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Care of Patients With Ischemic Heart Disease

Prodromal myocardial infarction symptoms experienced by women

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ABSTRACT

Objectives: This integrative review sought to identify studies that describe individual prodromal myocardial infarction (MI) symptoms and clusters of prodromal symptoms in women and to critically examine this body of evidence.
Background: Studies have suggested that women may experience warning symptoms months prior to MI.
Methods: A comprehensive database search was conducted using multiple search terms in various combinations. A structured literature audit was then conducted.
Results: 12 studies were included in the final review, including 10 peer-reviewed journal articles and 2 doctoral dissertations. The review suggests that prodromal myocardial infarction symptoms are prevalent in almost all women prior to MI. The most common prodromal symptom appears to be fatigue, though other symptoms are also prevalent. Further, prodromal symptoms may be useful at predicting myocardial infarction.
Conclusions: Though prodromal MI symptoms experienced by women are prevalent, additional study is required in a larger population of diverse women to fully characterize prodromal MI symptoms in women.

Although cardiovascular disease continues to be the leading cause of death in the United States, representing approximately one in every three deaths, rates have declined by 28.8% in the 10 year period 2003–2013.[1] Cardiovascular disease remains the leading cause of death globally, accounting for approximately 31% of all deaths according to the World Health Organization.[2] Coronary artery disease (CAD), also called ischemic heart disease (IHD) or coronary heart disease (CHD), is a sub-type of heart disease that specifically affects the coronary arteries and continues to be a major cause of morbidity and mortality globally.[3]

Acute myocardial infarction (MI) is a common complication of CAD. While MI outcomes have improved and MI rates have declined over the past four decades,[4] according to the American Heart Association (AHA), approximately 530,000 men and 385,000 women experience a new or recurrent MI or fatal CHD each year.[5] Of women with CAD, nearly 40% have experienced a MI.[6]

Symptoms associated with MI or impending MI, as well as the pathophysiology of CAD, have been shown to be varied between men and women and among sub-groups of both men and women.[7–9] The AHA issued its first scientific statement on AMI in women in 2016.[10] Citing sobering statistics regarding post-MI survival, data in this report note that more women than men present with non-ST-segment elevation myocardial infarctions and unusual symptoms as well as higher complications and in-hospital mortality.[10] However, across many types of cardiovascular problems, women have historically received much less attention than men, and diagnosis and treatment in women may be suboptimal.[10–15] For example, it was not until 1999 that the first cardiovascular disease prevention guidelines were published for women specifically.[16] Moreover, 51% of deaths due to heart disease are seen in women,[6] and it is troublesome to note that in the 35–54 year-old woman age demographic, the rate of death due to CAD may actually be increasing.[17]

Researchers have found that patients may present with both symptoms in the weeks and months prior to an MI and symptoms that develop acutely during MI.[8,18–20] Acute symptoms of MI are those that occur when the actual MI event occurs, while prodromal symptoms are those symptoms that are experienced before the actual MI event occurs, though no specific time frame has been defined for the prodromal period, as it may include the months, weeks, or days prior to MI.[21] Prodromal symptoms of acute myocardial infarction (AMI) have been operationally defined by McSweeney et al[21] and "(1) are new or change in intensity or

Abbreviations: MAPMISS, McSweeney Acute and Prodromal Myocardial Infarction Symptom Survey; JHNEBPM, Johns Hopkins Nursing Evidence-based Practice Model.

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frequency before the AMI, (2) are intermittent before the AMI, and (3) disappear or return to previous levels after the AMI" (p.2620). While acute MI symptoms have been studied in some detail in men and women, prodromal symptoms have received considerably less attention, even though prodromal symptoms have been shown to be prevalent in women[20,21] and have been shown to predict MI.[22]

Historically, some women who have sought care for cardiovascular symptoms have reported that their symptoms were disregarded or demeaned by health providers, contributing to feelings of marginalization.[13] Additionally, women still lack knowledge regarding cardiovascular disease. For example, according to the AHA's most recent analysis from 2012 data, 56% of women were aware that heart disease is the number one killer of women, leaving 44% unaware of heart disease as the number one killer.[23] Moreover, fatigue, which will be described later as a significant prodromal MI symptom, was only reported by 10% of the women in the 2012 data report as being a potential symptom of MI, revealing significant room for knowledge improvement.[23] Chest pain was only identified by 56% of the women as a potential warning sign of MI, and other symptoms, such as nausea and shortness of breath, were recognized by less than half of the women.[23] Mehta et al[10] identify sex differences in AMI presentation, naming "atypical chest pain and angina-equivalent symptoms such as dyspnea, weakness, fatigue, and indigestion …" (p.7) as more commonly seen in women at clinical presentation.

