

Capstone Project: Gender Differences in Seeking Treatment for Myocardial Infarction

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Chapter 1

Coronary artery disease remains the number one killer in the United States. Over the last decade, myocardial infarction has surpassed breast cancer as the primary cause of death in women (Quinn, 2008). Many patients and healthcare providers continue to view myocardial infarction in women as a rare occurrence. Only recently have researchers begun to acknowledge and focus on symptomology and disparities related to myocardial infarction care in women. Because cardiac research has been conducted focusing primarily on male subjects, many women view myocardial infarction to be a disease affecting mostly men. Also, if women believe chest pain to be the only symptom of myocardial infarction, accessing medical attention may be delayed. Women frequently present with different, often vague symptoms when compared to men, and women are less likely to complain of chest pain that they attribute to heart problems (Wells & Kaleman, 2011). Women also remain the caregivers in most societies. Women's roles within society may also cause reluctance and hesitation in seeking treatment (Isaksson, Brulin, Eliasson, Naslund, & Zingmak, 2013).

Early recognition of symptoms as well as quick treatment can decrease adverse events as well as mortality. Whether women fail to recognize their symptoms or feel reluctance in seeking treatment due to social responsibilities, adaptation to the changes that are occurring within their bodies and in their environments is essential to effective treatment and ultimate survival. Roy (2008) conceptualizes that adaptation as a consequence of human consciousness and decision. It is essential that nurses not only educate women on the symptomology of myocardial infarction but also help them adapt to changes so that treatment is not delayed. In order to effectively support women, Nurses must acknowledge and understand disparities in symptom onset and

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medical treatment seeking behaviors for myocardial infarction symptoms in order to provide quality care and promote positive outcomes for women in this clinical situation.

Theoretical Framework/Conceptual Model

The theoretical framework utilized in this research is Roy's (2008) theory of adaptation. Roy (2008) based her theory on the concepts of person, health, environment, and nursing, and defines four adaptive modes. The underlying assumption of Roy's model is that adaptive behaviors are connected and that stimuli, such as cardiac symptoms, are related to behaviors and action. Roy's theory can be applied to diverse patient and nursing populations so that the nurse may facilitate patient adaptation for various disease processes in diverse patient care settings including the community. In adaptation, Roy's framework aligns closely with women's adaptation to physiological and psychological changes occurring during myocardial infarction because Roy's model stresses the interconnection of modes of adaptation, including physiological, self-concept, role-function, and interdependence. During myocardial infarction, women, while alert to their physical symptoms, also are cognizant of how treatment for such symptoms will affect their relationships, social integrity, and self-concept. The goals of the nurse for this patient population are to aid women in consciously identifying, acknowledging and accepting cardiac symptoms while also promoting individual adaptation to changes in social roles as a result of the disease process. Roy's adaptation model can be applied to this research project because understanding and acknowledgement of role function as it relates to adaptation is key to interpreting gender disparities in treatment seeking behaviors for cardiac symptoms.

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Purpose Statement

The purpose of this study was to determine if there are gender differences in seeking treatment for myocardial infarction symptoms at three ST-segment Elevation Myocardial Infarction (STEMI) receiving centers in the southeast. The goals of this research were to determine the median length of time in minutes that women wait before seeking medical treatment compared to men, to determine if gender affects the mode of transport to hospital for myocardial infarction symptoms, and to determine the median length of time from symptom onset to treatment for both men and women. Results of this research may be used to determine if additional female-focused community education is necessary to help improve symptom onset to the time of seeking medical treatment.

Chapter 2

Review of the Literature

A Boolean search using the EbscoHost database was conducted. The original search identified 177 academic journal articles using the key words myocardial infarction and women. The publication timeframe was limited to 1995 to 2014 in an effort to identify early research on the specific subject matter. Twelve articles were chosen for inclusion in the literature review based on significance to topic and strength of evidence.

Theoretical Literature

An important element determining length of time from symptom onset to seeking medical attention for any disease process is the patient's ability to acknowledge, accept, and adapt to physiological and psychological changes. Many factors can affect not only how women one perceive symptoms, but also how they respond to the symptoms. Early symptom response may

lead to faster physiological and psychological adaptation thus decreasing adverse outcomes from the cardiac event. A study conducted by Varvaro (2000) noted that following myocardial infarction, women received less assistance than men when completing household chores and are also less likely to accept assistance from family members. These findings suggest that women have increased resistance to adaptation in the role of homemaking. Given these findings, it is understandable that women are less likely to acknowledge symptoms for fear of disruption in the established social roles and responsibilities of caregiver and homemaker.

