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Research Article

### A STUDY ON THE EVALUATION OF ASSOCIATED FACTORS WITH ACUTE MYOCARDIAL INFRACTION

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**Abstract:**

**Objective:** To evaluate the factors associated with pre-hospital time (PHT) in our community.

**Materials and Methods:** Patients suffering from acute STEMI Heart attack due to complete blockage of the blood supply were marked as the subjects of the study. There was no restriction of age on the sample. In addition, factors responsible for delay during PHT were inquired and analyzed. Economical, remoteness, lack of awareness, local doctors and quakes, no helper nearby, and others i.e. mode of transportation etc. were the major contributing factors for the delay.

**Results:** The mean age of the sample was calculated to be 55±12 years. Out of 185 subjects, 130 (70.30%) were males and 55(29.7%) were females. The other associated diseases found for the STEMI patients in our study were smoking 102(55.1%), high blood pressure 81(43.8%) and diabetes 52(28.1%). The patients who reported within 4 hours were 43.8%, 4-8 hours were 23.2%, 8-12 hours were 11.4%, 12-16 hours were 9.2%, 16-20 hours were 3.8% whereas 8.6% patients were delayed for more than 20 hours. The MI of anterior wall was most common 111(60%) in our research whereas that of inferior wall was second 46(24.9%). Most of the females were late to reach hospital (72.72%). It was observed that the people who reported late were also suffering from hypertension (58.02%), obesity (56.52%) and diabetics (53.8%). Other factors such as lack of knowledge, longer distance, unavailability of transport etc. also contributed to the cause at a lower level.

**Conclusion:** In this study majority of the population was having PHT more than 4 hours. Lack of knowledge, local doctors and quakes and unawareness about symptoms were the major causes of the delay during PHT. Most of the patients who reported late were females.

**Keywords:** Therapies, Ischemic Heart Disease, Diabetes Mellitus, Hypertension, Thrombolytic, Mortality.

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**INTRODUCTION:**

The mortality rate associated with heart related diseases is becoming uncontrollable even with the all-new advancements in medical science. The time is the key factor in case of heart disease. Drug administered therapies such as thrombolytic are effective only if delivered in time. Hence, time is the major predictor of the patient's life or death after the onset of symptoms in case of heart attack. Often the delay in such cases is happened to be the transportation time a main component of Pre-Hospital Time which causes the mortality rate to shoot up [1]. Technical delays are sometime noticed with increased Door to Needle (DTN) time but can be minimized. In short, the PHT in 75% cases is due to the patients' own decision time.

Other countries around the world are also facing the high PHT delays for patients but it is still higher in our societies. Studies have delivered the PHT delays of 3.5 hours in USA, 2.5 hours in England, 4.4 hours in South Korea and 4.5 hours in Japan. The current study is aimed at determining the PHT delays in our area and factors related to the delays in PHT.

**MATERIAL AND METHODS:**

185 patients' males and females were the participants of this study. All patients were suffering from acute STEMI onset symptoms. The inclusion criterion was based on the following; Symptoms of acute MI Chest pain, arm pain etc, Electrocardiograph results showing acute MI, Elevated CPK and CK-MB levels

greater than normal. Patients who reported dead and who were admitted for the same disease within 2 weeks were excluded from the study. Patients' socioeconomic and demographic variables were studied. These included ages, living standard (lower/middle/upper class) and living arrangements (single/combined family), gender, location (urban/rural) and job status. The subjects were also checked for previous history of MI, revascularization through PCI or CABG, blood pressure irregularities, chest pain and diabetes mellitus etc. The PHT delay was noticed in each case and associated factor were explored with the help of face-to-face interview with the patients. Factors related were economical, rural or remote areas, lack of knowledge, local doctors and transportation. On arrival, clinical exam of all the subjects was conducted. ECG was obtained for all patients on daily basis. Heart attack symptoms were noted. SPSS (Ver13) was used for data analysis. Variables were expressed in frequencies and means  $\pm$  SD according to their types. Delayed PHT frequencies were stated as percentages.

**RESULTS:**

The mean of the age for the sample was calculated to be  $55 \pm 12$  years. Among 185 subjects, 130 were male and the rest were females. Association of other diseases was found; smoking 102(55.1%), Blood pressure 81(43.8%), diabetes 52(28.1%), obesity 46(24.9%), dyslipidemia 31(16.8%) and family history 23(12.4%) (Table-1).

**Table-I: Demographic Criteria of Patients**

Demographic Characteristics	Numbers (Percentages) n=185
Age means years	55 $\pm$ 12 Years
Gender	
Male	130 (70.30%)
Female	
Major Risk Factor of MI	
Hypertension	81 (43.8%)
Diabetes Mellitus	<b>52(28.1%)</b>
Smoking	<b>102(55.1%)</b>
Family History	<b>23(12.4%)</b>
Obesity	<b>46(24.9%)</b>
Dyslipidemia	<b>31(16.8%)</b>
Time of presentation	
Within 4 hrs	81 (43.8%)
4-8 hrs	17(9.2%)
8-12 hrs	
12-16 Hrs	
16-20 Hrs	
> 20 hrs	
Type of MI	111 (60.0%)

Anterior Wall MI	12(6.5%)
Inferior Wall MI	5(2.1)
Inferior wall + RV MI	
Inferior wall + Post Wall MI	
Lateral Wall MI	
Global MI	

The delay time varied from 4 hours to more than 20 hours. The majority of the subjects who reported late were females. The front wall of the heart was damaged in most of the cases 111 (60%). The percentages of anterior, inferior, lateral walls MI and global MI is presented in Table 1.

Females were delayed more (72.72%) than males. Clinical factors like blood pressure, obesity and diabetes mellitus in various proportions (Table 2) were also observed in the patients with delayed presentation. Age factor was also associated with delayed presentation as more than half of the patients who reported late were over 60 years of age.

**Table-2: Risk Factors of Ischemic Heart Disease in Patients Presenting Late**

Risk factor	Numbers (Percentages) n=104
Female	72.7%
Hypertensive	58.02%
Obesity	56.52%
Diabetics	53.8%
Age >60 years	52.7%

Local medical practitioners were also a significant cause for delayed presentation in MI cases (28% in current study). Similarly lack of knowledge, long distance from hospital, transportation and economic

factors add up to the delays in PHT. The patients who were unable to describe the exact time of appearance of symptoms were dropped from the sample (Table 3).

**Table-3 Factors Leading to Late Presentation**

FACTORS	Numbers (Percentage) n=104
Local Clinics (GPs, Hakims, Quaks etc)	52(28.1%)
Lack of Awareness	20(10.8%)
Long Distance	14(7.6%)
Others (Conveyance etc)	14(7.6%)
Financial	2(1.1%)
No attendant at home	2(1.1%)

GP= General Practitioner

### DISCUSSION:

The outcome of the research has delivered that the delays in PHT are prevailing in our society. Although the delays have been noticed in other developed countries too, but the delay times are even higher at our region [2]. Different studies have been conducted on this topic. A study conducted by Eric in America produced that the PHT was not cut short in the time frame of 13 years from 1987 – 2000. A total of 18928 patients were investigated during the study [3]. The tendency in use of Emergency Medical Services increased but it could not curtail the delayed presentation of MI patients. Many other studies conducted at Germany, Massachusetts and America yielded the similar results [4]. Multiple factors have been recognized in different studies accounting for delay in Pre-Hospital Time. A study led by Meischke

proposed the effect of gender on the MI [5]. Gender difference is related to MI symptoms in three ways namely cold sweats, nausea and dyspnea. Males have cold sweat more frequently whereas females are not seen with frequent cold sweats [6]. Similarly, females are seen with increasing instances if nausea and dyspnea. Most studies argue that female population has more delayed presentations than males [7]. Clinical factors have been discussed in various studies and found that hypertension, diabetes is somehow related to delayed presentation because the patients with such diseases are less sensitive to pain caused by STEMI [8]. In 75% cases, the PHT is the time taken by the patient to decide to go to a cardiac hospital. In current research, local quacks and practitioners were responsible for delay of the heart patient from ideal CCU environment [9]. The main

reason for delay at local practitioner is lack of understanding of MI symptoms and economic benefits for quakes who do not hesitate to admit the patient without any expertise in the concerned field [10]. The possible reasons concluded by a number of studies for delayed presentation include; The patient was not sure if he/she is ill enough to call an emergency medical service (EMS), The patient's trust in his/her family doctor Local practitioner or quake in most cases and the patient's decision awaiting approval from the family doctor to call EMS.

People are not well acquainted with the heart attack symptoms. Some people do know that chest pain might be associated with heart attack but they cannot tell any more symptoms correctly [11]. The studies have been carried out to assess if the PHT delays can be minimized by educating the people through television, newspapers and short training sessions [12, 13]. The results were a bit improved. In some cases, the PHT time was reduced as it was before the activity but in some cases, it was as earlier. The need is to train the local practitioners about the symptoms of the heart attack and actions required at that time for speedy transportation of the patient to the cardiac hospitals. Moreover, the quakes need to be condemned at government and community levels.

### CONCLUSION:

The study concluded that the delay in Pre-Hospital Time (PHT) was more than 4 hours. The delay factors were multiple and some leading factors include lack of knowledge, general physicians' formalities, and unawareness about the symptoms of STEMI. The study also presented the major delayed population consisted of females.

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