Purpose

The purpose of this integrative review was to identify quantitative, qualitative, and/or mixed-methods studies that describe prodromal symptoms experienced by women and to explore these studies for common themes regarding prodromal myocardial infraction symptom experiences by women.

Methods

Whittemore and Knafl's[24] integrative review methodology was used as a guiding framework for the methods of this review. These key steps include the problem identification stage, literature search stage, data evaluation stage, data analysis stage, and the presentation or synthesis stage.[24]

Electronic database literature searches were conducted in fall 2014 in PubMed, CINAHL Complete, Health Source: Nursing/Academic Edition, PsycINFO, PsychARTICLES, and SocINDEX. Search terms utilized in the searches included "prodromal symptoms," "acute coronary syndromes," "myocardial infarction," "ACS," "early warning," "women," "myocardial infarction symptoms," "symptoms," and "symptom" in various combinations. Searches were conducted using both a key word search as well as title search. The initial search criteria were broad with no date limitations and only excluded articles that were not in English. Searches were conducted in December 2014, with review and analysis conducted in 2015.

After the initial search, duplicate studies were excluded, and a title and abstract screening was conducted, with inclusion criteria applied. Inclusion criteria included studies that described numerically one or more specific prodromal MI symptoms or a cluster of symptoms experienced by the participants; specifically mentioned symptoms experienced solely by women and not women and men combined; were qualitative, quantitative, or mixed-methods; were original research or secondary analyses that presented additional insight; were in English; and were either published in peer-reviewed journals or were dissertations. Following title and abstract review, the inclusion criteria were applied to the full-text articles. Articles of varying study designs and levels of evidence were included, due to the relatively small number of studies. In addition to the articles discovered via electronic databases, two articles were identified by the ancestry approach after reading the full-text articles.

After identification of the literature to be included in the review, articles were read one time in order to gain a general understanding of the body of literature to be included in the review. After this initial reading, a master data extraction tool was developed to facilitate extraction of important information from each study. Components of the master extraction tool included study design, study purpose, sample size and demographic, outcome measures and variables, instruments or scales used, study methodology, statistics utilized, results related to the research question, limitations, and notes. Each article was reread, with information extracted into the master literature matrix. Additionally, level of evidence and evidence quality were critiqued and included in one cell of the data extraction tool. Given the importance of grading levels of evidence and evidence quality, both were evaluated for each of the studies included in this review. Levels of evidence and quality were evaluated based on the Johns Hopkins Nursing Evidence-based Practice Model (JHNEBPM).[25] The JHNEBPM employs three level ratings for study design; level I includes randomized controlled trials (RCT) and other experimental designs; level II includes quasi-experimental studies; and level III studies include those that employ non-experimental or qualitative designs. The JHNEBPM quality ratings assign three levels, A (excellent), B (good), and C (poor), related to generalizable, consistent results, comprehensiveness of literature reviews, sample size, and analysis.

Once the master extraction tool was completed, sub-matrices were developed for results and overall levels of evidence, which incorporated study design, methods, sample size and demographic, and validity, facilitating data reduction and comparison among studies.[24] In order to ultimately identify key themes from the research, the results matrix for all studies was reviewed. Though full Grounded Theory methodology was not utilized, constant comparison as a general technique was adopted from Glaser and Strauss[26] in order to ensure that analysis of all included studies was consistent and equitable. In addition to the qualitative categories, specific quantitative findings were compared among studies, such as the overall prevalence of certain prodromal symptoms experienced by women in each study. In order to ensure elements from the study results were not inadvertently excluded, the results sections for all studies were reexamined. After this reading, final comparisons of the prevalence of certain key symptoms were completed, and themes emerged.

Additionally, because several of the studies utilized the McSweeney Acute and Prodromal Myocardial Infarction Symptom Survey (MAPMISS) tool, a focused literature search was conducted in CINAHL and PubMed for articles detailing the validity and reliability testing for this tool. The psychometric properties of this tool are acceptable and have been published elsewhere, along with a description of the development of the tool.[27]

Results

Included studies and characteristics

A total of 554 database hits were identified after the initial search, with 178 duplicate hits excluded. A total of 376 titles and abstracts were then screened, with 298 excluded based on the inclusion criteria described in the methods. After this step of exclusion, 78 remained, and full-text versions of these studies were obtained. Of the publications selected for full-text review, several mentioned prodromal symptoms in women and stated that they were prevalent, but the studies were excluded because they either