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Assessment of factors associated with pre-hospital delay in seeking medical treatment among patients with myocardial infarction admitted in selected hospital of Kolkata, West Bengal

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Abstract
Myocardial Infarction is a medical emergency which need prompt and early treatment, and delays in seeking care can have adverse consequences on patient's outcome. Hence a descriptive study was conducted to assess the factors associated with pre-hospital delay in seeking medical treatment among patients with myocardial infarction. Descriptive survey approach was adopted to collect data from 188 subjects selected by non-probability purposive sampling technique. Semi structured interview schedule was used to collect data. Findings revealed that in the aspect of contextual factors, among 188 subjects, majority (44.6%) subjects delayed the treatment because the distance from home to hospital was too far whereas significant people (22.8%) delayed because the symptoms came and went away. In relation to cognitive factors, majority (52.6%) of the subjects delayed because they perceived that the symptoms originated from gastric upset. Similarly in relation to behavioral factors, maximum (49.4%) of the subject delayed because they tried to eliminate the symptoms by doing other activities and taking self-medication. The findings of the study have several implications in nursing. Hence the researcher recommends to undertake similar research in a large group and various interventions can be developed by the nurses to reduce the pre hospital delay in seeking medical treatment in such a disease.

Keywords: Associated factors, pre-hospital delay, seeking medical treatment, patient with myocardial infarction

1. Introduction

Heart health is at the heart of the health. The world heart association organizes world heart days on September 29 each year to aware people about cardiovascular disease (CVDs) which are the biggest cause of death and disability in the world [1]. The most common form of CHD is the Myocardial Infarction. Myocardial infarction is the complete occlusion of large endocardial artery by a thrombus resulting in decreased coronary blood supply to all the layers of the heart muscle. It is usually the results of thrombus in coronary artery, triggered by fissuring or rupture of an atherosclerotic plaque. Globally, cardiovascular diseases (CVDs) are the number one cause of mortality. According to the World Health Organization (WHO), it is estimated that 7.4 million deaths were due to coronary heart disease in 2015. It is estimated that 23.6% million people will die from CVDs by 2030. These are projected to remain the leading causes of mortality [2].

Coronary Heart disease burden is projected to rise from around 47 million Disability adjusted life years (DALYs) globally in 1990 to 82 million (DALYs) in 2020. Congestive heart disease is the leading cause of death in the united State [3]. The mortality rate of myocardial infarction is approximately 30% and for every 1 in 25 patients who survive the initial hospitalization, dies in the first year after AMI [4].

AMI is a medical emergency and have adverse consequences on patients condition. It is well known that timely reperfusion therapy can results in dramatically improved patients clinical outcomes. Early thrombolytic therapy improves perfusion of myocardial ischemia and reduce risk of fatal arrhythmias. It increases survival rate upto 50% when provided within one hour after the occurrence of symptoms however these treatment should be given as early as possible-A review of nine trials of fibrinolysis therapy showed that the absolute mortality reduction was about 30 per 10000 patients presenting within 6 hours of onset of pain and

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about 20/1000 among those coming 7-12 hours later [5].

Despite major advance in technology resulting in innovative reperfusion therapies, a majority of individuals with AMI symptoms do not seek professional medical treatment in a timely manner. This delay in seeking contributes significantly to the disability, death associated with AMI. AHA guidelines recommend appropriate medical treatment intervention to be administered within one hour of onset of symptoms (golden hour) for maximum reperfusion and to minimize damage of myocardial tissue [6].

Pre hospital delay is the time from onset of symptoms suggestive of ACS till arrival to the point of definite care [7]. Pre hospital delay is a prominent cause of increasing early and also late mortality in AMI and decreased possibility of revascularization. A pre hospital delay may increase cardiac damage and diminish survival chance of individual [8]. Many factors associated with prolonged pre hospital delay in patients with AMI have been proposed as being old, being female, having low socioeconomic status, resistance behaviour, clinical factors such as history of hypertension or diabetes, or prior history of angina or previous AMI and other factors such as consultation with one spouse family members or physician, lack of awareness and poor transportation, unable to recognize the symptoms and use of over the counter drugs [9].

