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Original Research

Assessment of Risk Factors of Coronary Artery Disease in Subjects Attending a Tertiary Care Facility in North India - A Clinical Study

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ABSTRACT:

Background: Cardiovascular disease (CVD) involves both heart as well as blood vessels and is a group of disease which carries high mortality and morbidity. The present study was conducted to assess the risk factors of CAD in patients. **Materials & Methods:** The present study was conducted in department of General Medicine, Mayo Institute of Medical Sciences, Barabanki, Uttar Pradesh and a tertiary care apex facility of Cardiology, Patna. It consisted of 120 patients (70 males and 50 females) age ranged 40-70 years who had evidence of significant coronary artery disease in their coronary angiogram done either after admission to the hospital or was already available with them since admission. Various factors such as smoking, lipid profile (serum levels of total cholesterol, HDL cholesterol, LDL cholesterol and triglycerides), level of education, socio-economic status, marital status, history of diabetes, history of hypertension and positive family history were recorded. **Results:** Age group 40-50 years comprised of 14 males and 8 females, 50-60 years had 20 males and 12 females and 60-70 years had 36 males and 30 females. Diabetes was present in 70, hypertension in 65, hyperlipidaemia in 95, smoking in 78 and positive family history in 34 patients. The mean cholesterol was 268.2 mg/dl, triglyceride was 214.5 mg/dl, HDL was 43.2 mg/dl and LDL was 108.4 mg/dl. **Conclusion:** We found that the most frequently occurring risk factors in patients of coronary artery disease were diabetes, hypertension, hyperlipidaemia, smoking and positive family history. **Key words:** coronary artery disease, smoking, hyperlipidaemia.

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INTRODUCTION

Cardiovascular disease (CVD) involves both heart as well as blood vessels. It is a group of disease which carries high mortality and morbidity. Coronary artery disease (CAD) and acute coronary syndrome (ACS) are conditions of heart and its associated blood vessels¹ with grave outcome.

According to World Health Organization (WHO) in 2005, it was estimated that cardiovascular disease (CVD) resulted in 17.5 million deaths worldwide. There is significant rise in number of cases of CAD and increase in cardiovascular mortality in India and other south Asian countries. Characteristic feature of CAD is significant atherosclerosis of coronary arteries and it can remain asymptomatic till the major adverse event of

a myocardial infarction occurs. Researchers have enumerated various risk factors for cardiovascular diseases, especially CAD.²

CAD is more prevalent in male as compared to female. According to the Global Burden of Disease Study, estimates of age-standardized death rate for cardiovascular disease is 272 per lakh population in India and this is higher than the global average of 235 per lakh population. This figure is alarming.³

Among them, age, history of smoking, limited physical activity, alcoholism, use of oral contraceptives, poor socioeconomic status (SES), positive family history, occupation, unhealthy lifestyle, lack of proper nutrition, industrialization etc. are the common ones. Among systemic conditions, obesity, poorly controlled diabetes, stress, hyperlipidaemia, depression, hypertension etc. play an important role in causing CAD.⁴

Subjects on high-sodium foods, high-fat diets, low levels of fatty acids, foods rich in saturated fats, frequent use of fast foods, use of fried foods, refined carbohydrates, processed foods, low consumption of fruits, vegetables, and high-fiber foods are nutrition associated risk factors leading to CAD.⁵ The present study was conducted to assess cases of CAD in patients and to find out various risk factors for the same.

MATERIALS & METHODS:

The present study was conducted in the department of General Medicine, Mayo Institute of Medical Sciences, Barabanki, Uttar Pradesh and a tertiary care apex facility for cardiological services at Patna. It consisted of 120 patients (70 males and 50 females) age ranged 40-70 years of age who had evidence of significant coronary artery disease i.e. >70 % blockage in either a single or multiple vessel in their coronary angiogram done after admission to the hospital or was already available with them since admission. All patients were informed about the study and written consent was taken. Ethical approval was obtained from institute prior to the study. Patient data such as name, age, gender etc. were recorded. A thorough clinical examination was performed. Various factors such as smoking, lipid profile (serum levels of total cholesterol, HDL cholesterol, LDL cholesterol and triglycerides), level of education, socio-economic status, marital status, history of diabetes, positive family history and hypertension were recorded. 5 ml of venous blood was obtained in 5 cc syringe for estimation of routine biochemical parameters, Troponin-I, lipid profile, HbA1c etc. Assessment of blood pressure was done with auscultatory method using sphygmomanometer and stethoscope. Results thus obtained were subjected to analysis.

