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Myocardial Infarction in Women

Promoting Symptom Recognition, Early Diagnosis, and Risk Assessment

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Even with national campaigns to help increase awareness, most people do not realize that heart disease is now the leading cause of death for women. Women experiencing an acute cardiac event often do not recognize the symptoms or are misdiagnosed by healthcare providers because of atypical symptom presentation. This can lead to a significant delay in treatment and a less desirable recovery outcome. To help promote early identification of cardiac risk and cardiac events, this article highlights the range of symptom presentation in women with myocardial infarction and focuses on how advanced clinical nurses can increase nurses' and the public's understanding of this disease in women.

Keywords: Heart disease, Heart disease in women, Myocardial infarction

[Dimens Crit Care Nurs. 2009;28(1):1-6]

Approximately 267,000 women die annually from a myocardial infarction (MI), and each year, as many as 9,000 women who have had an MI are younger than 45 years.[1] In spite of these alarming statistics, less than half of the women in a recent survey knew that cardiovascular disease was the leading cause of death in women and "even fewer women, only 13%, felt that the greatest danger to their health was heart disease."[1(p210)] The atypical nature of many cardiac symptoms experienced by women cause them to be unable to link their symptoms to heart disease, which often leads to delay in seeking treatment.[1]

"Since 1984, the number of deaths related to cardiovascular disease for females has exceeded those for males and has continued to rise."[2(p342)] Despite cardiovascular disease becoming the leading cause of death in women and exceeding cardiovascular-related death rates in men, women's cardiovascular health risk continues to be overlooked. Research findings suggest that the "delay of risk identification in women may be an important determinant of their higher mortality rates."[2(p343)] In addition, gender differences in recognition and diagnosis are problematic.[2] Furthermore, researchers have discovered that gender disparities in treatment persist. Specifically, women were less likely to receive guideline-based treatment and adequate preventive care for cardiovascular health, which, in turn, increases their mortality rate.[3] With cardiovascular disease as the leading cause of death for women, it is time that healthcare providers including nurses become more astute in identifying MI in women.[2] The purpose of this article was to present a clinical review of the literature identifying gender differences in MI presentation, which highlight atypical presentations among women, so that signs and symptoms will be better understood by nurses and the lay population to promote

greater symptom recognition and earlier diagnosis and improve risk assessment.

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METHODS

A literature search was done to identify relevant articles that provide evidence to support the need for modifying the assessments performed on women. The literature databases published between 2004 and 2007 were searched for articles related to atypical presentation of MI in women. Combinations of the following key words were used: *women*, *myocardial infarction*, *gender differences*, *atypical presentation*, *symptoms*, *heart disease*, *coronary artery disease*, *identification*, and *treatment*. The literature search generated 22 journal articles, 6 of which were not used because they did not have a clear link to identifying MI in women based on gender difference. Sixteen were relevant to identifying atypical presentation of MI in women; however, only 12 of those included in this article reported original research. A summary of the 12 research articles is presented in Table 1.

UNAWARENESS OF ATYPICAL SYMPTOMS

Only about half of women with an MI present with chest pain.[16] In fact, "women are more likely to present with atypical symptoms such as fatigue, sleep disturbance, shortness of breath, back pain, upper abdominal or epigastric pain, and nausea with or without vomiting"[16(p125)] rather than simply present with chest pain. Compounding the problem for women is how a "low perceived vulnerability to heart attack might reduce the likelihood that signs and symptoms are labeled as a heart attack."[10(p199)] Also, women who experience signs and symptoms of MI tend to delay seeking medical care longer than men do,[10] which may compound the poor outcome due to a delay in treatment because of misdiagnosis.[13] A promising finding is that women are more likely to be able to identify atypical MI symptoms after being educated regarding MI symptom presentation.[7]

MISINTERPRETATION OF SYMPTOMS

A comparative survey performed by Lovlien et al[6] in 2006 to ascertain the differences in symptom presentation and illness behavior among 82 men and women with acute MI found that women experience a greater diversity of symptoms as compared with men. Study findings also indicated that non–chest-pain symptoms occur frequently in women and may be falsely identified as musculoskeletal, gastrointestinal, or emotional in origin and deemed inconsistent with cardiac symptoms.[6] Common MI symptoms in women, such as nausea, are less likely to be identified because most women expect that they will have severe chest pain when having an MI.[7] Recognition and treatment of an acute MI within 1 hour of the onset of symptoms have been shown to be paramount in reducing the mortality rate after an infarction.[6] Misinterpretation of these symptoms in women is certain to prevent them from decreasing their mortality risk.[6]

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DELAYS IN DIAGNOSIS AND TREATMENT

One correlational study demonstrated that for females, the absence of chest pain was found to be associated with longer delays as compared with the presence of chest pain. This translated into delayed diagnosis and less likelihood of receiving optimal treatment for an acute MI.[8] In addition, studies have shown that the average delay for treatment with women is 1 hour longer than for men, which is clinically significant to the outcome.[11] One reason for this is that women tend to have greater prehospital care pathway delays than men have due to their atypical symptom presentation.[9] Also, women tend to be managed less aggressively compared with men after acute MI, including being less likely to have an invasive cardiac procedure, surgery, and referral for cardiac rehabilitation than men.[14]

Most women who delay seeking treatment for MI do so because they "were not thinking heart attack as an explanation for their symptoms."[5(p61)] Instead, women are more likely to attribute their symptoms to an MI if they match the media illustration of a heart attack, which are typically male-based symptoms.[5] In fact, during an acute cardiac event, women are more likely to experience a variety of symptoms rather than the typical chest pain that men often describe.[4] To highlight the difference between men and women in MI presentation, Table 2 provides a comparison of symptoms based on sex.

RISK ASSESSMENT

"During the past two decades, men have experienced a decline in coronary heart disease mortality, due in part

TABLE 1 Summary of Research Articles

Author	Sample	Method	Results
Chen et al[4]	N = 112 women and men with a mean age of 65 and 59 y	Comparative design	This study showed gender differences in symptom experiences in patients with acute coronary syndrome.
			Women are more likely than men to report chest discomfort rather than chest pain.
Engoren[5]	N = 10 women with a mean age of 66 y	Qualitative descriptive study	Women were more likely to seek prompt care for MI when symptoms mirrored media depiction of symptoms.
			Women were more likely to delay care for MI when symptoms did not align with the expected presentation.
Lovlien et al[6]	N = 82 women and men between ages 50 and 65 y	Comparative survey	Women had greater diversity in symptoms than men with acute MI.
McDonald et al[7]	N = 113 women older than 25 y	Quasi-experimental	Women are more likely to identify atypical MI symptoms after being educated regarding MI symptom presentation.
Noureddine et al[8]	N = 204 men and women with a mean age of 62 y	Descriptive correlational study	Women were shown to delay treatment longer and more often than men did.
O'Donnell et al[9]	N = 890 women and men with a mean age of 69 and 61 y	Sequential design	Women were more likely to experience prehospital care delays due to symptom presentation.
			Women had a poorer prognosis than that of their male counterparts.
Omran et al[10]	N = 83 men and women with a mean age of 52 y	Descriptive comparative study	There is evidence that women experience symptoms during MI that do not fit the classic picture of MI symptoms based on men's experience.
Quinn[11]	N = 100 men and women with a mean age of 64 y	Descriptive correlational study	Median delay of treatment for MI was 1 h longer for women than for men
Raggi et al[12]	N = 10,377 women and men with a mean age of 55 and 52 y	Comparative descriptive study	In women, the diagnosis of ischemic heart disease is often delayed with subsequent undertreatment of coronary artery disease.
Sanfilippo et al[13]	N = 158 women with a mean age of 55 y	Correlational study	A detailed evaluation of cardiac chest pain in women failed to yield typical features and reinforced the need to maintain a wide index of clinical suspicion in women.
Tabenkin et al[14]	N = 3384 men and women with a mean age of 52 and 50 y	Descriptive comparative study	The same disease can appear differently in women in comparison with men. Physicians tend to treat patients differently based on sex.
Yawn et al[15]	N = 150 women with a mean age of 75 y	Retrospective chart review	Women with more identified risk factors for heart disease were more likely to receive a diagnosis of coronary heart disease and treatment before experiencing an MI.

Abbreviation: MI, myocardial infarction.

to the national awareness campaigns regarding heart disease; unfortunately, women have not experienced the same recognition and treatment or a similar decline in coronary heart disease mortality"[15(p1087)] to date despite recent female-focused campaigns. According to Raggi and colleagues in 2004, "risk assessment in women is additionally complicated by unique challenges, such as the dramatic differences in the prevalence and outcome of risk factors in women compared with men."[12(p274)] Risk factor screening or assessment for common modifiable coronary heart disease risk factors is done for most women in the years before their first cardiac event; however, screening without effective treatment of abnormal results is of no proven value.[15] The compound

TABLE 2 Comparison of Symptoms Based on Sex

"Atypical" MI Symptoms in Women	Symptoms Present in Both Sexes	"Typical" MI Symptoms in Men
Absence of chest pain or vague chest discomfort	Diaphoresis	Chest pain
No radiation of pain	Shortness of breath	Jaw pain
Back pain	Fatigue	Pain between shoulder blades
Heaviness of arms	Weakness	Shoulder pain
Light headedness		Arm pain
Epigastric burning		Neck pain
Nausea		Headache
Vomiting		Indigestion
Feeling flushed		Palpitations
		Cough

Abbreviation: MI, myocardial infarction.

problem of misperceptions of risk in women and frequently atypical symptom presentation lead to women having a less aggressive pattern of care and a delay in diagnosis and treatment.[12]

IMPLICATIONS FOR NURSING PRACTICE

A significant clinical challenge exists because "detailed evaluation of chest pain characteristics in women failed to yield typical features either alone or in combination."[13(p245)] In light of this challenge, advanced clinical nurses have not only an opportunity but also a responsibility to educate staff nurses across the acute care setting, from the emergency department to the medical-surgical units, and across critical care units that their female patients who may be admitted for noncardiac diagnosis may also experience an MI. They may present with atypical symptoms of the condition during their hospital stay. The message must be emphatic: that it is imperative to maintain vigilance and have "a wide index of clinical suspicion"[13(p245)] for MI in their adult female patients in general and postmenopausal patients in particular. Furthermore, nursing student clinical rotations through cardiac step-down and cardiac care units are opportune times for nursing faculty and clinical preceptors to heighten these future nurses' awareness regarding women and MI.

