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DETERMINANTS OF OUTCOME AMONG PATIENTS ATTENDING CARDIAC EMERGENCY WITH ACUTE CHEST PAIN OF CARDIAC ORIGIN IN LUCKNOW DISTRICT, UTTAR PRADESH, INDIA

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ABSTRACT

Background: India, accounts for 5.24 million deaths annually due to NCD s and 20 DALY s lost per 1000 population per year due to cardiovascular diseases. They also contribute to 35.3% of total morbidity. **Objectives:** To study the distribution of outcome and the factors contributing to complications and non-survival in patients attending cardiac emergency with acute chest pain of cardiac origin in Lucknow district. **Material and Methods:** A Descriptive Longitudinal Study was conducted in the cardiac emergency of CSMMU, a tertiary care center, following systematic random sampling technique on a sample size of 220 during study period of one year August 2010 to August 2011. Data was collected through preformed and pretested schedule and analysed using SPSS 17.0 software. **Results:** The rate of complications during hospital stay was about 29.1%, out of which 29.7% were persistent and the commonest complication was arrhythmias (22.3%), followed by LVF (7.3%). The rate of complications after 3 months of follow up was about 21%, out of which 27.9% were persistent and the commonest complication was recurrence of chest pain (9.5%), followed by LVF (6.3%). Overall in-hospital mortality rate of patients with acute chest pain of cardiac origin was 5% and total mortality rate upto 3 months of follow up was 13.7%. The factors responsible for complications in patients with acute chest pain of cardiac origin were: uncontrolled DM,

stage I and stage II hypertension, presence of dyslipidaemia, lack of regular exercise and lower socio-economic class. The factors leading to non-survival were: uncontrolled DM, stage I and stage II hypertension, presence of LVF at admission, having renal or electrolyte abnormalities, LVEF <40 % and having BPL card. **Conclusions:** IEC activities should be targeted to the high risk groups on short term approach to educate about the immediate action that can be taken after chest pain and about the appropriate health centers for treatment of chest pain so that some lives can be saved before reaching the hospital. As pain onset during night was associated with the delay and delay in arranging transport was significantly associated with the adverse cardiac outcomes, calling for help and ambulance services should be made available to the people with acute chest pain.

KEYWORDS: Outcome, Acute Chest Pain, Cardiac Emergency, Seeking Health Care.

INTRODUCTION

Epidemiological transition by the second half of 20th century has witnessed a rise in the global burden of non communicable diseases**,** accounting for 36 million deaths. World health report 2010 indicates 63% of total global deaths and 46% of global burden of disease is due to NCD‘s and 80 % of these deaths occur in low and middle income countries. Cardiovascular diseases are the leading cause of mortality and morbidity among NCD’s contributing to 17 million deaths i.e. 48% of total NCD deaths and WHO report 2010 estimated it to increase to 23.4 million by 2030. Cardiovascular diseases contribute to 170 million DALYs, accounting for 11.3% of global burden. India, second most populous country in the world, accounts for 5.24 million deaths annually due to NCD s and 20 DALY s lost per 1000 population per year due to cardiovascular diseases. They also contribute to 35.3% of total morbidity. (WHO; Global status of non communicable diseases 2010).

It has been well documented that tobacco use, Diabetes mellitus, high blood pressure , obesity , physical inactivity, unhealthy dietary habits are the major and alcohol, low socio-economic status and psycho social stress are the minor modifiable risk factors for cardiovascular diseases . India, having an overall prevalence of smoking 34.6% in men and 3.4% in women , having diabetes prevalence of 5.5 % is also having the brunt of risk factors. (WHO; NCD SEA region profile 2009).

It has been reported that the administration of reperfusion agents is associated with a reduction of up to 25% in in-hospital mortality after acute myocardial infarction. Moreover

both the use of reperfusion strategies and their efficacy are inversely correlated with the time between the onset of symptoms suggestive of acute coronary disease and patients' arrival at the hospital for treatment. Concerning the association of pre-hospital delay and the benefits of thrombolytic therapy, there is clear evidence that early treatment, especially within the first "golden hour", can reduce both infarct size and subsequent disability and mortality.

