Prodromal symptoms as unfamiliar feelings: Experiences of Iranian myocardial infarction patients

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Original Article

Abstract

BACKGROUND: Patients affected by myocardial infarction (MI) report prodromal symptoms before heart attack. Deep understanding of these symptoms can increase the likelihood of early recognition and treatment of coronary heart disease (CHD). The purpose of this study was to describe the prodromal symptoms of MI experienced by Iranian adults.

METHODS: In this qualitative conventional content analysis, data was collected through an in-depth semi-structured interview with 14 men and women (aged 40–82 years). The patients were interviewed at the hospital 2 or 3 days after hospitalization due to MI. MAXQDA software was used for data analysis.

RESULTS: Data analysis led to the emergence of the 4 categories of 'Misperception of the symptoms', 'Reactions to the symptoms', 'Heart disease knowledge deficit', and 'Ideas and beliefs about heart disease'. The participants had not recognized the prodromal symptoms of MI and they attributed their symptoms to non-cardiac causes. They did not consider themselves at risk of heart disease, so they did not seek health services.

CONCLUSION: The participants were unaware of their prodromal symptoms. Clinicians should be attentive that men and women at risk of MI may experience a range of unfamiliar and vague prodromal symptoms, so they must give greater attention to their narratives. A greater understanding of the prodromal symptoms experienced may lead to a more truthful and timely interpretation of their symptoms and earlier detection by physicians.

Keywords: Myocardial Infarction; Prodromal Symptoms; Heart attack; Coronary heart disease

Introduction

Coronary heart diseases (CHDs) including myocardial infarction (MI) is considered as one of the major problems in the health care systems worldwide, especially in middle income countries including Iran.[1] It has a significantly ascending trend[2] and is the most common cause of death, responsible for 46% of mortality in developing countries, especially Iran.[2] A large percentage (> 20%) of the Iranian population (13.08 million) will be at moderate to high risk of CHD in the next 10 years.[3]

People usually experience intermittent symptoms that change in frequency and/or severity before MI, which are called prodromal symptoms.[4] Patients have provided diverse descriptions of prodromal symptoms of MI such as chest discomfort, shortness of breath, unusual fatigue, sleep disturbances, headache, and gastrointestinal complaints.[5]

Very few studies have examined prodromal symptoms of MI in the Iranian community and a

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knowledge gap exists regarding these symptoms. A study in Iran on patients with MI showed that almost two-thirds of patients with MI had experienced prodromal symptoms approximately 2 weeks before the cardiac event and more than 60% of them did not seek medical treatment.[6] Other research stated that about one-third of patients have at least 1 prodromal symptom.[7]

Immediate recognition of MI symptoms is vital to earlier seeking of care and treatment, and better clinical outcomes.[8] However, patients are less likely to recognize prodromal symptoms and it is more probable that they attribute their symptoms to other diseases.[9] Some people experience more unusual symptoms; such differences in prodromal symptoms can be attributed to ethnicity.[10] Cultural beliefs and diversities in health status and health care services are the factors that influence population-level health consequences.[11]

Iran is located in the southwest of Asia. Iran's official language is Persian. The majority of people are Muslim and Shia. In Iranian mysticism, there are certain interpretations of pain, and in some cases it is considered a valuable treatment.[12] Self-medication is common in the Iranian community.[13] A study on cardiovascular patients showed that they kept drugs at home, and 26% used chemical drugs and 86.7% used herbal drugs (mostly cowslip).[14] These cultural habits might cause variations in the prodromal symptoms presentation.

However, to date, we have not found any study focused on prodromal symptoms of MI experienced by Iranian CHD patients. Exploration of Iranian adults' perception and description of their prodromal symptoms experience will give health care providers a clearer understanding of how to provide cultural-based and appropriate cardiac care to this population. The purpose of this study was to describe the prodromal symptoms experience of Iranian adults who were diagnosed with an MI.

Materials and Methods

A qualitative descriptive design was used to describe the prodromal symptoms of MI experienced by the Iranian people. The qualitative descriptive design is the best method of looking for straight descriptions of the basic nature and form of events or experiences[15] compared to an interpretive description that provides an expansive description or understanding of a phenomenon.[16] In this study, we attempted to obtain straight descriptions of experiences.

