Are There Gender Differences in the Reasons Why African Americans Delay in Seeking Medical Help for Symptoms of an Acute Myocardial Infarction?

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Objectives: To identify gender differences in delay time and the reasons why African Americans delay in seeking medical care for symptoms of acute myocardial infarction (AMI).

Design: Cross-sectional

Setting: Five hospitals in the San Francisco and East Bay areas

Patients: Sixty-one African American men and women diagnosed with an AMI

Main Outcome Measures: Prehospital delay time

Results: Median delay time was longer for women compared to men (4.4 hours vs 3.5 hours), although the difference was not significant. Single women delayed longer than single men ($P=.03$), and women who were alone when symptoms began delayed longer than women with someone ($P=.03$). Women who received advice to seek help or call 911 upon symptom onset had shorter delays compared to women who were not advised to call 911 ($P=.01$). Men at home delayed longer than men who experienced their symptoms outside the home ($P=.01$). Men with emergency room insurance delayed longer than men without emergency room insurance ($P=.03$), and men who took an ambulance to the hospital had shorter delay times than men who took other means of transportation ($P=.04$).

Conclusion: Women compared to men often delay seeking treatment for an AMI, which further increases their risks. Our findings suggest specific characteristics that can serve as a profile to those African Americans most likely to delay seeking treatment for AMI. (*Ethn Dis*. 2007;17:221–227)

Key Words: African Americans, Heart Disease

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African Americans have a higher overall mortality rate from coronary heart disease (CHD) than any other ethnic group, particularly at younger ages.[1] In addition, African Americans are more likely to be at higher risk for CHD because of greater prevalence of multiple risk factors and type 2 diabetes mellitus.[2–4] Thus, it is of considerable concern that African American men and women also delay longer[5–7] than White men and women[8] when seeking medical help for symptoms of an acute myocardial infarction (AMI), which decreases their ability to benefit from early intervention. Research shows that early intervention of reperfusion therapies are effective in salvaging the myocardium and reducing infarct size.[9] Patients treated within 90 minutes of symptom onset experience 50%-80% lower mortality rates and a 50% reduction in infarct size compared to those treated later.[9,10]

Some investigators have found that women have longer prehospital delay times than men,[11–14] while other investigators have found no differences.[15–17] However, after arrival at the hospital, women are treated less aggressively and later than men in the course of an AMI and experience worse outcomes than men.[18] Mortality rates for women who suffer from an AMI are substantially higher than for men; 38% of women vs 25% of men will die within a year after their AMI.[11] Despite the higher mortality rate in women compared to men, women are less likely to undergo diagnostic catheterization,[18] percutaneous transcatheter coronary angioplasty (PTCA), thrombolysis, or coronary artery bypass graft (CABG).[19]

The purpose of this study was to compare prehospital delay time between African American men and women experiencing AMI and identify gender-specific reasons for delay. Identifying the reasons for the excess prehospital delay time in African Americans may prove to be pivotal for healthcare providers and clinicians in targeting interventions that will successfully decrease the high prehospital delay times and mortality rates observed in this population.

Methods

Following approval from the institutional review board at all participating sites, 61 patients were recruited. Five medical centers in the San Francisco and East Bay areas served as recruitment sites. Methods have been described previously[20] but will be summarized here. We recruited 61 African American men and women diagnosed with an AMI confirmed by cardiac biomarkers or standard electrocardiogram: 1) currently hospitalized; 2) $\geq$18 years of age; 3) able to speak and understand English; 4) alert and oriented; 5) living independently in the community; and 6) hemodynamically stable. The diagnosis of AMI was based on elevated cardiac enzyme levels and at least one of these criteria: 1) a history of ischemic symptoms; 2) development of pathologic Q waves on the electrocardiogram (ECG); 3) ECG changes indicative of ischemia (ST elevation or depression); or 4) documented coronary artery intervention (eg, coronary angioplasty).[21] All patients willing to participate were asked to sign a written consent before enrollment into the study. All patients were interviewed within one month of having their AMI. The average time between hospital admission and interview was 2.6 days (standard deviation [SD] 1.1 days).

