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Predictors of delay in seeking treatment by Jordanian patients with acute coronary syndrome

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ABSTRACT

Background: ACS management aims for early coronary reperfusion, which should be within one hour from symptoms onset. This time was found to be relatively long, and many patients died before hospital arrival. In Jordan, this phenomenon is not clearly understood with a discrepancy between the reported durations of delay time.
Aims: To evaluate Jordanian ACS patients' delay time in seeking medical care, along with predictors of delay.
Methods: A descriptive, cross-sectional design was utilized to conveniently recruit 160 Jordanian ACS patients. Data were collected using chart review and the Modified ACS Response Questionnaire.
Results: The mean delay time was 7.8 hours ($SD = 3.5$), with none of participants presenting within one hour. Delay time correlated negatively with ACS history, knowledge, attitudes, beliefs, and perceived risk ($r = -0.448$, $r = -0.400$, $r = -0.408$, $r = -0.261$, $r = -0.411$, respectively) and positively with health perception ($r = 0.469$). A 4-predictor model (history, beliefs, health perception, STEMI diagnosis) was revealed explaining 40% of variance in delay time ($R^2 = .400$, $F(14,145) = 6.908$, $P < .001$).
Conclusion: Improving ACS patients' health seeking behaviors can be achieved when all components of care are considered together.

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1. Introduction

According to the American Heart Association (2010), Acute coronary syndrome (ACS) is a group of symptoms attributed to coronary heart diseases (CHD) classified as unstable angina, ST-segment elevation myocardial infarction (STEMI), and non ST-segment elevation MI (NSTEMI). The typical manifestation is chest pain radiated to left arm, neck, and jaw, but can also be manifested by epigastric or back pain. ACS is a significant public health problem associated with high morbidity and mortality rates, which adds to the economic burden on healthcare systems. For instance, the American Heart Association (2010) concluded that there is a new ACS event every 25 seconds, and ACS-related death every 60 seconds. In the United States (US), there are 700,000 new MI patients yearly, among them 38% die within the same year of diagnosis (Rosamond et al., 2008).

Comparable numbers were reported in France (Danchin et al., 2010), Ireland (O'Brien et al., 2013), and Middle East (Eshah, 2013; World Health Organization, 2012). Therefore, there is a necessity for appropriate management strategies to reduce ACS-associated morbidity and mortality.

The main goal of ACS management is the early coronary reperfusion using fibrinolytic therapy or percutaneous coronary interventions (Van de Werf et al., 2003), where optimal benefits can be attained within one hour of symptoms onset (Moser et al., 2006) leading to reduced complications and enhanced survival rates (Steg et al., 2012). Similarly, Khan et al. (2007) reported that mortality rate can be reduced 50% if reperfusion initiated within 70 minutes. Conversely, late reperfusion therapy was associated with low success rate of ACS treatment (Asseburg et al., 2007). Despite the importance of early treatment in ACS, time for initiating reperfusion therapy was found to be relatively long, and almost 50% of patients die before hospital arrival (Lloyd-Jones et al., 2009).

A major attributable factor for late hospital arrival is delay in patients' decision to seek care, where patients were hesitant to seek immediate medical help (McKinley et al., 2009; Taylor et al., 2005).

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Patients' decision to seek care starts from symptoms onset to the time of hospital arrival and treatment initiation (Asseburg et al., 2007). The median delay time was 2.2 hours in US (McKinley et al., 2009) and China (Peng et al., 2014), and 4.1 hours in Jordan (Eshah, 2013) and Ireland (Mooney et al., 2014). Further, the percentage of ACS patients who arrived late (>one hour) was 65% in Iran (Taghaddosi et al., 2010), and 72% in Jordan (Eshah, 2013). Many factors were found to affect patients' decision to seek care including patient's lack of ACS knowledge, inappropriate attitudes and beliefs toward ACS, and lack of perceived risk for ACS.

Examining patients' knowledge of ACS is important to investigate an important factor affecting their decision to seek care. In general, both patients and public were found to have inadequate ACS knowledge. For instance, Dracup et al. (2008) examined ACS knowledge among 3522 patients and found that 46% had low knowledge scores (i.e., <70% correct) with a mean of 71%. Similar results were noted among Irish patients with a mean of 68% (O'Brien et al., 2013), and among Pakistani patients who were unable to recognize ACS symptoms (Khan et al., 2007). Patients' relatives had the same lack of ACS knowledge, where no differences were noted between patients and their relatives (Henriksson et al., 2012). Further, the general educated public was found to have lack of ACS knowledge (Eshah, 2013). In most studies, participants identified chest pain as a symptom of ACS, but were unable to relate other symptoms such as heartburn and abdominal pain to ACS (Hwang et al., 2008; Noureddine et al., 2006) or misattributed ACS symptoms to stomach or other gastrointestinal origins (Dracup et al., 2003). Further, patients lacked knowledge regarding other aspects of healthy behaviors of CHDs (Mosleh and Darawad, 2014).

