

## SEEKING MEDICAL ATTENTION AMONG JORDANIAN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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### Abstract:

**Background:** Significant reduction of mortality rate among acute myocardial infarction (AMI) patients could be achieved by early reperfusion. Successful reperfusion inversely related to the time from onset of AMI symptoms to treatment. Unfortunately, only about 25% of patients with AMI receive reperfusion treatment and the primary reasons for withholding this treatment was the time delay before admitting to hospital. In Jordan, as many other countries there is incomplete understanding for the dimensions of the delay problem in Jordanian community.

**Purposes:** To understanding factors leading to delay seeking treatment among Jordanian AMI patients. Specifically to explore the effects of sociodemographic, clinical, contextual and cognitive factors on delay; as well as identifying factors that predict delay among AMI Jordanian patients.

**Methods:** Comparative descriptive design was used; where convenient sampling technique used to recruit AMI patients within 24-72 hours of admission to coronary care unit. Eligible patients were invited to complete the modified Response to Symptoms Questionnaire.

**Results:** 150 patients were enrolled in the study. The mean delay time for Jordanian AMI patients was nine hours. Only 28% of patients were presented to the hospital within the first hour of symptoms experience. Six factors predicting patient's delay; those are: living in impoverished area, having low income, being alone at the time of symptoms onset, experienced intermittent symptoms, took medicine to relive symptoms, and worried about troubling others.

**Conclusion:** Jordanian AMI patients have a long delay time before they seek medical treatment. Sociodemographic, clinical, contextual, and cognitive factors were all found to be associated with delay seeking medical treatment. Findings highlighted the need to reduce the time to presentation among Jordanian AMI patients. Such reduction could be achieved by designing and implementing proper interventional programs, as well as improving public awareness of the appropriate responses to AMI symptoms.

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**Key Words:** delay, Jordanian, myocardial infarction, responses, seeking medical attention

### Introduction

Cardiovascular diseases (CVDs) considered the leading cause of death worldwide. Among CVDs, acute myocardial infarction (AMI) is the first leading cause of death in many countries (American Heart Association, 2009; Jordanian Ministry of Health, 2007). According to Robinson (1999), one third of AMI victims will not survive after that experience, and 60% of them die suddenly during the first hour after the onset of symptoms and before they reach the hospital (Chambless et al., 1997; Leslie, Fitzpatrick, & Morrison, 1996).

The care for AMI patients has shifted dramatically over the past decades. Remarkable achievements in reducing the mortality rates have been evolved through utilizing of thrombolytic therapy and primary percutaneous coronary angioplasty (PTCA) (Mckinley, Moser, & Dracup, 2000). The successful reperfusion by either thrombolytic therapy or primary PTCA inversely related to the time from symptoms onset to treatment and diminish markedly when the intervention is received more than six hours after the onset of AMI symptoms (Fibrinolytic Therapy Trialists Collaborative Group, 1994; Van't Hof et al., 1997). Actually, studies revealed that mortality rate of AMI cases can be reduced by 45% if thrombolytic is given in one hour of onset of symptoms, and by 25% if given within three hours of symptoms (Leslie, Urie, Hooper & Morrison, 2000).

Despite those benefits many patients who experience AMI do not receive either thrombolytics or primary PTCA (Zerwic, 1999), and only about 25% of patients with AMI receive thrombolytic treatment (Perry, 2001). The primary reasons for Withholding thrombolytic therapy was delay admitting to hospital more than six hours after the symptoms (Chareonthaitwee et al., 2000). Approximately one quarter to one half of all AMI patients delay longer than six hours in seeking medical treatment (Dracup & Moser, 1991; Schwarz, Schoberberger, Rieder, & Dunze, 1994).

Al-Hassan and Omran (2005) interviewed 83 Jordanian patients on the third day after AMI symptoms onset, to examine the health care seeking decision for myocardial infarction symptoms. They reported that 43% of the patients delayed the health care seeking decision more than one hour.