RESULTS:

Graph I Distribution of patients

Age Group (Years)	Male	Female
40-50	14	8
50-60	20	12
60-70	36	30
Total	70	50

Table I shows that age group 40-50 years comprised of 14 males and 8 females, 50-60 years had 20 males and 12 females and 60-70 years had 36 males and 30 females.

Table II Assessment of risk factors

Risk factors	Number
Diabetes	70
Hypertension	65
Hyperlipidaemia	95
Smoking	78
Positive family history	34

Table II, graph I shows that diabetes was present in 70, hypertension in 65, hyperlipidaemia in 95, smoking in 78 and positive family history in 34 patients.

Graph I Assessment of risk factors

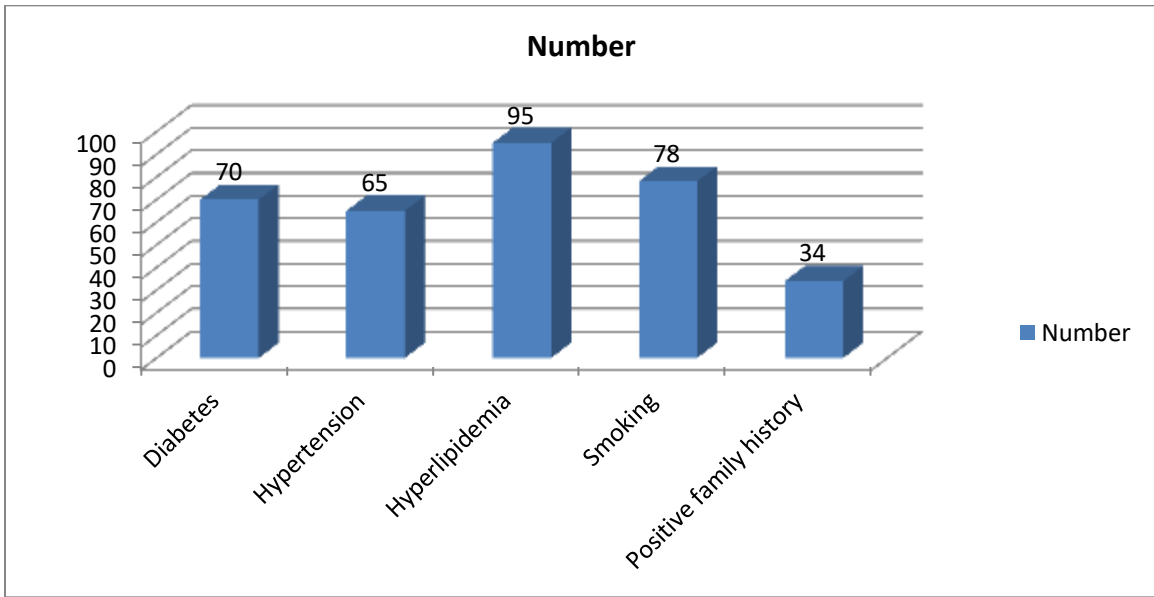
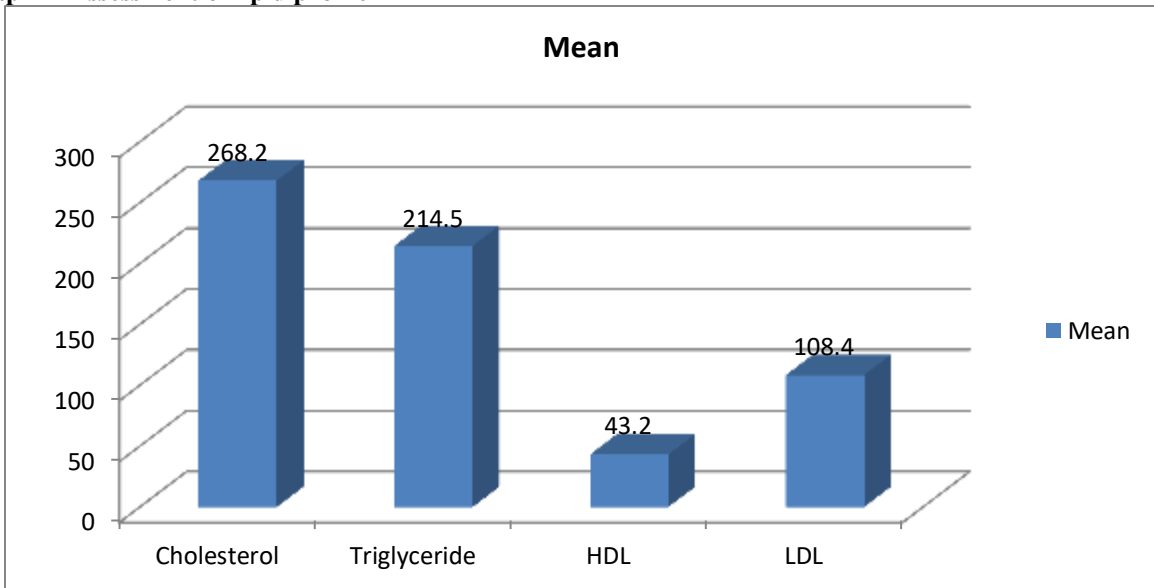