Despite the known importance of early intervention, delay in seeking medical care is common and constitutes a major unresolved public health problem. Previous studies have investigated factors associated with the delay in seeking medical care and suggested that a variety of demographic, behavioral and clinical characteristics account for this delay. However, information relating to the extent of delay and factors associated with the delay for each type of acute coronary syndrome are limited, since most of the studies conducted in the past, included only patients with acute myocardial infarction and this kind of studies are done in western countries more often than in India.

Therefore, the primary focus of the present study was to examine the extent of the delay and to delineate associated factors in seeking medical care for patients hospitalized with acute coronary syndromes and also to examine avoidable delay in initiation of the intervention at the health care facility. Further our study was also aimed to find out whether delay either in reporting or in intervention and its associated factors has any role in the health outcome.

OBJECTIVES OF THE STUDY

1. To determine the distribution of outcome in presenting to a health care facility of patients attending cardiac emergency with acute chest pain of cardiac origin residing in Lucknow district.
2. To delineate the socio-medical determinants of outcome in seeking health care of patients attending cardiac emergency with acute chest pain of cardiac origin residing in Lucknow district.

MATERIAL AND METHODS

This Descriptive Longitudinal study was conducted at Lucknow, capital state of Uttar Pradesh. This study was carried out from August 2010 to August 2011 at Cardiology emergency, Chhatrapati Shahuji Maharaj Medical University (Tertiary care centre) among Patients attending cardiac emergency with acute chest pain of Cardiac origin in Lucknow district as Study unit. Due to lack of availability of similar studies in India and after review of

studies all over the world, the range of acute chest pain patients seeking health care within 6 hours of onset of pain varies from 40% to 60%. Hence by taking 50% of the patients with acute chest pain of cardiac origin as seeking health care within 6 hours from the onset of pain, with the absolute permissible error, d=10% in the prevalence with a 95% confidence limit, the sample size was calculated with design effect (W) of 2 and 10% of cases lost to follow up, final sample size worked out to be 220. Systematic random sampling technique was used. Sampling interval (every third patient in the emergency register) was decided on the basis of analysis of baseline data obtained from the cardiac emergency for the month of July 2010.

All patients attending cardiac emergency with acute chest pain of cardiac origin (as evidenced by expert clinical opinion or ECG or cardiac enzymes) residing in Lucknow district with minimum stay in the hospital for atleast 1 hour were included in the study while patients with acute chest pain of non cardiac origin, patients with serious unrelated disease (Eg: advanced malignancy, renal failure, severe COPD, trauma, surgery) which may limit the life expectancy were excluded. A pretested structured interview schedule was used to collect necessary information. Permission to conduct this study was taken from the institutional ethical committee and Head of the department, Cardiology. Informed consent was taken from the study respondents.

Gender, place of residence, marital status, religion, type of family, having BPL card, having medical imbursement, smoking, alcohol, DM, HTN, dyslipidaemia, regular exercise, past history, family history, day of onset of pain, Age, literacy status, SES class, perception about level of seriousness, awareness of risk factors, Caste, occupation, place at the onset of pain, final diagnosis, time of onset of pain were the independent variables in the study.

Data entry and analysis was done using SPSS version 17.0. Descriptive statistics such as mean and standard deviation (SD) for continuous variables, and frequency and percentage for categorical variables were determined. The chi-square test and Fisher's exact test (when appropriate) was used to show the associations between predictor and outcome variables .The level of significance was set at 0.05. Factors independently associated with health seeking behavior of patients were determined by multiple logistic regression analysis methods.

RESULTS

The rate of complications during hospital stay was about 29.1%, out of which 70.3% were cured and 29.7% were persistent. Out of the complications occurred during hospital stay, the

most common complication was arrhythmias (22.3%), followed by LVF (7.3%), recurrence of chest pain (5.9%) and hypotension (5.5%). Among the arrhythmias occurred, CHB contribute for the 45% of the cases. Similiarly, the rate of complications after 3 months of follow up was about 21% , out of which 72.1% were cured and 27.9% were persistent. Out of the complications occurred after 3 months of follow up, the most common complication was recurrence of chest pain (9.5%), followed by LVF (6.3%). Overall in-hospital mortality rate of patients with acute chest pain of cardiac origin was 5% and total mortality rate upto 3 months of follow up was 13.7% (Table 1).