Till now there is incomplete understanding for treatment delay phenomenon among AMI Jordanian patients. Therefore, the current study could be a good resource to understand the delay phenomenon in a society such as Jordan. Additionally, it could guide health workers in designing and applying appropriate community interventions. The purposes of this study are: (1) to compare between the delayers and non- delayers Jordanian AMI patients based on the sociodemographic, clinical, contextual, and cognitive factors. (2) Identifying the most significant predictors of Jordanian AMI patients' delay. (3) Identifying the factors that are associated with early hospital presentation among AMI Jordanian patients.

### **Research Questions**

1. What are the differences in sociodemographic, clinical, contextual, and cognitive factors between the delayers and non- delayers AMI Jordanian patients?
2. What are the most significant predictors of patient's delay to seek medical treatment in Jordanian AMI patients?
3. What are the sociodemographic, clinical, contextual, and cognitive factors that are associated with early hospital presentation among Jordanian AMI patients?

### **METHODOLOGY**

#### **Design**

Comparative descriptive design was used to examine and describe differences in variables between the two groups (delayers and non-delayers patients).

#### **Sample and Sampling Criteria**

Power analysis indicated that 128 subjects would be sufficient to detect the significant differences between the two groups, with 80% power to pick up a medium effect size for two tailed t-test with a P value equal to 0.05 (Cohen, 1987). Convenient sampling technique was utilized to recruit 150 patients to participate in this study.

The target population of the current study was Jordanian patients who were diagnosed with AMI and admitted to the coronary care units (CCU), in two major hospitals in Amman. The emergency department physician made the diagnosis of AMI if two of the following criteria were present: chest pain lasting more than 20 minutes; serial electrocardiographic (ECG) evidence of AMI; or significant elevation of serum Creatin Kinase-MB.

Patients were enrolled in the study if they were diagnosed with AMI, oriented, free from neurological and mental disorders, experienced out hospital AMI, free from malignancy, and have the Jordanian nationality.

#### **Measurements**

In the current study; the modified Response to Symptoms Questionnaire (RSQ) were used. The first version of RSQ was developed by Burnett and her colleagues in 1995 (Burnett et al., 1995). The RSQ consisted of 18 items that provides information about patient delay and factors contributing to delay in six domains: (1) the context in which the AMI symptoms first appeared (i.e. where patient was when symptoms began, day of week, time of day, whom patient was with). (2) The antecedents of symptom onset (i.e. what patient was doing when symptoms occurred, how expected to anticipate the symptoms were, the level of emotional stress the patient was under). (3) Behavioral responses to the symptoms (i.e. first thing the patient did when symptoms were noticed, ease in reaching the doctor, get difficulty in transportation to the hospital). (4) Affective and emotional response to the symptoms (i.e. how anxious or upset the patient felt, comfort in seeking medical assistance, severity of pain). (5) Cognitive responses to the symptoms (i.e. symptoms attribution, perceived seriousness of the symptoms, perception of ability to control over the symptoms). (6) The response of others to patient symptoms (e.g. behavioral, emotional responses of others) (Burnett et al., 1995).

Based on growing evidence that cognitive, emotional, symptoms appraisal and social factors may be more important determinants of delay than knowledge about appropriate response to symptoms; Dracup and Moser (1997) modified, and used the modified RSQ in their study. They added sub-items to assess additional cognitive (e.g. assessment of symptoms experienced, knowledge of AMI symptoms), emotional (e.g. fear concerning consequences of symptoms, embarrassment about seeking help), and social factors surrounding the patient's decision to seek care for AMI symptoms (e.g. not wanting to trouble others) (Dracup & Moser, 1997).

Both the original and modified instrument has content validity (Dracup & Moser, 1997; Mckinley et al., 2000). For the purposes of the current study, the questionnaire was translated to Arabic language. Then pilot study was conducted, and internal consistency reliability was assessed by using cronbach's alpha ( $\alpha=0.78$ ).