People of different ethnicities (Azeri, Kurdish, lurs, Arabs, Fars, Turkmen, Baluch, Gilakis, and Mazandaranis) live in Iran. They have diverse cultures, lifestyles, and socio-economic statuses.[17] Our study was conducted in Kerman, Iran. More than 821,394 people live in Kerman with different religious beliefs including Shia Muslims, Zoroastrians, and the Sheikhiyya sect. Nomadic groups, who have different cultures, live in Kerman. Patients with diverse lifestyles are admitted to the educational hospitals.

Purposeful sampling was used to recruit participants from the 3 cardiac care units (CCU) of the educational hospitals of Kerman University of Medical Sciences, Kerman, Iran. Patients with MI who were hospitalized from May 2016 to May 2017 were assessed. To ensure a broad sample with maximum variation, a strategic selection with respect to age, sex, marital status, social situation, education level, risk factors, and types of MI was carried out, which is the usual approach in qualitative research.[18] Thus, 20 men and women who had been diagnosed with MI, were able to understand and speak in Persian, and were willing to participate in the study were face-to-face interviewed on the second or third day of hospitalization in a private room.

An in-depth, semi-structured interview was used with the aim of determining how people with MI describe the prodromal symptoms they have experienced. An interview guide (Table 1) with the main and probing questions was used to ensure that each participant replied to all the questions consistently. The interviews lasted for 30 to 60 minutes, with an average length of 45 minutes. Telephone follow-up interviews were conducted to gain additional information. Phone interviews lasted 15–20 minutes. After each interview, a member of the research team transcribed verbatim the audio recordings of the participant dialogues with the participants' permission. After the last interviews, when no new information categories or codes emerged, it seemed that data saturation was reached.

Table 1. Interview guide

Main questions	Examples of probing questions
Could you tell me about your health just before your recent hospitalization?	What did you think when those symptoms started? How did you act during the symptoms' presentation?
Did you experience any new or concerning symptom before your cardiac event that you believe may be related to your heart attack?	Could you please describe them and tell me how long you have been experiencing them?

In this study, qualitative conventional content analysis as described by Hsieh and Shannon (2005)[19] was used to analyze the interview data. The recordings were transcribed verbatim in a Microsoft Word document, and then, entered into the MAXQDA software program (version 10; VERBI Software, Berlin, Germany). Transcribed interviews were read and reread to achieve immersion and obtain a deeper understanding of the whole interview. Each interview was considered as a unit of analysis. Each participant's description of his/her prodromal symptoms was coded and categorized. We marked significant meanings from participants' own statements. No new categories emerged after 14 interviews. The commonalities in data were identified with codes, and subcategories emerged from codes based on how the meanings of each code were linked; the subcategories with similar meanings were grouped into categories.

Rigor: The Lincoln and Guba criteria of credibility, dependability, conformability, and transferability[20] was used to confirm the rigor of the study. Credibility was ensured through member checking with some of the participants, peer checking by coauthors, and external checks by faculty members, respectively.

For dependability, authors reviewed codes and categories throughout the research process to make sure that these codes and categories resembled the data obtained from the interviews.

To achieve conformability, we consulted with colleagues and faculty members who were familiar with qualitative research and had not participated in the research.

Moreover, transferability was maintained by selecting participants of both genders, and different age groups, education levels, marital statuses, and occupations.

Ethical considerations: This paper was derived from the nursing PhD thesis number 98/10/7/121 at Kerman University of Medical Sciences. The ethical committee of Kerman University of Medical Sciences approved this project (IR.kmu.REC.13950924). The first researcher presented oral information about the goals and objectives of the study to the participants, including the confidentiality and anonymity of the data, and explained that they were free to withdraw from the study at any time. When verbal consent was received individually, participants were asked to sign an informed consent form.

Results

The study participants included 14 patients with a history of prodromal symptoms and a mean age of 60.21 ± 13.22 years (Table 2).