The rate of complications (23.9%) and mortality rate (15.2%) were common among advanced age group (>65 yrs). The rate of complications was higher in females (32.4% v/s 18.5 % in males), while the mortality rate was more in males (14.3% v/s 10.8% in females). The mortality rate among rural patients was higher (18.6% v/s 11.1% in urban patients). No statistical association found between type of family, caste , marital status and dietary habits of the patient and outcome of the patient (Table 2). The association between the socio-econonomic status, having BPL card and outcome of the patient was statistically significant, whereas the association between having medical reimbursement or health insurance, literacy status and outcome of the patient was not statistically significant (Table 3).

Table 4 shows that the rate of complications and the mortality rate were much higher in patients who were not doing regular exercise. The association between the regular exercise and outcome of the patient was statistically significant (p=0.006). The rate of complications was much higher in patients with stage I hypertension and mortality was higher in patients with stage II hypertension. The association between the grading of hypertension and outcome of the patient is extremely significant statistically. Both the rate of complications and mortality rate were much higher in patients with uncontrolled DM and hyperlipidaemia (p=0.014). The rate of complications was higher in obese patients (50%) and mortality was higher in underweight patients (18.8%) and the association between the BMI status and outcome of the patient was statistically significant (p=0.032).

It is evident from table 5 that the association between the time taken in arranging transport and outcome of the patient was found statistically significant (p=0.029). There was no significant association was found between the day, time and place of onset of chest pain, perception of the level of seriousness of the pain, awareness of the risk factors and the outcome of the patient (Table 6).

The patients with LVF were having more chances of non-survival than the patients without LVF (p=0.038). The mortality was more in patients with other arrhythmias, abnormal RFT, Dyselectrolytaemia, abnormal ABG, having two vessel disease and LVEF <40 % (Table 7). The rate of complications was marginally higher in patients with NSTEMI (24.6%) and the mortality rate was much higher in patients with IWMI/RVMI/PWMI (17.3%).

Table 8 summarises the findings and shows that the factors responsible for complications in patients with acute chest pain of cardiac origin were: uncontrolled DM, stage I and stage II hypertension, presence of dyslipidaemia, lack of regular exercise and lower socio-economic class. The factors leading to non-survival were: uncontrolled DM, stage I and stage II hypertension, presence of LVF at admission, having renal or electrolyte abnormalities, LVEF <40 % and having BPL card.

Table 1: Distribution of Patients with Acute Chest Pain of Cardiac Origin According to their Outcome.

Outcome of the patient	During hospital stay (n=220)		After 3 months follow up (n=205)	
	No	(%)	No	(%)
Uneventful	145	**65.9**	134	**65.4**
CHB	22	**10.0**	3	**1.4**
Other Arrhythmia	27	**12.3**	3	**1.4**
Hypotension/ Shock	12	**5.5**	3	**1.4**
Dyspnoea/ LVF	16	**7.3**	13	**6.3**
Recurrence of chest pain	13	**5.9**	21	**9.5**
Others	10	**4.5**	9	**4.4**
Complications (Total)	64	**29.1**	43	**21.0**
Cured	45	**70.3**	31	**72.1**
Persistent	19	**29.7**	12	**27.9**
Death	11	**5.0**	28	**13.7**

Table 2: Association between Bio-Social Characteristics and Outcome of the Patient

Bio-social characteristics	Outcome of the patient (n=205)				P value
	Uneventful	Complications	Death	Total	
Age (in years)					
<45	16 **(72.7)**	5 **(22.7)**	1 **(4.5)**	22	**0.706**
45-65	90 **(65.7)**	27 **(19.7)**	20 **(14.6)**	137	
>65	28 **(60.9)**	11 **(23.9)**	7 **(15.2)**	46	
Gender					
Male	113 **(67.3)**	31 **(18.5)**	24 **(14.3)**	168	**0.164**

Female	21 **(56.8)**	12 **(32.4)**	4 **(10.8)**	37	
Place of residence					
Rural	43 **(61.4)**	14 **(20.0)**	13 **(18.6)**	70	**0.336**
Urban	91 **(67.4)**	29 **(21.5)**	15 **(11.1)**	135	
Religion					
Hindu	111 **(69.8)**	30 **(18.9)**	18 **(11.3)**	159	**0.129**
Muslim	23 **(53.5)**	13 **(30.2)**	7 **(16.3)**	43	
Caste					
General	89 **(65.4)**	26 **(19.1)**	21 **(15.4)**	136	**0.656**
OBC	27 **(65.9)**	11 **(26.8)**	3 **(7.3)**	41	
SC/ST	18 **(64.3)**	6 **(21.4)**	4 **(14.3)**	28	

Table 3: Association between Socio-Economic Status and Outcome of the Patient

	Outcome of the patient (n=205)				P value
Socio-economic position	**Uneventful**	**Complications**	**Death**	**Total**	
Occupation					
Professional	32 **(68.1)**	10 **(21.3)**	5 **(10.6)**	47	**0.838**
Shopkeeper, clerk, farmer	39 **(68.4)**	13 **(22.8)**	5 **(8.8)**	57	
Labourer	33 **(68.6)**	8 **(16.7)**	7 **(14.6)**	48	
Unemployed/ housewife	40 **(63.5)**	12 **(19.0)**	11 **(17.5)**	63	
Education					
Illiterate	17 **(63.0)**	5 **(18.5)**	5 **(18.5)**	27	**0.828**
Primary & high school	41 **(62.1)**	14 **(21.2)**	11**(16.7)**	66	
Intermediate	12 **(75.0)**	2 **(12.5)**	2 **(12.5)**	16	
Graduate and above	64 **(66.7)**	22 **(22.9)**	10 **10.4)**	96	
Socio economic status					
I	13 **(81.3)**	1 **(6.3)**	2 **(12.5)**	16	**0.006**
II	65 **(69.9)**	18 **(19.4)**	10**(10.8)**	93	
III	31 **(55.4)**	17 **(30.6)**	8 **(14.3)**	56	
IV	25 **(64.1)**	7 **(17.9)**	7 **(17.9)**	39	
V	0 **(0.0)**	0 **(0.0)**	1 **100.0)**	1	
Have BPL card					
Yes	13 **(48.1)**	6 **(22.2)**	8 **(29.6)**	27	**0.010**
No	121 **(68.0)**	37 **(20.8)**	20**(11.2)**	178	
Have Medical reimbursement/ Health insurance					
Yes	40 **(75.5)**	8 **(15.1)**	5 **(9.4)**	53	**0.198**
No	94 **(61.8)**	35 **(23.0)**	23**(15.1)**	152	

Table 4: Association between Risk Factor Status and Outcome of the Patient

	Outcome of the patient (n=205)				P value
Risk factors	**Uneventful**	**Complications**	**Death**	**Total**	
Smoking					
Yes	57 **(64.0)**	20 **(22.5)**	12 **(13.5)**	89	**0.898**
No	77 **(66.4)**	23 **(19.8)**	16 **(13.8)**	116	
Alcohol					
Yes	31 **(70.5)**	9 **(20.5)**	4 **(9.1)**	44	**0.581**
No	103 **(64.0)**	34 **(21.1)**	24 **(14.9)**	161	
Regular exercise					
Yes	52 **(82.5)**	5 **(7.9)**	6 **(9.5)**	63	**0.006**
No	82 **(57.7)**	38 **(26.8)**	22 **(15.5)**	142	
Hypertension					
No	77 **(63.1)**	25 **(20.5)**	20 **(16.4)**	122	**0.383**
Yes	57 **(68.7)**	18 **(21.7)**	8 **(9.6)**	83	
Pre-hypertension	36 **(97.3)**	1 **(2.7)**	0 **(0.0)**	37	**<0.001**
Stage I	12 **(46.2)**	14 **(53.8)**	0 **(0.0)**	26	
Stage II	7 **(38.9)**	3 **(16.7)**	8 **(44.4)**	18	
Diabetes Mellitus					
No	90 **(64.7)**	29 **(20.9)**	20 **(14.4)**	139	**0.906**
Yes	44 **(66.7)**	14 **(21.2)**	8 **(12.1)**	66	
On regular treatment	44 **(93.6)**	1 **(2.1)**	2 **(4.3)**	47	**<0.001**
On irregular treatment	0 **(0.0)**	13 **(68.4)**	6 **(31.6)**	19	
Dyslipidaemic					
Yes	14 **(48.3)**	12 **(41.4)**	3 **(10.3)**	29	**0.014**
No	120 **(68.2)**	31 **(17.6)**	25 **(14.2)**	176	
Status of BMI					
Underweight	12 **(75.0)**	1 **(6.3)**	3 **(18.8)**	16	**0.032**
Normal	82 **(68.9)**	21 **(17.6)**	16 **(13.4)**	119	
Overweight	31 **(62.0)**	11 **(22.0)**	8 **(16.0)**	50	
Obese	9 **(45.0)**	10 **(50.0)**	1 **(5.0)**	20	