### **Protocol of Data Collection**

Between 24 and 72 hours of admission to the CCU, eligible patients were invited to complete the modified RSQ. Patients were asked if they wanted to complete the questionnaire by themselves, or if they wanted the researcher to read the questionnaire. Patients were hemodynamically stable and free from pain when they completed the questionnaire. The researcher by himself obtained sociodemographic and clinical data from the patients and medical records.

### **Ethical Considerations**

Patients were informed that participation is voluntary, and assured that data will be use only for research purposes and this data will be treated confidentially; and their anonymity were assured, and they can withdraw from the study at any time.

### **Data Analysis**

The statistical package of social science (SPSS) for windows statistical software package (15<sup>th</sup> version) was used for data analysis. Descriptive statistics were used to describe the sample, summarize the patients' answers to all questionnaire's elements. Patients then classified into two groups according to the delay time: non-delayers (presented to the hospital < 6 hours) and delayers (presented to the hospital  $\geq$  6 hours).

To answer the first research question, and based on the level of measurement; Mann-Whitney U, Kruskal-Wallis, and independent t-test were used to compare the sociodemographic, clinical, contextual, and cognitive factors between the two groups (delayers and non-delayers patients). Then significant variables ( $P<0.05$ ) that associate with increasing delay time, were entered into forward stepwise logistic regression to identify the most significant predictors of patients' delay.

Depending on the delay time, early presented patients with delay time ( $\leq 1$ ) hour where listed, and according to the level of measurement; Spearman and Pearson's correlation coefficient were used to test the association between the (sociodemographic, clinical, contextual, and cognitive factors) and the early hospital presentation.

### **Results**

Hundred and fifty patients were participated in the study. Participants were predominantly males (75.3%), married (94%), reside in the city (93.5%), working (53.3%), not insured (68%). Most of them were older than 45 years old (69.3%), have low monthly income (88%), non-educated (43.3%). Thirty patients (20%) had a prior history of angina, and 19 (12.6%) had a previous myocardial infarction, 52 (34.6%) have hypertension, and 48 patients (32%) have diabetes mellitus (Table 1 & 2).

The mean delay time for Jordanian AMI patients participated in the study was (9.1) hours, were as the median delay time was (4) hours. Only 28% of patients were presented to the hospital within the first hour of symptoms onset, 58.7% presented <6 hours, and 41.3% presented  $\geq 6$  hours. Non-delayers (presented <6 hours) had a mean delay time about (1.8) hours, and median time about (1.7) hours. Delayers (presented  $\geq 6$  hours) had a mean delay time about (19.4) hours, and median time about (14.5) hours (Table 3).

### **Differences between the Delayers and Non- Delayers**

Comparing the sociodemographic, and clinical factors between the two groups revealed that individuals arrived  $\geq 6$  hours; have less than 200 J.D. monthly income ( $P=0.00$ ), less than 9 years of formal education ( $P=0.00$ ), un insured ( $P=0.0003$ ), and they were less than 25 years old ( $P=0.005$ ), or more than 45 years old ( $P=0.005$ ). Additionally, the delayers were residing in camps ( $P=0.009$ ), retired from work ( $P=0.02$ ), sought help in a governmental hospital ( $P=0.04$ ), and have a greater

prevalence of diabetes ( $P=0.0003$ ). Additionally, there were no significant differences between the delayers and non-delayers based on previous history of angina, myocardial infarction, heart failure, percutaneous transluminal coronary angioplasty (PTCA), coronary artery bypass graft (CABG), or family history. Only the history of previous cardiac catheterization was significantly different, and associated with non-delay ( $P=0.03$ ).

There were no significant differences in delay times based on the setting where the symptoms first noted. However, there were significant differences based on patient's companionship when symptoms began. In which, delayers were alone when they noticed their symptom ( $P=0.03$ ), and non-delayers were with their spouses when they noticed their symptoms ( $P=0.006$ ). Moreover, There were significant differences in delay times between the two groups based on the reaction of bystanders to the patient's symptoms; in which some reactions increased delay time "they tried to comfort me" ( $P=0.0001$ ), "they suggest I rest or take medicine" ( $P=0.0002$ ). On the other side, reactions such as "they took me to the hospital" ( $P=0.00$ ), or "they suggested I get medical help" ( $P=0.03$ ) lead to decrease the delay time. Delay time were also increased in patients who never told anyone about their symptoms ( $P=0.01$ ).

Based on the cognitive and emotional responses; the following responses were associated with increasing delay time: "pretended nothing was wrong" ( $P=0.00$ ), "tried self-help remedy" ( $P=0.0003$ ), took some medication ( $P=0.049$ ), attributing symptoms to muscle pain ( $P=0.0001$ ), flu or flu-like illness ( $P=0.006$ ), or breathing problems ( $P=0.03$ ), thought that they have the ability to control their symptoms ( $P=0.01$ ), waited to see if symptoms would go away ( $P=0.00$ ), their symptoms were intermittent rather than constant ( $P=0.02$ ), or being worried about troubling others with a request for assistance ( $P=0.00$ ). On the other side; attributed symptoms to the heart ( $P=0.00$ ), patients who "transported themselves or had someone transport them to the hospital" ( $P=0.00$ ), or "told someone about their symptoms" ( $P=0.006$ ) had decreased delay time.

### **Predictors of Patient's Delay to Seek Medical Treatment**

Stepwise logistic regression was used to identify the most significant predictors of patient's delay. Results revealed that among the sociodemographical factors, the most significant predictors were: living in impoverished area ( $P=0.001$ ), and having low monthly income ( $P=0.003$ ). Were as the most significant predictor among the contextual factors was being alone at the time of symptoms onset ( $P=0.005$ ). Among the cognitive factors; the most significant predictors were; the intermittent nature of symptoms ( $P=0.001$ ), took some medicine to relieve symptoms ( $P=0.011$ ), and worried about troubling others by requesting help ( $P=0.043$ ).

### **Factors Associated with Early Hospital Presentation**

According to the level of measurement, Spearman and Pearson's correlation coefficients were used to identify the sociodemographic, clinical, contextual, and cognitive factors that associated with early hospital presentation. Results revealed moderate positive relationships between early hospital presentation and the age group ranged between 25 and 45 years old ( $r = 0.34$ ,  $P=0.02$ ), and requesting care in a private hospital ( $r = 0.33$ ,  $P=0.03$ ).

When testing the contextual factors; results revealed moderate negative relationship with experiencing AMI symptoms at home ( $r = -0.41$ ,  $P=0.007$ ), and strong positive relationship with being visited friends or relatives at the time of symptoms started ( $r = 0.58$ ,  $P=0.00$ ).

Regarding the cognitive factors, results revealed a moderate positive relationship between early presentation and told nearby person about the symptoms ( $r = 0.43$ ,  $P=0.004$ ), moderate negative relationship with perception of self-ability to control the symptoms ( $r = -0.37$ ,  $P= 0.01$ ), and a moderate positive relationship with waiting to see if symptoms would go away ( $r = 0.35$ ,  $P=0.02$ ), and strong positive relationship with attributing symptoms to the heart ( $r = 0.57$ ,  $P=0.00$ ).

Additionally, early hospital presentation were positively associated with attributing symptom to indigestion or stomach problems ( $r = 0.43$ ,  $P=0.004$ ), and negatively associated with symptom attribution to the heart ( $r = -0.43$ ,  $P=0.004$ ).

