

## ORIGINAL RESEARCH

# Evaluation of various risk factors for coronary artery disease

Dr. Amit Sachan

Assistant Professor, Department of General Medicine, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India

### Corresponding Author

Dr. Amit Sachan

Assistant Professor, Department of General Medicine, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India

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### ABSTRACT

**Background:** Coronary heart disease (CHD), sometimes referred to as ischemic heart disease or coronary artery disease (CAD), is a medical disorder that arises when the accumulation of plaque in the coronary arteries reduces or blocks the blood supply to the heart's muscles, or myocardium. The present study was conducted to assess risk factors for coronary artery disease. **Materials & Methods:** 65 patients of coronary artery disease of both genders were enrolled. Assessment of weight (Kg) and height (cm) and body mass index (BMI) was calculated. Measurement of plasma glucose, HDL-C, LDL-C, and ALT. **Results:** Out of 65 patients, males were 40 and females were 25. The age >45 years had 20 and <45 years had 45 patients. Education status was primary in 20, secondary in 22 and higher in 23 patients. Disease type was hypertension in 7, CHD in 28 and HTN & CHD in 30 patients. Smoking was positive in 42 and negative in 23. Alcohol intake was positive in 42 and negative in 23. Marital status was married in 38 and unmarried in 27. Family history was positive in 34 and negative in 31. Physical activity was positive in 19 and negative in 46. The difference was significant ( $P < 0.05$ ). The risk factors were ALT with normal level in 22 and high in 43 patients. LDL-C was normal in 18 and high risk in 47. HDL-C was normal in 16, moderate in 24 and high in 25 patients. The difference was significant ( $P < 0.05$ ). **Conclusion:** High LDL-C, an ALT level, smoking, drunkenness, inactivity, obesity, and a favorable family history were all prevalent risk factors for CHD.

**Keywords:** Coronary heart disease, smoking, CHD

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### INTRODUCTION

Coronary heart disease (CHD), sometimes referred to as ischemic heart disease or coronary artery disease (CAD), is a medical disorder that arises when the accumulation of plaque in the coronary arteries reduces or blocks the blood supply to the heart's muscles, or myocardium. The heart muscle receives oxygen-rich blood via these arteries, and narrowing or blockage of these arteries can result in a number of cardiovascular issues.<sup>1,2</sup> A number of risk factors for coronary heart disease (CHD) include smoking, low socioeconomic level, alcoholism, high blood pressure, high serum total cholesterol, low serum HDL-C, diabetes mellitus, oral contraceptives, diet, stress, depression, and aging. Significant risk factors include being overweight and not exercising or being physically inactive.<sup>3</sup>

Patients with hypertension are the most prevalent worldwide. Modification of lifestyle is one of the elements of managing hypertension. Regular physical exercise protects against hypertension, according to studies.<sup>4</sup> Angina, or pain in the chest, is a result of reduced blood flow to the heart muscle. Physical

activity and emotional stress are common causes of angina, which usually goes away with rest or medicine. A heart attack may result from a blood clot that totally blocks a coronary artery (usually from a burst plaque). This happens when the heart muscle loses too much oxygen and nutrients, which can cause tissue damage or even death.<sup>5</sup> The present study was conducted to assess risk factors for coronary artery disease.

### MATERIALS & METHODS

The present study comprised 65 patients of coronary artery disease of both genders. All patients gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Records were kept on variables such education level, socioeconomic standing, smoking and alcohol consumption, physical activity level, and family history of CHD or hypertension. A height (cm) and weight (kg) assessment was performed. Next, the body mass index (BMI) was computed using the formula  $BMI = \text{weight (kg)} / \text{height (m)}^2$ . Based on Seventh Joint National Committee guidelines, blood

pressure was recorded as normal (systolic <120, diastolic <80), pre-hypertension (systolic 120–139, diastolic 80–89), hypertension stage I (systolic 140–159, diastolic 90–99), and hypertension stage II (systolic ≥160 and diastolic ≥100). For the purpose of

measuring plasma glucose, HLD-C, LDL-C, and ALT, 10 milliliters of venous blood were drawn. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total- 65		
Gender	Male	Female
Number	40	25