Measures

The time of symptom onset and time of admission to the hospital were obtained from the patient's medical record. Patients were also interviewed to verify the exact time of symptom onset. To help patients establish that time, a benchmark technique was used whereby the patient was asked to verify the time of symptom onset reported in relationship to an event occurrence, daily routine (eg, meals, bedtime, commute to work), or break in routine.[22]

Demographic and medical characteristics were obtained by patient interview and medical record review. The presence of pain as an AMI symptom was measured on a scale of 0 to 10, with 0 being "no pain" and 10 being the "most severe pain." Patients were asked to rank the pain they had experienced on arrival at the hospital.

Response to Symptoms Questionnaire

The Response to Symptoms Questionnaire was developed to obtain information in 6 different areas: 1) context in which AMI symptoms first appeared; 2) antecedents of symptoms; 3) affective or emotional response to symptoms; 4) behavioral response to symptoms; 5) cognitive responses to symptoms; 6) and the response of others to patient symptoms.[23] The responses are evaluated by each item of the questionnaire and not by a total score or subscale scores.

For this research study, we used a modified version of the Response to Symptoms Questionnaire in which items were added to assess the cognitive, emotional, and social factors that surrounded a patient's decision to seek help for AMI symptoms.[17] Individual items are used as subunits of analysis, and the instrument does not yield total or subscale scores. Reilly[24] established content validity of the modified version with an expert panel.

Statistical Analysis

Data were analyzed with SPSS version 11.5 (SPSS Inc, Chicago, Ill). Frequencies and descriptive statistics were used to describe the sample. Mean delay times tend to be skewed as a result of individuals who wait days before seeking medical assistance. Therefore, the median delay time was used as a more accurate representation of the prehospital delay times. A logarithmic transformation of mean delay time was used in all analyses, and values were then transformed back and reported in their original form for presentation in tables. Independent *t* tests were used to compare the gender differences on a variety of sociodemographic and clinical characteristics. Statistical significance was set at $P \leq .05$.

A total of 61 African American patients were enrolled in the study. The women ($n=32$) were between the ages of 35 to 81 (mean 61.5 ± 12 years), and the men ($n=29$) were ages 36 to 79 (mean 59.3 ± 12 years). Women were less educated than men; 59% had high school education or less, and 41% had some college. Among men, 48% had a high school education or less and 52% had some college. More than 62% of women and men reported their annual income as <$15,000.

Overall median delay time was 4.3 hours. Median delay time was .9 hours longer for women compared to men (4.4 hours vs 3.5 hours), although the difference was not significant ($P=.86$). Single women delayed longer than married women (8.0 hours vs .17 hours, $P=.03$), and men with emergency room (ER) insurance delayed longer than men without ER insurance (4.4 hours vs .50 hours, $P=.03$). With regard to other demographic and clinical characteristics, no significant differences were seen between men and women.

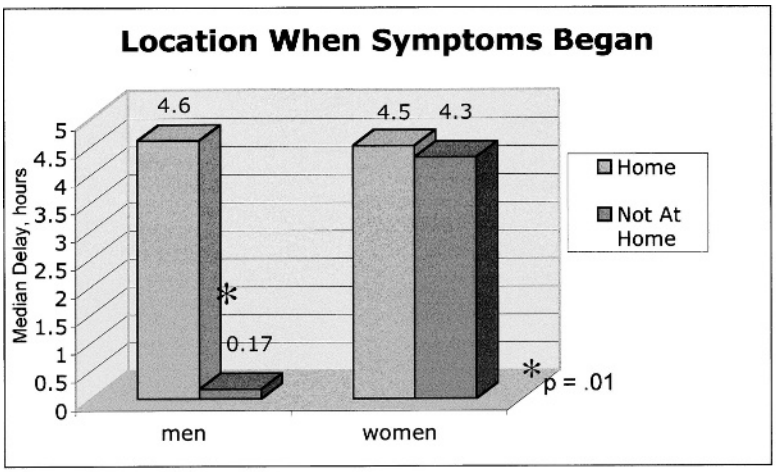
RESULTS

Initial Symptom Experience for Men and Women

The experiences of both men and women with AMI symptoms are summarized in Figures 1 and 2. Most patients (69%) were in their homes when symptoms began. More men (79%) were at home than women (56%). Men at home during symptom onset had longer delay times compared to men not at home (4.6 hours vs .17 hours, $P=.01$). Among women, no differences in delay times were seen by place of symptom onset. Women alone during symptom onset had longer delay times compared to women who were not alone (9.0 hours vs 4.2 hours, $P=.03$). Among men, no differences in delay times were observed. Most patients (59%) were transported to the hospital by ambulance. Men who took other forms of transportation to the hospital had substantially longer delay times compared to men who went by ambulance (6.12 hours vs 1.0 hour, $P=.04$). Among women, delay times were also longer for those who took other forms of transportation compared to those who took the ambulance (8.0 hours vs 3.1 hours), although more than twice as long, this difference was not statistically significant.