### **Discussion**

Inconsistent with Al-Hassan and Omran (2005) who suggested that Jordanian AMI patients demonstrated rapid arrival to emergency department; patients in the current study arrived at the hospital after a mean delay time of (9.1) hours. Although median delay time was (4) hours, this time is long as compared to western studies (Burnett et al., 1995; Dracup & Moser, 1997; Mckinley et al., 2000; Trent et al., 1995). Jordanian AMI patients who delay seeking treatment were characterized by

having low income, low educational level, uninsured, either too young or too old, reside in camps, retired from work, sought help in the a governmental hospital, and have greater prevalence of diabetes. While had previous cardiac catheterization associated with being non-delayers.

Increasing delay among lower income patients is logically expected, and consistent with the findings of (Dracup et al., 1997; Mckinley et al., 2000; and yarzebski et al., 1994). Because there is no free medical services in Jordan; so such patients are unable to tolerate the expenses of medical treatment, so they search for available alternatives; such as taking some medications, herbs, or even deny the present of symptoms.

Consistent with Dracup et al. (1997), and Mckinley et al. (2000), lower educational level associated with longer delay time. Increased delay among patients who have low educational level might be attributed to the shortage in knowledge regarding the disease. Increased delay among the uninsured patients could be explained depending on the patient's economical condition. In the light of increasing the treatment cost in Jordan, the uninsured patients and those receiving low monthly income are unable to tolerate the hospital expenses.

Regarding the age group; the current study revealed that the delayers belonging to two different age groups; those are < 25, or > 45 years. Delay among the too young patients is attributed to the patient's previous healthy condition that negatively affected patient's decision to seek medical attention. Older age also make symptoms recognition more difficult. This difficulty in symptom recognition might be attributed to the presence of co-morbidities. This finding was also consistent with (Goff et al., 1999; Mckinley et al., 2000; Ruston & Clyton, 1998; Sheifer et al., 2000).

Delayers were alone when they noticed their symptoms, and this might be attributed to the confusion associated with sever pain, in addition to lack of external motivation to seek help. On the contrary, being with the spouse at the time of symptoms onset was noticed among the non-delayers, and this finding is inconsistent with Crumlish and Hand (1999), and Dracup et al. (1995). In Jordan, usually the relationship between spouses is very close and strong; so it could be that the appearance of symptoms in a spouse, leads to a high stressful condition in the other partner.

There were significant differences between the delayers and non-delayers based on the cognitive and emotional responses. The delayers were pretended nothing was wrong, tried self-help remedy, or took some medicine, and this is consistent with Perry et al. (2001). Delay might occur in those patients because they tried to get control over their symptoms before they seek help for those symptoms. On the contrary, patients who applied effective coping actions arrived sooner. The effective coping actions described by the patients in the current study were transport them selves or had someone transport them to the hospital, or told some one about their symptoms. The last result was consistent with (Crumlish & Hand, 1999; Dracup, Moser & Eisenberg, 1995).

Consistent with the findings of Dracup and Moser (1997) and Mckinley et al. (2000), taking the choice to wait and see if symptoms would go away, thought that they have very much ability to control their symptoms, worried about troubling others with a requesting for assistance, and having intermittent symptoms. In Jordan, the family relationships are very strong; so it's expected from each member to be worry about troubling others if he or she has any health problem. Unfortunatly; this condition negatively affected requesting early medical help.

Consistent with Burnett et al. (1995), Dracup et al. (1997) and Mckinely et al. (2000), non-delayers correctly attributed their symptoms to the heart, whereas the delayers attributed their symptoms to muscle pain, or breathing problems. Patients who believed that their symptoms were cardiac in origin, made true mental representation and labeled the experienced illness as AMI, so they sought medical care faster than those who attributed their symptoms to another origin.

### **Conclusions**

Jordanian AMI patients have a long delay time (9.1 hours) before they seek medical treatment, this delay will decrease the effectiveness of thrombolytic therapy, leading to bad prognosis. Several factors were found to be associated with delay seeking medical treatment among Jordanian AMI patients; those factors are belonging to four main categories; sociodemographic, clinical, contextual, and cognitive factors. These factors have a great effect on patient's decision to seek medical treatment. Therefore, health care workers in Jordan need to apply proper interventions to increased public awareness about AMI and the appropriate response to it's related symptoms.

