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Determination of risk factors of Coronary artery disease

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Abstract
Background: Coronary artery disease (CAD) is the leading cause of mortality worldwide and by 2020, will be the leading cause of disability. The present study was conducted to determine risk factors of coronary artery disease.
Materials & Methods: 74 patients of CAD based on WHO/AHA criterions were included. History of hypertension, diabetes history, cholesterol, history of smoking, CABG history etc. was recorded. Weight, Height, BMI, systolic and diastolic blood pressure, lipid profile such as HDL, TG, TC, LDL and VLDL etc. was also recorded.
Results: Marital status was married in 62 and single in 12, BMI was obese in 38, normal in16 and overweight in 20, education was high school in 40 and graduation in 34. The difference was significant ($P< 0.05$). Common risk factors was diabetes in 42, hypertension in 58, CAG in 12, high cholesterol in 30, smoking in 46 and family history of CAD in 24 patients. The difference was significant ($P<0.05$).
Conclusion: High cases of CAD among males as compared to females. Common risk factors were diabetes, CAG, hypertension, cholesterol and smoking.

Keywords: Coronary artery disease, Diabetes, Hypertension

Introduction
Coronary artery disease (CAD) is the leading cause of mortality worldwide and by 2020, will be the leading cause of disability [1]. Mortality and morbidity rates due to cardiovascular diseases (CVDs) are escalating worldwide, with disproportionately significant worse outcomes in the developing countries, due to rapid health and nutrition transitions caused by urbanization and globalization [2]. More than 17.92 million people died in 2015 due to CVDs, with the highest death rate of 9.4 million recorded in men than 8.5 million in women. Coronary heart disease (CHD) ranks as the highest cause of deaths among all CVDs, accounting for more than 8.9 million deaths worldwide. The prevalence of CHD is increasingly uneven in different regions of the world, due to inadequate and lack of better health services [3].
Acute myocardial infarction (AMI) is one of the most common presentations of CAD. Although individuals younger than 40 years of age account for only 3% of all patients with coronary artery disease, they are not completely immune from CAD. Additionally, AMI in very young patients aged ≤ 35 years has been poorly described but is estimated to be less than 2% [4].
Modifiable risk factors affecting the CAD include smoking, low physical activity, alcohol consumption, poor socioeconomic status, some drugs, such as oral contraceptives, and certain diseases, such as obesity, especially abdominal obesity, diabetes, hyperlipidemia, hypertension, stress, depression, and nutrition [5]. The dietary factors imposing cardiovascular diseases or related risk factors include high-fat diets, high-sodium foods, foods with saturated fats, refined carbohydrates, low levels of fatty acids, processed foods, fast foods, and fried

foods as well as low consumption of fruits, vegetables, and high-fiber foods [6, 7]. The present study was conducted to determine risk factors of coronary artery disease.

Materials & Methods

The present study was conducted among 74 patients of CAD based on WHO/AHA criterions in the department of general medicine. All were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. A thorough general physical examination was performed. Factors such as duration, hypertension, diabetes history, cholesterol, history of smoking, CABG history etc. was recorded. Weight, Height, BMI, systolic and diastolic blood pressure, lipid profile such as HDL, TG, TC, LDL and VLDL etc. was also recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I: Distribution of patients

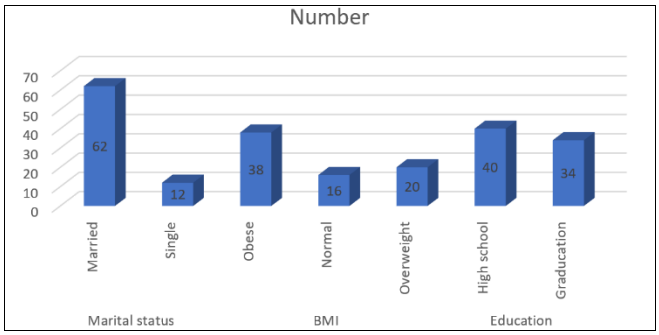
Total- 74		
Gender	**Male**	**Female**
Number	48	26

Table I shows that out of 74 patients, males were 48 and females were 26.

Table II: Assessment of parameters

Parameters	Variables	Number	P value
Marital status	Married	62	0.01
	Single	12	
BMI	Obese	38	0.04
	Normal	16	
	Overweight	20	
Education	High school	40	0.12
	Graduation	34	

Table II, graph I shows that marital status was married in 62 and single in 12, BMI was obese in 38, normal in16 and overweight in 20, education was high school in 40 and graduation in 34. The difference was significant (P< 0.05).