Table 5: Association between Health Seeking Behaviour and Outcome of the Patient

	Outcome of the patient (n=205)				P value
Delay in health seeking	**Uneventful**	**Complications**	**Death**	**Total**	
Time taken in decision making to seek treatment					
<1 hr	54 **(65.9)**	17 **(20.7)**	11 **(13.4)**	82	**0.409**
1-6 hrs	36 **(73.5)**	9 **(18.4)**	4 **(8.2)**	49	
6-12 hrs	11 **(73.3)**	1 **(6.7)**	3 **(20.0)**	15	
>12 hrs	33 **(55.9)**	16 **(27.1)**	10 **(16.9)**	59	
Time taken in arranging money					
≤ 1 hr	101 **(65.6)**	34 **(22.1)**	19 **(12.3)**	154	**0.561**
>1 hr	33 **(64.7)**	9 **(17.6)**	9 **(17.6)**	51	

Time taken in arranging transport					
≤ 1 hr	77 **(74.0)**	16 **(15.4)**	11 **(10.6)**	104	**0.029**
>1 hr	57 **(56.4)**	27 **(26.7)**	17 **(16.8)**	101	
Time taken in transportation to reach appropriate center					
< 1 hr	78 **(63.4)**	28 **(22.8)**	17 **(13.8)**	123	**0.858**
1-2 hrs	29 **(72.5)**	6 **(15.0)**	5 **(12.5)**	40	
>2 hrs	27 **(64.3)**	9 **(21.4)**	6 **(14.3)**	42	
Duration between the onset of chest pain and first consultation					
<1 hr	44 **(68.8)**	12 **(18.8)**	8 **(12.5)**	64	**0.801**
1-6 hrs	43 **(68.3)**	13 **(20.3)**	7 **(11.1)**	63	
6-12 hrs	11 **(68.8)**	2 **(12.5)**	3 **(18.8)**	16	
>12 hrs	36 **(58.1)**	16 **(25.8)**	10 **(16.1)**	62	

Table 6: Association between Time of Onset of Chest Pain, Perception of Seriousness and Awareness of Risk Factors and Outcome of the Patient

Characteristics	Outcome of the patient (n=205)				P value
	Uneventful	Complications	Death	Total	
Day of onset of chest pain *					
Weekdays	101 **(65.6)**	33 **(21.4)**	20 **(13.0)**	154	**0.874**
Weekend	33 **(64.7)**	10 **(19.6)**	8 **(15.7)**	51	
Time of onset of chest pain					
6 am to 11:59 am	46 **(71.9)**	10 **(15.6)**	8 **(12.5)**	64	**0.841**
12 pm to 5:59 pm	36 **(61.0)**	13 **(22.0)**	10 **(17.0)**	59	
6 pm to 11:59 pm	30 **(63.8)**	11 **(23.4)**	6 **(12.8)**	47	
12 am to 5:59 am	22 **(62.9)**	9 **(25.7)**	4 **(11.4)**	35	
Place at the onset of chest pain					
Home	98 **(65.8)**	32 **(21.5)**	19 **(12.8)**	149	**0.959**
Work place	20 **(62.5)**	7 **(21.9)**	5 **(15.6)**	32	
Public Place	16 **(66.7)**	4 **(16.7)**	4 **(16.7)**	24	
Perception about level of seriousness					
Low	33 **(56.9)**	18 **(31.0)**	7 **(12.1)**	58	**0.077**
High	31 **(68.9)**	6 **(13.3)**	8 **(17.8)**	45	
Very High	46 **(78.0)**	8 **(13.6)**	5 **(8.5)**	59	
Life Threatening	24 **(55.8)**	11 **(25.6)**	8 **(18.6)**	43	
Awareness of risk factors					
0	33 **(57.9)**	12 **(21.1)**	12 **(21.1)**	57	**0.383**
1-4	36 **(66.7)**	11 **(20.4)**	7 **(13.0)**	54	
5-8	65 **(69.1)**	20 **(21.3)**	9 **(9.6)**	94	

Table 7: Association between Clinical and Diagnosis Status at the Time of Admission, Diagnosis and Outcome of the Patient

Characteristic		Outcome of the patient (n=205)				P value
		Uneventful	Complications	Death	Total	
Clinical status at the time of admission						
LVF	Present	6 **(42.8)**	3 **(21.4)**	5 **(35.7)**	14	**0.038**
	Absent	128 **(67.0)**	40 **(20.9)**	23 **(12.0)**	191	
CHB	Present	10 **(50.0)**	5 **(25.0)**	5 **(25.0)**	20	**0.191**
	Absent	124 **(67.4)**	38 **(20.7)**	22 **(12.0)**	184	
Other Arrhythmia	Present	14 **(56.0)**	5 **(20.0)**	6 **(24.0)**	25	**0.269**
	Absent	120 **(66.7)**	38 **(21.1)**	22 **(12.2)**	180	
RFT	Normal	122 **(69.3)**	37 **(21.0)**	17 **(9.7)**	176	**<0.001**
	Abnormal	12 **(42.9)**	5 **(17.9)**	11 **(39.3)**	28	
Electrolytes	Normal	130 **(68.8)**	39 **(20.6)**	20 **(10.6)**	189	**<0.001**
	Abnormal	3 **(21.4)**	3 **(21.4)**	8 **(57.1)**	14	
ABG	Normal	4 **(66.7)**	1 **(16.7)**	1 **(16.7)**	6	**0.271**
	Abnormal	4 **(30.8)**	2 **(15.4)**	7 **(53.8)**	13	
Two vessel disease	Present	2 **(33.3)**	2 **(33.3)**	2 **(33.3)**	6	**0.204**
	Absent	132 **(66.3)**	41 **(20.6)**	26 **(13.1)**	199	
LVEF	<40%	27 **(50.0)**	8 **(14.8)**	19 **(35.2)**	54	**<0.001**
	>40%	56 **(71.8)**	20 **(25.6)**	2 **(2.6)**	78	

Table 8: The Factors Leading to Complications and Non-Survival of the Patients with Acute Chest Pain of Cardiac Origin

Characteristics	P value
Uneventful v/s complications	
Grading of hypertension	**<0.001**
Control status of DM	**<0.001**
Dyslipidaemia	**0.003**
Lack of regular exercise	**<0.001**
SE class	**0.037**
Survival v/s non-survival of the patient	
Grading of hypertension	**<0.001**
Control status of DM	**0.001**
Having BPL card	**0.010**
Presence of LVF at admission	**0.013**
Abnormal RFT	**<0.001**
Dyselectrolytaemia	**<0.001**
LVEF <40 %	**<0.001**

DISCUSSION

In the present study, the rate of complications during hospital stay was about 29.1%, the most common complication was arrhythmias (22.3%), followed by LVF (7.3%), recurrence of chest pain (5.9%) and hypotension (5.5%). Overall in-hospital mortality rate of patients with

acute chest pain of cardiac origin was 5% and total mortality rate upto 3 months of follow up was 13.7%.

