

ORIGINAL ARTICLE

Ratio of ST-Elevated versus Non ST-Elevated MI in Adult patients.

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Affiliations Ex-DMS, Allama Iqbal Memorial Teaching Hospital, Sialkot Corresponding Author: Dr. Mohammad Zubair, Ex-DMS, Allama Iqbal Memorial Teaching Hospital, Sialkot Contact # 0334-8108954 zubairss436@gmail.com Submission complete: July, 2025 Review began: August, 2025 Review ended: Sept., 2025 Acceptance: Oct., 2025 Published: December, 2025 Author contribution: AS: Designed the research Pattern and drafted the manuscript.	ABSTRACT Objective: This study seeks to determine ratio of Non-ST segment elevated myocardial infraction to ST segment elevated myocardial infarction in adult patients of age 40-80 years, diagnosed with myocardial infarction in Allama Iqbal Memorial Teaching Hospital Sialkot. Methodology: A cross sectional study was carried out at Allama Iqbal Memorial Teaching Hospital Sialkot from 02-01-2025 to 01-03-2025 in cardiology department. All patients with myocardial infarction of age 40-80 years were included in the study. Ratio of non ST segment elevated to ST elevated MI were calculated in relation to age by statistical analysis. Conclusion: Ratio of non-ST segment elevated MI is higher than ST-segmented elevated patients especially in middle age adults. Result: Total 100 patients were taken of age 40-80 years out of which 94% were non-ST segmented elevated MI patients while 6% were ST segment elevated MI patients. Ratio of non-STEMI to STEMI patients come out to be (15.7:1) which indicates higher ratio of non-STEMI in this age group as compared to STEMI. Key words: ST segment elevated myocardial infarction, Non-ST segment elevated myocardial infarction, Myocardial Infarction, Morbidity, Mortality, Dyslipidemia, Hypertension, Atherosclerosis. Cite this Article as: Zubair M.,; <i>Ratio of ST-Elevated versus Non ST-Elevated MI in Adult patients. SIAL J Med. Sci. Dec-2025 V-4(Issue-14): 30-34</i>
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Introduction

Definition: A myocardial infarction (MI) is one of the leading causes of cardiovascular disease and death around the world¹. It is clinically divided into: ST-segment elevation myocardial infarction (STEMI) and (2) non-ST-segment elevation myocardial infarction (NSTEMI). The universal definition of MI considers ST elevated MI as having more than one millimeter ST-segment elevation in two or more contiguous leads with the exception of V2–V3 or has elevation of ST segments meeting age and sex specific criteria for V2–V3. This is the pattern that usually represents full thrombotic blockage of one of the big coronary arteries. In contrast, Non ST elevated MI occurs due to partial

blockage or extreme narrowing of a coronary artery, causing necrosis of the myocardium without the classic ST-elevation pattern. While ST elevated MI is considerably more dangerous in the short term. However, several longitudinal studies suggest that the non-ST-elevated form may pose the same or even greater long-term risk of complications. In Pakistan, ischemic heart disease (IHD) is one of the leading causes of mortality coupled with the high prevalence of risk factors that can be modified such as smoking, dyslipidemia, hypertension, and diabetes mellitus. The emerging non-communicable disease burden is the result of demographic and epidemiological transitions^{1,2}.

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Acute coronary syndromes (ACS) are one of the largest contributors to morbidity and mortality globally, with ST-segment elevation myocardial infarction (STEMI) and non ST-segment elevation myocardial infarction (NSTEMI) being the two most common clinical conditions. In the last 20 years, across the globe, the ratios and occurrences of STEMI and NSTEMI have changed as a result of changes to diagnostic criteria, easier and better access to health care, and changes to population risk factors. Studies have shown that, even though STEMI is more common in low- and middle-income countries, NSTEMI is at least twice as prevalent in many high-income countries that have developed care strategies to better identify and manage coronary artery disease as it arises. A key concept has been the fact that the registration records in regions such as South Asia have also recently indicated that the burden of STEMI is higher than that of their relative Western cohorts, primarily due to populations presenting late to hospital settings with poorer access to reperfusion facilities, and included more modifiable risk factors, e.g., smoking and diabetes^{3,4,5}. However, plaque, vasocontition, coronary or pulmonary embolism, hypo or hyper tension, tachycardia and aortic stenosis may cause NSTEMI.⁵ NSTEMI usually presents with dissecting backache or chest pain with pericardial friction rub in patients of pericarditis ^{6,7,8}. In Pakistan, existing data are still limited, but data from hospital based registries demonstrate that ST elevated MI is still a significant majority of ACS presenting for care although the non ST elevated MI ratio has on the rise. Disparity in reporting of STEMI: non-STEMI ratios may include variations in the health care structure type and demographics of the patient population that are encountered, using differing eligibility criteria, and quite possibly including the timing of presentation for reperfusion strategies. Internationally rec-

ognized standards for practice describe that accurate representation of the expected ratios of STEMI and NSTEMI cases must be established to guide policy in addition to optimal treatment.

Objectives: This study seeks to determine ratio of Non-ST segment elevated myocardial infraction to ST segment elevated myocardial infarction in adult patients of age 40-80 years diagnosed with myocardial infarction in Allama Iqbal Memorial Teaching Hospital Sialkot.