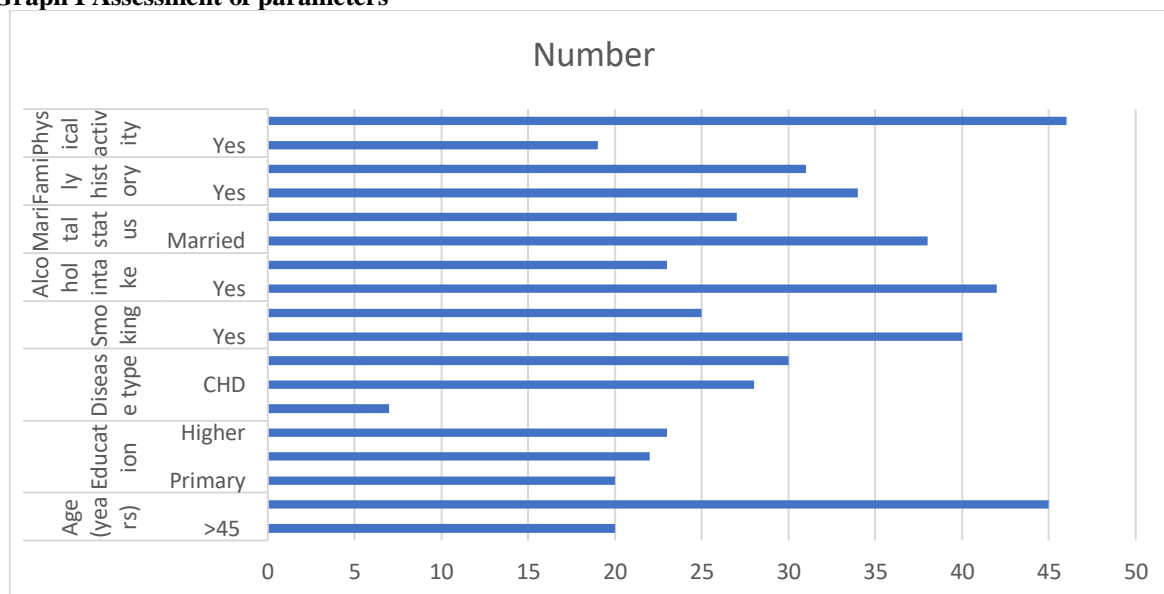
Table I shows that out of 65 patients, males were 40 and females were 25.

**Table II Assessment of parameters**

Parameters	Variables	Number	P value
Age (years)	>45	20	0.04
	<45	45	
Education	Primary	20	0.51
	Secondary	22	
	Higher	23	
Disease type	Hypertension	7	0.05
	CHD	28	
	HTN & CHD	30	
Smoking	Yes	40	0.01
	No	25	
Alcohol intake	Yes	42	0.02
	No	23	
Marital status	Married	38	0.91
	Unmarried	27	
Family history	Yes	34	0.87
	No	31	
Physical activity	Yes	19	0.01
	No	46	

Table II shows that age >45 years had 20 and <45 years had 45 patients. Education status was primary in 20, secondary in 22 and higher in 23 patients. Disease type was hypertension in 7, CHD in 28 and HTN & CHD in 30 patients. Smoking was positive in 42 and negative in 23. Alcohol intake was positive in 42 and negative in 23. Marital status was married in 38 and unmarried in 27. Family history was positive in 34 and negative in 31. Physical activity was positive in 19 and negative in 46. The difference was significant (P< 0.05).

