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Research Article

### INCIDENCE OF MODIFIABLE RISK FACTORS AFTER MYOCARDIAL INFARCTION AND TWELVE MONTHS FOLLOW-UP

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**Abstract:**

**Aim:** To determine the frequency of modifiable risk factors for coronary heart disease after the first MI and after one year of follow-up.

**Study design:** A Prospective study

**Place and duration:** In the Department of Cardiology, Jinnah Hospital Lahore for one year duration from February 2019 to February 2020.

**Methodology:** The study included 200 cases with typical chest pain and significant ECG changes or a specific increase in serum cardiac enzymes. We recorded demographic data, including age, gender, weight, height and other independent patient variables, in a pre-determined form. Traditional cardiovascular risk factors have been observed (smoking, hypertension, diabetes, dyslipidemia, sedentary lifestyle, obesity). All of these patients were regularly monitored and data on variable risk factors were re-recorded after twelve months. Data were analyzed using SPSS version 10.

**Results:** 25% (n = 250) per 1000 registered patients did not participate in follow-up. In the remaining 75% (n = 750) of cases 64% (n = 480) were men with an average admission age of 57 ± 07. The main variable risk factors documented during acute myocardial infarction were diabetes (48%), hypertension (46%) and smoking (45%). After 12 months, the incidence of poor glycemic control was 18%. Lack of accessibility was the main problem (34% of patients) underlying poor disease control and related risk factors.

**Conclusion:** Variable risk factors for coronary artery disease can be better controlled in the majority of patients who undergo regular follow-up. Failure to comply with treatment, lack of affordable prices, and lack of proper medical advice are identifiable etiologies in a group of patients who do not have sufficient control over these risk factors.

**Keywords:** MI, CAD, NSTEMI, STEMI

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**INTRODUCTION:**

Coronary artery disease (CAD) describes a spectrum of diseases of various etiologies and is the most common cause of atherosclerotic plaque. Myocardial infarction (MI) or myocardial infarction is a serious consequence of coronary artery disease when the arteries become narrower or stiff because of cholesterol plaque buildup. Additional narrowing may occur due to a blood clot or blood clots formed on the surfaces of the platelets. Because important CAD risk factors were identified in the Framingham heart study in the 1960s, much emphasis was placed on reducing cardiovascular disease burden by changing these risk factors. Modifiable risk factors include diabetes, smoking, hypertension, hyperlipidemia, sedentary lifestyle, obesity, stress and depression. The invariable factors are advanced age, male gender, family history of CAD, while menopause and personality type may be partially changed. Recent risk factors include highly sensitive C-reactive protein (hsCRP), homocysteine, lipoprotein (a), fibrinogen, D-dimers, interleukin-6 and myeloperoxidase. In Pakistan, cardiovascular risk factors are increasing for ischemic heart disease and acute myocardial infarction. Dyslipidemia is increasingly recognized as an important contributor to CVD. Rising rates of overweight and obesity are a serious public health problem worldwide, because it is not only associated with the risk of cardiovascular disease, but also the state of poverty of people.

**METHODOLOGY:**

This is a prospective study held in the Department of Cardiology, Jinnah Hospital Lahore for one year duration from February 2019 to February 2020. In this study, 1,000 cases with significant changes in typical chest pain and electrocardiography (ECG) or a specific increase in serum cardiac enzymes were registered. The diagnosis was based on the definition of myocardial infarction by the American College of Cardiology and the European Society of Cardiology, which adopts MI as a typical increase in troponin T or I of the heart or creatine kinase B (CK-MB) isoenzyme above the 99th percentile for normality, with at least one of the following;

ischemic symptoms, development of pathological ECG Q waves, ischemic ECG changes (depression or ST segment height) or percutaneous coronary artery intervention. Patients with any type of myocardial infarction (including myocardial infarction other than ST segment, anterior, lateral, lower and combined) were admitted for registration. Hypertension was defined in accordance with the seventh United States Joint Commission report on the prevention, detection, assessment and treatment of high blood pressure (JNC 7), and systolic blood pressure was considered  $\geq 140$  mmHg and diastolic blood pressure  $\geq 90$  mmHg. Fasting glucose equal to or greater than 7.0 mmol / L or a two-hour glucose value equal to or greater than 11.1 mmol / L was considered diabetes. Body mass index (BMI) was defined as 0.0030.00 kg / m, abnormalities lipids were defined in accordance with the recommendations of the National Cholesterol Education Program (NCEP) III Panel for Adult Treatment. We recorded demographic data, including age, gender, weight, height and other independent patient variables, in a pre-determined form. Traditional cardiovascular risk factors (hypertension due to smoking, diabetes, dyslipidemia, sedentary lifestyle, obesity) have been observed. All of these patients were regularly monitored and data on variable risk factors were re-recorded after twelve months. The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 17.