2. Methodology

2.1 Research Approach: In this study quantitative approach was used

2.2 Research Design: In this study, Descriptive survey research design was used.

2.3 Study Setting: BM Birla Heart Research Centre and RN Tagore International Institute of Cardiac Sciences, Kolkata West Bengal.

2.4 Sample: Patient with Myocardial Infarction delayed for more than six (6) hours in seeking medical treatment admitted in private hospital.

2.5 Sample Size: In this study total sample size was 188

2.6 Sampling Technique: Non Probability purposive sampling technique

2.7 Tool: Semi structured interview schedule to collect demographic and clinical profile, semi structured interview schedule to assess factors associated with pre hospital; delay in seeking medical treatment.

2.8 Ethical Consideration: The ethical permission were obtained from Institutional ethics committee of B.M Birla Heart Research Centre and written informed consent from each participants

Data Collection: The main study data collection was commenced from 8th January 2020 and completed on 24th January 2020. The formal administrative permission were obtained from the authority of B.M Birla Heart Research Centre and Facility director of RN Tagore International Institute of Cardiac Sciences. The subjects were selected by non-probability sampling technique admitted in selected hospitals of Kolkata, West Bengal. Self-introduction was done and purpose of the study was explained to each subject with information guide sheet. Written informed consent was obtained from each subject. Tool I and tool II were administered to each subject one to one by interview technique among 188 patients who had delayed for more than sic (6) hours in seeking medical treatment. Data collection was terminated by thanking each participant for their kind participations and cooperation.

3. Results

Section I (A): Description of Sample characteristics

Table 1: Frequency (f) and Percentage (%) distribution of demographic variables of the patient with Myocardial Infarction having delayed in treatment

n=188

Sl. No	Sociodemographic variables		Frequency (f)	Percentage (%)
1	Age in years	<35 years	9	4.7
		35-45 years	22	11.7
		46-55 years	75	39.8
		>55 years	82	43.6
2	Gender	Male	148	78.7
		Female	40	21.2
3	Marital Status	Married	171	90.9
		Unmarried	-	-
		Divorsed/seperated	17	9.04
4	Educational Status	Illiterate	9	4.7
		Primary level	24	12.7
		Secondary level	32	17.0
		Higher Secondary	84	44.6
		Graduate and above	39	20.7
7	Types of family	Nuclear family	87	46.2
		Joint family	98	52.1
		Extended family	3	1.5
8	Monthly family Income	Upto 20,000	-	-
		20,001-30,000	7	3.7
		30,001-40,000	111	59.0

		>40,001	70	37.2
9	Employment Status	Private	53	28.1
		Government	41	21.8
		Self employed	28	14.8
		Unemployed/ retired	66	35.1
10	Mode of transportation	Personal	79	42.0
		Two wheeler	30	15.9
		Ambulance	15	7.9
		Four wheeler	64	34.0

Table No. 1 depicts that Maximum (43.6%) of the patients belong to the age group of more than 55 years of age, Majority (78.7%) of the patients were male, Majority (90.9%) of the patients were married, Majority (44.6%) of the patients had higher secondary level of education, Majority (52.1%) of the patients belonged to joint family, Majority (59%) of the patients had monthly family income of 30,001-40,000, Maximum (35.1%) of patients were unemployed, Maximum (42%) of patients used personal transportation for travelling to hospitals.

Table 2: Mean and standard deviation of distance from home to nearby hospital of the patients with MI delayed in seeking medical treatment

n=188

Sl. No	Item	Mean	Standard deviation
1	Distance from home to nearby hospital	137.6 km	±146 km

The data represented above in Table 2 showed the mean and standard deviation of distance from home to nearby hospital. The mean distance from home to nearby hospital was 137.6 Km and standard deviation was ±146 km.