**Graph I Assessment of parameters**



**Table III Evaluation of risk factors**

Parameters	Variables	Number	P value
ALT	Normal	22	0.02
	High	43	
LDL- C	Normal	18	0.01
	High risk	47	
HDL- C	Normal	16	0.05
	Moderate	24	
	High	25	

Table III shows that risk factors were ALT with normal level in 22 and high in 43 patients. LDL- C was normal in 18 and high risk in 47. HDL- C was normal in 16, moderate in 24 and high in 25 patients. The difference was significant ( $P < 0.05$ ).

## DISCUSSION

In comparison to a lifetime of abstinence from smoking, cigarette smoking roughly doubles the risk of morbidity and mortality from ischemic heart disease. The risk is also correlated with the length and quantity of smoking. There is proof that quitting smoking lowers the risk of nonfatal MI and all-cause mortality in people with congestive heart failure.<sup>6</sup> As a result, smoking should be discouraged for all patients with ischemic heart disease as it significantly increases the risk of both fatal and nonfatal recurrences of MI as well as the risk of a first MI.<sup>7</sup> While it may take more than 20 years, if at all, for the risk associated with smoking to fully reverse, the risk of morbidity and mortality linked with smoking cigarettes drops as soon as one stops.<sup>8,9</sup> The present study was conducted to assess risk factors for coronary artery disease.

We found that out of 65 patients, males were 40 and females were 25. According to Hasan et al<sup>10</sup>, 29 patients (72.5%) with juvenile CAD were smokers. Fifteen patients (37.5%) had low HDL, thirty-three patients (82.5%) had elevated LDL, twenty-one patients (52.5%) had hypertension, and eight patients (20%) had impaired fasting glucose or diabetes. There was a positive family history of CAD in 27 individuals (67.5%). Twenty patients (or 50%) had a BMI of more than thirty, were overweight, and had STEMI. Out of those, 18 patients (45%) had AAMI, while only 2 patients (5%) had IWMI. 2(5%) exhibited LBBB with a recent onset. Seven (17.5%) had unstable angina, while 11 (27.5%) had NSTEMI. LV dysfunction was seen in 29 individuals (72.5%) on echocardiography.

We observed that age >45 years had 20 and <45 years had 45 patients. Education status was primary in 20, secondary in 22 and higher in 23 patients. Disease type was hypertension in 7, CHD in 28 and HTN & CHD in 30 patients. Smoking was positive in 42 and negative in 23. Alcohol intake was positive in 42 and negative in 23. Marital status was married in 38 and unmarried in 27. Family history was positive in 34 and negative in 31. Physical activity was positive in 19 and negative in 46. Hossain et al<sup>11</sup> identified the factors that increase the risk for CHD as it is an extremely important area in health sciences. They also assessed overall risk. The analysis showed that serum

cholesterol level is a risk factor of coronary heart disease, but its effect is modified by the age category of the subjects.

We found that risk factors were ALT with normal level in 22 and high in 43 patients. LDL- C was normal in 18 and high risk in 47. HDL- C was normal in 16, moderate in 24 and high in 25 patients. Mukhopadhyay et al<sup>12</sup> included 433 students International Physical Activity Questionnaire-long form was used for assessment of physical activity and Perceived Stress Scale (PSS) to elicit psychological stress levels. Waist-to-height ratio (WHtR) was calculated. Total cholesterol to high-density lipoprotein ratio was calculated as the CVD risk ratio. 39.3% were women and 68.6% of the subjects were in junior classes. 22.4% subjects had high PSS while 30% performed low physical activity. Tobacco and alcohol intake was prevalent in 29.3% and 21.0% respectively. High CVD risk ratio was found in 14.3%. Most risk factors were more prevalent among juniors except diabetes. Among the non-overweight and non-obese subjects there was a significant positive correlation between WHtR and CVD risk score ( $R = 0.33$ ,  $p < 0.001$ ). 82.7% of the variance in CVD risk ratio could be explained by WHtR, Body mass index, