CHD risk uncovered skewed data that was unexpected. Examination of the skewed data at each level of CHD risk revealed significant findings that will be discussed in the following sections.

Low CHD risk category. Sixty-one percent of the participants were men at low risk for CHD with an average age of 39 years. The prevalence rates for major CHD risk factors for this group of men showed that: 18.3% had hypertension, 16% had high cholesterol, 2.0% were diabetic, 1.0% was current smokers, 46% were overweight, 37.8% were obese, and 49% engaged in regular leisure time activity often or very often.

CHD develops over the life course and risk increases with age (AHA, 2008; Cooper, 2005; Clark et al., 2001; Epstein, 2005; Ferdinand, 2004, Wyatt et al., 2003). CHD becomes a major risk, for men, at 45 years of age (AHA, 2008). Although the average age of the men at a low level of CHD risk was 39 years of age (six years below the age that CHD becomes a major risk factor in men), 5% of the men in this category were greater than 45 years of age. The age range for the low CHD risk outliers was between 55 and 77 years of age. The outliers were 10 to 32 years older then the age at which CHD becomes a major risk factor in men; yet they were at a low level of CHD risk.

With African American men suffering from excess CHD morbidity and mortality, it is important to examine the factors that contributed to these skewed

unexpected results. Investigation of the cardiac risk factor profile for the low risk outliers revealed that they did not have hypertension, high cholesterol, diabetes, or a family history of heart disease. There was only one former smoker within the outlier group and no others smoked. Therefore, the low risk outliers, with the exception of the one former smoker, had optimal CHD risk factor profiles. Optimal risk factor profile is defined as the absence of and/or controlled hypertension, high cholesterol, diabetes, and smoking (Hozawa, Folsom, Sharrett, & Chambless, 2007). The prevalence of an optimal CHD risk profile in the U.S. population is 6.5 % (Hozawa et al., 2007). Lloyd-Jones et al. (2006) reported that an absence of CHD risk factors at 50 years of age was associated with a very low lifetime risk of CHD.

One study in the literature compared CHD mortality and optimal cardiac risk factors in African Americans and Caucasians (Hozawa et al., 2007). The odds ratio of not having an optimal risk factor profile for African Americans compared to Caucasians was 0.44 (Hozawa et al., 2007). In addition, Hozawa et al., reported no CHD deaths in African Americans with optimal CHD profiles.

This study also found that 30% of the low risk participants were normal weight and about 70% were overweight. Close to 70% exercised often or very often and about 30% exercised sometimes.

Intermediate CHD risk category. Twenty-Nine percent of the participants were men at an intermediate risk for CHD risk with an average age of 52 years. Twenty-six percent of the men in the intermediate CHD risk group

were less than 45 years of age, the age at which CHD becomes a major risk in men. The cardiac risk factor profile for the outliers in the intermediate CHD risk category revealed that: 7% had a family history of CHD, 86% had hypertension, 86% had high cholesterol, 7% were diabetic, 93% never smoked, 50% were obese, 43% were overweight, 14% were normal weight, 40% engaged in leisure time physical activity often/very often and 40% sometimes. Overall, there was a high prevalence of hypertension, high cholesterol, and obesity in outliers at the intermediate risk level outliers.

High risk CHD category. Ten percent of the participants were men at high risk for CHD with an average age of 58 years. Twenty-one percent of high-risk men were younger than 45 years of age with the youngest being 23 years of age. The cardiac risk factor profile for the high-risk outliers revealed that 50% of the men had a family history of heart disease, 75% had hypertension, 100% of the men had high cholesterol, 50% of the men were diabetic, 100% were obese, and 75% never or seldom engaged in leisure time physical activity.

Half of the high-risk participants had a family history of CHD and 100% were obese. The findings in this study support the findings of Mora, Yanek, Moy, Fallin, Becker L., and Becker, D. (2005) who found that overweight and obesity may substantially increase the risk of CHD in individuals with a family history of premature CHD. Siblings from families with premature CHD demonstrated a high prevalence of high BMI especially those at high risk for CHD (Mora et al., 2005).

Comparison of CHD risk categories. The participants within each category of CHD risk were compared for similarities and differences. Review of results showed that the average age of participants increased as each category of CHD risk increased which is consistent with the research on advancing age as a risk factor for heart disease. There was a statistically significant relationship between age and CHD risk. The landmark Framingham Study (1948) identified advancing age as a risk factor for CHD in a primarily all-Caucasian cohort and the 1960 Evans County Heart Study replicated findings from the Framingham Study in an African American study population (Crook et al., 2003; Hames, Rose, Knowles, Davis, & Tyroler, 1993; Tyroler, Knowles, Wing, Logue, Davis, Heiss, Heyden, & Hames, 1984).

Fifty percent of the high CHD risk group (men at high risk for heart disease but younger than 45 years of age) grew up in lower socioeconomic households compared to only 17% of the low CHD risk group (men greater than 45 years of age but at low risk for heart disease). Examination of socioeconomic level during formative years across levels of risk showed that 17% of the low risk group grew up in lower socioeconomic households, 35% of the intermediate risk group grew up in lower socioeconomic households, and 50% of men at high risk grew up in lower socioeconomic households. This finding is of major significance and lends support to the growing body of literature on adverse early childhood experiences and adult health outcomes (Smith, 2000; Felitti et al., 1998).

Socioeconomic circumstances in early life, and even during previous generations, can influence health and psychosocial characteristics in adulthood (Bosma et al., 1999;

Chen et al., 2001; Lynch, Kaplan, & Salonen, 1997; Smith et al., 1998). Smith, Hart, Blane, and Hole (1998) reported that lower family SES during childhood is associated with increased mortality in adulthood independent of adult SES. Moreover, deprivation in childhood is associated with increased risk for CHD mortality (Smith et al., 1998).

Research Question 2: What is the Relationship between Race-Related Stress and CHD risk in Middle-class African American Men?

The results from this study showed no association between race-related stress and CHD risk in middle-class African American men. The findings in this study are inconsistent with researchers who suggest that racial/ethnic discrimination is a form of chronic stress that might impact CHD (Albert et al., 2008; Brondolo et al., 2009; Clark et al., 1999; Harell & Tailaferro, 2003; Hemingway & Marmot, 1999; Krieger, 2003; Redford, 2008; D. R. Williams 2003; Wyatt et al., 2003; Williams & Mohammad, 2009; Wulsin & Singal, 2003).

In addition, the findings in this study were inconsistent with research on race-related stress and mental health. A significant body of research has documented perceived racism as a psychosocial stressor that imparts harmful effects on the mental health of African American men (Anderson, Clark, & V., Williams, 1999; Bronodolo, Gallo, & Meyers, 2009; Clark et al., 1999; Dobbins & Skillings, 2000; Fand & Meyers, 2001; Franklin-Jackson, Carter, 2007; Harrell, 2000; Pascoe & Richman, 2009; Pieterse & Carter, 2007; Utsey, Giesbrecht, Hook & Stanard, 2008; Utsey & Payne, 2000; Williams & Mohammed, 2009; Wyatt et al., 2003; Williams, D., 2003).

