East African Scholars Journal of Medicine and Surgery
Abbreviated Key Title: EAS J Med Surg
ISSN: 2663-1857 (Print) & ISSN: 2663-7332 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-5 | Issue-10 | Nov-2023 | DOI: 10.36349/easjms.2023.v05i10.003

Original Research Article

The Risk Factors in Patients of Myocardial Infarction: An Observational Study

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Article History
Received: 29.08.2023
Accepted: 04.10.2023
Published: 11.11.2023

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background:*** Acute myocardial infarction is a condition where the blood flow to the heart muscle is blocked, leading to the death of heart tissue. It is a major cause of heart failure and fatalities worldwide. ***Objective:*** To assess risk factors in MI patients and determine clinical criteria for patients with MI. ***Methods:*** This cross-sectional observational study was done from January 2023 to June 2023 at the Mymensingh Medical College Hospital, Mymensingh, Bangladesh**.** A total of 100 people were observed in this study. ***Results:*** Our study showed that a maximum of 32 individuals aged 50-59 suffered from acute myocardial infarction. Most were male (74%) and Muslim (93%). 83% had hypertension, 78% had diabetes mellitus, and 77% were smokers. Different types of MI were identified, with anterolateral MI being the most common (25 patients). ***Conclusion:*** Several risk factors increase the chance of developing acute myocardial infarction, including family history, sedentary lifestyle, unhealthy diet, smoking, lack of exercise, and certain health conditions like diabetes, hypertension, dyslipidemia, SLE, vasculitis, or obesity.

Keywords: Myocardial infarction, diabetes mellitus, hypertension, dyslipidemia.

INTRODUCTION

The most prevalent major illness in industrialized societies is coronary heart disease (CHD), which is also a rapidly worsening health issue in emerging nations. These illnesses have a higher mortality rate than other illnesses in affluent nations and come at a high social and economic cost. These illnesses are currently prevalent in the majority of the world's population's low- or average-income countries.

During recent decades developed countries have been able to decline coronary heart disease mortalities significantly by preventive actions. They have passed the outbreak stage of this epidemic and disease mortality has dramatically declined [1].

Acute myocardial infarction is further broken down into six types based on whether or not the ECG shows ST-segment elevation: infarction caused by coronary atherothrombosis (type 1), infarction caused by a supply-demand imbalance unrelated to acute atherothrombosis (type 2), infarction that results in sudden death without the chance for biomarker or ECG confirmation (type 3), and infarction related to a percutaneous coronary [2].

External triggers, including strenuous exercise, emotional stress, eating, exposure to cold or heat, drinking coffee or alcohol, using cocaine or marijuana, and sexual activity are acknowledged as the most significant acute risk factors [3].

Other attributable risk indicators that exhibit relationships: Poor socioeconomic standing, Increased

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prothrombotic factors: PAI-1 and fibrinogen3, high homocysteine levels, Increased lipoprotein-(a) and psychological variables (depression, hostility, rage, stress, and traumatic life events), and social structure disintegration (loss of social support and coherence) [4].

However, dyslipidemia is linked to a higher risk of coronary artery disease (CAD), particularly elevated levels of low-density lipoprotein (LDL-c), triglycerides, and lipoprotein lipase activity. HDL-c, is a kind of high-density lipoprotein [5]. Most life-long cardiovascular diseases, including coronary disease, left ventricular hypertrophy, valvular heart disease, cardiac arrhythmias such as atrial fibrillation, cerebral stroke, and renal failure, are strongly or significantly correlated with hypertension [6]. A high-risk subset of hypertensive people is those with a positive family history of cardiovascular disease [7]. Numerous studies have independently examined the impact of environmental factors on coronary heart disease (CHD) in individuals with and without a familial history of heart disease [8]. There is an association between the presence of psychological stresses and an elevated risk of acute myocardial infarction [9].

OBJECTIVE

To assess risk factors in MI patients and determine clinical criteria for patients with MI.

METHODS

This cross-sectional observational study was done from January 2023 to June 2023 at the Mymensingh Medical College Hospital, Mymensingh, Bangladesh. The study was done using interviews with MI patients and their records (based on WHO/AHA criteria) patients with acute MI who were referred to Mymensingh Medical College Hospital and with a definitive diagnosis of MI were hospitalized and examined in CCU wards.

