

**Original article**

## **Clinical presentation, gender and age profile of acute coronary syndrome - multicentre observational analysis in Vijayapur in North Karnataka**

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### **Abstract**

**Objective:** To determine the clinical characteristics, sex differences in younger and older patients hospitalized among patients with acute coronary syndrome in the two major tertiary referral medical college hospitals in the endemic area of Vijayapur over a period of 4 years.

**Methods:** This study included a final total of 100 patients out of the 920 patients screened who presented with acute chest pain. We excluded a total of 820 patients. Out of 230 patients with diagnosed ACS, further 130 patients were excluded for factors: stay duration less than 7 days in the hospital, referral to higher centers or expired. Data was analyzed by proper statistical tests.

**Observations and Results:** Male prevalence was higher in younger ages and female prevalence becomes higher with age  $\geq$  60 years. Typical chest pain, sweating, nausea/vomiting were prominent manifestations in comparing males and females both the older as well as the younger group. In elderly patients, atypical chest pain and neurological manifestations were the predominant features. Smoking, alcohol and tobacco were the predominant risk factors.

**Conclusion:** Identifying the factors that determine the prognosis in myocardial infarction (MI) is of utmost importance. Vis-a-Vis merely diagnosing and treating MI. Younger people tend to mistake it for acidity causing delayed detection of ACS. Elderly patients and women are less likely to come to the hospital due to atypical manifestations, neglect by the family and financial constraints. We have less elderly and sex-specific data in women than in men as a result of lower enrollment in clinical trials.

**Key Words:** Clinical profile; acute coronary syndrome

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### **Introduction**

Coronary artery disease (CAD) is the leading cause of mortality and morbidity in the world and acute coronary syndromes (ACS), which encompass unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI), are the commonest causes of mortality in patients with coronary artery disease. India has the highest burden

of acute coronary syndromes in the world.<sup>5</sup> With the introduction of a huge armamentarium of invasive and noninvasive therapeutic strategies, the mortality related to acute coronary syndromes has steadily declined with a 25% fall in mortality in the developed world over the past 20 years<sup>1,2,3,4</sup>. The prevalence of coronary artery disease and the incidence of acute coronary syndromes is very high among Indians with rates of 96.7/1000 population in the urban and 27.1

% in rural areas<sup>4,6</sup>. The mortality remains high among Indians<sup>6</sup>. Coronary artery disease occurs in Indians 5–10 years earlier than in other populations around the world and the major effect of this peculiar phenomenon is on the productive workforce of the country aged 35–65 years. This prospective study is carried out to determine the clinical characteristics and possible risk factors for morbidity and mortality among patients with acute coronary syndromes.

**Materials and methods**

This study included a final total of 100 patients out of the 920 patients screened who presented with acute chest pain to the two major tertiary referral medical college hospitals in the endemic area of Vijayapur over a period of 4 years. We excluded a total of 820 patients. Out of 230 patients with diagnosed ACS, further 130 patients were excluded for factors: stay duration less than 7 days in the hospital, referral to higher centers or expired. Data was analyzed by proper statistical tests i.e. t test, chi square test regression analysis, Fischer exact test, student‘t’ test and diagrammatic representation.

**Inclusion criteria**

All cases presenting with typical rise and/or fall of biochemical markers of myocardial necrosis with at least one of the following : a)Ischemic symptoms; b)Development of pathologic Q waves in the ECG; c) Electrocardiographic changes indicative of ischemia (ST-segment elevation or depression); d) Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality

**Exclusion criteria**

Patients with chronic coronary artery disease (CAD) / Stable CAD, cases with proven non-cardiac chest pain, those who got discharged before completion of the treatment for any reasons were excluded.

**Results:**

Out of the 920 presentations with acute chest pain, we excluded a total of 820 patients. Out of 230 patients with diagnosed ACS, further 130 patients were excluded for factors: stay duration less than 7 days in the hospital, referral to higher centers or expired. The rest of 690 patients wereKO diagnosed and treated for conditions other than ACS.

**Table 1: Test Of Significance Between Sexes Among Different Age Groups**

Age	Male	Female	Total	Z value	P value
60 and above	30	19	49	2.35	0.018
Below 60	40	11	51	6.829	< 0.0001
All age	70	30	100	9.52	< 0.0001

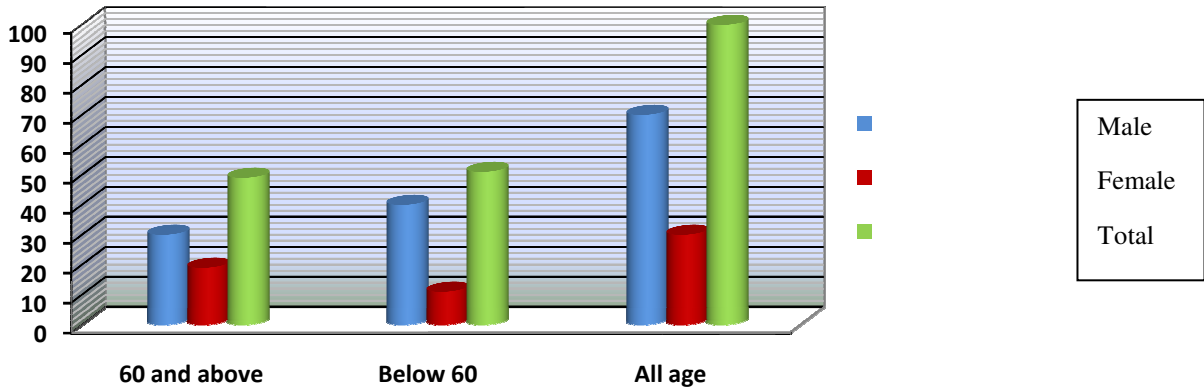


Figure 1: Test Of Significance Between Sexes Among Different Age Group

Table 2: Test Of Significance Between Ages Among Sexes

Age	60 and above	Below 60	Total	Z value	P value
Males	30	40	70	1.75	0.0802
Females	19	11	30	2.25	0.0244

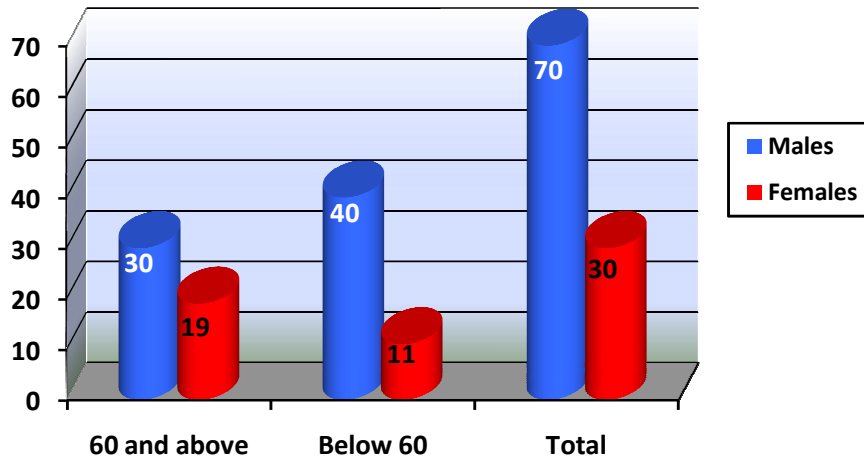


Fig 2: Test Of Significance Between Ages Among Sexes

**Table 3 : Test Of Significance Between Age, Sex And Clinical Presentation**

Symptoms	Group I ( < 60 Yrs.)				Group II ( ≥ 60 Yrs.)				Total	Z - Value	P- Value
	M	F	Z value	P value	M	F	Z value	P value			
Typical Chest Pain	38	8	5.12	<0.0001	24	13	2.756	<0.0001	83	0.95	0.65
Atypical Chest pain	3	2	1.88	0.06	8	7	0.57	0.56	20	4.29	<0.0001
Sweating	27	8	4.55	<0.0001	18	9	2.92	<0.0001	62	1.14	0.25
Dyspnea	5	6	0.95	0.65	7	8	0.57	0.56	26	1.88	0.06
Nausea and / or vomiting	8	1	5.8	<0.0001	10	3	4.43	<0.0001	22	1.88	0.06
Neurological manifestations	4	1	4.93	<0.0001	4	3	1.32	0.188	12	3.56	<0.0001
Palpitation	0	1			2	0					