Table 2. Characteristics of the participants (n = 14)

Sociodemographic characteristics		n
Gender		
	Men	10
	Women	4
Age (years)	Range: 40-82	
Job		
	Self-employed	3
	Employed	3
	Retired	6
	Housewife	2
Education level		
	Illiterate	5
	Primary	3
	Secondary	2
	Academic	4
Marital status		
	Married	13
	Widowed	1
Monthly income (US Dollar)		
	< 100	6
	100–300	5
	> 100	3
Residence		
	Rural	8
	Urban	6
Risk factors		
	With	11
	Without	3
Type of myocardial infarction		
	Anterior	4
	Inferior	3
	Lateral	2
	Anterolateral	3
	Inferolateral	2

Prodromal symptoms of myocardial infarction experience

From the participants' experiences prior to MI, 4 categories were extracted. The categories were 'Misperception of the symptoms', 'Reactions to the symptoms', 'Heart disease knowledge deficit', and 'Ideas and beliefs about heart attack' (Table 3).

Misperception of the symptoms

The study participants described their symptoms and interpreted the causes of the unusual feelings. This category consists of the 2 subcategories of symptoms as unfamiliar feelings and linking the symptoms to non-cardiac causes.

Symptoms as unfamiliar feelings: Prodromal symptoms were described by participants as unfamiliar feelings that they experienced before MI. They described various prodromal symptoms (average of 5). A participant stated that she had an unusual feeling of fatigue while she was walking:

Table 3. Subcategories and categories of prodromal symptoms experience

Subcategories	Categories
Symptoms as unfamiliar feelings	Misperception of the symptoms
Linking the symptoms to non-cardiac causes	
Ignore and wait	Reactions to the symptoms
Self-treatment	
Search for health services	
Lack of knowledge about the prodromal symptoms	Heart disease knowledge deficit
Incomplete and misleading information about myocardial infarction	
The belief that they would not be affected by heart attack because of adopting a healthy lifestyle	Ideas and beliefs about heart attack
Expecting the disease according to an inner sense	

"3 or 4 days ago I walked about a kilometer. Walking was so hard for me. I could not walk at all. I felt so heavy. I was confused. It was a strange feeling (A 64-year-old woman)".

A 52-year-old man suffered from a vague cramp in his chest during intense work:

"When I was climbing the hill, I felt an unfamiliar constriction in my chest. It was not pain. It was something new."

Linking the symptoms to non-cardiac causes: The participants attributed the odd feelings they experienced to causes other than that of cardiac origin. For example, they linked chest discomfort to digestive problems and some of them to comorbid conditions, stress, or aging:

"Because I had pain in my upper abdomen, I would say that it is related to my stomach" (A 59-year-old man).

Others described their odd feeling as being associated with comorbid conditions and not feeling well:

"Whenever I got very tired, I was under a lot of work pressure, I had little sleep, and I had palpitations and I was aware of it" (A 45-year-old woman).

Participants experienced a variety of symptoms such as chest discomfort/pain, sleep problems, numbness of the hands, neck and leg pain, shortness of breath, palpitations, and digestive problems. Some of these symptoms were specific to the heart, and some were non-specific and general. They defined various prodromal symptoms which they had not experienced before.

Reactions to the symptoms

Participants in this study reported different responses to the unfamiliar feelings. They explained their response to their prodromal symptoms before the cardiac event. The second category, the reactions to the symptoms, emerged from the 3 subcategories of ignore and wait, self-treatment, and search for health services.

Ignore and wait: In spite of having symptoms, participants continued to go about their activities rather than search for health services. Over half of the participants did not seek health care for their symptoms. An explanation for this could be that they believed that by ignoring symptoms they would go away.

"I had a burning sensation in my chest, I felt pain in my shoulders too. It was so painful and lasted about 7 to 10 minutes. I just ignored it and little by little it became better" (A 72-year-old man).

"I felt pain here (pointing at the left part of his chest). I did not think about it. I just ignored it and continued my job" (A 66-year-old man).

Self-treatment: Some participants started self-treatment after having the symptoms. They used some herbal and chemical drugs. A participant said: "I had a stomachache, I ate some ginger or mint extract, and then, I felt better" (An 82-year-old woman).