Inclusion Criteria

- Age above 25 years.
- Positive family history of ischemic heart disease.
- Sedentary lifestyle.
- Smoker
- Presence of other chronic diseases like DM, HTN, SLE, dyslipidemia, vasculitis,

Exclusion Criteria

- Considerable valve stenosis or regurgitation (grade 2 or above)
- Serious lung disease or pathology (such as infection or pericardial effusion)

Data Collection and Analysis

The used checklist consists of four parts. The first part included demographic data like age, sex, occupation, and religion. The second part included questions related to Symptoms, presence of risk factors including history of coronary diseases, history of smoking cigarettes, examination findings, and laboratory tests such as Troponin I was observed. Types of MI were observed in the third part. The data were entered into the SPSS 23. The significance level index was 0.05.

RESULTS

The data presented in Table 1 indicates the age distribution of patients. The majority of patients (32 individuals) experienced acute myocardial infarction between the ages of 50 and 59, while only one patient was in the 20-29 age group.

Table 1: Distribution of patients according to age (N=100)

Age (years)	Frequency	Percentage
20-29	1	1
30-39	7	7
40-49	20	20
50-59	32	32
60-69	26	26
70-79	11	11
80-89	3	3

Figure 1 shows that 74% of patients with acute myocardial infarction were male, while 26% of patients with myocardial infarction were female.

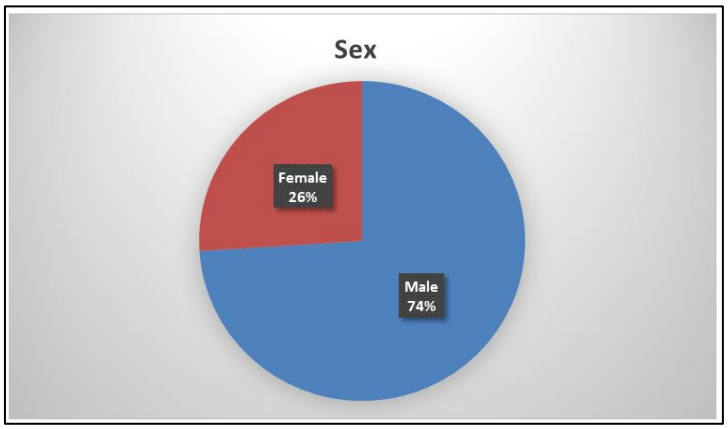

Figure 1: Gender distribution in acute myocardial infarction

Figure 2 shows that the majority of patients, 33 in total, are businessmen. Following this, 26 % of patients are housewives, 25% are service holders, 2% are farmers, 4% are day laborers, and the remaining 10 individuals have other occupations.

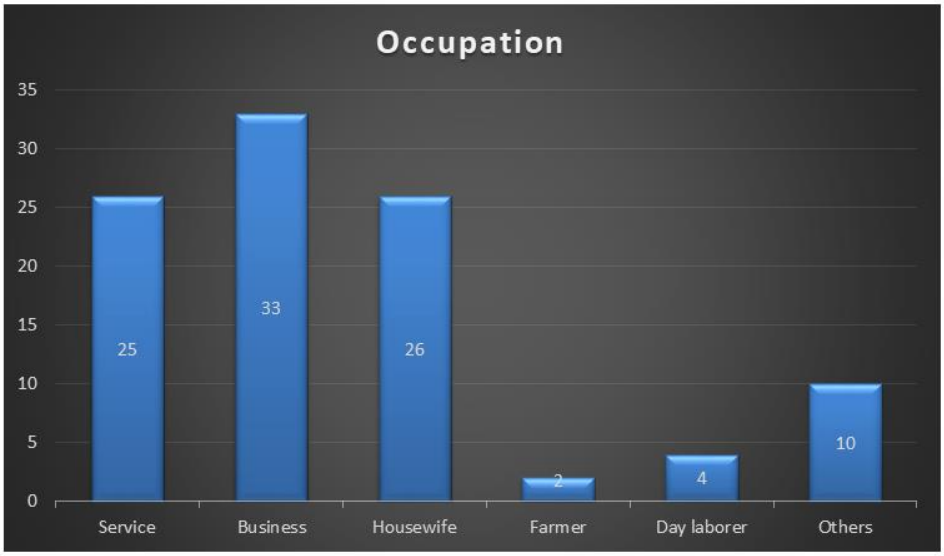

Figure 2: Occupation among patients with acute myocardial infarction

Figure 3 indicates that 93% of the population are Muslim, while 7% are Hindu.

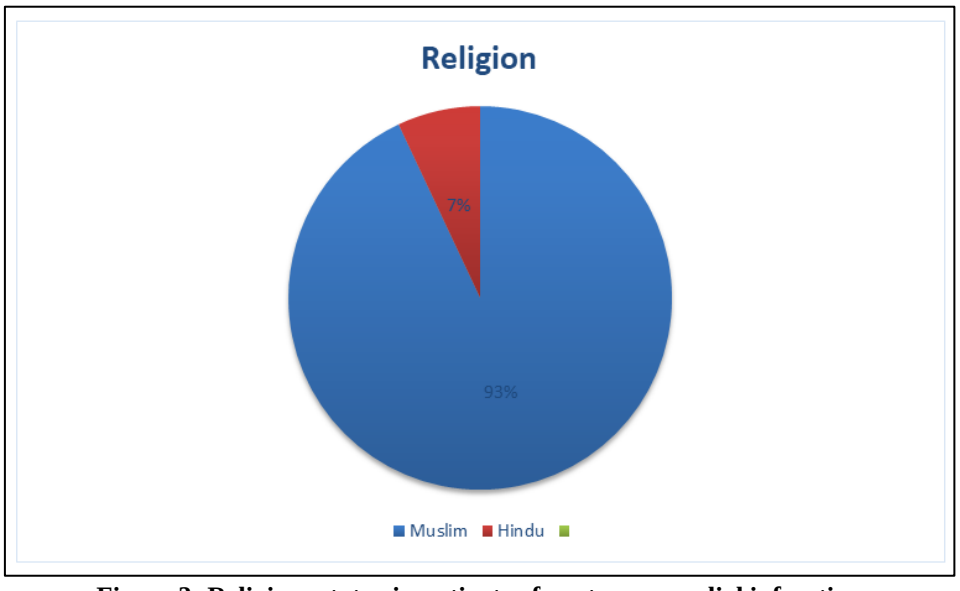

Figure 3: Religious status in patients of acute myocardial infarction

Table 2 indicates that 91% of patients experienced ischemic chest pain, 88% had breathlessness, 63% had breathlessness on presentation, and 44% had nausea.

Table 2: Major symptoms of acute myocardial infarction

Symptoms	Frequency
Chest pain	91
Breathlessness	63
Palpitation	88
Nausea	44

Table 3 displayed that the mean pulse rate was 80.90 ±13.44. The mean systolic blood pressure was found 128.55 ± 20 and the mean diastolic blood pressure was 88.10 ± 12.09.

Table 3: Blood pressure

Examination	Mean ± standard deviation
Pulse	80.90 ±13.44
Systolic BP	128.55 ±20
Diastolic BP	88.10 ±12.09

Figure 4 shows that 83% of patients had hypertension, 78% had diabetes mellitus, 77% were smokers, 46% had a positive family history, and 45% had a sedentary lifestyle.

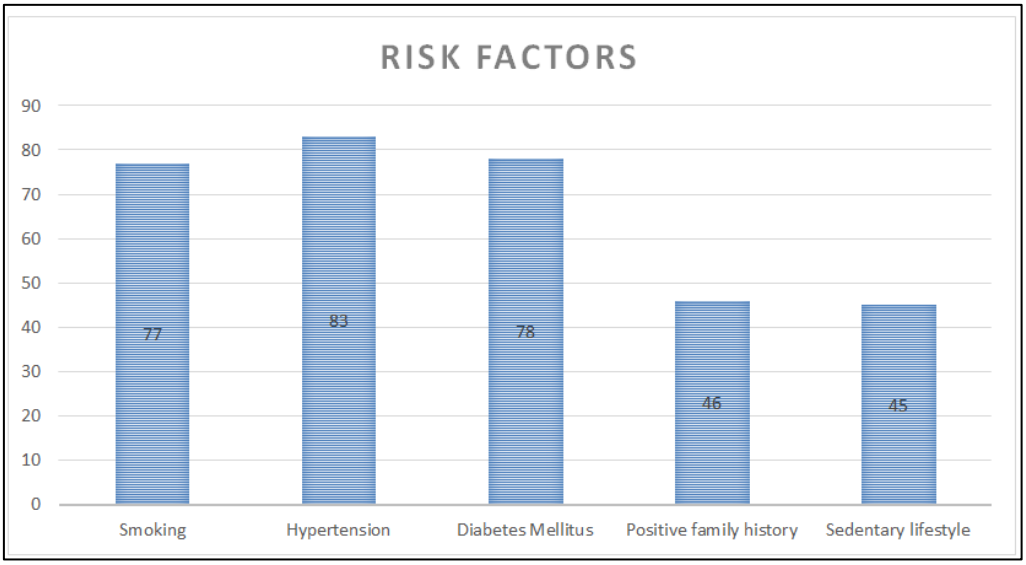

Figure 4: Major risk factors of acute myocardial infarction

Figure 5 shows the different types of myocardial infarction, with the majority of patients (25) experiencing anterolateral MI. Other types include lateral MI (22 patients), anterior MI (21 patients), inferior MI (16 patients), inferolateral MI (12 patients), anteroseptal MI (3 patients), and inferoseptal MI (1 patient).