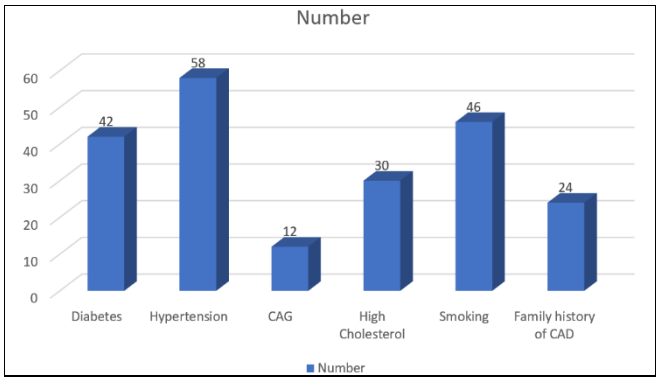


Graph I: Assessment of parameters

Table III: Risk factors assessment

Risk factors	Number	P value
Diabetes	42	0.02
Hypertension	58	
CAG	12	
High Cholesterol	30	
Smoking	46	
Family history of CAD	24	

Table III, graph II shows that common risk factors was diabetes in 42, hypertension in 58, CAG in 12, high cholesterol in 30, smoking in 46 and family history of CAD in 24 patients. The difference was significant (P<0.05).



Graph II: Risk factors assessment

Discussion

India is going through an epidemiologic transition whereby burden of communicable diseases has been declining slowly, but that of non-communicable diseases (NCD) has been rising rapidly, thus facing a dual burden [8, 9]. Current estimates from various epidemiologic studies indicate the prevalence of coronary heart disease (CAD) to be 7%-13% in urban and 2%-7% in rural populations [10]. The pattern of care and outcomes of very young with STEMI is therefore not well defined. Coronary angiography (CAG) performed in young patients with AMI has identified a relatively high incidence of non-obstructive stenosis or single-vessel disease [11]. The present study was conducted to determine risk factors of coronary artery disease.

In this study, out of 74 patients, males were 48 and females were 26. Mirzaeipour *et al.* [12] estimated the amount of the effect of each classic risk factor on CAD (coronary artery disease) among Aja personnel. The 250 military patients hospitalized for CAD were considered as a case group. Each case was individually matched for age and service force with tree military patients without CAD. Data analysis indicated that the risk factors including diabetes, hyperlipidemia, smoking, hypertension, and positive family history of CAD enhance the probability of CAD as much as 79.2%, 77.3%, 67.7%, 64.1%, and 56.6%, respectively.

We found that marital status was married in 62 and single in 12, BMI was obese in 38, normal in16 and overweight in 20, education was high school in 40 and graduation in 34. Sinha *et al.* [13] assessed the risk factors, clinical presentation, angiographic profile including severity, and in-hospital outcome of very young adults (aged ≤ 30 years) with first acute myocardial infarction (AMI). Total of 1,116 consecutive patients with ST-segment elevation acute myocardial infarction (STEMI) were studied. Risk factors were smoking (78.5%), family history of premature coronary artery disease (CAD) (46.8%), obesity (39.1%), physical inactivity (38.7%) and stressful life events (29.6%). The most common symptom and presentation was chest pain and anterior wall myocardial infarction (AWMI) in 94.8% and 58.8%, respectively. About 80.6% of patients had obstructive CAD with single vessel disease (57.6%), double-vessel disease (12.9%) and left main involvement (3.2%). Left anterior descending (LAD) was commonest culprit artery (58.1%) followed by right coronary artery in 28.2%. In-hospital mortality was 2.8%. Percutaneous

coronary intervention was performed in 71.6% of patients. Median number and length of stent were 1.18 and 28 ± 16 mm, respectively.

We found that common risk factors were diabetes in 42, hypertension in 58, CAG in 12, high cholesterol in 30, smoking in 46 and family history of CAD in 24 patients. Kiani *et al*. [14] assessed the risk factors in patients with myocardial infarction (MI). Results showed that 70% of patients were women and only 30% were men. 48% of them were illiterate and patients mean age was 58.3. SD had been 12.6. The mean of pain onset time till referring to hospital was 11 hours with SD of 2.1. 17% of patients (coronary artery diseases history), 25.5% (hypertension history), 26% (diabetes history), 15.5% (cholesterol history), 13% (smoking) and 3% have reported CABG history.

Roman *et al*. [15] found that of the 100 patients recruited to participate in the study, 65% had hypertension, 23% had coronary heart diseases and 12% had both disease conditions. The most prevalent risk factors for hypertension and coronary heart diseases were: alcohol intake (67%), high blood pressure (59%), physical inactivity (61%), obesity (39%), alanine aminotransferase (43%), high-density lipoprotein (79%), low-density lipoprotein (65%), C-reactive protein (78%), sodium (41%) and potassium (40%). Moreover, age, plasma glucose, alanine aminotransferase, and C-reactive protein were found to be independently and positively associated with hypertension and coronary heart diseases.

The limitation of the study is small sample size.

Conclusion

Authors found high cases of CAD among males as compared to females. Common risk factors were diabetes, CAG, hypertension, cholesterol and smoking.

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