Only 17% of individuals who were consulted by men experiencing symptoms of a heart attack suggested that they seek help or call 911, while the remaining 83% suggested a variety of other behaviors, such as resting. Men who chose other behaviors had substantially longer delay times than men who sought help or called 911 (4.4 hours vs .58 hours, $P=.01$). Similar differences in delay times were also noted among women who chose other behaviors compared to those who called 911 (6.5 hours vs .17 hours), but the difference was not statistically significant. In 38% of the cases, the initial response by others to symptoms of a heart attack in both genders was to have them relax or take medication. However, 30% of patients never told anyone about their symptoms.

Both men and women who attributed their symptoms to a cardiac problem had shorter delay times compared to those who attributed their symptoms to something else, but the differences were not statistically significant.



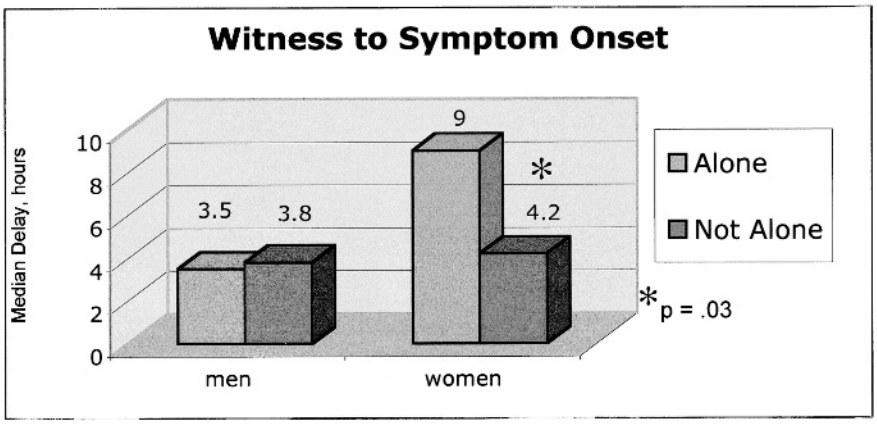


Fig 1. Social context of AMI experience

Reasons for Delay in Men and Women

Approximately half of the patients delayed seeking help for symptoms of AMI. Forty-six percent of men and 54% of women delayed seeking medical help for symptoms of an AMI. Men and women delayed for different reasons, but the number one reason given by both was that they waited to see if the symptoms would go away. The presence of reported stuttering symptoms (symptoms came and went) were prevalent in both sexes but were more likely to be noted by women compared to men. Both men and women ranked not knowing the symptoms of a heart attack as their third reason for delay, and neither gender realized the importance of their symptoms. Women also delayed because they did not want to trouble anyone, but this was not a factor in the decision to seek care for men.

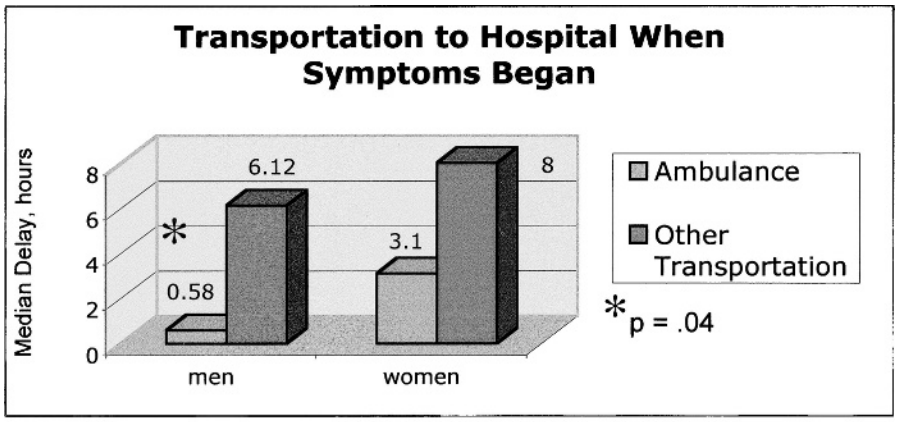
DISCUSSION

This is the first study to report gender differences in delay in seeking treatment for AMI in the African American population, and to examine the reasons why African American men and women delay in seeking medical help for symptoms of an AMI. Given that African Americans have worse outcomes after an AMI, higher mortality rates, and higher out-of-hospital deaths than any other ethnic group,[4] timely access to preventive and interventional cardiovascular therapies is imperative. In the current study, the median delay time was 4.3 hours, which is substantially longer than the recorded median delay times in predominately White samples of 2.3 and 3.1 hours.[8,25]