"I did not sleep at night for a long time; it really bothered me. I took alprazolam, so the next day I could not work well and I was confused" (A 50-year-old man).

Search for health services: A few (n = 4) of the participants reported that they had sought medical attention for their symptoms, but none of them had cardiovascular disease. One of the participants who went to several doctors many times for her chest pain said: "By the way, I went to the doctor 2 days ago, and I also went to the doctor 2 days before that. The doctor told me that my electrocardiography result was OK." (A 54-year-old woman).

Participants reacted differently to their symptoms. They showed behaviors such as neglecting symptoms, self-medication, and seeing a doctor.

Knowledge defect of heart disease

The participants defined their perceptions of heart disease. They reported that they had not received any education in this regard. This category is comprised of the 2 subcategories of lack of knowledge about the prodromal symptoms of MI and incomplete and misleading information about MI.

Lack of knowledge about the prodromal symptoms of myocardial infarction: All of the participants reported that they did not have any information about the early warning symptoms of MI and they did not know the symptoms. In relation to this, a participant said: "I did not know that my chest pain could be the sign of a heart attack in the next few days" (A 70-year-old man).

Even 2 participants with high academic education in the field of medicine reported their lack of information about the warning symptoms of MI; one of them stated: "I had never seen anything about warning symptoms. I had not received any information in this regard from my friends or colleagues either" (A 52-year old man).

Incomplete and misleading information about myocardial infarction: The participants had little knowledge of heart disease, and some had received misinformation from relatives and friends. A participant stated: "I had heard a lot of things from my friends and relatives, but none of them were like heart disease symptoms. Even my son-in-law, who studied medical education, said: "Do not worry; it is just a stomach problem" (A 55-year old man).

The participants had little information about the symptoms of heart disease.

Ideas and beliefs about heart disease

The participants had doubted that having a cardiac event was something that could happen to them and they had believed that this could not happen to them. This category includes the 2 subcategories of the belief that they would not be affected by heart attack because of adopting a healthy lifestyle and expecting the disease due to an inner sense.

The belief that they would not be affected by heart attack because of adopting a healthy lifestyle: Participants with risk factors believed that having a healthy lifestyle prevented them from being affected by heart disease. They believed that a healthy diet and regular exercise could prevent a cardiac event.

"I was on a low-salt, low-fat diet. I ate chicken, fish, vegetables, and salads. I did not eat red meat. I walked half an hour every evening. I did not think I would have trouble" (A 66-year-old man).

One of the participants said: "My father had a heart attack 20 years ago, and his father had a heart attack when he was young, and I found myself in danger of having a heart attack. So I was careful, played sport, was on a diet…, and I exercised regularly. I had been doing judo since I was a college student. I went for a swim every day. I went for a walk. I did not expect it" (A 52-year-old man).

Expecting the disease according to an inner sense: A small number of participants had expected to suffer from cardiac disease for many years. They stated that an inner sense told them that they are not well and they are at risk of heart disease. A 59-year-old man said: "During the days that I felt pain below my chest, I knew that something was happening to me. Otherwise, why would this pain still be there? Why did it suddenly appear? If there was no serious problem, it would have been better" (A 59-year-old man).

The participants described prodromal symptoms during their interviews. They attributed their symptoms to non-cardiac causes. Incomplete information prevent participants from considering themselves at risk for heart disease. Although unaware of prodromal symptoms, they felt the impending onset of a heart attack in the days before the illness.

Discussion

This is the first study to describe the prodromal symptoms experienced by men and women in Iran. In the present study, we sought to gain a deeper understanding of the prodromal symptoms experienced by the patients. From the analysis of the study interviews, the 4 categories of 'Misperception of the symptoms', 'Reaction to the symptoms', 'Heart disease knowledge deficit' and 'Ideas and beliefs about heart attack' emerged.