The research findings on perceived racism and its potential harmful effects on physical health are inconsistent and unclear (Din-Dzietham, Nembhard, Collins, & Davis, 2004; Harrell et al., 2003; Paradies, 2006; Redaford, 2008; Trieber, Kanarck, Schneiderman, Sheffield, Kapuku, & Taylor, 2003; Williams, Neighbors, & Jackson, 2003). Pascoe and Richman (2009) performed a comparative analysis of studies on perceived racism and mental health and perceived racism and physical health and found no significant differences in the two. Meyers (2003) and Paradies (2006) posited that perceptions of racism have a more negative impact on mental health than physical health (Meyers, 2003; Paradies, 2006).

Numerous psychosocial factors such as: coping styles, self-esteem, and racial identity, emotional support, and perceived control, skin color, acculturation, personality, anxiety and depression, early childhood traumatic experiences, religion, John Henryism, confrontation, and anger have been identified as mediating, intervening, or modifying influences that buffer the deleterious effects of racism (Fegan & Spikes, 1994; Jones 1997; Lalonde,1995; Paradies, 2006; Williams & Mohammed, 2009; Utsey, Ponterotto, Reynolds, & Cancelli, 2000). Mediating factors were not included as variables in this study.

As suggested by Redman (2008) it may not be possible to measure the impact of race-related stress as a psychosocial risk factor via self-report measures of racism or discrimination. Race-related stress may be involved in the pathogenesis of CHD through biologic pathways that work over time (Redman,

2008).

Research Question 3: What is the Relationship between HRQOL and CHD Risk in middle-class African American Men?

CHD risk was negatively associated with HRQOL on 2 subscales; general health (GH) and physical functioning (PF), and one composite summary score: the physical composite score (PCS). Results from this study showed the higher the CHD risk the lower the general health (GH), physical functioning (PF), and physical composite score (PCS) in middle-class African American men.

Numerous researchers have reported on the association between HRQOL and specific CHD risk factors (Govil, Weidner, Merritt-Worden, & Ornish, 2009; Lalonde et al., 2001; Redberg, 2005; Spertus, Safley, Gang, & Peterson, 2005; Wolinsky, Miller, D., Anderson, Malmstrom, & Miller, P., 2004). Lalonde et al. (2001) examined HRQOL in patients with and without high cholesterol. Scores were similar for the two groups with the exception of lower general heath (GH) sub-scores for the high cholesterol group. Based on these findings Lalonde et al. suggested that people may confuse a risk factor with actual disease and label themselves as unhealthy.

The results in this study suggest the same phenomenon. Middle-class African American men in this study may view CHD risk with actual disease thus accounting for the lower GH, PF, and PCS scores. Peterson, J.J., Lowe, Peterson, N.A. and Janz (2006) found and association between long-term social stress, decreased physical functioning on HRQOL in those of low SES. Moreover, this

low SES group had no diseases. The low SES group with chronic stress exhibited lower scores than those with multiple chronic diseases. Peterson et al. (2006) posited that a psychobiological mechanism, through excessive allostatic load, mediated the decreased physical functioning in the low SES chronic stress group. A similar phenomenon may have occurred in this study of middle-class African American men.

Wolinsky et al. (2004) compared HRQOL subscores in a group of middle-aged African Americans to HRQOL sub-scores in the overall U.S. population. The results of Wolinsky et al. (2004) found that all sub-scores for African Americans, with the exception of vitality (VT) and mental health (MH) were below the national average. Wolinsky et al. suggested that African Americans coped with their limitations better than Caucasians despite experiencing poorer physical well being.

Spertus et al. (2005) compared African Americans and Caucasians admitted to the hospital with the diagnosis of Acute Coronary syndrome and found that both groups had similar HRQOL scores with physical functioning being slightly less for African Americans. One year later both groups had improved HRQOL scores but the improvement was significantly less for African Americans and physical functioning decreased for African Americans.

Ohldin et al. (2004) examined differences in HRQOL between African American and Caucasian veterans with CHD. Despite a higher prevalence of CHD risk factors, African Americans reported higher physical functioning (PF),

role functioning (RF), and vitality (VT), scores but lower emotional (RE) and mental health score (MH). In addition, the mental health composite score (MCS) and the physical health composite scores (PCS) were higher for African Americans. However, these findings were not consistent across geographic locations suggesting that other socio-demographic variables influence discrepancies in HRQOL.

Research Question 4: How do these Variables in Combination Explain/Predict CHD risk in Middle-Class African American Men?

Findings from this study showed that age, PF, and GH were the best predictors of CHD risk in middle-class African American men. These findings are consistent with Farmer and Ferraro's (2005) hypothesis that feelings of frustration and lack of control over life-chances, experienced by middle-class African Americans, could be internalized and then transferred to their interpretation of health. The findings in this study also suggest that psychological and behavioral responses to psychosocial stressor such as race-related stress may lead to physical changes in health (Pascoe & Richman, 2009; Redman, 2008; Williams & Mohammad, 2009). These findings support the findings of Lalonde et al. (2001) who suggested that people may confuse a risk factor with actual disease and label themselves as unhealthy.

Ancillary Findings

Health care coverage. Research has shown that access to care is a major cause of excess CHD morbidity and mortality in African Americans (Smedley et al., 2002; Woodard, Hernandez, Lees, & Peterson, 2005). African Americans are less likely to

possess private or employee based health insurance, are more likely to be underinsured, and are more likely to be covered by Medicaid compared to Caucasians (Woodard, Hernandez, Lees, & Peterson, 2005; Wyatt, Williams, Calvin, Henderson, Walker, & Winters, 2003). In this study, 100% of men in the high-risk group had health care insurance/coverage, 100% in the intermediate risk group had health care coverage, and 94% in the low risk group had health care coverage. The findings in this study will contribute to the existing gap in health and health related information for African American men with health care coverage. Moreover, the findings in this study suggest that sociocultural differences among African American men produce variations in health outcomes.

Patient-provider relationship. Both patient and provider beliefs, perceptions, expectations, and behaviors may contribute to racial/ethnic disparities in healthcare (Brondolo et al., 2009; Redberg, 2005; Wyatt et al., 2003). The Institutes of Medicine's 2003 report on unequal treatment in health care cites three mechanisms by which providers might contribute to racial/ethnic disparities: 1) bias or prejudice, 2) greater clinical uncertainty when interacting with other groups 3) beliefs about the behavior or health of certain ethnic/racial groups (Smedley et al., 2002). Middle-class African American men in this study were asked to rate the relationship with their health care provider as good, not good, or indifferent. One hundred percent of participants in the high CHD risk category rated the relationship with their health care provider as good; 79% of those with an intermediate risk of CHD rated their relationship as good; and 66% of those at low risk for CHD rated their relationship as good.

Hypertension and race-related stress. Although no association was found between race-related stress and CHD risk, an inverse relationship was found between hypertension and cultural racism. This finding was consistent with two other studies in the literature that found an inverse association between perceived racism and blood pressure (Krieger & Sidney, 1996; Peters, 2004). Hypertension is a major CHD risk factor and is included in the PHS instrument. Peters (2004) found that African Americans who reported less experience with racism or those who reported less distress from racism had higher mean diastolic blood pressures then those who reported more experience with racism or those who reported feeling distressed by it. Peters posited that the use of denial as a coping strategy may explain the inverse relationship between hypertension and perceived racism. In a study on blood pressure and racism, Roberts, Vines, Kaufman, and James (2008) found that more than twice as many men who reported never suffering from racism had high levels of John Henryism. Roberts et al. describes John Henryism as a strong disposition to engage in high effort to cope with stressors. John Henryism has been characterized as a strategy for coping with racism used by working class African Americans and those of lower SES (Krieger & Sidney, 1996; Roberts et al., 2008). Although the men in this study were middle-class, a significant number of men in this study grew up in lower SES households and moved into middle-class status. As posited by Smith, (2000), educational attainment and material status may not override learned early childhood coping strategies thus lending support to the growing body of evidence on the effects early childhood experiences have on adult health outcomes.

Krieger and Sidney (1996) found an inverse relationship between blood pressure and racism in African American professionals who reported responding to racism by not doing something about it but rather keeping it to themselves. Kreiger and Sidney posited that professional African Americans may have greater social and economic resources and feel as if they can address racism on their own, and that talking about it may compound rather than alleviate the situation.

Implications

The findings in this study provide valuable information on CHD risk in middle-class African American men. Moreover, the findings in this study fill a gap in the research literature on the complex interactions, psychological, physical, economic, cultural, and social factors that influence cardiac health outcomes. Results from this study have major implications for the nurse clinician-educator researcher. The Health Belief Model is an appropriate framework for preventing CHD disease and promoting healthy behavioral changes.

Results from this study suggest that The Personal HEART score has enormous potential for use in middle-class African American men. The nurse clinician-educator researcher can introduce The Personal HEART Early Assessment scoring Tool to middle-class African American men. As self-directed adult learners, middle-class African American men can calculate their own risk of developing CHD within 10-years. Moreover, the majority of the men in this study had careers in Management, Administration, or Business. Evolving electronic technologies in the form of applications or software products may appeal to men in this group as a means for calculating and

tracking CHD risk and risk factor management. Calculating this knowledge for one's self is empowering and would give the middle-class African American male ownership over his cardiac health. The nurse clinician-educator can then reinforce the importance of knowing and calculating individual CHD risk in populations of middle-class African-American men. In addition, preventive care is sought when a person believes he or she is personally at risk for a particular disease. A simple, easy to use, self-report CHD risk-scoring tool such as The Personal HEART score gives immediate feedback needed to change the perceived susceptibility for disease.

There are many CHD risk reduction campaigns and health promotion interventions targeting health behaviors in low SES racial/ethnic groups (Myers, 2009). However, the findings in this study suggest heterogeneity of CHD risk profiles for sub-groups of African American men. Contrary to AHA statistics, the prevalence of smoking was overwhelming lower for this cohort of middle-class African American men than for both African American men at large and Caucasian men. In addition, contrary to recently AHA statistics, physical activity was higher for this group of middle-class men than for both African American men at large and Caucasian men. Moreover, the findings in this study suggest that sociocultural differences among African American men produce variations in health outcomes.

The nurse clinician-educator researcher is uniquely positioned to not only create new knowledge but to translate that knowledge into practice. The nurse clinician-educator researcher disseminates new knowledge through classroom and clinical teaching of students, patient teaching, speaking, writing and publishing. The new knowledge

uncovered in this study may be used to develop and implement targeted risk reduction strategies and health promotion intervention strategies for middle-class African American men.

The findings in this study found consequences of CHD risk specific to middle-class African American men in the area of HRQOL. Higher levels of CHD risk were associated with perceptions of lower general health and physical functioning. HRQOL is now used to measure health care delivery outcomes. It is important that African Americans are included in HRQOL research to ensure measurement validity for the African American population. Moreover, this study highlights the importance of sociocultural validation of measurements.

Awareness of sociocultural differences within groups is very important to both education and clinical practice. The nurse-clinician will be able to make a greater provider-patient connection with middle-class African American men by offering targeted and relevant up-to-date information that can be discussed in a very real and personal manner. The nurse-clinician, aware of the history of the African American middle-class and race as a sociopolitical construct, would know that middle-class may be tenuous or marginal for African Americans. It is expected that middle-class African American men would want a high level of physical functioning and overall health in order to live a long and productive life for themselves, their families, their children, and their communities. In addition, the nurse practitioner is in a position through committee efforts to lobby for change in structures and policies contribute to inequities in income.

This study also found positive outcomes related to modifiable CHD risk in middle-class African American men. This sample of men had an overwhelmingly low prevalence of smoking. In addition, they had a high prevalence of engaging in physical activity. This study suggests that education and income do make a difference in health and lifestyle choices. Young African American children need to hear and see the consequences of right lifestyle choices that include both education and health. The nurse-clinician educator specializing in pediatrics is in a prime position to promote this message.

This study documented that the majority of middle-class African American men have not only access to care but they also have a good relationship with their health-care providers. The nurse-clinical educator is in a position to conduct research that uncovers the perceptions and responses of health care providers to the needs of middle-class African American male patients. The nurse-clinician education can also train and encourage health care providers in the use of targeted teaching and targeted interventions tailored for middle-class African American men. Moreover, the nurse-clinician educator can teach nurse practitioner students cultural competence by integrating Standardized Patient experiences into the curriculum. This allows students to practice effective communication skills in simulated learning environments.

Although the relationship is good, the quality of care is still at issue. African American men should be taught how their CHD risk may differ from Caucasian men. Moreover, African American men should know the standard of cardiac health care for the control and management of cardiac risk factors and they should be empowered to expect

that level of care from health care providers.

About 32% of the men in this study who were at high risk for CHD had a family history of premature CHD. This is a novel finding in a cohort of middle class African American men. Children and siblings in families with a history of premature CHD need to be especially aware of the impact of lifestyle and environmental factors on the development of CHD. Moreover, they need to know the impact of obesity on a family history of premature CHD. This finding demonstrates the need for increased awareness and education on cardiac risk factor modification. Cardiac health teaching and interventions should start at a very early age in families with a history of premature CHD. The nurse-clinician educator can be instrumental in developing pre-k and early elementary school cardiac health education programs. Half of the middle-class African American men in this study at high CHD risk grew up in lower socioeconomic households and moved into higher socioeconomic levels as adults.

This study lends further support to the importance of holistic care given by nurse practitioners and other health care providers. Broader societal forces impact not only health, illness, and well being but also the perceptions of health, illness, and well-being. This study confirms the need to approach racial/ethnic health disparities research involving African Americans from a broad biopsychosocial lifespan model in combination with the concept of allostatic load to capture cumulative vulnerabilities that may even be generational, and occur over time.

Limitations

There are several limitations to the current study. (a) A sample of convenience

was used for this study. Future studies should be conducted using large-scale randomized national population samples. (b) CHD develops over the life course. A longitudinal design should be employed as CHD develops over the life course. (c) This study was used for self-reported survey data. Social desirability bias may have been a threat to construct validity. Future studies should include direct measurements and laboratory values obtained by health care providers or research assistants. (d) This study was correlational and only revealed the presence or absence of relationships among study variables. Causal relationships were not investigated causing a possible threat to internal validity. (e) The ability to generalize the study's results are limited in that middle-class African American men belonging to a Greek letter African American fraternity may differ in important ways from those in the general population of middle-class African American men who do not belong to a fraternity. (f) The instruments used to collect the data for this study may have affected the results obtained. They were not constructed specifically for or validated in the specific population studied. In addition, social contexts change over time and questions on the IRRS-B may not reflect current manifestations and experiences of racism/discrimination. Current political and cultural influences may have influenced participant's responses on the IRRS-B. Gordon (2006) found that the leadership of an African American president at a predominately-Caucasian university changed the climate of the campus and changed the perceptions of success for African American students. The historic significance of an African American President of the United States may have influenced the perceptions of racism/discrimination in the United States. Moreover, items on the IRRS-brief version may have emotionally aroused

study participants. (g) Moderating, mediating, and intervening factors in addition to influences such as intergenerational and maturational age effects may have influenced the study results.

Recommendations for Future Research

While this study provided some insight into the role of psychosocial and sociocultural factors on CHD risk in a sample of educated, employed, and insured middle-class African American men, a better understanding will result from a broader investigation of race-related stress, quality of life, and CHD risk. Given the high rate of unemployment among African American males and the number of African American males with less than a college education, the association of race-related stress, quality of life, and CHD risk should be explored in this subgroup of African Americans. This study should also be duplicated in women who belong to a Greek letter African American sorority and in women with less education and employment.

A significant number of men in this study were overweight or obese. There is evidence to suggest that the abdominal pattern of obesity, indicative of visceral adiposity, increases CHD risk, and therefore waist circumference measurement are a more specific predictor of CHD risk than BMI (Clark et al., 2005). BMI was used in this study because it is easy to calculate from self-reports. A follow-up study using objective measurements including waist circumference is needed in this subgroup of men because of the high prevalence of overweight and obesity.

The interpretation of health by middle-class African American men needs to be investigated. HRQOL offers the key to discovering physical pathways leading to

physical symptoms, which are not recorded by health care providers that mediate adverse social conditions. Quality of care and access to care for the middle-class African Americans with managed care health insurance plans needs to be investigated.

A significant and novel finding from this study showed that half of the men at high CHD risk grew up in lower SES households and moved into middle class SES as adults. There is growing evidence that socioeconomic circumstances in early life, and even during previous generations, can influence health and psychosocial characteristics in adulthood (Bosma et al., 1999; Chen et al., 2001; Lynch, Kaplan, & Salonen, 1997; Smith et al., 1998). This study also demonstrates the need for more research to alleviate adverse childhood experiences that affect adult health outcomes in African Americans who move from lower to higher SES with education. Large-scale longitudinal studies conducted by multidisciplinary research teams are needed to document the progression of biology, adverse social and environmental conditions, adverse psychosocial factors, behaviors, and changes to the physiologic systems (Bosma et al., 1999; Chen et al., 2001; Lynch, Kaplan, & Salonen, 1997; Smith et al., 1998).

An extension of this study should be conducted with focus groups of the sample population. The focus groups will give deeper understanding to factors associated with the constructs of this study such as childhood experiences, interpretation of health, and quality of care. This study confirmed that increased efforts are needed to decrease morbidity and mortality in subgroups of African American men. Health education programs for the modification of CHD risk in middle-class African American men should be established. Moreover, the effectiveness of these health education programs through

the used of individual, group, or family interventions should be explored.

One methodology cannot fully span the depth and breathe of constructs such as race-related stress and HRQOL. A qualitative follow-up study is needed to extend this research. Stories told, of the lived experiences, of current and past generations of middle-class African American men will go beyond the surface of self-report measures to capture and elucidate the underlying understanding and interpretation of the constructs in this study. Moreover, stories are impactful by touching the heart and soul and leaving lasting impressions. To enrich the educational experience teachers could use stories from qualitative research, to establish at an early age, the significance of interrelationships between self, cultures, health, society, the environment, and politics.

This descriptive research on a subgroup of African American men has illuminated the challenges associated with health disparities research. Much of the available data on health disparities and health outcomes is unclear and inconsistent. Attention and funding must be funneled into the development of psychometric measurement properties and criteria for understudied populations. In addition, conceptualization of variables key to the study of health disparities, such as socioeconomic status, race, and discrimination need to be determined. This study suggests that The Personal HEART score can be used in a population of middle-class African American men. Further psychometric development of The Personal HEART score as a measurement tool for use in research and clinical African American populations is needed.

Conclusion

This cohort of African American, middle -class, educated and employed men with

health insurance was a heterogeneous group with the majority (90%) at low to intermediate CHD risk. While reporting a preponderance of hypertension, high cholesterol and obesity, this cohort of men did not smoke, were more likely to engage in physical activity, and had positive relationships with a health provider. Therefore, it is essential for health care providers and researchers to obtain baseline cardiac risk factor data and to determine the category of CHD risk for African American males for future initiatives related to health education and behavioral change. Application of the findings in this study will enhance quality of care to African American men and enable clinician-educators to better manage and treat middle-class African American patients with risk factors for CHD.

In the midst of policy debates and ongoing research on race, class, and health disparities, this study adds legitimacy, credence, and validity to the work in this area. While some of the findings from this study support the hypothesis that higher education and income do not equal better health outcomes for middle-class African American men, other findings refute the hypothesis. However, the novel findings in this study clearly demonstrate the importance of the patient's interpretation of his or her health in association with psychosocial risks and CHD outcomes. This study highlights the urgent need for the funding of research by collaborative multidisciplinary teams. They need to uncover the complex psychosocial and sociocultural factors that influence health and the highly integrated physiologic, psychologic, and behavioral pathways that lead to adverse health outcomes overtime.

