



Care of Patients with or at Risk for Ischemic Heart Disease

Disparities in patients presenting to the emergency department with potential acute coronary syndrome: It matters if you are Black or White



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ABSTRACT

Objectives: To explore disparities between non-Hispanic Blacks and non-Hispanic Whites presenting to the emergency department (ED) with potential acute coronary syndrome (ACS).

Background: Individuals with fewer resources have worse health outcomes and these individuals are disproportionately those of color.

Methods: This prospective study enrolled 663 patients in four EDs. Clinical presentation, treatment, and patient-reported outcome variables were measured at baseline, 1, and 6 months.

Results: Blacks with confirmed ACS were younger; had lower income; less education; more risk factors; more symptoms, and longer prehospital delay at presentation compared to Whites. Blacks experiencing palpitations, unusual fatigue, and chest pain were more than 3 times as likely as Whites to have ACS confirmed. Blacks with ACS had more clinic visits and more symptoms 1 month following discharge.

Conclusions: Significant racial disparities remain in clinical presentation and outcomes for Blacks compared to Whites presenting to the ED with symptoms suggestive of ACS.

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Introduction

The relationships among race, risk for cardiovascular disease, and patient outcomes have been extensively studied.¹ However, the complex relationship between race and health disparities in coronary heart disease (CHD) remains poorly understood.² Health disparities have been defined by Healthy People 2020 as “a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage.”³ Further, the presence of health disparities suggests that disadvantage, resulting in disease, is unjust and avoidable.³ Describing health disparities in patients presenting to the emergency department (ED) with symptoms suggestive of acute coronary syndrome (ACS) is crucial for several reasons. First, troubling disparities in the prevalence of

CHD between Black (non-Hispanic) women (7.1%) and White (non-Hispanic) women (4.6%) persist.⁴ Even though Black (non-Hispanic) men have a lower prevalence of CHD (6.8%) compared to White (non-Hispanic) men (8.2%) their mortality rates are significantly higher (181.1 vs. 155.9/100,000).⁴ Second, gaps in health status between higher and lower classes are increasing rather than decreasing.¹ Third, disparities between high and low income levels have widened to the greatest extent since the 1920s.⁵ Fourth, inequalities in care among racial groups have been reported at varying points in the continuum of care.^{6–8} Patterns of health disparities in the US have been consistent; individuals with fewer resources have worse health outcomes and individuals with fewer resources are disproportionately those of color.¹

Racial differences in clinical presentation for possible acute coronary syndrome

Heart disease is the leading cause of death for both Blacks and Whites in the US.⁹ It has been well documented that Blacks have higher numbers of risk factors, such as hypertension, diabetes, and smoking, than Whites^{10–12} and Blacks have among the highest incidence of hypertension (44%) in the world.⁴ Hypertension may

Abbreviations: ACS, acute coronary syndrome; CHD, coronary heart disease; ED, emergency department; OR, odds ratio; PCI, percutaneous coronary intervention; SACS, Symptoms of Acute Coronary Syndromes Index; SES, socioeconomic status; WISE, Women's Ischemic Symptoms Evaluation study.

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have an impact on the clinical presentation and the precision of non-invasive diagnostic studies making the diagnosis of ischemia more challenging.¹³

Eastwood et al⁶ suggest that racial differences in symptom presentation for acute coronary syndromes may be adversely affecting the time it takes to achieve diagnosis and treatment. However, there are few studies that have analyzed symptom data by racial groups.^{6,14,15} According to results from the Women's Ischemic Symptoms Evaluation (WISE) study,⁶ Black women with suspected ischemic heart disease were more likely to report stomach symptoms and less likely to report chest symptoms compared to White women. Similarly, Hravnak et al¹⁴ found that among patients with CHD, Blacks were more likely to report shortness of breath and shortness of breath was negatively correlated with revascularization procedures. McSweeney et al¹⁵ found that Black women reported higher frequencies for 9 of 12 acute symptoms of myocardial infarction when compared to non-Hispanic White women, including being dizzy or faint, hot/flushed, indigestion, heart racing, numbness in hands/fingers, vomiting, new vision problems, coughing, and choking sensation.