Section I (B): Description of Clinical Profile

Table 3: Frequency (f) and Percentage (%) distribution of Clinical Profile of the patient with Myocardial Infarction having delayed in treatment

n=188

Sl. No.	Clinical Profile		Frequency (f)	Percentage (%)
1	History of high Pressure blood	Yes	152	80.8
		No	36	19.1
2	History of smoking	Yes	161	85.6
		No	27	14.3
3	History of high blood sugar	Yes	122	64.8
		No	66	35.1
4	History of previous MI	Yes	39	20.7
		No	149	79.2
5	History of high Cholesterol	Yes	98	52.1
		No	90	47.8
6	Family disease History of heart	Yes	43	22.8
		No	145	77.1
7	Types of MI	STEMI	103	54.7
		NSTEMI	85	45.2

Table 4 depicts that Majority (80.8%) of patients had history of high blood pressure, Majority (85.6%) of patients had a history of smoking, Majority (64.8%) of patients had a history of high blood sugar, Majority (79.2%) of patients had no history of previous MI, Majority (52.1%) of patient had a history of high Cholesterol level, Majority (77.1%) of patients had no family history of heart disease, Majority (54.7%) of patients belonged to STEMI

Table 4: Mean and standard deviation of duration (in hours) between appearance of first symptoms and reaching to nearby hospital/clinics/ physician chamber/medical treatment at home in hours.

Sl. No	Duration of time	Mean	Standard deviation
1	Duration between appearance of first Symptoms and reaching to nearby hospital/clinic/physician chamber/medical treatment at home	5.49 hrs	±5.32 hrs

The data presented in table 2 showed the mean and standard deviation of duration between appearance of first symptoms and reaching to nearby hospital/clinic/physician/ chamber/medical treatment at home in hours was 5.49±5.32 hrs.

Table 5: Distribution of sample according to the mean and standard deviation based on the duration between time of onset of symptoms till the patient got admitted to the hospital.

n=188

Sl. No	Duration of time	Mean	Standard deviation
1	Time of onset of symptoms till patient got admitted in the hospital	6.75 hrs	±6.8

The data presented above in table 3 shows the mean and standard deviation based on the duration between times of onset of symptoms till patient got admitted in the hospital. The mean and standard deviation was 6.75±6.8 hrs.

Section II: **Distribution of sample based on the factors associated with pre- hospital delay in seeking medical treatment among patients with myocardial infarction.**

Table 6: Frequency and percentage distribution of sample based on symptoms and contextual related factor

n=188

S. No.	Symptoms/contextual related factors	Presence of factors	
		Frequency (f)	Percentage (%)
1.	Symptoms appeared at night time	38	20.2
2.	Did not get any help	20	10.6
3.	Did not access to contact others	5	2.65
4.	Ignore symptoms due to financial reason	24	2.76
5.	Symptoms came and went	43	22.8
6.	Did not feel ill enough to call the emergency medical services	6	3.19
7.	Local physician could not diagnose the symptoms	41	21.8
8.	Afraid that poor outcomes would occur	-	-
9.	Did not get any vehicle	25	13.29
10.	Distance from hospital was too far	84	44.6
11.	Afraid about the loss/abstinence from Jobs	2	1.06
12.	Thought that complaints would cease	40	21.2
13.	Prayed and wished that symptoms would go away.	-	-
14.	If any other please specify (traffic, unavailability of health care resources etc.	28	14.8

The data presented in table 4 showed the frequency and percentage distribution of subjects according to their response against each item.

Maximum (44.6%) patient with MI, reported that the delay was because of the longer distance from home to hospital and most (22.8%) of them stated that the symptoms came and went.

Table 7: Frequency and percentage distribution of sample based on cognitive factor

n=188

S. No.	Cognitive factors	Presence of factors	
		Frequency(f)	Percentage (%)
1.	Thought that the symptoms were natural results of aging	2	1.06
2.	Perceived that symptoms originated from gastric upset.	99	52.6
3.	Did not understand that the complaints were related to heart disease	62	32.9
4.	Symptoms were intermittent	52	27.6
5.	Perceived the symptoms to be not so serious	57	30.3
6.	If any other please specify	-	-

The data presented above in table 5 showed the frequency and percentage distribution of patients according to their response against each item of cognitive factor. Among 188 samples.

Majority (52.6%) of patient with MI reported that had wrong perception of chest pain as gastric upset whereas (32.9%) patients with MI expressed that they perceived the symptoms were not related to heart disease.