**Note:** Wherever figures are in zeroes, z value cannot be calculated. M-Males F- Females

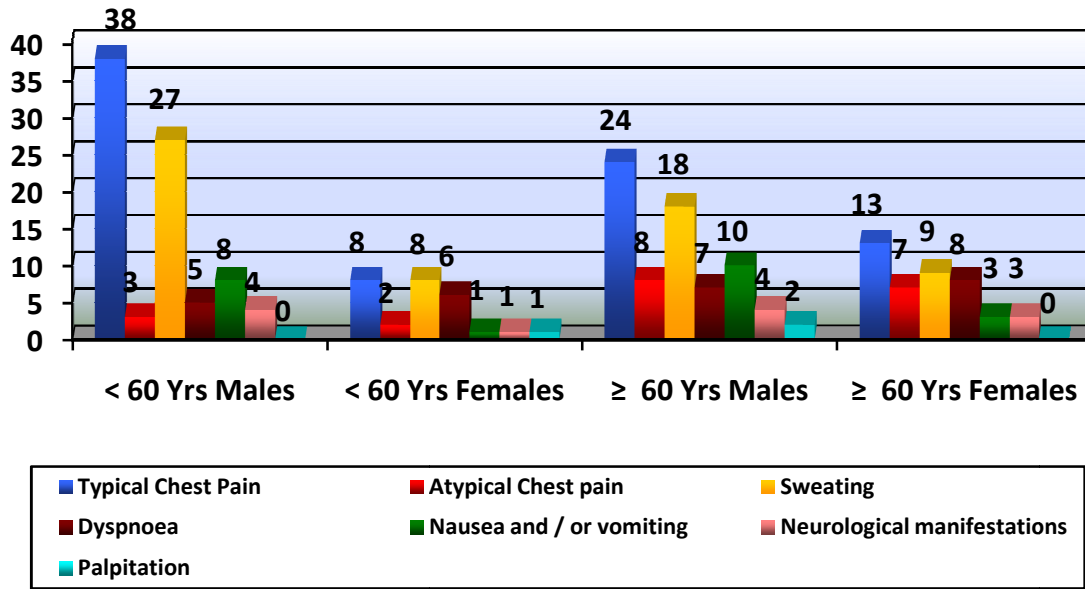


Fig 3: Test of Significance Between Age, Sex And Clinical Presentation

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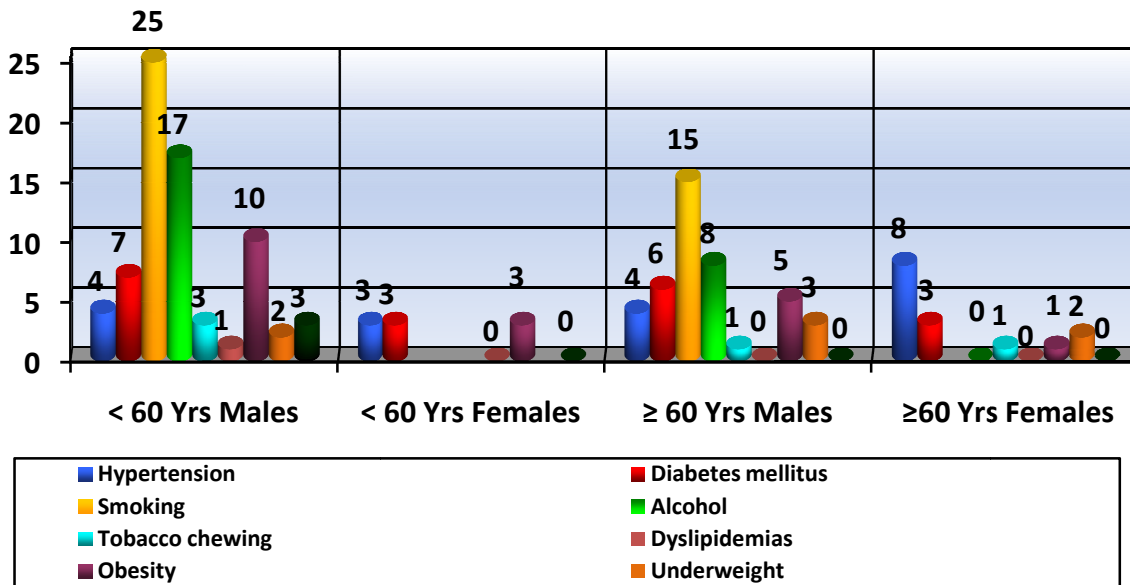
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**Table 4: Test Of Significance Between Age, Sex And Risk Factors**