Roy's adaptation model has been adopted by many practitioners, including community health nurses, as this theory offers a framework for the overall delivery of care emphasizing health promotion and disease prevention (Dixon, 1999). Acknowledging the person as a system with smaller sub-systems that must be treated as one integrated whole is key to Roy's adaptation theory (Tolson & McIntoch, 1996). The person has the ability to adjust to changes in the environment that in turn can change the environment even further. The environment is a compilation of the conditions, circumstances, and influences that surround the person and affect coping. Adaptation is the promotion of physiological, psychological, and social balance that leads the unity. Adaptation is achieved when a person positively responds to internal and external stimuli (Roy & Andrews, 2008). Understanding barriers to adaptation during myocardial infarction allows nurses to develop appropriate education and deploy the education to the desired population in the community.

Empirical Literature

While healthcare providers have witnessed the presentation of women with myocardial infarction, only recently have researchers begun to acknowledge and study myocardial infarction in women, focusing particular attention on the differences in symptomology compared to men.

While review of the articles identified in the EbscoHost literature search identified 35 relevant articles related to women and myocardial infarction, less than half of the relevant articles were published within the last five years. This may lead one to conclude that research on this topic may have been partially exhausted prior to 2010. However, as the female cardiac patient demographic evolves, additional research on the phenomenon of female delay in seeking medical treatment may be warranted.

Research strongly concludes that women delay seeking medical treatment for myocardial infarction (Cao, Davidson, DiGiacomo, & Yang, 2010; Hwang, Zerwic, & Jeong, 2011; Khraim, Scherer, Dom, & Carey, 2009). While some studies suggest female gender is an independent factor in delay, other research suggests that factors such as age and comorbidities also contribute to delay (Cao, Davison, DiGiacomo, & Yang, 2010). Acknowledgement of gender differences in time to treatment is imperative to determining education and care gaps within the community. Factors such as not recognizing symptoms as cardiac, perceiving myocardial infarction as a disease of men, and a preference to wait for symptoms to subside have also been shown to be current themes among women delaying seeking treatment for myocardial infarction (Higginson, 2008; Lovlien, Schei, & Hole, 2008).

Research conducted by DeVon, Ryan, Ochs, and Shapiro (2008) found that while women experience higher intensity of symptoms compared to men, the types of symptoms were less likely to be attributed solely to a cardiac event. Research by Khan, Albarran, Lopez, and Chair (2010) found that 19% of Chinese women compared to 37% of Chinese men complain of chest pain during myocardial infarction, thus further supporting the notion that women are less likely to experience classic symptoms during myocardial infarction. Study findings did not support research by DeVon et al., instead showing no difference in intensity of symptoms. Study results

from Coventry, Bremner, Jacobs, and Finn (2013) further support previous research suggesting that women are less likely to report symptoms of chest pain and to report more vague symptoms, such as vomiting, shortness of breath, confusion, and a general feeling of unwell. If symptoms are not thought to be cardiac in nature, women are likely to seek immediate treatment, thus causing more extensive myocardial damage. McSweeney et al. (2014) determined that the most common symptoms include jaw or arm pain, fatigue, shortness of breath, and generalized chest discomfort. Literature also suggests that women as well as providers lack knowledge about women's cardiovascular risk (Wells & Kalman, 2011).

It is evident from the literature that women typically delay seeking treatment for a variety of reasons. It is important for nurses to acknowledge disparities in treatment-seeking behavior to better understand educational needs and challenges of the population. It is essential that nurses evaluate if disparities truly exist in their communities to determine if there is an opportunity to educate citizens on chest pain symptoms, importance of seeking immediate medical treatment, and barriers to appropriate care.

Chapter 3

Methodology and Procedure

Because research suggests that women experience different symptoms than men and perceive cardiac symptoms differently, the researcher hypothesized that women would delay seeking treatment when compared to men. The researcher also hypothesized that, because women do not view symptoms as severe, a greater percentage of women compared to men would seek medical treatment using private occupancy vehicle instead of emergency transport. Based on current research that is included in the literature review, it is apparent that during times of personal physiological stress, women continue to feel obligated by social and familial responsibilities, which can cause delay in seeking treatment.

