



CODEN [USA]: IAJPBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4127046>Available online at: <http://www.iajps.com>

Research Article

DEMOGRAPHIC STATUS OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION (AMI) PRESENTED TO PUNJAB INSTITUTE OF CARDIOLOGY, LAHORE

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Article Received: August 2020	Accepted: September 2020	Published: October 2020
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Abstract:

Objective: While doing the study on Aspirin Awareness and Usage (AAUS) in cases of Acute Coronary Syndrome (ACS), AAUS study Group designed the protocol to include the profile of patients presenting with symptoms of ACS and in the light of that also reviewed the available data in Pakistani population.

Methodology: It was a prospective study conducted in the acute coronary care units (CCUs) of Punjab Institute of Cardiology Lahore for two years duration from April 2018 to April 2020. Patients included men and women of all age groups with chest pain who were diagnosed with coronary artery disease (CAD) and classified for unstable angina (USA), STEMI or NSTEMI based on clinical, ECG and enzyme criteria. Risk factors, family history, diet history, time to ER after symptom onset, ACS management in the ICU, and treatment outcome were recorded.

Results: A total of 1,527 patients presented to the ED with chest pain, but approximately 1,400 patients were assessed. The majority (68%) were men. The mean age of all patients was 52.2 ± 10.7 years. 28.3% of patients were <45 years of age. The mean time to presentation in the emergency room was 13.2 ± 6.2 hours. 92.7% of patients reported chest pain. More than half of the patients had hypertension (55.2%) and / or smoking (52%) as risk factors, while 37.2% had diabetes and 18.2% had hyperlipidemia. Hypertension (52.7%), IHD (44%) and diabetes (36.2%) were important in the family history. The United States and STEMI were the main types of ACS (43.0% and 40.5%, respectively). At the time of discharge, 67.8% of patients were stable without symptoms, 13.3% with symptoms, 16.4% were referred for further testing, and 2.5% had died.

Conclusions: Review of the available data in Pakistan, supported by the current study on a cohort of 1,400 patients, the emerging profile of AMI patients is that the majority are male, relatively younger compared to the Western population, smoking and hypertension followed by diabetes are the major risk factors. The unstable angina and STEMI are the dominant types of ACS, and most patients likely have high blood pressure, IHD, and diabetes in their families. Better control of risk factors and awareness of prevention strategies are needed.

KEYWORDS: Acute Coronary Syndrome (ACS), Acute Myocardial Infarction (AMI), Risk Factors, Ischemic Heart Disease, Profile.

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Please cite this article in press Abida Bashir et al, Demographic Status Of Patients With Acute Myocardial Infarction (AMI) Presented To Punjab Institute Of Cardiology, Lahore., Indo Am. J. P. Sci, 2020; 07(10).

INTRODUCTION:

Cardiovascular risk factors for coronary heart disease and AMI are increasing in Pakistan¹⁻². 18% of the - adult population suffer from hypertension, smoking and smoking have increased, and obesity is increasing. 16.2% of men and 11.7% of women have diabetes, while another 8.2% of men and 11.7% of women have impaired glucose tolerance³⁻⁴. Along with the increase in wealth and life facilitations, there is a definite change in lifestyle and the growing tendency to a sedentary lifestyle. Physical and outdoor activities appear to have decreased⁵⁻⁶. As a consequence, cardiovascular diseases such as myocardial infarction and stroke have become the leading causes of morbidity and mortality in Pakistan. When investigating the regimen of aspirin use in ACS patients in Pakistan, an additional goal was to examine the demographics, presentation, risk factors, management and outcomes of patients with ACS⁷⁻⁸.

PATIENTS AND METHODS:

It was a prospective study conducted in the acute coronary care units (CCUs) of Punjab Institute of Cardiology Lahore for two years duration from April 2018 to April 2020 and operated by trained physicians. The study population included all male and female patients who presented sequentially to the emergency department with chest pain, dyspnea or syncope. These patients were diagnosed with coronary artery disease (CAD) based on clinical, electrocardiographic, and enzymatic ACS criteria. They were then divided into unstable angina (USA), STEMI and NSTEMI. An extensive questionnaire was used and verified in the pilot study. It included questions related to risk factors for coronary artery disease, detailed nutritional history, family history, time of reaching the emergency room after chest pain, management of ACS in the ICU and treatment outcome. Trained doctors were asking questions. Formal written informed consent of patients was obtained for participation in the study. The sampling method was one of the convenient sampling methods for all patients presenting with chest pain due to ACS for inclusion in the study. Patients who did not meet the inclusion criteria, refused to enter, and those who had contraindications to the use of aspirin were excluded from the study. Patients were followed during their stay in hospital until discharge.

Statistical analysis: Data are expressed as median (range) or mean (\pm standard deviation) for continuous variables or as indicators (percent) for categorical variables. The data was entered and analyzed using the SPSS software.

RESULTS:

One thousand five hundred and twenty-seven consecutive patients reported to the emergency room of hospitals, of which approximately 1,400 patients were assessed. Non-evaluable patients are those who did not meet the inclusion criteria, refused to participate in the study, or had grossly inadequate case report forms. The demographics of 1,400 eligible patients are provided in Table I.

Table-I: Patient Demographics (n=1400)

Males	953 (68.1%)	
Females	447 (31.9%)	
Age (years)	Mean	52.5 \pm 10.8
	< 45	28.3%
	> 45	71.7%
	< 60	77.5%
	> 60	22.5%
BMI	Mean	26.5 \pm 5.5
Time to admission after onset of symptoms(Mean)	13.2 \pm 6.2 hours	

The majority (68%) were male. The mean age of the patients at the time of reporting was 52.2 \pm 10.7 years. The mean age of patients with STEMI and NSTEMI was 51 \pm 9.9 and 53.11, respectively, $p = 0.034$. Relatively younger patients at the age of 60. The mean time from symptom onset to onset in hospital was 13.2 \pm 6.2 hours. The mean BMI was 26.5 \pm 5. The presented symptoms included unstable angina in 547 (39%), chest pain in 1299 (92.7%), dyspnea in 602 (43%) and syncope in 87 (6.2 %).

Table-II: Co-morbid Conditions & Family History (n= 1400)

<i>Co-morbid</i>	
Hypertension	55.2%
Smoking	52.0%
Diabetes mellitus	37.8%
Existing IHD	38.7%
Hyperlipidemia	18.2%
<i>Family History</i>	
Hypertension	52.7%
Diabetes mellitus	36.2%
IHD	44.6%
Hyperlipidemia	7.0%

Table II shows comorbidities and family history. More than half of the patients had hypertension (55.2%) and / or smoked (52.0%). Family history showed that a significant number (52.7%) had hypertension, 44% had ischemic heart disease, and 36.2% had a family history of diabetes. Table III shows the types of ACS and the final result at discharge from hospital. Unstable angina and STEMI were nearly equal in presentation [43% and 40.5%,

respectively], while 16.5% had NSTEMI. At the time of discharge, most patients (67.8%) were stable and asymptomatic, 13.3% were symptomatic stable, 16.4% were referred for further study, and 2.5% had died.

Table-III: Types of ACS and Outcome (n=1400)

Types of ACS	
Unstable angina	43%
STEMI	40.5%
NSTEMI	16.5%
Outcome	
Stable without symptoms	67.8%
Stable with symptoms	13.3%
Referred for investigations	16.4%
Died	2.5%

DISCUSSION:

Although the AAUS study was directed to awareness and use of aspirin in ACS patients, the assessment of the AMI profile was built into the protocol⁸⁻⁹. This study included the largest number of patients (1,400) in Pakistan to date to assess aspirin awareness and AMI profile. Based on this study, the typical profile of patients would be that the majority are males, with a mean age of around 52 years, bordering on obesity, reporting chest pain and smoking, hypertension followed by diabetes as the main risk factors. They also likely have a family history of high blood pressure, IHD, and diabetes. Moreover, 28.3% of our patients were under 45 years of age¹⁰⁻¹¹. Most patients had unstable angina and STEMI in equal proportions to the types of ACS. Comprehensive data on the characteristics and profile of AMI patients in Pakistan patients are insufficient and no major studies have been published. However, some data is available. Samad Z *et al*. They described the profile of patients with AMI hospitalized in a 3rd degree hospital¹². Their findings that fit our study on male advantage. However, their patients with chest pain were admitted much earlier (within 2 hours of symptom onset) and those without chest pain, but shortness of breath occurred 12 hours after symptom onset compared to our study (13.2 ± 6.2 hours). Even then, the mortality in our study was lower at 2.5% compared to 10.8%, possibly because more of their patients presented shock. Saleheen and Frossard reported that the relatively younger patients (<45 years) accounted for 16.1% of all patients. These patients smoked more often and had high lipid levels. In our study, almost a third of patients (28.3%) belong to the relatively younger age group <45 years. Ahmad and Shafique looked at risk factors for AMI in the younger age group. 19% of their patients were under the age of 40. The majority (87%) were men. 79% had risk factors for smoking, 35% for

hypertension, 31% for diabetes and 19% for hyperlipidemia. Ishaq M *et al*. Also reported that coronary artery disease is more common in men¹³. It found that smoking was the most common risk factor among men, while most women were obese, had high blood pressure and abnormal lipid levels. These risk factors are almost similar to our research. In another study by Abbas S. *et al*. The pattern of risk factors is almost similar to previous studies in terms of predominance of men (73.8%), smoking (57.8%), hypertension and a significantly higher incidence of diabetes in women than in men in each age of groups and increased with age (5.0% to 16.9% vs. 3.1% to 10.1%). Contrary to these studies, Jafar *et al*. In a cross-sectional population study found that the incidence of IHD was equal to that of men and women [26.9% in men and 30% in women ($p = 0.12$)]. However, major risk factors such as smoking and high blood pressure were similar to other observations. The risk was equally high in young patients and women. A case-control study in India showed a similar profile of risk factors for high levels of smoking, high blood pressure and diabetes. In this study, the lipid profile did not play a significant role. The mean age of the patients in our study was 52.5 ± 10.8 years, and only 22.5% were over 60 years of age. This underlines the fact that Pakistani patients are at least 10 years younger than what is seen in the West¹⁴. A recent US COURAGE study found that the mean age was 62 ± 5 years, but male predominant (85%). Contrary to our study, risk factors such as smoking are significantly lower in this study (29% vs 52%). However, hypertension (68%) and diabetes (34%) are significant risk factors, similar to studies in South Asia. Another recent study compared ACS in South Asians and Caucasians. It found that Asians were at least 10 years younger than Caucasians at the time of ACS presentation. The immediate outcome of patients may have been biased due to the focus on aspirin use¹⁵. There are no medium to long term outcomes available for these patients. Details of the angiographic tests that were performed later on some patients in the studies are also not available. As the study was not intended to account for post-AMI mortality, the number of unseen deaths reported is low and may be inaccurate.

CONCLUSION:

Despite the limitations outlined above, it still seems reasonable to draw conclusions about the emerging AMI profile in Pakistan patients. The majority (two-thirds) of patients are likely to be males, bordering on obesity, with the dominant risk factors of smoking, hypertension and diabetes. They are more likely to have high blood pressure, IHD and diabetes in their families. The unstable angina and STEMI are equally

common presentations. An almost similar profile has been found in other peer-reviewed studies in Pakistan and South Asia. Preventive strategies and accelerated efforts to raise awareness are needed. Disclosure: None of the authors or researchers received funding or any other compensation for conducting this study.

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