Original article

Factors influencing pre-hospital delay among patients with acute myocardial infarction in Iran

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Background  Acute myocardial infarction (AMI) is the leading cause of morbidity and disability among Iranian population. Pre-hospital delay is an important cause of increasing early and also late mortality in AMI. Thus the aim of the present study was to identify the factors influencing pre-hospital delay among patients with AMI in Iran.

Methods  Between August 2010 and May 2011, a cross-sectional and single-center survey was conducted on 162 consecutive patients with ST-elevation myocardial infarction (STEMI) admitted to Cardiac Care Unit (CCU) of Dr. Heshmat Hospital, Rasht. All patients were interviewed by the third author within 7 days after admission by using a four-part questionnaire including socio-demographic, clinical, situational and cognitive factors. Data were analyzed by descriptive and Logistic regression model at \( P < 0.05 \) using SPSS 16.

Results  Mean age was \( (60.11 \pm 12.29) \) years in all patients. Majority of patients (65.4%) were male. The median of pre-hospital delay was 2 hours, with a mean delay of 7.4 hours \( (\pm 16.25 \text{ hours}) \). Regression analysis showed that admission in weekend \( (P <0.04, \text{OR}=1.033, 95\% \text{ CI}=1.187-2.006) \) and misinterpretation of symptoms as cardiac origin \( (P <0.002, \text{OR}=1.986, 95\% \text{ CI}=1.254-3.155) \) and perceiving symptoms to not be so serious \( (P <0.003, \text{OR}=3.264, 95\% \text{ CI}=1.492-7.142) \) were factors influencing pre-hospital delay > 2 hours.

Conclusions  Our findings highlight the importance of cognitive factors on decision-making process and pre-hospital delays. Health care providers can educate the public on AMI to enable them recognize the signs and symptoms of AMI correctly and realize the benefits of early treatment.

Coronary heart disease (CHD) is the first killer of Iranian population. Annually, there are about 138,000 deaths due to CHD (about 40% of total deaths). About 50% of deaths occur due to acute myocardial infarction (AMI). It is a leading cause of morbidity and disability in Iranian population.\(^{1}\)

AMI is a clinical condition for which delays in seeking care can have significant and adverse consequences on patients’ outcomes.\(^{2,3}\) Morbidity and mortality can significantly reduce if individuals receive treatment shortly after the onset of symptoms.\(^{4,5}\) The survival chance of patients is significantly higher when treatment is initiated within first hours after the onset of symptoms but indeed few patients arrive at hospital within this period.\(^{6,9}\)

Pre-hospital delay is a prominent cause of increasing early and also late mortality in AMI.\(^{10,12}\) A pre-hospital delay may increase cardiac damage and diminish survival chance of individuals.\(^{13}\) Pre-hospital delay remains unacceptably long with median intervals averaging 2 to 4 hours\(^{12,16}\) and interventions to decline delays have accompanied limited success.\(^{17,18}\)

Many studies have considered factors related to long pre-hospital delay in AMI patients.\(^{4,14}\) However, the causes of this delay are not completely understood, and results from earlier studies are inconclusive. Some studies have shown that older age\(^ {10,17}\) and female gender\(^ {2}\) might be the risk factors for a prolonged delay on the part of the patient. On the contrary, others did not indicate age and gender differences regarding pre-hospital delay.\(^ {9,12,19}\)

Patients with a history of AMI had shorter pre-hospital delay than those without this condition.\(^ {5,15}\) However, similar studies did not discover any association between pre-hospital delay and a history of AMI.\(^ {9,19}\)

Factors associated with prolonged pre-hospital delay might vary among population resulting from diversity in ethnicity, culture and socio-economic status.\(^ {14}\) The