Methodology

This investigation was structured as a hospital based cross sectional study aiming to compare the ratio of ST elevated myocardial infarction (STEMI) with non-ST elevated myocardial infarction (non-STEMI) in patients aged 40-80 years in Allama Iqbal Memorial Teaching Hospital, Sialkot w.e.f. 12 February 2025 to 11 April 2025 admitted in cardiology department with a confirmed diagnosis of Myocardial Infarction. Diagnosis was based on ECG changes and elevated cardiac enzymes: patients aged 40-80 years old, confirmed STEMI and NSTEMI based on ECG and enzyme levels troponin I,troponin T, Creatin kinase(CK), hospital record with MI, angiography, angioplasty, and CABAG were included.

The patients above 80 and below 40 year, patients with stable or unstable angina, patients with chest pain, patients with any other cardiac condition without evidence of myocardial infarction were excluded.

Results

Age Group	NSTEMI	STEMI	Females	Males
40-49	22	0	8	14
50-59	32	0	13	19
60-69	29	5	7	27
70-79	11	1	3	9
Total	94	6	31	69

Table No. 01

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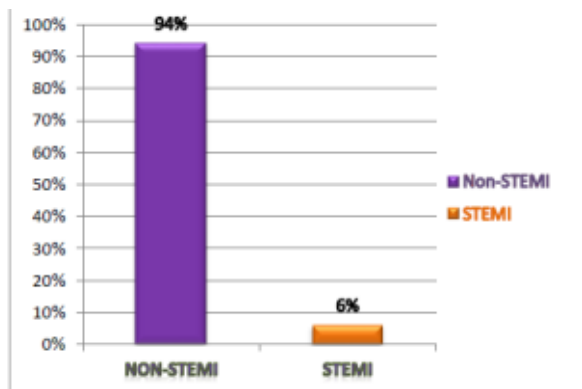
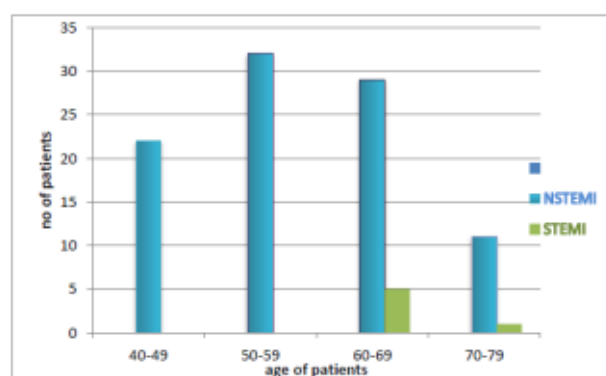


Figure1: This bar chart shows ratio of non-STEMI and STEMI patients



Figures 2: Shows STEMI versus non-STEMI in patients of 40-80 years

By applying chi square test our p-value comes out to be 0.04 which is less than 0.05 indicates validity of our results of higher ratio of non-STEMI as compared to STEMI in adult (40-80 years) patients.

Relationship with gender:

The table gives information as follow:

Males were predominant with more cases 69% in total out of which cases 4 (5.79%) were of ST elevated MI, Non ST elevated cases were 65 (94.20%)

Whereas female patients of total case-s 31 out of which non ST elevated MI 29 (93.54%) and with cases of St elevated MI 2 (6.45%)

Discussion

In this study, NSTEMI made up 94% of myocardial infarction cases, with STEMI constituting just 6% which shows that there is a predominance of NSTEMI cases in the

study population which coincides with international study⁹.

The age group 50–59 had the highest number of NSTEMI cases with 32 patients, followed by 60–69 years (29), 40–49 years (22), and 70–79 years (11). STEMI was only seen in older patients, with 5 cases in the 60 to 69 year age group and 1 case in the 70 to 79 year age group in agreement with Sancher's research.¹⁰

Most populations show a rise in age as a factor to incidence of myocardial infarction, however, in this study, there was a notable amount of cases (n=22) in the 40 to 49 year age group. This suggests that there is an early trajectory of ischemic heart disease which might be attributed to the high prevalence of modifiable risk factors such as smoking, obesity, lack of physical activity, and uncontrolled high blood pressure or diabetes, along with a plausible family history of the disease. These early manifestations of the disease may be the result of socio-economic and lifestyle factors specific to the local population.¹¹

From the gender analysis, there was a male predominance in both subclasses with 69% of NSTEMI and 66.67% of STEMI cases being male and females constituting 31% and 33.33% respectively. This increased prevalence in men is in line with the impact of testosterone and associated lipid alterations, increased smoking, and lower estrogen-mediated vascular protection.

In Pakistan, ischemic heart disease (IHD) is one of the leading causes of mortality, coupled with the high prevalence of modifiable risk factors such as smoking, dyslipidemia, hypertension, and diabetes mellitus. The emerging non-communicable disease burden is the result of demographic and epidemiological transitions. With the advancement of health-care systems and diagnostic technologies, IHD has become more prevalent and easier to identify,

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especially types such as ST-elevation MI and non-ST-elevation MI.¹²

Conclusion:

Myocardial Infraction has increased over time with older patients having non ST elevated.

Recommendations

Awareness among physicians and patients may help improve management of such cases and reduce mortality rate.

Limitations

This study was limited by a small sample size, particularly in the STEMI sub group, which reduced the ability to detect subtle age-related differences. The short study duration and single-center setting may have introduced selection bias, limiting generalizability.

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Conflict of Interest: None

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