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Comparison of Cardiovascular Risk Factors Among Patients with STEMI and NSTEMI

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ABSTRACT

Background: Cardiovascular risk factors contribute substantially to acute myocardial infarction (AMI), but their distribution may vary between ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI). This study compared selected cardiovascular risk factors among patients with STEMI and NSTEMI**. Methods & Materials:** This article is a analysis of data from a descriptive cross-sectional study conducted in the Department of Cardiology, Shaheed Ziaur Rahman Medical College Hospital, Bogra, from April to September 2013. This study included 100 patients with AMI: 50 STEMI and 50 NSTEMI. Dyslipidaemia, diabetes mellitus, and hypertension were compared using the reported Z test of proportions. **Results**: Dyslipidaemia was present in 84% of STEMI and 74% of NSTEMI patients (p=0.46); diabetes mellitus in 30% and 20%, respectively (p=0.36); and hypertension in 28% and 24%, respectively (p=0.52). None of these between-group differences was statistically significant. In the full AMI sample, the study reported a mean age of 54±12.5 years, 76% male sex, 68% smoking, 80% dyslipidaemia, and 12% family history of MI. **Conclusion:** In this sample, dyslipidaemia, diabetes mellitus, and hypertension were numerically more frequent among STEMI patients, but the differences from NSTEMI were not statistically significant. Larger, contemporary studies are needed before generalizing these findings.

Keywords: *Acute myocardial infarction, cardiovascular risk factors, dyslipidaemia; diabetes mellitus, hypertension.*

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INTRODUCTION

Acute coronary syndrome includes STEMI, NSTEMI, and unstable angina. STEMI is characterized by ST-segment elevation with evidence of myocardial injury, whereas NSTEMI is diagnosed in the presence of myocardial injury without persistent ST-segment elevation [1,2].

Coronary atherosclerosis and superimposed thrombosis form the major pathological basis of acute myocardial infarction. Traditional cardiovascular risk factors, including cigarette smoking, hypertension, diabetes mellitus, and dyslipidaemia, contribute to atherosclerotic disease and subsequent coronary events [3-6].

South Asian populations carry a substantial burden of ischemic heart disease, making assessment of modifiable cardiovascular risk factors particularly relevant in Bangladesh and similar settings [1,7]. Identifying whether risk-factor profiles differ between STEMI and NSTEMI may improve clinical characterization and prevention strategies.

Previous studies have shown that STEMI and NSTEMI differ in clinical presentation, coronary pathology, myocardial damage, and outcomes, although the prevalence of individual risk factors may overlap considerably [8-12]. The study on which this analysis is based reported no statistically significant difference between STEMI and NSTEMI for dyslipidaemia, diabetes mellitus, or hypertension.

The present study therefore aimed to compare cardiovascular risk factor profiles between patients with STEMI and NSTEMI, with particular emphasis on the prevalence and distribution of dyslipidaemia, diabetes mellitus, and hypertension.

METHODS & MATERIALS

This study was a descriptive cross-sectional study conducted in the Department of Cardiology, Shaheed Ziaur Rahman Medical College Hospital, Bogra, Bangladesh, from 1 April 2013 to 30 September 2013. The study included 100 patients admitted with acute myocardial infarction, comprising 50 STEMI and 50 NSTEMI patients. Patients fulfilling the original inclusion and exclusion criteria were selected purposively.

This study defined STEMI by ST-segment elevation on electrocardiography and NSTEMI by typical chest pain with elevated troponin I without ST-segment elevation. Dyslipidaemia was defined using serum triglyceride, total cholesterol, HDL-cholesterol, and LDL-cholesterol thresholds; diabetes mellitus was defined according to the stated WHO criteria; and hypertension according to JNC 7 criteria.

For the risk-factor comparison, this study reported a Z test of proportions and considered $p<0.05$ statistically significant. The analysis is based on the available aggregated study results. Reported frequencies, percentages, Z values, and p values are presented as documented in the study records.

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RESULTS

The study included 100 AMI patients. The mean age was 54±12.5 years; 76% were male and 24% female. The study's general-characteristics table reported smoking in 68%, dyslipidaemia in 80%, and a family history of myocardial infarction in 12% of the overall sample. *Table I* summarizes the general characteristics of the 100 patients with acute myocardial infarction. The mean age was 54 ± 12.5 years. Men represented 76% of the study population, while women represented 24%. Smoking was reported in 68% of patients and dyslipidaemia in 80%, whereas 12% had a family history of myocardial infarction. These findings show that smoking and dyslipidaemia were common cardiovascular risk factors in the overall AMI sample.