The participants' descriptions provide a brief picture of the prodromal symptoms of MI experienced by them. They defined various prodromal symptoms as an unfamiliar feeling, which they had not experienced before. MI patients report a wide range of symptoms; some describe a vague sense of illness and others more specific symptoms including severe pain.[21] Studies have reported that low socioeconomic status is an explanation for the discrepancy between actual and expected symptoms of MI.[22-25] Our results are consistent with previous studies which have shown that people may experience a range of MI symptoms that may be unusual.[4,26-29] However, McSweeney et al. reported that unusual fatigue, sleep disturbances, and anxiety were the most common prodromal symptoms.[10]

Participants linked their symptoms to non-cardiac causes because they had limited information about heart attack. They attributed this to not having received any information from health care providers. Touchchian et al.[30] and Rafiee Alhossaini et al.[31] reported moderate knowledge regarding

cardiovascular risk factors in the Iranian population, but Ranjbar et al.[32] and Ezzati and Salehi[33] reported poor heart knowledge among their participants. The majority of participants in this study were old men. They had low education level, low monthly income, and low socioeconomic status. This condition contributed to low awareness of MI symptoms. Prior studies have associated low awareness with old age, male gender, low education, and low socioeconomic status.[31,34,35]

In spite of having symptoms such as chest discomfort, sleep disorder, fatigue, and shortness of breath, participants continued to go about their daily life rather than search for health services. The descriptions for this were ignoring symptoms, thinking the symptoms would resolve themselves, or thinking it was something other than the heart. They attributed their unfamiliar feelings to non-cardiac origins such as stress, indigestion, and aging. In order to relieve their symptoms, they performed relaxation exercises and self-curing. Consistent with findings derived from other studies, lack of awareness, attributing the MI symptoms to non-cardiac origins, ignoring and self-treatment were mentioned as factors contributing to delayed seeking of health services in Iran.[30,31,34]

Low perceived significance of disease, insufficient time to visit a physician, easy purchase of drugs, good results experienced from self-medication, and high costs of physician's visit were among the most repeatedly reported causes of adopting self-medication behavior.[13]

Few participants searched for healthcare services for their symptoms. Health care professionals must pay special attention to the atypical, early pre-hospital warning signs and symptoms of CHD. Training physicians and nurses about cultural competence and disparities in health care seems necessary.[36]

The participants did not identify the prodromal symptoms of MI. According to the results of a previous study in Kerman, health literacy of cardiovascular patients at educational and private hospitals was 10% and 48%, respectively.[37] The participants of this study were selected from educational hospitals. Previous studies have reported prodromal symptoms associated with acute symptoms of MI and cardiac event outcome.[5,38,39] People did not recognize their prodromal symptoms, and thus, delayed care-seeking for MI symptoms.[9,40] Early recognition of prodromal symptoms by people and clinicians can reduce the mortality rate.[8] A study in Iran has shown that a cultural issue is the main barrier in CHD education.[35] The culture-based education of prodromal symptoms to people is important. Moreover, cardiovascular continuing medical education is necessary for physicians and nurses.

A number of participants found it difficult to believe that they could have a cardiac event. Nevertheless, some of them believed in their inner sense that they would have a heart attack. This could likely be from their perceptions that having a healthy lifestyle would prevent MI occurrence. Following a healthy lifestyle can reduce cardiovascular risk,[41] but they have non-modifiable risk factors of heart disease, such as a family history, sex, and old age. Limited knowledge about heart disease may be due to way of thinking. Because people with risk factors of heart attack are at high risk of morbidity and mortality, there is a need to change their beliefs and behaviors. Symptoms are subjective and they are related to one's feelings and expectations.[42]

Conclusion

The descriptions of patients of their symptoms before a cardiac event provided a comprehensive view of the nature of their prodromal symptoms experience that included cultural beliefs. The findings of this study have offers for how health care providers interpret the prodromal symptoms of Iranian people, how nurses educate patients and their families about prodromal symptoms, and what their reactions should be to the symptoms. Approaches are required for improving prodromal symptom recognition and MI prevention strategies among Iranian people. Future research for examining the prodromal symptoms of Iranian people must include the development of culturally based symptom measures and inclusion of Iranian family members in studies that will seek to increase awareness of prodromal MI symptoms.

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Conflict of Interests

Authors have no conflict of interests.

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