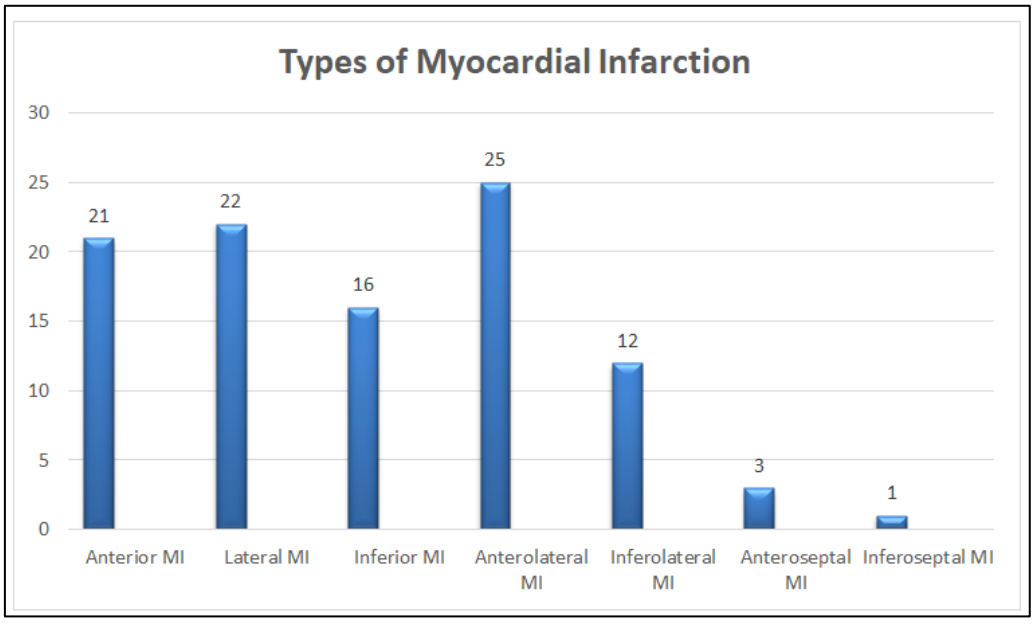

Figure 5: Type of myocardial infarction

DISCUSSION

From January 2023 to June 2023, an observational study was conducted at Mymensingh Medical College Hospital in Mymensingh, Bangladesh. Patient records and interviews with acute myocardial infarction (MI) patients were utilized following

WHO/AHA criteria. Confirmed acute MI patients were admitted and evaluated in CCU wards.

Table 1 shows that the majority of patients (32 individuals) experienced acute myocardial infarction between the ages of 50 and 59, with only one patient in the 20-29 age group. Among the samples, 74% of patients with acute myocardial infarction were male, while 26% were female. 33 patients were businessmen, followed by 26 housewives, 25 service holders, 2 farmers, and 4 day laborers. The remaining 10 individuals had other occupations. 93% of the patients were Muslim, while 7% were Hindu. In this study, 83% of patients had hypertension, 78% had diabetes mellitus, 77% were smokers, 46% had a positive family history, and 45% had a sedentary lifestyle.

Different types of myocardial infarction were identified, with the majority of patients (25) experiencing anterolateral MI. Others include lateral MI (22 patients), anterior MI (21 patients), inferior MI (16 patients), inferolateral MI (12 patients), anteroseptal MI (3 patients), and inferoseptal MI (1 patient).

A significant proportion of myocardial infarctions can be attributed to conventional risk factors that have the ability to be modified. Hence, in addition to endeavors aimed at exploring emerging coronary risk factors, the prevention of coronary disease should prioritize interventions targeting the reduction of well-established risk variables [10].

CONCLUSION

During our study, we explored the risk factors associated with acute myocardial infarction, some of which can be modified while others cannot. It was found that males are more prone to experiencing acute myocardial infarction compared to females. The most significant risk factors identified were the presence of chronic diseases such as diabetes and hypertension, as well as a positive family history.

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Cite This Article: Protap Kumar Paul, Mohammad Shafiqur Rahman, Md. Kamrul Hasan, Nure Alam Siddique, Mohammad Alwalid Sharkar, Nureza Islam, Koushik Bhowmick, Md. Saiful Islam, Prohlad Kumar Paul (2023). The Risk Factors in Patients of Myocardial Infarction: An Observational Study. *East African Scholars J Med Surg*, *5*(10), 184-188.