Table I
General characteristics of the study population (*n*=100).

Characteristic	Value.n(%)
Age, mean ± SD	54 ± 12.5 years
Male	76 (76)
Female	24 (24)
Family history of MI	12 (12)
Smoking	68 (68)
Dyslipidaemia	80 (80)

Table II compares dyslipidaemia, diabetes mellitus, and hypertension between the STEMI and NSTEMI groups. Dyslipidaemia was found in 84% of STEMI patients and 74% of NSTEMI patients. Diabetes mellitus was present in 30% and 20%, respectively, while hypertension was present in 28% and 24%, respectively. Although all three risk factors were numerically more frequent in the STEMI group, none of the differences was statistically significant because all reported p values were greater than 0.05.

Table II
Comparison of selected cardiovascular risk factors between STEMI and NSTEMI.

Risk factor	STEMI (n=50),n(%)	NSTEMI (n=50),n(%)	Z value	p value
Dyslipidaemia	42 (84)	37 (74)	0.6	0.46 (NS)
Diabetes mellitus	15 (30)	10 (20)	0.8	0.36 (NS)
Hypertension	14 (28)	12 (24)	0.5	0.52 (NS)

Table III shows the absolute percentage-point differences between the two infarction groups. The largest differences were observed for dyslipidaemia and diabetes mellitus, each being 10 percentage points higher in STEMI than in NSTEMI. Hypertension showed a smaller difference of 4 percentage points.

Table III
Absolute percentage-point differences between STEMI and NSTEMI.

Risk factor	STEMI (%)	NSTEMI (%)	Difference (percentage points)
Dyslipidaemia	84	74	+10
Diabetes mellitus	30	20	+10
Hypertension	28	24	+4

Table IV provides the statistical interpretation of the reported comparisons. The p values were 0.46 for dyslipidaemia, 0.36 for diabetes mellitus, and 0.52 for hypertension. Because each value exceeds the predefined significance level of 0.05, the study did not demonstrate a statistically significant difference between STEMI and NSTEMI for any of the three selected risk factors.

Table IV
Statistical interpretation of the reported risk-factor comparisons.

Risk factor	Reported p value	Statistical interpretation
Dyslipidaemia	0.46	Not statistically significant
Diabetes mellitus	0.36	Not statistically significant
Hypertension	0.52	Not statistically significant

Figure 1 visually compare the prevalence of the three selected cardiovascular risk factors in STEMI and NSTEMI patients. For each factor, the STEMI bar is higher than the corresponding NSTEMI bar: dyslipidaemia 84% versus 74%, diabetes mellitus 30% versus 20%, and hypertension 28% versus 24%. Dyslipidaemia was the most prevalent factor in both groups, while hypertension showed the smallest between-group difference. The visual differences are descriptive only, because the reported statistical tests for all three comparisons yielded p values greater than 0.05.