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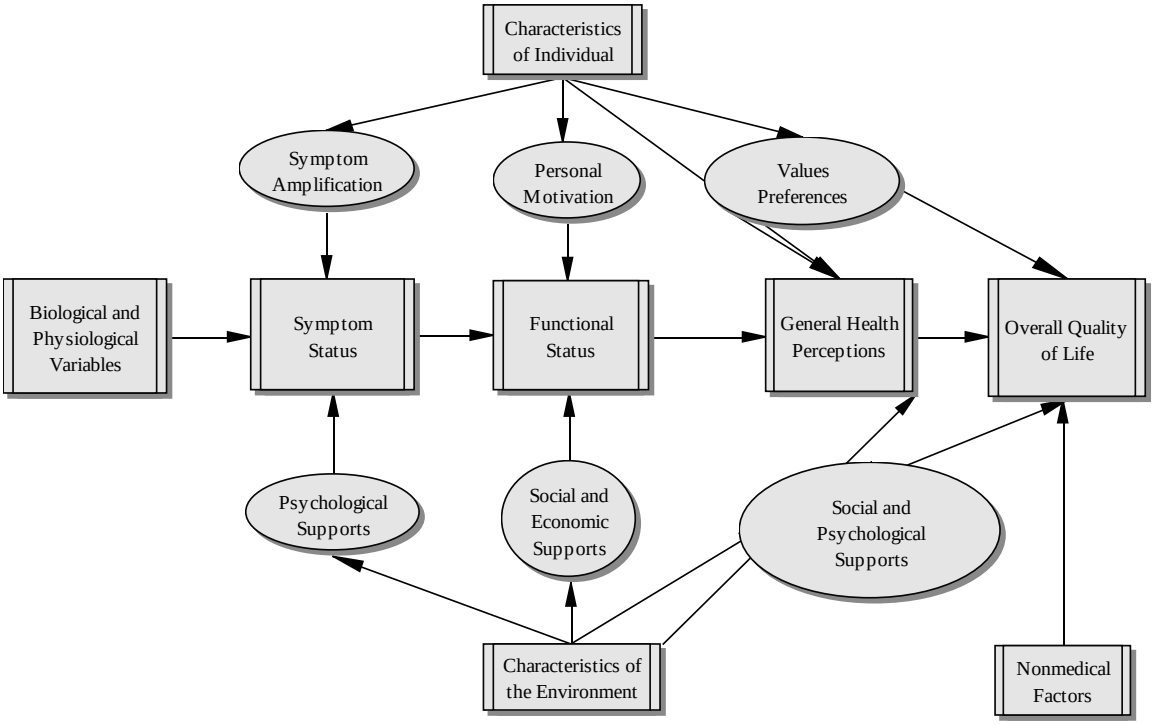
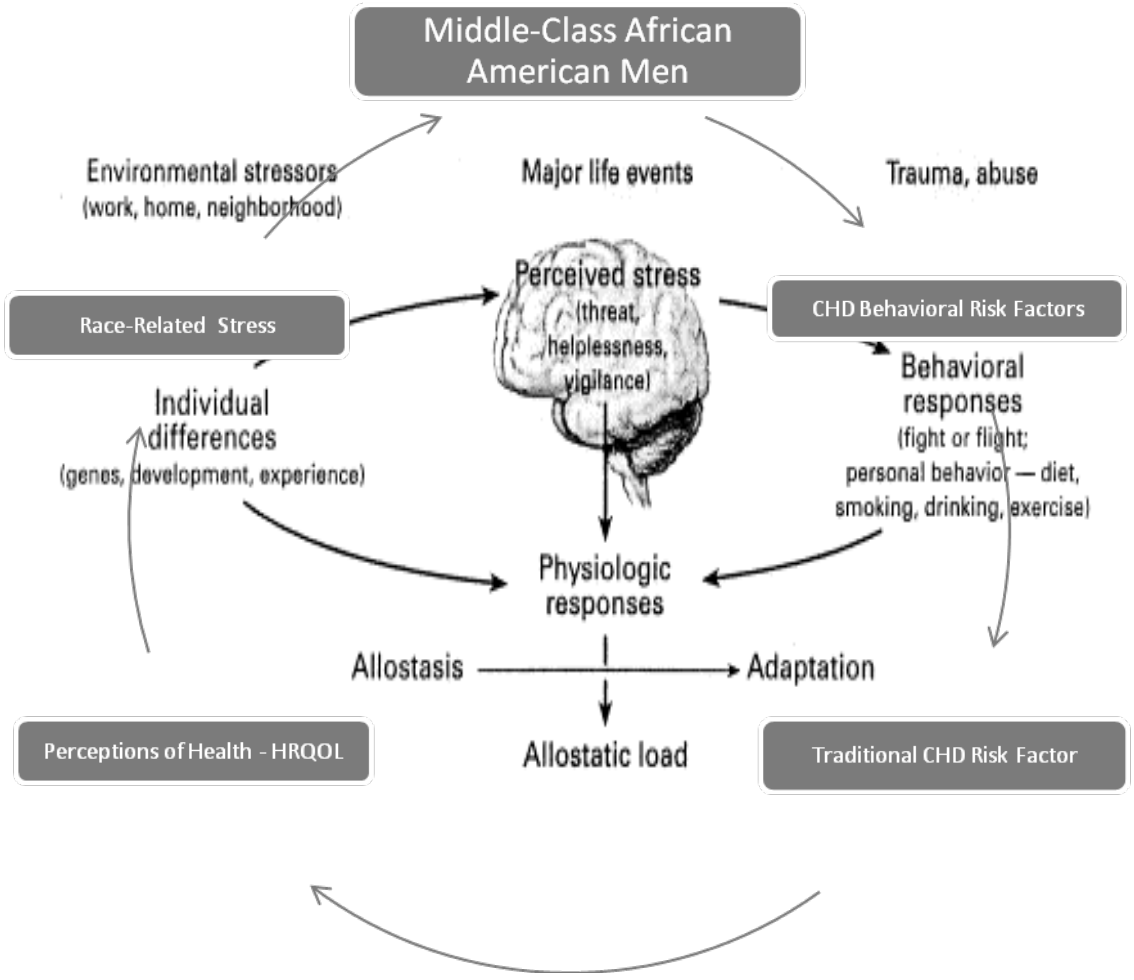
Appendix A: Figure A1 Wilson and Cleary's Model of Health Related Quality of Life



Appendix B: Figure B1 Conceptual Framework



Appendix C: Demographics, Health, and Health Care

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

1. Are you African American (Black)?

Yes	No
☐	☐

*If you checked no, please indicate your race*_____

2. From birth to age 18 how would you describe your family's income most of the time?

Lower socioeconomic level	Middle socioeconomic level	Upper socioeconomic level
☐	☐	☐

3. How would you describe your current annual household income?

Lower socioeconomic level	Middle socioeconomic level	Upper socioeconomic level

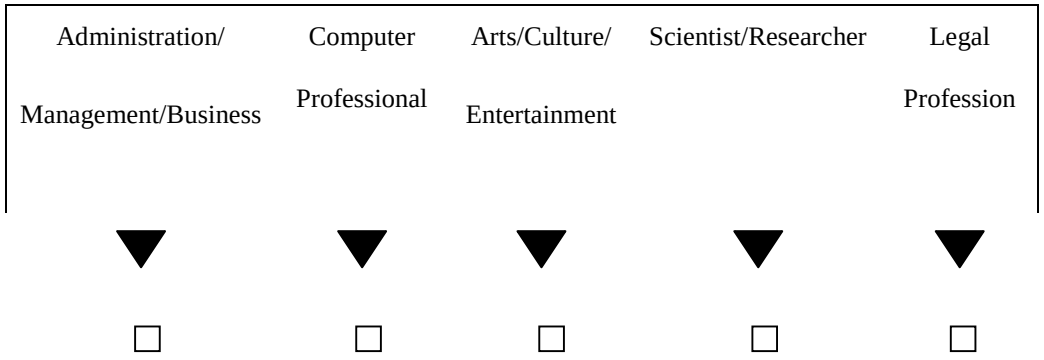
☐ ☐ ☐

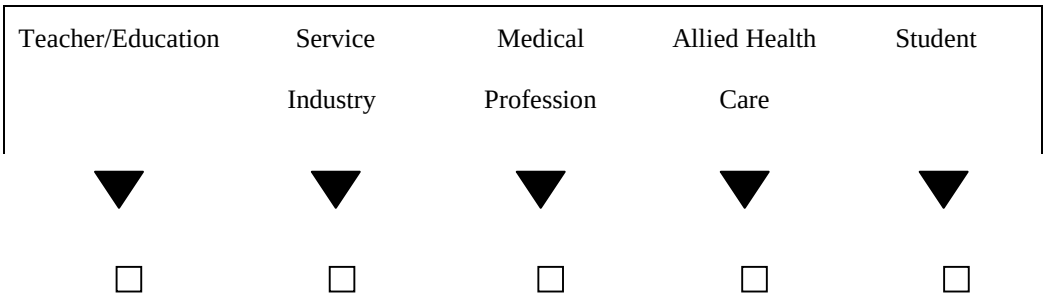
4. Indicate the highest level of education that you have completed.

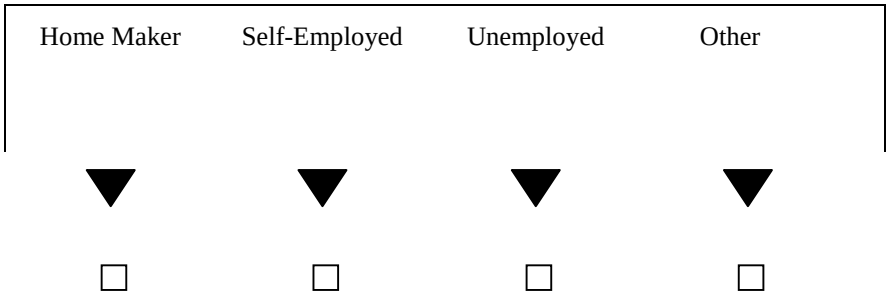
Attended but did not complete High School	High School Diploma /GED	Some College Courses	Associate's Degree
☐	☐	☐	☐

Bachelor's Degree	Master's Degree	First Professional Degree *(e.g. MD, JD)*	Doctoral Degree *(PhD)*
☐	☐	☐	☐

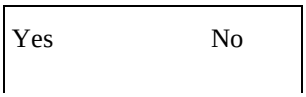
5. Indicate the profession in which you work. (If *you have more than one job, check <u>all</u> that apply).*

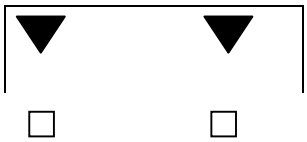




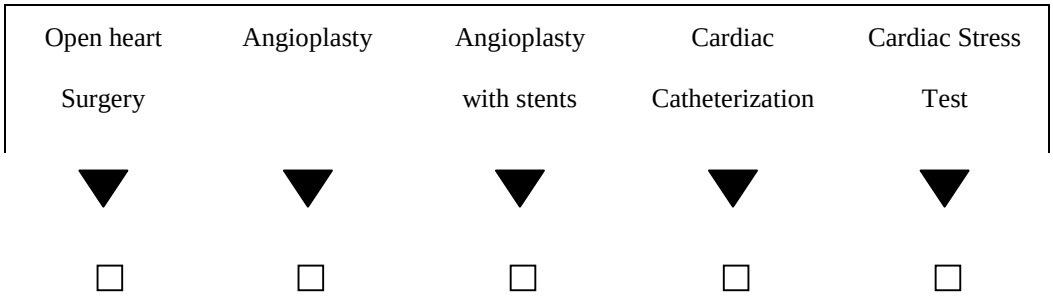


6. Have you ever had a heart attack?

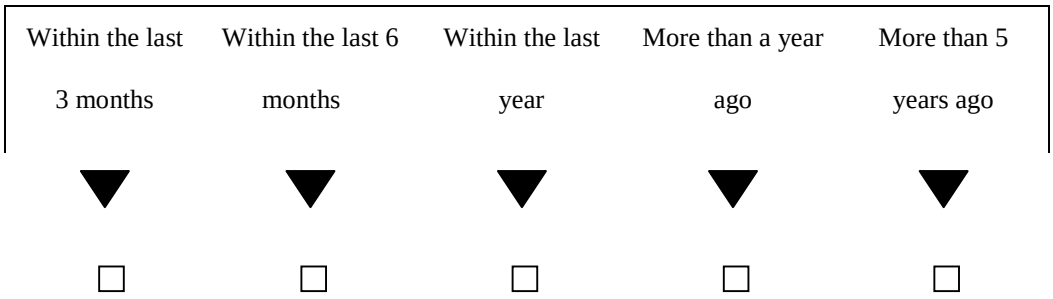




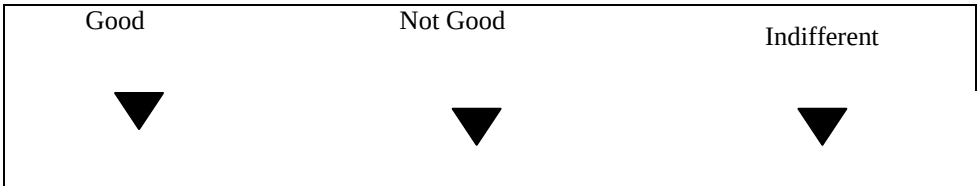
7. Have you had any of the following cardiac surgeries or procedures? (*Please check <u>all</u> that apply.)*



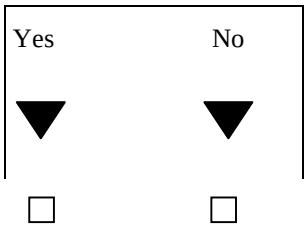
8. When did you last visit a health care provider?



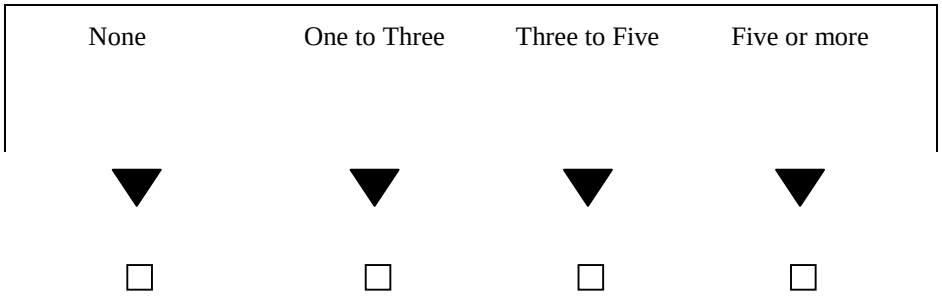
9. How would you describe your relationship with your health care provider?



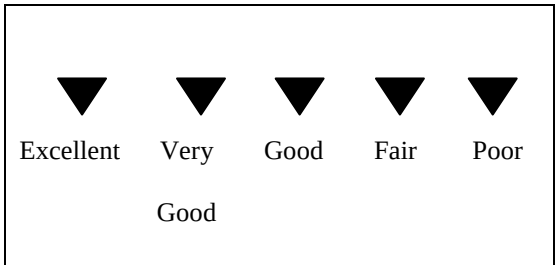
10. Do you have health care coverage, including health insurance, prepaid health plans, HMOs, PPOs, or Medicare?