In the WISE study, the differences in symptom presentation also coincided with poorer outcomes in Black women.⁶ Despite well-known reductions in morbidity and mortality when patients receive treatment within 3 h of symptom onset,^{13,16,17} Blacks experiencing ACS symptoms have longer pre-hospital delay times compared to Whites.^{18–20} Additional prehospital delay by Blacks may be a result of limited health care access, variations in symptoms, lack of understanding of the significance of symptoms,⁶ or socioeconomic status (SES).²⁰

Racial differences in assessment, diagnosis, and treatment

Although Blacks have a higher risk for CHD⁸ and have poorer outcomes,²¹ initial electrocardiograms, laboratory testing, non-invasive and invasive diagnostic evaluations are completed less often than they are for Whites. When Blacks do present with chest pain, CHD is suspected less often as a cause for the symptoms than for Whites.¹³ Additionally, Blacks are less likely to receive any cardiac intervention or percutaneous coronary intervention (PCI) compared to Whites.^{2,7,12} Such racial disparities in the management of patients that have been considered ideal candidates for specific therapies are more pronounced than sex disparities according to Vaccarino and colleagues who examined sex and racial differences in the management of acute myocardial infarction over an 8 year period.¹¹ The researchers analyzed data from 598,911 patients included in the National Registry of Myocardial Infarction between 1994 and 2002. Differences in treatment and mortality were small between White women and White men while differences in management of acute myocardial infarction were greater when patients were compared across race within each sex (Black women vs. White women and Black men vs. White men).¹¹ Black women had the highest risk for not receiving reperfusion therapy and the highest rates of mortality among the four groups.¹¹

In a study conducted by Cohen et al,²² fewer Black patients received thrombolytic therapy within recommended timelines or primary PCI within 90 min of arrival to the hospital. In addition, smoking cessation counseling⁸ and aspirin were prescribed less to Blacks than Whites on discharge.^{21,22} According to Leifheit-Limson et al,⁸ younger Blacks were prescribed antihypertensive and lipid-lowering medications less often than younger Whites. An analysis of data collected in the Cooperative Cardiovascular Project, indicates disparities in the medical treatment received by Blacks may be in part due to the differences in the quality of care between hospitals.²³

Racial differences in outcomes

Kataoka et al,²¹ suggested poorer clinical outcomes experienced by Blacks may in part be due to suboptimal control of CHD risk factors. Blacks have a greater risk factor burden than Whites with an increased risk for death from CHD.² In addition, Clark and Lingegowda¹³ indicate that a delay in presentation to the ED, failure to consider and order diagnostic testing to confirm ACS on the part of clinicians, and less aggressive medical therapy and interventions contribute to poorer outcomes. Since Blacks are often socioeconomically disadvantaged, and may be less likely to afford long-term treatments, engage in physical activity, and maintain a healthy diet, health disparities may actually become more evident after the patient has been discharged from the hospital.¹³ Blacks have increased mortality rates, re-hospitalization, and lower quality of life compared to Whites.²² There is a large body of research that appears to show that Blacks with ACS are disadvantaged, however the mechanisms and circumstances under which that disadvantage is manifested remains unclear. Consequently, we hypothesized that there would be disparities in clinical presentation (symptoms, and prehospital delay time), treatment (medications and diagnostic procedures), and patient-reported outcomes (clinic visits, calls to clinicians and 911, ED visits, and rehospitalization) between Blacks and Whites presenting to the ED with symptoms suggestive of ACS.

Methods

Each institutional review board approved a waiver of initial consent for electronic screening of patients at triage and to collect symptom data prior to enrollment. A waiver of initial consent was granted to evaluate symptoms on presentation to the ED because patients presenting with possible ACS require emergent care which precluded providing immediate informed consent.

Sample and setting

Patients in this sample are part of the larger National Institute of Nursing Research sponsored *Think Symptoms* study. Individuals presenting to the ED with symptoms triggering a cardiac evaluation, ≥ 21 years old, fluent in English, and who arrived by private transportation or emergency medical services were eligible. Patients were excluded if they had an exacerbation of heart failure, were transferred from a hemodialysis facility, were referred for evaluation of a dysrhythmia, or had cognitive impairment, defined as the inability to understand and provide written informed consent. Enrollment occurred between January 2011 and September 2013 in four EDs in the Midwest, West, and Pacific Northwest regions of the US. The centers included three academic medical centers and a large, referral community medical center. The total sample size was 781 patients and included 116 Black (15.0%), 547 White (69.9%), 37 Hispanic (4.7%), 24 Asian (3.1%), 21 multi-racial (2.7%), 15 American Indian/Alaskan Native (1.9%), and 21 of other or unknown ethnicity (2.7%). Only Black and White patients ($n = 663$) were included in the final analyses due to insufficient samples sizes for other ethnic groups.

Measures

ACS Symptom Checklist

The number of symptoms was measured with the validated 13-item ACS Symptom Checklist. The checklist was derived from the Symptoms of Acute Coronary Syndromes Index (SACSI). The SACSI, a reliable (Cronbach's $\alpha = .81$)²⁴ and valid (content validity indexes of .88 & .94)^{25,26} instrument was tested in previous

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