Factors	Group I ( < 60 Yrs)				Group II ( ≥ 60 Yrs.)				Total	Z - Value	P- Value
	M	F	Z - Value	P- Value	M	F	Z - Value	P- Value			
<b>Hypertension</b>	4	3	1.32	0.188	4	8	3.56	<0.0001	19	1.66	0.097
<b>Diabetes mellitus</b>	7	3	3.56	<0.0001	6	3	2.92	<0.0001	19	0.24	0.81
<b>Smoking</b>	25	-	-	-	15	-	-	-	40	2.24	0.025
<b>Alcohol</b>	17	-	-	-	8	-	-	-	25	3.24	<0.0001
<b>Tobacco chewing</b>	3	-	-	-	1	1	-	-	4	4.29	<0.0001
<b>Dyslipidemias</b>	1	0	-	-	0	0	-	-	-	-	-
<b>Obesity</b>	10	3	3.42	<0.0001	5	1	5.28	<0.0001	19	3.24	<0.0001
<b>Underweight</b>	2	-	-	-	3	2	1.88	0.06	-	-	-
<b>Family history of coronary artery disease</b>	3	0	-	-	0	0	-	-	-	-	-

M-Males; F- Females



**Fig 4: Test of Significance between Age, Sex and Risk Factors**

In this study we found significant differences on comparison of males and females in group 1 (<60years) and in group 2 (≥ 60years). On comparison of both groups there is significant risk for ACS. Comparison of sexes with age at presentation, we found significant differences in group 1 and group 2. Significant differences with  $p < 0.0001$  is seen in typical chest pain between males and females in group 1 and in group 2. Atypical chest pain showed significant differences on comparison of group 1 and group 2. Significant differences are seen in sweating between males and females in group 1 and in group 2. Significant differences with  $p < 0.0001$  is seen in dyspnea between males and females in group 1 and in group 2 and also showed significant differences on comparison of group 1 and group 2. Significant differences with  $p < 0.0001$  is seen in neurological manifestations between males and females in group 1

and also showed significant differences on comparison of group 1 and group 2. Hypertension showed highly significant differences  $p < 0.0001$  between males and females in group 2 and also showed significant differences on comparison of group 1 and group 2. Significant differences in diabetes mellitus between males and females in group 1 and in group 2. Smoking showed differences on comparison of group 1 and group 2. Alcohol and tobacco chewing showed highly significant differences on comparison of group 1 and group 2.

#### **Discussion**

Age is one of the most powerful determinants of prognosis in myocardial infarction (MI), but there is comparatively little recent data across the whole spectrum of acute coronary syndromes (ACS). Even though the impact of age on clinical presentation and outcome in acute myocardial infarction (AMI) is well

characterized, the effects of age with these emerging characteristics of ACS have not been well studied. With increasing life expectancy, the mean age of ACS patients is growing steadily, emphasizing the need to define the impact of age across the whole spectrum of ACS. The World Health Organization uses 60 years of age to define elderly, whereas most U.S. classifications use the age of 65 years. Gerontologists subclassify older age groups into young old (60 to 74 years), old old (75 to 85 years), and very old (older than 85 years). Chest pain or discomfort is the most common complaint in patients up to the age of 75 years, but after the age of 80 years, complaints of diaphoresis increase and chest discomfort decreases. Altered mental status, confusion, and fatigue become common manifestations of MI in the oldest patients. Older patients may also present with sudden pulmonary edema or neurologic symptoms such as syncope or stroke.

In this study we found significant differences on comparison of males and females in group 1 (<60years) and in group 2 ( $\geq$  60years). Xavier D, Pais P, Devereaux PJ et al in the Lancet 2008, "Treatment and outcomes of acute coronary syndromes in India (CREATE): a prospective analysis of registry data" did a prospective registry study in 89 centres from 10 regions and 50 cities in India and found out of 20,468 patients, mean age was 57.5 (SD 12.1) years; patients with STEMI were younger (56.3 [12.1] years) than were those with non-STEMI or unstable angina (59.3 [11.8] years). In our study male prevalence is higher in younger ages and female prevalence becomes higher with age  $\geq$  60years.