Table III Assessment of lipid profile

Lipid profile	Mean
Cholesterol	268.2
Triglyceride	214.5
HDL	43.2
LDL	108.4

Table III, graph II shows that mean cholesterol was 268.2 mg/dl, triglyceride was 214.5 mg/dl, HDL was 43.2 mg/dl and LDL was 108.4 mg/dl.

Graph II Assessment of lipid profile



DISCUSSION:

Coronary artery disease is considered to be the disease of middle aged people. Various risk factors have been found to be associated with CAD. Besides the conventional risk factors, new-advent risk indicators such as inflammatory markers, for instance high sensitivity C-reactive protein, interleukin-6, fibrinogen - an acute phase protein, retinal artery narrowing, coronary artery calcification, endothelial dysfunction and anemia are therefore now being studied in women.⁶ The present study was conducted to assess cases of CAD in patients and to find out various risk factors for the same.

In present study, age group 40-50 years comprised of 14 males and 8 females, 50-60 years had 20 males and 12 females and 60-70 years had 36 males and 30 females. It was found that diabetes was present in 70, hypertension in 65, hyperlipidaemia in 95, smoking in 78 and positive family history in 34 patients. Mirzaiepour et al⁷ in their case-control study on 1000 male assessed risk factors of CAD. Analysis of their data revealed that the risk factors like diabetes, hyperlipidaemia, smoking, hypertension and family history of CAD increase the probability of CAD as much as 79.2%, 77.3%, 67.7%, 64.1%, and 56.6%, respectively.

Laltesh et al⁸ conducted a study on 90 patients with coronary artery disease. All patients underwent assessment of serum levels of total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides. It was observed that the total serum cholesterol to high density lipoprotein-cholesterol and low density lipoprotein cholesterol to high density lipoprotein-cholesterol ratios also were significantly higher in cases than in controls, whereas the rise in triglycerides to high density lipoprotein-cholesterol ratio was not found to be significant.

We found that mean cholesterol was 268.2 mg/dl, triglyceride was 214.5 mg/dl, HDL was 43.2 mg/dl and LDL was 108.4 mg/dl. American Heart Association - mentioned risk factors for cardiovascular disease as total cholesterol: <200 mg/dL, HDL: 200 mg/dL, HDL: >40 mg/dL; and LDL: <130 mg/dl. The lipid profile is a group of tests that are often done together to identify the risk of heart disease.⁹ These tests are good indicators of whether someone is likely to have a heart attack or stroke caused by the blockage of blood vessels or hardening of the arteries. The lipid profile usually includes: high levels of cholesterol in blood circulation are strongly associated with progression of heart disease. For a person of about 68 kg typical total blood cholesterol synthesis is about 1g (1000 mg) per day.¹⁰

Lin et al¹¹ in their study performed on 130,000 of patients with traumatic brain damage as well as 258,000 of healthy individuals were followed up over 10 years.

Individuals in the case and control group were homogenous in terms of age and gender. After a 10-year follow-up, it was found that the incidence of hyperlipidaemia among patients with CAD was significantly higher than that among the healthy subjects. Grosz et al¹² study was to examine 250 military pilots over 10 years in terms of coronary heart disease risk factors in 10-year follow-up. Authors observed that there was a direct and significant relationship between smoking and CAD, with 31.7% of patients having had a history of smoking.

CONCLUSION:

We found that the most frequently occurring risk factors in patients of coronary artery disease attending the centers where study was done in north India were diabetes, hypertension, hyperlipidaemia, smoking and positive family history.

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