### Limitations

Generalizability can be restricted by using convenience sampling, and calculation of time elapsed before hospital presentation was depending on retrospective recall by the patients themselves. Additionally, the study included AMI survivor, in which died patients might have completely different characteristics.

### Implications and Recommendations

The present study reinforces the need to reduce the time to hospital presentation among Jordanian AMI patients. Such reduction could be obtained by proper application of public educational programs that highlight the correct contextual and cognitive responses. Public educational contents should include cardiac risk factors, symptoms of AMI, and benefits of early hospital presentation. Appropriate coping actions should be discussed with individuals and families, and the role of emergency medical system should be reinforced in Jordanian society.

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Table 1: Patients' characteristics according to the sociodemographical variables

Variables	Delayers (n=62) n (%)	Non-Delayers (n=88) n (%)
<b>Age</b>		
< 25 years	3 (4.8)	2 (2.3)
25 - < 35 years	1 (1.6)	3 (3.4)
35 - < 45 years	8 (12.9)	29 (33)
≥ 45 years	50 (80.6)	54 (61.4)
<b>Educational Level</b>		
< 9 years	42 (67.7)	23 (26.1)
9 – 12 years	15 (24.2)	25 (28.4)
> 12 years	5 (8.1)	40 (45.5)
<b>Treatment Expenses</b>		
Insured	10 (16.1)	38 (43.2)
Non-insured	52 (83.9)	50 (56.8)
<b>Monthly income</b>		
< 200 J.D.	33 (53.2)	31 (35.2)
200 – 400 J.D.	29 (46.8)	39 (44.3)
> 400 – 600	-	10 (11.4)
> 600 J.D.	-	8 (9.1)
<b>Employment status</b>		
Working	27 (43.5)	53 (60.2)
Don't working	20 (32.3)	19 (21.6)
Retired	15 (24.2)	16 (18.2)
<b>Residency area</b>		
City	59 (95.2)	80 (92)
Village	-	07 (8)
Camp	03 (4.8)	-
<b>Treating hospital</b>		
Governmental	54 (87.1)	66 (75)
Private	08 (12.9)	22 (25)
<b>Marital status</b>		
Single	05(6.5)	06 (5.7)
Married	57 (93.5)	82 (94.3)
<b>Gender</b>		
Male	41 (66.1)	72 (81.8)
Female	21 (33.9)	16 (18.2)



Table 2: Patients' characteristics according to the clinical variables

Variables	Delayers ( n=62) n (%)	Non-Delayers (n=88) n (%)
History of angina Negative <b>Positive</b>	51 (82.3) 11 (17.7)	69 (78.4) 19 (21.6)
History of myocardial infarction Negative Positive	52 (83.9) 10 (16.1)	79 (89.8) 9 (10.2)
History of heart failure Negative Positive	60 (96.8) 2 (3.2)	82 (93.2) 4(6.8)
Previous cardiac catheterization Negative Positive	61 (98.4) 1 (1.6)	79 (89.8) 7 (10.2)
History of hypertension Negative Positive	40 (64.2) 22 (35.5)	58 (65.9) 30 (34.1)
History of diabetes Negative Positive	32 (51.6) 30 (48.4)	70 (79.5) 18 (20.5)
Family history for cardiac diseases Positive Negative	19 (30.6) 43 (68.3)	23 (26.1) 65 (73.9)

Table 3: Patients' groups with mean and median delay time for each group.

	Non-delayers	Delayers	Early presented
N (%)	88 (58.7)	62 (41.3)	42 (28)
Mean delay time	1.8 hours	19.4 hours	0.85 hours
Median delay time	1.7 hours	14.5 hours	0.5 hours