Previous investigators have reported conflicting findings about delay times between men and women. Some investigators[13,14,26] found that women delayed longer than men, while others found[15,16,27] no significant differences. We documented no significant differences in delay times between men and women in this current study, although we did identify differences in response times by sociodemographic characteristics, which suggests a profile of an African American patient who might be more likely to delay seeking treatment.

We found that single women delayed longer than married women, while there was no such difference in delay time in men on the basis of their marital status. Single women may have delayed longer than married women because they lacked the orientation of seeking assistance in making difficult decisions in the course of an illness. Historically, African American women have been seen as strong and resilient in the face of all odds and have been providers for others at the expense of their own needs and well-being.[28] In light of this cultural belief, single women may have ignored or dismissed their own symptoms.

Researchers[4,7,29] have hypothesized that the longer delay times historically documented in African Americans resulted partially from the low socioeconomic status and lack of medical insurance. However, we found that men with ER insurance delayed longer than men without ER insurance. A similar difference was also seen in women, although the difference was not significant. A possible explanation for the shorter delay times in both men and women without insurance is that they did not have a personal healthcare pro-



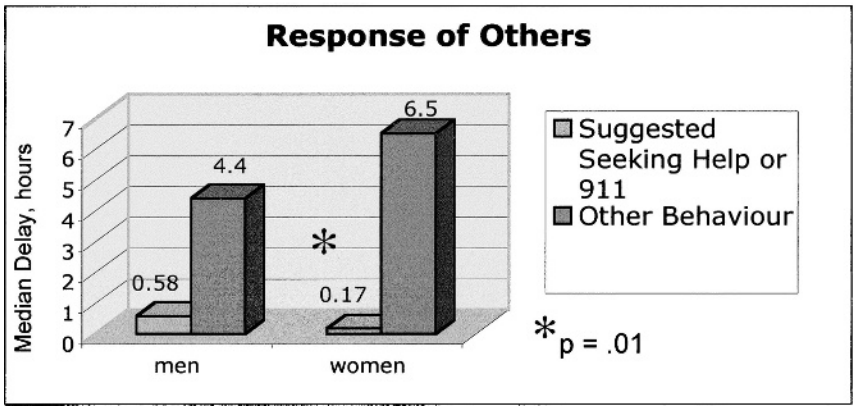


Fig 2. Social context of AMI experience

vider and may have perceived the ER as an immediate access to care that was convenient, available 24 hours a day, and sufficiently staffed with skilled professionals who are accustomed to handling emergency and life-threatening illnesses.

Men who were at home when symptoms began delayed longer than men who were not at home, while no such difference was seen in women. An explanation for this finding may have been that men at home did not have a family member or friend to encourage them to seek help, which is an important finding, given that many people suffer permanent damage to their hearts or die because they do not get help immediately.[30] Approximately 50% of AMI patients who die do so with in one hour of the start of symptoms and before reaching the hospital.[30]

Only a few men (17%) who consulted others about their symptoms were encouraged to seek medical help immediately, compared to the majority of men (83%) who were not encouraged to seek medical care promptly. This finding raises many questions. Were patients encouraged to choose other behaviors because the people consulted did not recognize the symptoms? Did they attribute the symptoms to a cause that was not serious enough to warrant medical intervention? Research shows that delay in recognition of symptoms of an AMI may be due to inadequate knowledge of heart attack symptoms or misattribution of the symptoms to another noncardiac or potentially less serious cause.[31–33] The belief that symptoms are cardiac in origin has been associated with shorter delay times and earlier use of emergency medical services.[32–34] These findings present an opportunity for healthcare professionals to intervene and educate the African American community regarding the importance of seeking medical care for cardiac symptoms.