Having appropriate attitudes and beliefs toward ACS were found to be among the factors that can positively influence patients' decision to seek care (O'Brien et al., 2013). Unfortunately, patients were found to have inappropriate attitudes toward ACS (Khan et al., 2007; O'Brien et al., 2013), where the most negative attitudes were toward recognition of ACS symptoms and differentiating them from other non-cardiac symptoms. Similarly, patients had inappropriate beliefs about ACS symptoms (O'Brien et al., 2013), where they believed that they should seek care only if they had severe crushing pain, and most of them would feel embarrassed if symptoms were non-cardiac. Not only patients were found to have inappropriate attitudes and beliefs, but also their relatives shared the lack of confidence to recognize and relate symptoms to ACS (Henriksson et al., 2007).

Another variable that could have an in influence on patients' decision to seek care is their perceived risk for future ACS event. Pattenden et al. (2002) found patients who perceived themselves at risk to have more appropriate health seeking behaviors. Despite its importance in saving patients' lives, patients were found to have less than optimum perceived risk (Dracup et al., 2008), which was attributed to low level of ACS knowledge and negative history. Similarly, the public has reported low perceived risk for ACS (Ammouri et al., 2011), and females were found to perceive themselves at risk for breast cancer rather than heart problems (Hart, 2005).

In Jordan, there is an incomplete understanding of the phenomenon of delay in seeking care among ACS patients (Eshah, 2013). There was a huge discrepancy between the reported duration of delay time between two hours (Al-Hassan and Omran, 2005) and 9.1 hours (Eshah, 2013). The found studies focused mainly on the demographic differences between delayers and non-delayers, and none was found to assess the correlation of patients' ACS knowledge, attitudes, beliefs, and perceived risk with their delay time. Examining such relationships can add more to the understanding of this phenomenon. The results of this study can be used to guide healthcare professionals in designing appropriate interventions for patients, where 20% of MI patients are re-hospitalized within the same year (American Heart Association, 2010). Therefore, this study aims to explore the delay time among Jordanian ACS patients to seek care in ACS events. Specifically, this study aims to answer the following questions:

1. What is the average delay time among Jordanian ACS patients to seek care in ACS events?
2. Is there a relationship between ACS patients' delay time and their ACS knowledge, attitudes, beliefs, and perceived risk?
3. Is there a difference in delay time among Jordanian ACS patients based on their demographic characteristics?
4. What are the predictors of delay time among Jordanian ACS patients?

2. Methodology

2.1. Design

A descriptive correlational design using cross sectional survey was used.

2.2. Setting

The study was conducted in the middle region of Jordan, which is the largest region containing 62% of Jordanian inhabitants (Jordanian Department of Statistics, 2012) and 56% of hospitals (Jordanian Ministry of Health, 2012). Also, the healthcare system in Jordan has major sectors including governmental, private, and educational in addition to the military hospitals (Jordanian Ministry of Health, 2012). The eligibility criteria for selecting hospitals included large hospitals that contain coronary care units (CCUs) using a cut-off point of 300-bed hospital, which was chosen based on the Association for Community Health Improvement Report (2013) that classified hospitals to three levels according to bed capacity: (a) small size hospitals for <100 beds, (b) medium size hospitals for 100–299 beds, and (c) large size hospital for >300 beds. Then, three hospitals (one hospital from each sector) were randomly selected from a sampling frame of the eligible hospitals.

After reviewing the admission process for ACS patients in the recruited hospitals, the common places for treating those patients were CCUs and medical floors. Patients who suffer ACS events are commonly transferred to the CCU until definitive treatments are considered. After treatment, physicians decide either to discharge or transfer them to the medical floors for follow up. So, participants were recruited from both the CCUs and medical floors of the participating hospitals.

2.3. Sampling

The target population included all Jordanian ACS patients in Jordanian hospitals, whereas the accessible population included Jordanian ACS patients in hospitals with hospital size >300 beds in the middle region of Jordan. Non-probability convenience sampling technique was used to recruit patients from CCUs and medical floors who met the eligibility criteria, which included (a) having a confirmed medical diagnosis of ACS at the time of data collection regardless of admission day, (b) being hemodynamically stable, and (c) ability to comprehend Arabic language. On the other hand, patients with neurological deficits were excluded.

2.4. Instrument

The instrument package consisted of two sections, where the first section asked patients to report their demographic data including age, gender, marital status, education, income, insurance, employment, hospital type, and time from symptoms onset to hospital arrival. Medical history (11 items) and ACS diagnosis were retrieved from patients' files. The second section contained the Arabic