

# Risk Factors in Heart Attack

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**Abstract:** *The aim of this study was to provide an overview of the risk factors for acute myocardial infarction in patients attending Shkodra regional hospital. There were 213 admissions during the study period. (74%) were males and (26%) females, giving a male to female ratio of 3:1. The mean age of patients was 61.4 ( $\pm 9.7$ ) years (range 34–86 years). Risk factors: Smoking, diabetes, hypertension and history of coronary heart disease were the most common cardiovascular risk factors in the sample studied. More than half (55%) of patients were reported to be current smokers and 15% were ex-smokers. More than half of patients (61%) were identified as having diabetes mellitus (type 1 or 2 unspecified). History of hypertension and coronary heart disease were reported in 38% and 24% of patients respectively. Dyslipidaemia and history of cerebrovascular accidents as risk factors were reported in 8.6% and 7.1% of patients. Prevention strategies should be implemented in order to improve the long-term prognosis and decrease overall morbidity and mortality from coronary artery disease in patients.*

**Keywords:** myocardial infarction, smoking, diabetes, hypertension

## 1. Introduction

Cardiovascular disease is considered the most common cause of death for both males and females worldwide. Coronary heart disease, in particular, it is a major global health problem and the main cause of premature death in many countries (1). Also in Albania the cardiovascular disease is a major cause of morbidity and mortality (2). The prevalence of acute MI as the first manifestation of ischaemic heart diseases is high in approximately 50% to 70% of patients and is a common cause for hospital admission (3). Several factors related to the severity of the disease have been identified, such as smoking, diabetes mellitus, systemic arterial hypertension, dyslipidaemia, the number of arteries impaired and degree of functional impairment of the left ventricle (4). Furthermore, age, sex, obesity, heavy alcohol consumption and physical inactivity were all also recognized as contributory factors. The risk factors associated with CHD are multifactorial and work synergistically. Genetic predisposition, sex (it is more common in males), family history of ischaemic heart disease (especially in a first-degree relative under 55 years), stroke, peripheral vascular disease and advanced age are recognized risk factors for the development of coronary heart over which there is little control (5). The aim of this study was to provide an overview of the risk factors for acute myocardial infarction in patients admitted at regional hospital of Shkodra district, Albania.

## 2. Material and Methods

This is a prospective study including consecutive patients with first acute myocardial infarction over the period 2011–2013 admitted at regional hospital of Shkodra district, Albania. The following criteria were used for the diagnosis of acute MI: a clinical history of sudden chest pain, electrocardiogram (ECG) changes consistent with acute MI or characteristic changes in serum cardiac enzymes activity including: creatine kinase (CK), aspartate aminotransferase (AST), and lactate dehydrogenase (LDH) on 3 consecutive days after admission. Patient information related to age, gender, disease risk factors, clinical presentation, duration of

symptoms prior to admission, and known history of diabetes, in addition to analysis of ECG and cardiac enzymes profile, were collected. The main risk factors studied were: patient's sex, cigarette smoking (current and ex-smokers), medical history of diabetes, hypertension, history of hyperlipidaemia, history of coronary heart and history of cerebrovascular accident. Data were analysed using SSPS statistical package, version 10. Frequency distributions were generated and the chi-squared test was used to assess the significance of differences between categories. A p-value  $\leq 0.05$  were considered significant.

## 3. Results and Discussion

There were 213 admissions during the study period. (74%) were males and (26%) females, giving a male to female ratio of 3:1. The mean age of patients was 61.4 ( $\pm 9.7$ ) years (range 34–86 years). The ratio of patients  $\geq 60$  years of age to those  $< 60$  was 1.0:1 in male and 1.4:1 in female patients (table 1). Risk factors: Smoking, diabetes, hypertension and history of coronary heart disease were the most common cardiovascular risk factors in the sample studied. More than half (55%) of patients were reported to be current smokers and 19% were ex-smokers. More than half of patients (61%) were identified as having diabetes mellitus (type 1 or 2 unspecified). History of hypertension and coronary heart disease were reported in 38% and 24% of patients respectively. Dyslipidaemia and history of cerebrovascular accidents as risk factors were reported in 8.6% and 7.1% of patients. Clinical presentation: Clinical characteristics, in-hospital treatment and treatment at discharge of acute MI patients under investigation are presented in table . Acute chest pain was the presenting complaint in 92% of patients. Other presenting symptoms included nausea and vomiting (74%), epigastric pain (19%), dizziness (13%), fatigue (12%). Data on duration of symptoms prior to presentation at the hospital were available for all patients. In 37% of these cases the duration was  $> 12$  hours. Laboratory investigation: All of the patients included in the study had abnormal ECG and elevated levels of CK and LDH. Cardiovascular disease continues to be one of the major causes of morbidity and mortality among women as well as

men in many countries (6). Cardiovascular disease is much less frequent in premenopausal women than in age-matched men (7). This essentially shifts the incidence curves for women by 5–10 years compared with men. Acute MI below the fourth decade is predominantly a disease of men. In the present study, more than three-quarter of patients included were male. This is similar to the results from communities in some industrialized countries (8). In the present study, the ratio of the number of patients > 60 years of age to those ≤ 60 years was 1.0:1 in male patients and 3.3:1 in female patients. Diabetes is a major independent predictor of morbidity and mortality in acute MI, probably through its associations with pre-existing left ventricular dysfunction and diffuse and rapidly progressive coronary atherosclerosis (9). The study findings indicated that 51% of all patients hospitalized at Shkodra regional hospital for MI had diabetes. This is higher than the 10.5% to 30.0% reported in the other studies conducted in countries (10). This reflects the high burden of diabetes in our population, and suggests that more aggressive strategies need to be directed towards primary prevention among this vulnerable group. Hypertension, another well-established cardiovascular risk factor, was present in 36% of patients. Hypertensive individuals more frequently have symptoms preceding acute MI, probably due to ventricular hypertrophy associated with high blood pressure. Women with acute ischaemic syndromes have higher rates of associated diabetes and hypertension because the protective effects of the premenopausal state can probably be overcome by these two potent causes of atherosclerosis (11). The effect of cigarette smoking on the risk of MI has long been investigated and the results of one recent study suggested that cigarette smoking played the most important role in MI in individuals under the age of 36 years (12). Smoking increases the risk of an initial cardiac event and doubles the rate of subsequent infarction and death. The association between cigarette smoking and a high cholesterol level is well established (13). This may reflect the higher intake of dietary fat and cholesterol among smokers or the metabolic effects of cigarette smoke metabolites (3). As the number of cigarettes smoked per day increases so the cholesterol level rises in both males and females (14). Our results showed that smoking was an important risk factor among male patients. Of the total patients in the present study group for whom smoking history was available, 15% were ex-smokers and 53% were current smokers. This is comparable with the range of current smoking history among males with acute MI found in some other studies (14). On the other hand, in industrialized countries the range of smoking in females can be high and approach the male range (15). However, this is quite different from the female smoking habits in our sample. Few women smoke in our study. Our study showed that only 2% of female patients were current smokers.

#### 4. Conclusion

In view of the high inpatient mortality risk among acute MI patients in the present investigation public health planners and clinicians should be aware of the importance of early diagnosis of MI and the ensuing burden of various cardiovascular risk factors so that appropriate primary and secondary prevention strategies can be implemented.

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**Table 1:** Sociodemographic and clinical characteristics of patients with myocardial infarction

Variables	N	%
Gender		
Females	55	26
Males	158	74
Age, M (SD)	61.4	
ECG location		
Anterior	126	59.2
Inferior	66	31.2
Subendocardial	11	5.3
Posterior	7	3.1
Right ventricle	3	1.2
Risk factors		
Diabetes	130	61
Hypertension	81	38
History of coronary artery disease	51	24
History of cerebrovascular accident	15	7.1
History of hyperlipidaemia	18	8.6
Current smoker	117	55
Ex-smoker	40	19
Presenting symptoms		
Chest pain	196	92
Nausea and vomiting	158	74
Epigastric pain	40	19
Breathlessness	36	17
Dizziness	28	13
Fatigue	26	12