Design and Sample

A descriptive study was conducted using retrospective data obtained from chart review to determine the median times women and men wait before seeking treatment for myocardial infarction as well as the mode of transport most frequently used by women and men. The study was conducted at three ST-segment elevation myocardial infarction (STEMI) receiving facilities within the same chest pain network within the southeastern United States. To be included, patients must be 18 years of age or greater at the time of STEMI and must be included in the hospital system STEMI database, categorized as Code STEMI. Patient encounters must have occurred from 1/1/2013 to 11/13/2014. The term Code STEMI includes patients that present directly to the STEMI receiving facility either via private occupancy vehicle (POV) or emergency medical transport to include helicopter, receive percutaneous coronary intervention (PCI), and have no reason for delay in PCI treatment. Subjects were excluded from the Code STEMI category, thus excluding them from the data analysis, if they were transferred to the PCI receiving facility from

another facility, did not receive PCI, or had a specified reason for delay in treatment with PCI.

Variables

The variables included in the study were length of time from symptom onset to calling 911, length of time from symptom onset to hospital arrival, and length of time from symptom onset to treatment, were measured using quantitative methods. Data elements collected included: date and time of symptom onset, date and time of 911 call, date and time of hospital arrival, transport method, age, gender, and date and time of PCI. The hospital system-wide Code STEMI database was accessed via secure methods to obtain the designated variables.

Data Collection Methods

Permission to use the data was obtained from the database administrator prior to data collection procedures. Data were obtained from the hospital system-wide homegrown Code STEMI database and included no patient identifies. Using Statistical Analysis System (SAS) software, code was written to extract the identified variables from the Code STEMI database into Excel. Excel was then utilized to complete quantitative analysis. Only the student investigator and advisor had access to the data, which were housed on a personal password protected computer.

Chapter 4

Results

A total of 409 patient encounters met the criteria for inclusion in the analysis. Of the 409, 40 patients were missing data relevant to analysis and were excluded from the research. The total number of patient encounters included in data analysis was 369, with 90 women and 279 men. The median age for all patients was 59 years. The median age for women was 63 years and 58 years for men.

Table 1

Demographics

Gender	# Participants	% of Participants	Median Age
Men	279	75.61	58
Women	90	24.39	63
Combined	369	100%	59

Method of **Arrival**

One hundred thirty patients arrived to one of the three STEMI receiving centers via private occupancy vehicle (POV), 21 women and 109 men. The median age for both women and men arriving via POV was 60 years.

Two hundred eight patients arrived to one of the STEMI receiving facilities via ambulance, 59 women and 149 men. The median age for women was 63 years, for men was 57 years, and combined gender was 57.5 years.

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Thirty-one patients arrived via helicopter to one the STEMI receiving facilities, 10 women and 21 men. The median age for women was 73.5 years, 57 for men, and combined gender was 61 years.

Table 2
Mode of transport by gender

Gender	Arriving by POV #/%	Arriving by Ambulance #/%	Arriving by Helicopter #/%
Men	109/39.1%	149/53.4%	21/7.5%
Women	21/23.3%	59/65.5%	10/11.1%
Combined	130/35.2%	208/56.4%	31/8.4%

A t-test was calculated to compare the method of arrival between men and women. The t stat is 2.66, p=0.008. A chi square was calculated to determine if there is a significance difference between genders for mode of arrival. For men, the chi square is 92.21, p=0.0001. For women, the chi square is 44.06, p<0.001. The chi square for difference between men and women based on arrival is 7.605, p=0.02. These results suggest there is a significant difference in mode of arrival by gender.

Table 3
Median age by mode of transport and gender

Gender	POV	Ambulance	Helicopter
Men	60 years	57 years	57 years
Women	60 years	63 years	73.5 years
Combined	60 years	57.5 years	61 years

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Chest pain onset to 911 call

Sixty-nine women and 170 men were included the analysis of chest pain onset to 911 (those patients arriving via POV were excluded, as they did not call 911). The median time from chest pain onset to calling 911 for women was 50 minutes. The median time for men was 51.5 minutes. The median time for combined gender was 51 minutes. The median age for women contacting 911 was 63 years and for men was 57 years. Combined gender, the median age was 58 years. T-test was performed to determine if there is a significant difference between genders when comparing chest pain onset to 911 call. The calculated t-stat was -0.40 critical t-value was 1.99, and two-tailed p-value was 0.69. These results lead the researcher to fail to reject the null hypothesis.