11. How many servings of fruits and vegetables do you eat per day?



12. How would you rate the emotional support that you receive from each of the following?



a. Family ..... ☐ ..... ☐ ..... ☐ ..... ☐ .....

b. Friends ..... ☐ ..... ☐ ..... ☐ ..... ☐ .....

c. Church ..... ☐ ..... ☐ ..... ☐ ..... ☐ .....

d. Fraternity ..... ☐ ..... ☐ ..... ☐ ..... ☐ .....

e. Co-workers ..... ☐ ..... ☐ ..... ☐ ..... ☐ .....

f. Spirituality ..... ☐ ..... ☐ ..... ☐ ..... ☐ .....

13. To what extent do you believe the stress of being African American contributes to your health problems?

Greatly	Large amount	Average	Fair amount	Very little
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

Appendix D: The Personal HEART Score

Please write in your answer for the following question.

1. **What is your age?** _____

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

2. **Did your either of your parents have a heart attack before the age of 50?**

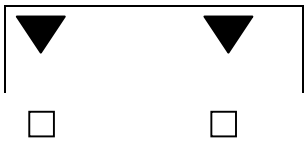
Yes	No
☐	☐

3. **Have you ever been told by a health care provider that you have high blood pressure?**

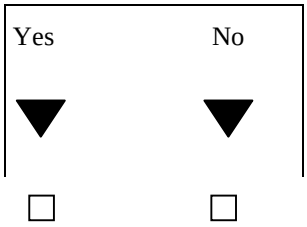
Yes	No
☐	☐

4. **Have you ever been told by your health care provider that you have high cholesterol?**

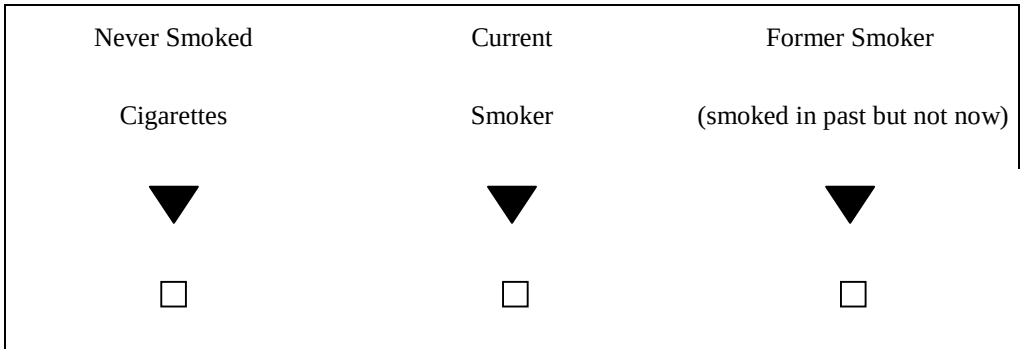
Yes	No



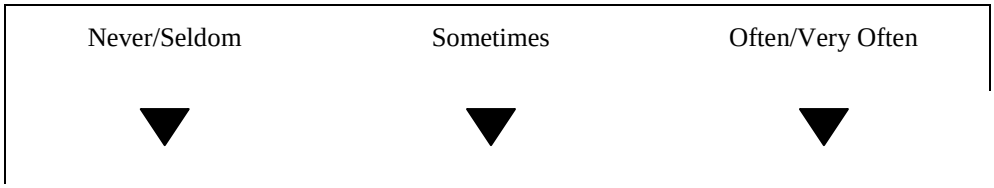
5. Have you ever been told by your health care provider that you have diabetes?



6. Please check the one answer that best describes your smoking status.



7. How often do you exercise or play sports in your leisure time?



☐ ☐ ☐

Please write in your answers for the questions below.

8. **What is your height? _____feet _____inches**

9. **What is your weight? _____pounds**

Permission obtained from Arch Mainous 1/26/09

Appendix E: Your Health and Well-Being (SF-12v2)

This survey asks for your views about your health, how you feel, and how well you are able to do your usual activities.

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
☐1	☐2	☐3	☐4	☐5

2. The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
	▼	▼	▼
a <u>Moderate activities</u>, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐1	☐2	☐3

b Climbing several flights of stairs ..... ☐1..... ☐2 ☐3

3. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼

a Accomplished less than you would

like ..... ☐1 ..... ☐2..... ☐3…☐4…☐5

b Were limited in the kind of work or

other activities ..... ☐1 ..... ☐2..... ☐3…☐4…☐5

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time

a Accomplished less than you would like..... ☐1 ..... ☐2 ..... ☐3 .....☐4…☐5

b Did work or other activities less carefully than usual ..... ☐1 ..... ☐2 ..... ☐3 .....☐4…☐5

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐1	☐2	☐3	☐4	☐5

6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

All of the time	Most of the time	Some of the time	A little of the time	None of the time

a Have you felt calm and peaceful? .....☐1.....☐2.....☐3…☐4..☐5

b Did you have a lot of energy? .....☐1.....☐2.....☐3…☐4…☐5

c Have you felt downhearted and

depressed?.....☐1.....☐2.....☐3…☐4..☐5

7. During the <u>past 4 weeks</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼
☐1	☐2	☐3	☐4	☐5

Appendix F: Index of Race-Related Stress-Brief Version

This survey questionnaire is intended to sample some of the experiences that Black (African-American) people have in this country because of their "blackness." There are many experiences that a Black person can have in this country because of his/her race. Some events happen just once, some more often, while others may happen frequently. Below you will find listed some of these experiences, for which you are to indicate those that have happened to you or someone very close to you (i.e. a family member or loved one). It is important to note that a person can be affected by those events that happen to people close to them; this is why you are asked to consider such events as applying to your experiences when you complete this questionnaire.

Please check the box (0 to 4) that indicates the reaction you had to the event at the time it happened. Do not leave any items blank. If an event has happened more than once, refer to the first time it happened. **If an event did not happen check the box that corresponds to 0 (This never happened to me) and go on to the next item.**

0 = This never happened to me.

1 = This event happened, but did not bother me.

2 = This event happened & I was slightly upset.

3 = This event happened & I was upset.

4 = This event happened & I was extremely upset.

---

1. You notice that crimes committed by White people tend to be romanticized, whereas the same crime committed by a Black person is portrayed as savagery, and the Black person who committed it, as an animal.

This never happened to me	This event happened, but	This event happened & I	This event happened & I	This event happened & I was

	did not bother me	was slightly upset	was upset	extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

2. Sales people/clerks did not say thank you or show other forms of courtesy and respect (i.e. put your things in a bag) when you shopped at some White/non-Black owned businesses.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

3. You notice that when Black people are killed by the police the media informs the public of the victim's criminal record or negative information in their background, suggesting they got what they deserved.