Acute coronary syndrome (ACS) is common in women, yet we have less sex-specific data in women than in men as a result of lower enrollment in clinical trials and low rates of sex-specific reporting. Women

are generally older with more comorbidities when diagnosed with ACS. Symptoms commonly associated with MI in both sexes include chest pain, pressure, or squeezing; pain radiating to the neck, shoulder, back, arms, or jaw; palpitations; dyspnea; heartburn, nausea, vomiting, or abdominal pain; diaphoresis; and dizziness. Women may experience milder symptoms or describe them somewhat differently and may more frequently experience nonspecific prodromal symptoms, such as fatigue. P. Joshi, P. Sakhi et al "Clinical Profile & Risk Factors In Acute Coronary Syndrome"<sup>6</sup> studied 200 consecutive patients presenting with features of acute coronary syndrome. This patients were predominately male (72%) with male to female ratio being 2.57:1. A study of 127 men and 90 women by Milner and colleagues showed that among patients who presented to the emergency department with symptoms of coronary disease other than chest pain, there were several sex-related differences in symptoms. Dyspnea, nausea and vomiting, indigestion, fatigue, sweating, and arm or shoulder pain as presenting symptoms in the absence of chest pain were all more frequent among women than among men. In our study, typical chest pain, sweating, nausea/vomiting were prominent manifestations in comparing males and females both the older as well as the younger group. In elderly patients, atypical chest pain and neurological manifestations were the predominant features.

Xavier D, Pais P, Devereaux PJ, in the CREATE study, found 6226 (30.4%) patients had diabetes; 7720 (37.7%) had hypertension; and 8242 (40.2%) were smokers. The Myocardial Infarction Triage and Intervention (MITI) Project investigators demonstrated that chest pain was present in almost all women (99.6%) and men (99%) who experienced a documented acute MI. In addition to symptom



differences, women with MI have more co morbidities, including hypertension, and present later in the course of symptoms and more frequently with high-risk clinical findings of heart failure and tachycardia. In our study, similar results were seen with elderly women with ACS having hypertension being comparatively higher in number.

Howe M, Leidal A studied "Role of cigarette smoking and gender in acute coronary syndrome events."<sup>7</sup> The smokers were younger at presentation with fewer co-morbidities than nonsmokers. Male smokers had lower mortality (3.2% vs 5.4%,  $p = 0.04$ ) and fewer cardiovascular events (33.1% vs 42.4%,  $p = 0.003$ ) at 6 months than nonsmokers. Female smokers had mortality (5.6% vs 8.4%,  $p = 0.15$ ) and cardiovascular events (54.5% vs 49.7%,  $p = 0.28$ ) at 6 months similar to that of nonsmokers. Smokers experienced acute coronary event events earlier than did nonsmokers. At younger ages (<50 years) smoking is more deleterious in women than in men, with a larger negative impact of the total number of cigarettes smoked per day. Younger age and fewer co-morbidities likely account for most observed survival benefit in smokers. In our study, smoking, alcohol and tobacco were the predominant risk factors.

All patients were treated with oxygen, nitrates, Beta blockers, ACE Inhibitors/ARB's, Statins and Low molecular weight heparin (LMWH). The use of Beta

blockers, ACE Inhibitors/ARB's, and LMWH was higher in STEMI.

### Conclusion

Age is one of the most powerful determinants of prognosis in myocardial infarction (MI), but there is comparatively little recent data across the whole spectrum of acute coronary syndromes (ACS). Younger people tend to mistake it for acidity and delayed detection of ACS due to delay in approaching qualified medical practitioners. Elderly patients are less likely to come to the hospital due to atypical manifestations neglect by the family and financial constraints. Acute coronary syndrome (ACS) is common in women, yet we have less sex-specific data in women than in men as a result of lower enrollment in clinical trials and low rates of sex-specific reporting. Women across ages have a tendency to ignore symptoms and also are ignored by family many times. They have financial constraints apart from having atypical presentations. Male prevalence is higher in younger ages and female prevalence becomes higher with age  $\geq 60$  years. Typical chest pain, sweating, nausea/vomiting were prominent manifestations in comparing males and females both the older as well as the younger group. In elderly patients, atypical chest pain and neurological manifestations were the predominant features. Smoking, alcohol and tobacco were the predominant risk factors.

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