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Care of Patients With or At-Risk for Cardiovascular Disorders

Awareness of modifiable acute myocardial infarction risk factors has little impact on risk perception for heart attack among vulnerable patients

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ABSTRACT

Background: Poor awareness of modifiable risks for acute myocardial infarction (AMI) may explain the reported weak relationship between patients' actual and perceived risk for AMI.
Objectives: To assess the level of awareness of modifiable risks and perceived vulnerability for AMI among Jordanian patients, and to determine their independent association.
Methods: This was a cross-sectional correlational study ($N = 231$). Perceived risk, awareness of risk factors and risk profile were collected by self-reports and medical chart review.
Results: Patients were mostly males (80%) and had a mean of 55.3 ± 12.6 years for age. Perceived and actual AMI risks were not highly congruent even though patients had, on average, two modifiable risks and were knowledgeable of them. Awareness of risk factors independently explained 3.5% of the variance in perceived risk.
Conclusions: The risk for developing AMI is underestimated among cardiac patients and it is only weakly linked with their awareness of AMI risk factors.

Introduction

Acute myocardial infarction (AMI) is a serious health condition that is associated with high mortality and morbidity across the world. In Jordan, a middle income Middle-eastern country, AMI kills more than all respiratory disorders combined.[1] In-hospital costs for AMI are about two times the average cost of other health conditions.[2] Psychological co-morbidity after AMI is also common and involves depression, anxiety, and post-traumatic stress disorder.[3,4]

Although burdensome, AMI can be prevented by controlling known modifiable risk factors, such as hypertension (HTN), diabetes mellitus (DM), hyperlipidemia, obesity and smoking. Preventative measures include exercising, eating a healthy diet low in fat and sodium, managing weight, and stopping smoking.[5,6] Nevertheless, being at actual risk for an AMI neither encouraged patients, including Jordanians, to adopt healthy behaviors nor did it motivate them to call the emergency medical service when they developed chest pain.[6–8] On the other hand, perceived risk or one's belief about his/her likelihood of encountering a health threat, like AMI determines patients' engagement in healthy lifestyle and adherence to treatment regimens, according to health behavior theories and previous research.[9,10]

Perceived risk is a fundamental part of the Health Belief Model, an important decision-making theory.[9,11] Threat appraisal constitutes a major construct in the Health Belief Model. According to this theory, people evaluate their vulnerability or susceptibility for a health threat before deciding to adopt a recommended health behavior. The assumption is that perception of risk motivates people to act favorably for the purpose of minimizing a health threat. However, Weinstein demonstrated that individuals commonly underestimate their risk for a health threat for different purposes such as enhancing self-esteem or reducing anxiety.[12,13] Individuals with optimistic bias tend to exaggerate expected benefits of their personal risk-reducing factors (e.g., heredity, environment) and minimize adverse impact of their risk-aggravating behaviors.[12] This inaccurate risk perception raises the threshold for acting appropriately in the face of acute symptoms.[14]

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Perceived risk for AMI is associated with various factors such as gender, age, educational level, and cardiovascular health history.[15–17] Females and young individuals were found to be optimistic regarding their perceived risk for AMI due to their belief that they are protected by their gender and physical fitness.[15–17] Poorly educated individuals and those who did not have a personal or family history of cardiac events also tend to underestimate their risk for AMI.[15,17–19] Actual risk profile for AMI, as determined by patients' history of DM, HTN, hyperlipidemia, obesity, and smoking has frequently been found either to be not associated or weakly linked with patients' perceived vulnerability for AMI.[20–23] One possible explanation of the weak relationship between patients' actual and perceived risk for AMI is poor awareness of the modifiable AMI risk factors.

Understanding what modifies one's risk is important for accurate estimate of one's perceived risk. However, several investigators have documented that patients and the public are not knowledgeable about modifiable AMI risks.[24–26] For example, a survey carried out in Thailand revealed that people believed drinking coffee and experiencing insomnia to be AMI risk factors more often than DM and obesity.[27] Additionally, van Steenkisite and colleagues found that patients often determined their risk for AMI based on their cholesterol level only.[18] Other patients believed that a decrease in nicotine level in the body after quitting smoking will actually increase their chance of developing AMI.[18] Furthermore, some patients believed that their coronary interventions had eradicated their risk for AMI.[15]

The degree to which awareness of AMI risk factors heightens patients' perceived risk for AMI is unknown. Thus, the first aim of the current study was to investigate the awareness of five modifiable risk factors (i.e., DM, HTN, hyperlipidemia, obesity, current smoking) and perceived vulnerability for AMI among Jordanian patients with a first-time AMI. The second aim was to determine whether such awareness is associated with patients' perceived risk for experiencing AMI after controlling for their individual risk profile and demographic variables.