In addition to educating their colleagues and nursing students, "nurses who care for patients with coronary artery disease are in a unique position to educate patients and families about the most appropriate help seeking behavior for MI."[9(p274)] Patient education from nurses is essential to helping women learn and recognize the symptoms of an acute MI. Educating women is vital in promoting early diagnosis, which ultimately decreases the mortality risk from an acute event. One opportunity for such instruction would be during discharge teaching, and a second opportunity would be during cardiac rehabilitation classes. Teaching and later reinforcing essential information regarding MI in women should not be considered an overkill. To avoid disabling or life-ending consequences from MI, women need to recognize their symptoms as indicative of an MI and quickly seek emergency response when such symptoms occur[7] instead of attributing their symptoms to a benign cause.[9]

The National Institute of Health's National Heart, Lung, and Blood Institute (NHLBI)[17] offers multiple educational resources for patient education in both English and Spanish, as well as educational posters to display in clinics. Also, NHLBI offers educational materials for healthcare professionals to supplement and update their knowledge regarding heart disease including MI. In addition, the American Heart Association[18] offers up-to-date information regarding heart disease and women and is the sponsor of the "Go Red for Women" campaign,[19] also known as the "Red Dress Campaign." This well-marketed campaign offers sound resources for helping women to take control of their heart health and provides screening opportunities for women, such as the "Go Red Heart Check-Up for Women," to assess risk for heart disease. The campaign also encourages women to communicate with their care provider and to schedule regular check-ups to promote heart health. The NHLBI[17] will be partnering with the Go Red for Women campaign and Coca-Cola to promote heart health to women through their "Heart Truth" campaign,[20] which offers educational information for both health professionals and lay persons, including health tips designed especially for women. This campaign will focus on educating women about their risk for heart disease and diet modification through information provided on Diet Coke products. With the heart health awareness campaigns for women and the educational materials summarized in Table 3, nurses are well positioned to enhance their knowledge and promote learning in their patients.

This campaign will focus on educating women about their risk for heart disease and diet modification.

TABLE 3 Helpful Resources Regarding Women and Heart Disease

American Heart Association, www.americanheart.org	Medically sound information regarding heart disease
	Current events regarding heart disease
	Educational information for providers and patients
	Tips to live a healthier lifestyle
Go Red for Women campaign, www.goredforwomen.org	Features the ''heart check-up''
	Tips for taking action against heart disease
	Educational information for providers and patients
National Awareness Campaign for Women About Heart Disease, www.hearttruth.gov	Tips for lowering your heart disease risk
	Currents events regarding heart disease
National Institute of Health's National Heart, Lung, and Blood Institute; www.nhlbi.nih.gov	Current research relating to heart disease
	Educational resources for healthcare providers

The role of advanced clinical nurses extends beyond peer and patient education to include an advocacy role as well. This important role may be achieved through monitoring if the female patients in their unit are receiving diagnostic procedures and treatments that are on par with those received by their male counterparts. Tactful communications from advanced clinical nurses and/or nurse managers with their physician colleagues regarding any noted inequities may enhance awareness of the issue and promote more equitable treatment for women. Furthermore, the role of nurse as advocate also calls for encouraging patients to take a proactive stance for their own healthcare to promote good heart health and well-being.

CONCLUSION

Heart disease is the leading cause of death for women in the United States, but many women are still unaware of this fact despite significant attempts to heighten awareness.[7] Also, healthcare providers often do not possess sufficient knowledge of differences in symptoms, diagnosis, risk, treatments, and outcomes between men and women with heart disease.[10] Advanced clinical nurses are the ideal healthcare providers to address this knowledge gap through educating their nursing colleagues, nursing students, and their female patients, as well as advocating with physicians. Through heart health promotion initiatives, delays in seeking care, misdiagnosis, and less aggressive treatment of women can be effectively addressed. In summary, education is key to reducing the mortality rate for women. Therefore, encouraging patients and providers to take advantage of the numerous educational opportunities provided by campaigns promoting women's awareness of heart disease is essential. Achieving the goal of educating women to recognize symptoms, assess risk, and seek early diagnosis for MI will contribute to improved treatment outcomes, elimination of gender disparities, and reversal of current trends regarding cardiovascular disease-related deaths in women.

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