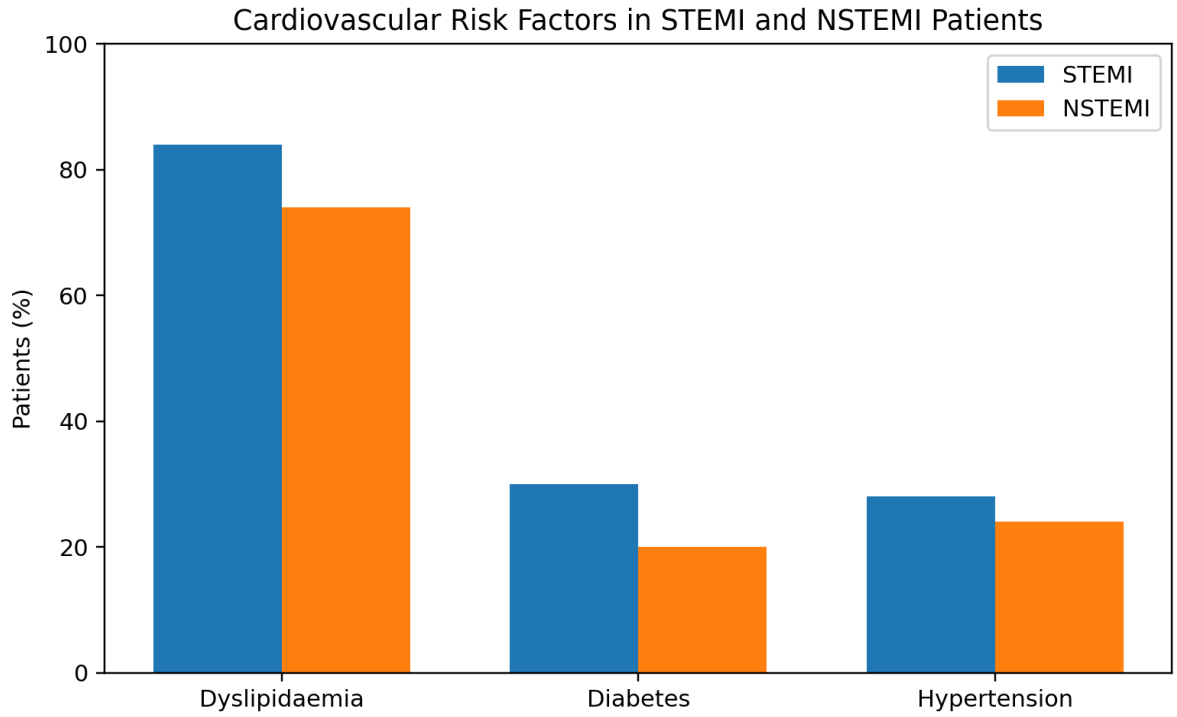


Figure 1 Comparison of selected cardiovascular risk factors between STEMI and NSTEMI patients.

Table V summarizes the overall AMI risk-factor burden reported in the study discussion. Hypertension and diabetes mellitus were reported in 26% and 25% of the overall sample, respectively. For dyslipidaemia and smoking, however, the study gives different percentages in different sections: 70% and 60% in the discussion compared with 80% and 68% in the general-characteristics table. Because the source data are internally inconsistent, both sets of values are reported transparently rather than being combined.

Table V
Overall AMI risk-factor burden reported in the dissertation discussion.

Risk factor	Reported overall prevalence	Note
Dyslipidaemia	70% in discussion; 80% in general-characteristics table	Internal inconsistency in source
Smoking	60% in discussion; 68% in general-characteristics table	Internal inconsistency in source
Hypertension	26%	Reported in discussion
Diabetes mellitus	25%	Reported in discussion

DISCUSSION

The main finding of this analysis is that the selected traditional cardiovascular risk factors did not differ significantly between the STEMI and NSTEMI groups. Dyslipidaemia was the most frequent of the three directly compared factors, occurring in 84% of STEMI and 74% of NSTEMI patients. Although this represents a 10-percentage-point difference, the reported p value of 0.46 does not support a statistically significant difference.

Diabetes mellitus was reported in 30% of STEMI and 20% of NSTEMI patients. The difference was again 10 percentage points, but it was not statistically significant (p=0.36). The study compared this observation with previous population-based work reporting no significant difference in STEMI and NSTEMI distribution among diabetic patients [13]. Diabetes remains clinically important because it is strongly associated with coronary artery disease and adverse cardiovascular outcomes even when a difference between MI subtypes is not demonstrated [5,6].

Hypertension was present in 28% of STEMI and 24% of NSTEMI patients, with the smallest absolute difference among the three directly compared risk factors. The reported p value was 0.52. Thus, within this sample, hypertension did not distinguish STEMI from NSTEMI. This is compatible with the broader concept that both STEMI and NSTEMI arise on a background of atherosclerotic cardiovascular disease and may share many conventional risk factors [3,4,8].

The study also emphasized the overall burden of modifiable risk factors. Its discussion reported dyslipidaemia, smoking, hypertension, and diabetes as common factors and compared these findings with earlier studies by Ercan et al. and De Servi et al. [14,15].

Previous registry and cohort studies have demonstrated important differences between STEMI and NSTEMI in clinical course, myocardial injury, management, and outcomes [8-12]. The present findings add a different point: despite those clinical differences, common conventional cardiovascular risk factors may be highly prevalent in both groups. From a prevention perspective, this supports attention to lipid disorders, blood pressure, diabetes, and smoking across the full spectrum of acute myocardial infarction.

CONCLUSION

Among 100 patients with acute myocardial infarction, dyslipidaemia, diabetes mellitus, and hypertension were numerically more common in STEMI than NSTEMI, but none of the reported differences reached

statistical significance. The findings indicate a substantial burden of conventional cardiovascular risk factors in both MI groups. Because of the small, single-center sample and source-data inconsistencies, the results should be interpreted cautiously and validated in larger contemporary Bangladeshi cohorts.

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