This never happened to me	This event happened, but	This event happened & I	This event happened & I	This event happened & I was

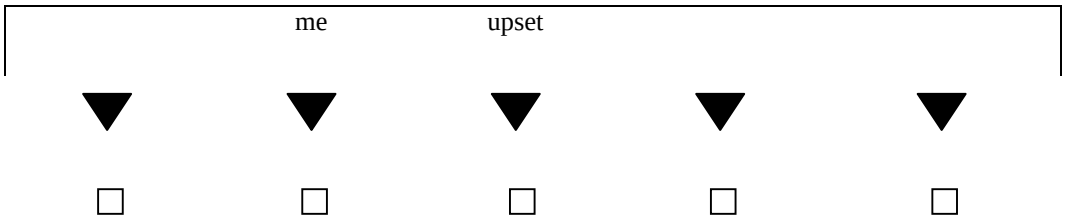
	did not bother me	was slightly upset	was upset	extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

4. You have been threatened with physical violence by an individual or group of White/non-Blacks.

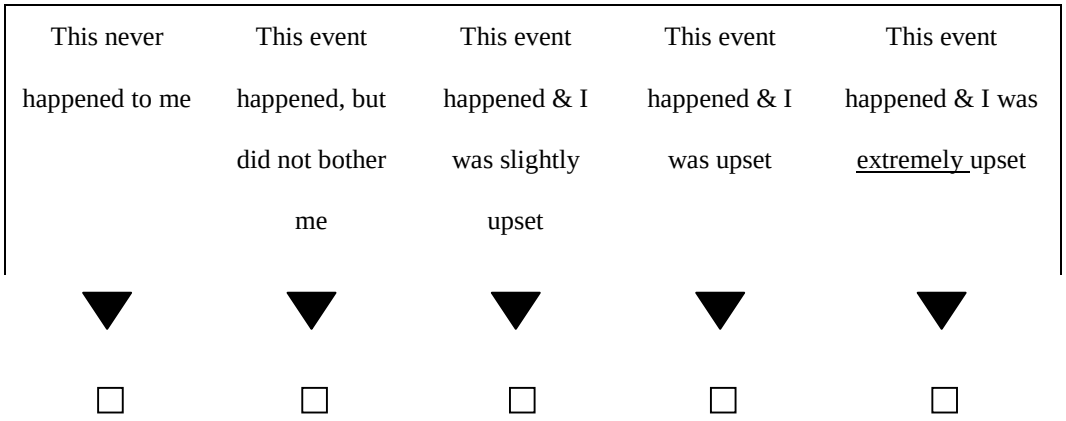
This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

5. You have observed that White kids who commit violent crimes are portrayed as "boys being boys", while Black kids who commit similar crimes are wild animals.

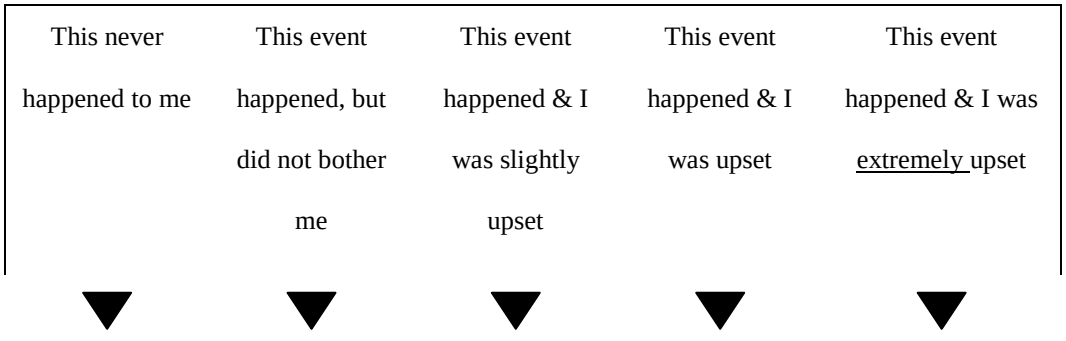
This never happened to me	This event happened, but did not bother	This event happened & I was slightly	This event happened & I was upset	This event happened & I was extremely upset



6. You seldom hear or read anything positive about Black people on radio, T.V., newspapers or in history books.



7. While shopping at a store the sales clerk assumed that you couldn't afford certain items (i.e. you were directed toward the items on sale).



☐ ☐ ☐ ☐ ☐

8. You were the victim of a crime and the police treated you as if you should just accept it as part of being Black.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

9. You were treated with less respect and courtesy than Whites and other non-Blacks while in a store, restaurant, or other business establishment.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼

☐ ☐ ☐ ☐ ☐

10. You were passed over for an important project although you were more qualified and competent than the White/non-Black person given the task.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

11. Whites/non-Blacks have stared at you as if you didn't belong in the same place with them; whether it was a restaurant, theater, or other place of business.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

12. You have observed the police treat White/non-Blacks with more respect and dignity than they do Blacks.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

13. You have been subjected to racist jokes by Whites/non-Blacks in positions of authority and you did not protest for fear they might have held it against you.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

14. While shopping at a store, or when attempting to make a purchase you were ignored as if you were not a serious customer or didn't have any money.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

15. You have observed situations where other Blacks were treated harshly or unfairly by Whites/non-Blacks due to their race.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

16. You have heard reports of White people/non-Blacks who have committed crimes, and in an effort to cover up their deeds falsely reported that a Black man was responsible for the crime.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

17. You notice that the media plays up those stories that cast Blacks in negative ways (child abusers, rapists, muggers, etc. [or as savages] Wild Man of 96th St., Wolf Pack, etc.), usually accompanied by a large picture of a Black person looking angry or disturbed.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

18. You have heard racist remarks or comments about Black people spoken with impunity by White public officials or other influential White people.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

19. You have been given more work, or the most undesirable jobs at your place of employment while the White/non-Black of equal or less seniority and credentials is given less work, and more desirable tasks.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

20. You have heard or seen other Black people express the desire to be White or to have White physical characteristics because they disliked being Black or thought it was ugly.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

21. White people or other non-Blacks have treated you as if you were unintelligent and needed things explained to you slowly or numerous times.

This never happened to me	This event happened, but did not bother me	This event happened & I was slightly upset	This event happened & I was upset	This event happened & I was extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

22. You were refused an apartment or other housing; you suspect it was because you are Black.

This never happened to me	This event happened, but	This event happened & I	This event happened & I	This event happened & I was

	did not bother me	was slightly upset	was upset	extremely upset
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

Thank you for completing this survey!

Permission obtained from Shawn Utsey 3/14/08

Vita

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Sandra Davis is a PhD candidate in the School of Education at Drexel University. She received her DPM from Temple University, her MSN from the University of Pennsylvania, and a BA from Wellesley College.

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Research interests include coronary heart disease and health care disparities.

Publications include:

Davis, S. (2002). Heart failure: A common clinical syndrome but a diagnosis often missed. ACE Unit. *Nursing 2002, 32, 36-44.*

Davis, S. (2004). Hypertension. In Todd, B., *Cardiothoracic Surgery Nursing Secrets.* (pp. 19-28). St. Louis, MO: Elsevier/Mosby

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Davis, S. (2005). Common Laboratory Tests. In Todd, B., *Acute Care Nurse Practitioner Secrets.* (pp. 3-11). St. Louis, MO: Elsevier/Mosby

Davis, S. (2005). Endocrinology. In Todd, B., *Acute Care Nurse Practitioner Secrets.* (pp. 57-71). St. Louis, MO: Elsevier/Mosby