Montassier E., *et.al*., (2011)[1] in their study to determine the rate of adverse cardiac events (ACE) within a period of 60 days after discharge from the emergency department, showed that the rate of ACE was 3.7%. Cornelia H.M., *et.al*., (2006)[2] in their study showed that for AMI, 1 month mortality was related to high age and low body mass index, while longer term mortality was related to male gender and high age and diabetes mellitus. Kakade., *et.al*., (2010)[3] in their study at Goa, showed that mortality rate was 21.2% and no significant difference in mortality rates among males and females (28% v/s 19.4%; p = 0.10). Patients reporting early to the hospital, having longer stay and those with higher systolic blood pressure at admission were likely to have better prognosis during their hospital stay.

None of the socio-demographic factors were associated with the outcome of the patient except having BPL card and SES class. Among the risk factors, uncontrolled DM, physical inactivity, obesity, dyslipidaemia and stage I and II HTN were associated with adverse cardiac outcomes. Aleksey N., *et.al*., (2011)[4] showed that in hospital mortality did not differ significantly between males and females.

Shabbir M., *et.al*., (2008)[5] observed that 9.2% of patients with AMI died during hospital stay, the mortality rate was 7.52% among males and 14.06% among females. 4.2% among less than 60 yrs of age, 10.3% among 61-70 yrs of age and 22.85% among above 70 yrs of age. Overall death rate was 7.51% among non-diabetics and 12.98% among diabetics. Higher mortality was also observed in patients with anterior wall MI. Joan S., *et.al*.,(2005)[6] showed that 28 day mortality rate was positively associated with advanced age and female gender and negatively associated with past history and current smoking. Biranchi N.J., *et al.,* (2009)[7] in their study at secunderabad showed that male sex, old age, residence (rural / urban) are associated with non survival of patients with acute chest pain . Response time was significantly associated with survival rate, only for critical cases.

In the present study, no significant association was found between the day, time and place of onset of chest pain, perception of the level of seriousness of the pain, awareness of the risk factors and the outcome of the patient. This is in contrast to Witte D.R., *et.al*., (2005)[8] who in their Meta-analysis showed that excess cardiac mortality occurs on Monday. The rate of complications was much higher in patients whose health seeking time was more than 12

hours from the onset of pain (25.8%) and mortality was more likely to occur in patients whose health seeking time was more than 6 hrs from the onset of pain. But the association between the health seeking time and outcome of the patient was found to be statistically insignificant (p=0.801). Delay in arranging money was associated with adverse cardiac outcomes. This is in contrast to Christos P, *et.al*., (2006)[9] who observed that median delay time was 6 hrs in those patients who died and 3.5 hrs in those who survived (p=0.008). 4% of the patients died who came within 2 hrs, whereas 11% died who came after 6 hrs of chest pain (p=0.04). logistic regression after dichotomising the delay as <2 hrs and >2 hrs, OR (95% CI) found out to be 2.3 (1.23 to 4.22). Prehospital delay remained a statistically significant predictor of in-hospital mortality even after adjustment for all potential confounders.

The present study showed that the factors responsible for complications in patients with acute chest pain of cardiac origin were: uncontrolled DM, stage I and stage II hypertension, dyslipidaemia, lack of regular exercise and lower socio-economic class. The factors leading to non-survival were: uncontrolled DM, stage I and stage II hypertension, LVF at admission, having renal or electrolyte abnormalities, LVEF <40 % and having BPL card. This is supported by Joan S., *et.al*.,(2005)[6] who showed that 28 day mortality rate was more in patients with severe arrhythmias, cardiogenic shock and LVF at admission.

CONCLUSIONS

Public awareness campaigns to be conducted periodically to educate people about signs and symptoms of acute chest pain of cardiac origin, to create awareness about the seriousness of the problem and risk factors. Calling for help (emergency helpline numbers) and ambulance services should be made available to the people with acute chest pain. Any community intervention planned should be focused at social, emotional and cognitive planes and involve the family members also in persuading and promoting preventive care. Prompt referral and early management of complications leads to better outcome of patients with acute chest pain.

Limitations of the study

The present study does not represent the patients with acute chest pain of cardiac origin who die at home or on the way to the hospital or those who died within the first hour of admission to the hospital or those who attended other facilities or did not visit this health facility.

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