Methods

Design, sample and setting

This was a cross-sectional correlational study. All patients hospitalized in one of 10 hospitals in Amman and Al Zarqa with a first-time AMI were considered for recruitment if they were above 18 years old, clinically stable, had no comorbid psychiatric or mental illnesses and were fluent in Arabic. By considering perceived vulnerability for AMI as the outcome variable of principal interest, sample size was calculated using G-Power V.3.1.[28] A sample of 200 was considered sufficient based on an effect size of 0.30, power of 0.80 and a two-tailed level of significance of 0.05. We increased the sample size to 230 to compensate for missing data.

Procedure

The institutional review board of the Hashemite University and the participating hospitals approved the current study and the investigation conformed to the principles in the Declaration of Helsinki.[29] The study aims, inclusion criteria and data collection plan were explained to research assistants who held master's degrees in nursing and were familiar with the assigned hospital. In order to recruit patients, research assistants checked medical records of all patients hospitalized for AMI during the study period and determined their eligibility. They explained the study aims, and patient's rights as research participants. Patients were also informed that their choice to participate was risk-free and had no impact on their medical care. Patients who agreed to participate signed an informed consent document prior to providing any information to the research assistants.

Patients were interviewed within 72 h of their admission to the hospital. Study questionnaires were read to patients and their answers were recorded by research assistants. Medical records were reviewed after the interviews with patients to complete the data collection process. Anonymity was preserved for all patients. During the study period the primary investigator randomly selected 10% of medical records to verify the accuracy of collected data, and no errors were detected.

Measurement

Awareness of AMI risk factors scale

A five-item scale was developed to measure patients' awareness of five modifiable risk factors for AMI (DM, HTN, hyperlipidemia, obesity, and current smoking). For each item, patients were asked to indicate their level of agreement regarding whether the risk factor increases the chance of experiencing AMI. There were four possible response options for each item: 1 = definitely disagree, 2 = disagree, 3 = agree, 4 = definitely agree. The total score is the sum of scores for the five items and can range between five and 20. A higher score indicates higher awareness about modifiable AMI risk factors. Construct validity of the awareness scale was supported by demonstrating a significant positive correlation with years of education ($r = 0.31$, $P < 0.001$). Cronbach alpha of the awareness scale within the current study was 0.78.

Perceived vulnerability for AMI

Perceived vulnerability or risk for AMI was measured using a four-point Likert question; "prior to your current diagnosis of AMI and compared to other people, how did you evaluate your personal risk of having an AMI during your lifetime?" There were four possible response options: 1 = at no risk, 2 = at low risk, 3 = at moderate risk, and 4 = at high risk. A higher score indicated higher perceived vulnerability for AMI. Construct validity of the perceived vulnerability for AMI scale was tested by examining the association of the scale with patients' beliefs about first cause of death in Jordan. We expected this association based on theoretical and empirical evidence[30,31] that one's perceived risk becomes higher when he/she believes that the health threat is frequent and common. Results of chi-square test supported the construct validity of the perceived risk scale ($X^2 = 4.7$, $P = 0.03$). Patients who thought that cardiac disease is the first cause of Jordanian deaths were more likely to perceive themselves at high risk for AMI than those who thought of other causes or did not know.

Demographic variables and risk factors for AMI

The variables age, gender, marital status, education level, insurance, income, smoking and family history of AMI were collected by patient self-report. Height and weight were not routinely recorded in medical records and therefore they were collected by self-report in order to calculate patients' body mass index (BMI). Patients were considered obese if their calculated BMI was $\geq$30. History of angina, HTN, DM and hyperlipidemia were collected by medical record review.

Analysis

The software SPSS version 17.0 was used for analysis. Data were checked for errors and assumptions of tests were verified. The sample was described using means, standard deviations, and frequency distributions. At the bivariate level, chi-square tests and Spearman rho were used to examine the relationship of perceived vulnerability for AMI with regard to gender, education, first degree