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Chest Pain onset to hospital arrival

For patients arriving to the hospital via POV, the median time from chest pain onset to arrival in the emergency department was 121.5 minutes. The median time for women was 135 minutes and for men was 120 minutes. T-test was performed to determine if there is a significant difference between gender and chest pain onset to hospital arrival. The calculated t-stat was -0.36, critical t-value was 1.98, and two-tailed p-value was 0.72. These results lead the researcher to fail to reject the null hypothesis.

Emergency Medical System arrival

For patients contacting emergency services and arriving to the hospital via ambulance or helicopter, the median time from chest pain onset to hospital arrival was 95 minutes. The median time for women was 94 minutes and for men was 95.5 minutes.

Table 4

Chest pain onset to 911 call, hospital arrival, and treatment

Gender	Men	Women	Combined
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GENDER DIFFERENCES IN SEEKING TREATMENT

Chest pain onset to 911 (in minutes)	51.1	50	51
Chest pain onset to hospital arrival (in minutes)			
POV	120	135	121.5
EMS	95.5	94	95
Chest pain onset to reperfusion (in minutes)			
POV	182	197	182.5
EMS	124.5	130	125

Chapter 5

Discussion

Findings from this analysis determined that the median age for women seeking medical attention for myocardial infarction was 5 years older than men. This is consistent with findings from other studies. Also consistent with other studies, the majority of the patient sample was men, with less than 25% of the sample being female. Interestingly, results from this study suggest that there is a significant difference in mode of transport to hospital between men and women. Surprisingly, more women than men were transported via emergency medical services, either ambulance or helicopter, than men. While one may theorize that more women arrived via emergency services because women waited longer to seek help, thus symptoms were more severe, data from this study does not support that theory. Though not statistically significant, women actually sought medical attention faster than men, with 50 minutes as the median time from chest pain onset to 911, compared to 51.5 minutes for men. While also not statistically significant, a study conducted by Khraim, Scherer, Dorn, and Carey (2009) contrarily found that men had a shorter delay in seeking medical treatment than women. Not surprisingly, women who sought medical services transport to the hospital arrived 1.5 minutes faster than men. Women transported via private vehicle arrived at the hospital 15 minutes later from symptom onset than men, which suggests that women waited longer to address symptoms than men.

While men being transported by private vehicle were older than those being transported via ambulance and helicopter, women being transported via private vehicle were younger than women being transported via emergency medical services. One could theorize that younger women did not perceive the symptoms as serious; therefore they did not believe symptoms warranted contacting emergency medical transport. Even though women transported via emergency services arrived sooner than men, men actually received treatment over five minutes

faster than women. This may suggest that while women are seeking treatment quickly, their symptoms may not be appropriately identified as cardiac in nature or that healthcare providers do not identify female symptoms as cardiac.

Because over 75% of the sample was men, the sample size of women was small. Further studies should focus on obtaining a more gender equitable sample. Also, this descriptive study does not explore symptomology or patient-detailed reasons for delays in seeking treatment and decisions of method of transport. Opportunities for future qualitative studies to explore individual feelings and ideas affecting medical treatment decisions may be available.

Nursing Implications

Based on the results of this study there are several implications to nursing practice. Opportunity still exists to educate both men and women on the importance of quickly seeking medical treatment for myocardial infarction symptoms. While this study did not focus on symptomology of myocardial infarction, previous studies support a need to educate patients on the signs and symptoms of myocardial infarction. Early identification of symptoms is key to obtaining early and effective treatment. Nurses can develop and implement education to patients in the community or in the ambulatory-care settings.

Primary prevention and community education can also focus on calling 911 for myocardial infarction symptoms instead of using private vehicles. Over one-third of subjects included in the analysis arrived by private-occupancy vehicle. Understanding patient barriers to calling 911 is the first step to improving patient compliance. Data analysis concluded that there is a significant difference between gender among method of transport. Education targeted to men regarding calling 911 is imperative. Secondary prevention education for those people who have had a prior myocardial infarction can focus on the importance of calling 911 as well as

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acknowledging symptoms similar to the previous heart attack. Understanding the secondary prevention population's prior myocardial infarction experience can be useful in developing education for primary prevention. Qualitative studies on myocardial treatment decision-making of patients may be warranted.

There is also opportunity to educate healthcare providers, including nurses, on the prevalence of myocardial infarction in women. Such education could accelerate treatment for women. Clinical Nurse Specialists, Nurse Educators, and Nurse Administrators have the ability to develop education initiatives designed to disseminate knowledge on myocardial infarction data as it relates to women. Target audiences include novice nurses, medic personnel, and ancillary hospital staff.

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