Table 8: Frequency and percentage distribution of sample based on behavioral factor

n=188

S. No	Behavioral Factors	Presence of factors	
		Frequency (f)	Percentage (%)
1.	Anxious and confused to take action	3	1.59
2.	Tried to eliminate the symptoms or discomfort by doing other activities or taking medicines.	**93**	**49.4**
3	Pretended nothing was wrong and tried to relax when felt the symptoms	5	2.65
4	Waited by the family physician for referral	28	14.8
5.	If any other please specify (consulting non physicians and patients and family member reluctance in shifting the patients from local hospital to referral hospital)	17	10

The data presented in table 6 shows the frequency and percentage distribution of patients with MI according to their response against each item of behavioral factors. Among 188 subjects, Maximum (49.4 %) of the patients

with MI stated that they tried to eliminate the symptoms or discomfort by doing other activities and taking self-medication.

4. Discussion

4.1 To assess the factors associated with pre hospital delay in seeking medical treatment among patients with myocardial infarction

The findings of the present study revealed that maximum (4.63%) of subjects belonged to the age group of more than 55 years and majority (78.7%) male, (90.9%) married, (44.6%) had higher secondary level of education and (42%) used person vehicle for transportation. These findings suggested to provide special emphasis to be given to older patients who were above the age of 55 years and who are male as they were likely to delay in seeking care and were at high risk of poor outcome.

The findings of the present study was in accordance to Dianati M, Mosavi GA, Hajibagheri Ali, Alavi NM.31(2010) who evaluated factors contributing to pre hospital delay in central hospital in kashan, Iran. The findings of the study revealed that 183(73.8%) were males and 65(26.2%) were females. The mean delay time was 127 ±174 mins. Female patients (p=0.01) and travelling to hospital by one's own car instead of using ambulance were important factors for pre hospital delay as observed in the present study [10].

Clinical Profile

In the present study majority (80.8%) of patients with MI had a history of high blood pressure, most (64.8%) of them were suffering from diabetes, (85.6%) of patients with MI had a history of smoking and maximum (54.7%) of them were belonged to ST segment elevation MI. Findings suggested that patients who had high blood pressure, history of smoking and high blood sugar were at high risk of poor outcomes.

The findings of the present study were supported by the following studies Youseef GS, Kassem HH, Ameen OA, AL Taaban HS, Rizk HH.10 (2017) conducted a study with the objective to detect cause of delay of Non ST- elevation acute coronary syndrome with a sample size of 315. Subjects were interviewed and data were analyzed using descriptive and inferential statistics. Results showed that 200 (63.5%) were males, 194(61.6%) hypertensive, 180(57.1%) diabetics and (62.2%) were current smokers. The mean pre hospital delay time was 8.7 ± 9.7 hours [7].

Factors associated with pre hospital delay in seeking medical treatment

In the present study it revealed that among 188 MI patients, 44.6% of patients delayed their treatment due to distance as a major factor, 22.8% of them stated that symptoms came and went most 52.6% of them perceived symptoms as gastric problem and 49.4% delayed because they have taken other measures to eliminate the symptoms by doing other activities and by taking medication.

The present study was supported by the following studies Hwang SY, Jeong MH. 25 (2012) conducted a study on cognitive factors that influence delayed decision to seek treatment among older patients with AMI. In this study 165 subjects were selected. The data was collected by interview technique by non-probability purposive sampling technique and were analyzed using descriptive and inferential statistics. The result of the study found that majority of the subjects (91.3%,n=95) stated that they never thought they would suffer a heart attack even though they had a hypertension, (38%) they were unaware of the risk factor associated with AMI and seriousness about their symptoms [11].

5. Recommendations

The following recommendations were based on the current study findings.

- Series of awareness programme to educate the people about AMI symptoms and need to seek medical treatment promptly can be organized regularly.
- Long term study can be planned with large sample size in order to generalize the study findings.
- Comparative study can be done by taking sample from government and private sector to understand the difference in pre hospital delay among patients with myocardial Infarction.
- The similar study can be done to find the association between factors associated with Pre hospital delay with selected variables.
- Assessment of knowledge and practice of nurse to manage the risk of patients with myocardial infarction who had delayed in seeking medical treatment is necessary.
- The findings of the study would be used by the nurse educator in planning and organizing continuous nursing educational programme for the nurses working in clinical as well as the community area.

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