**RESULTS:**

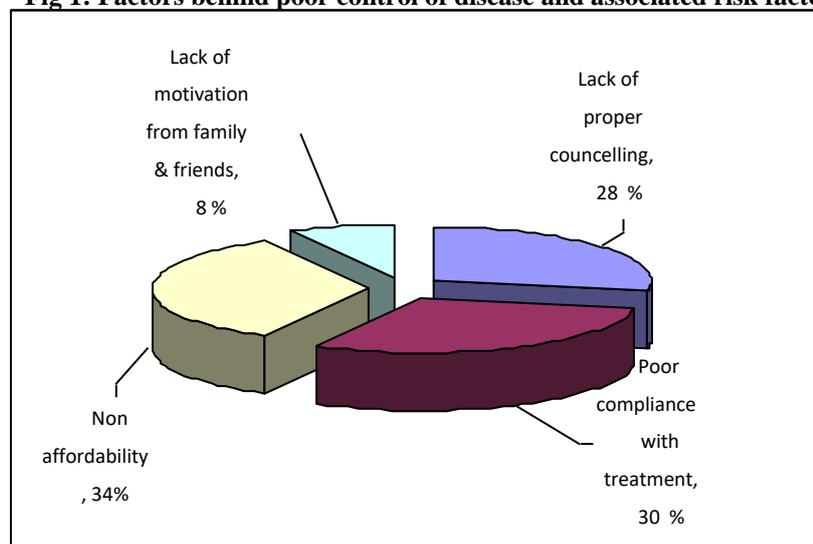
25% (n = 250) of 1000 registered patients did not participate in follow-up. In the remaining 75% (n = 750) of cases 64% (n = 480) were middle-aged men  $57 \pm 07$ . The main variable risk factors documented during acute myocardial infarction were diabetes (48%), hypertension (46%) and smoking (45%). The initial patient characteristics are given in Table 1. It was found that the poor frequency of glycemic control was 18% over 12 months (Table 2). The main factors causing poor control of these modifiable risk factors for coronary artery disease in this patient group are shown in Figure 1.

**Table 1: Baseline characteristics**

Variables	Males	Females
Mean age	57±07	64±05
Diabetes mellitus	26%	22%
Hypertension	25%	21%
Smoking	36%	09%
Dyslipidemias	12%	08%
Sedentary life style	14%	13%
NSTEMI	17%	12%
ST-segment elevation MI	33%	38%
Total	480	270

**Table 2: Interaction between risk factors at the time of MI and at 12 months follow up**

Variables	At the time of MI	At 12 months
Poor glycaemic control	48%	18%
Hypertension	46%	22%
Smoking	45%	37%
Dyslipidemia	20%	06%
Sedentary life style	27%	24%

**Fig 1: Factors behind poor control of disease and associated risk factors****DISCUSSION:**

Our study focused on identifying modifiable risk factors for coronary artery disease in patients with acute MI, maintaining them with personalized medication, and then re-evaluating all these modifiable risk factors after 12 months follow-up. We have concluded that poor compliance and poor accessibility are factors that have poor control over these factors. An important role is also played by the lack of proper advice from a doctor writing out about the etiology of the disease, the importance of compliance with treatment principles and the risk of not overcoming the variable risk factors of the disease. The death of patients, lack of easy access to the hospital, and people living in remote areas were the reason for leaving the examined patients. To improve compliance and guarantee the success of the proposed treatment, healthcare professionals need to recognize compliance problems and their predictors and seek to raise awareness about this important aspect of treatment. In a recent study evaluating drug compliance in patients with coronary artery disease, one year of treatment and appropriate level of education, marital status, mental health (depression / anxiety), and a 54% compliance rate followed this figure. Some interventions may improve loyalty issues, but patient involvement in discussing alternatives is necessary to increase loyalty. Using a technology system is a strategy, but patient education is crucial for structured reminders,

increasing the number of consultations or phone calls, and simplifying the medication regimen. The frequency of smoking in women was significantly lower than in men. The underlying causes can be social and cultural trends in this part of the country.

**CONCLUSION:**

It can be understood that most patients who undergo regular check-ups may have better control over variable risk factors for coronary artery disease. Non-compliance with treatment, lack of affordable prices and lack of appropriate medical advice are detectable etiologies in a group of patients who do not have sufficient control over these risk factors.

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