In contrast to men, women who were alone when their AMI symptoms began delayed longer than women who were not alone. A possible explanation for this finding is that women may have experienced ambiguous symptoms or symptoms that they viewed as insignificant.[35] One study demonstrated that the most frequent reason for patient delay is ambiguity of symptoms.[34] Additional factors for the longer delay may have been due to the lack of communication with others or receiving incorrect advice when others were consulted. Poor advice from others and not communicating with others about symptoms have been linked to longer prehospital delay times in patients.[36,37] Men who traveled to the hospital by ambulance had shorter delay times compared to men who chose other means of transportation. Although a similar difference in delay time was documented for women who called EMS, the difference was not significant. The men who arrived at the hospital sooner may have experienced the classic symptoms associated with an AMI and recognized the importance of their symptoms, which motivated them to seek medical care promptly.

The number one reason for delay in both men and women was waiting to see if the symptoms would go away, which may account for the longer delay times observed in African Americans[7,38] compared to Whites.[8,25] Additionally, both men and women failed to recognize the symptoms of a heart attack, which may indicate a lack of knowledge about AMI symptoms. Patients in this study may have expected a different set of symptoms compared to what they actually experienced. Other investigators[39,40] have supported the premise

that patients have an image of a heart attack that may not be consistent with their personal experience. Additionally, 28% of men and 47% of women in this study experienced no chest pain associated with their symptoms, which may have also contributed to longer delay times observed in this sample. Chest pain is thought to be a hallmark symptom associated with ischemia in men but is often not a predominant symptom for women.[41–43] However, men and women view it as a classical symptom of a heart attack. While knowledge of chest pain as a heart attack symptom is high and relatively uniform, there is still a deficiency of appreciation for the complex constellation of symptoms that signal an AMI, especially in low-socioeconomic groups.[44]

In this current study, men and women experienced stuttering symptoms (symptoms that came and went); however, this explanation for prehospital delay was ranked higher by women than by men. The appearance and disappearance of symptoms may enhance the belief of African American women that they are not having a heart attack and that they are not at risk for one. Research consistently shows that most American women are more concerned about developing breast cancer than an AMI,[45,46] and only 13% view themselves as being at risk for heart disease.[47] This misconception compounds the prolonged prehospital delay times in women and decreases their ability to receive thrombolytic interventions. Given that African American women are twice as likely to die from heart disease and have worse outcomes after an AMI than White women,[48] healthcare providers must highlight the need to educate and inform African American women of their increased risk, enable their access to care and eliminate the gap between fact and fallacy about heart disease.

We also found that African American women did not want to trouble anyone when they experienced their cardiac symptoms, which was not an issue for African American men. Research shows that African American women are more likely than men to cite worries about ''bothering'' their doctor as the main barrier to taking rapid action.[39] Women are also reluctant to acknowledge their distress and take immediate action because of their roles and responsibilities as family caregivers.[39] Given that African American women are socialized to be caregivers, there is an expectation within the African American culture that African American women will engage in self-sacrificing behaviors for the sake of the family.[49] Accepting this cultural expectation may have implications for compromising an African American woman's health.

LIMITATIONS

Our study was a small convenience sample of low-income African American patients who presented to the hospital with symptoms of an AMI. True differences between men and women in factors that contributed to prehospital delay may have been missed because of the small sample size.

The coding of patient delay time, which included the onset of symptoms to hospital arrival, may have also been biased by patient recall. This sample may not have been representative of African Americans with higher incomes.

Additionally, the cross-sectional design used also limits the conclusions regarding causality. Despite these limitations, our study contributes to the cardiac literature regarding patient delay time in the African American population during the course of an AMI.

CONCLUSION

Although the factors contributing to prehospital delay in this sample of African Americans with AMI were different for men and women in several important ways, the delay for patients of both sexes were unacceptably long. Physicians and healthcare providers have an important responsibility to emphasize education and counseling to individuals at high risk for AMI in this population. Education and increased awareness may empower African Americans to develop a realistic plan of action in the event of an AMI. This plan of action can then be communicated to family members in an effort to elicit their assistance for prompt response and immediate action. A plan of action may also provide a sense of security and support to high-risk patients who would otherwise be less likely to respond. Physicians and healthcare providers must emphasize to patients that the efficacy of reperfusion therapy in heart attack patients is directly related to the interval between symptom onset and administration of treatment.[39]

ACKNOWLEDGMENTS

This research was supported by the National Institute for General Medical Sciences (NIGMS) grant #1 R25 GM56847, University of California, San Francisco (UCSF) Graduate Student Research Program, and the UCSF Century Club Fund.

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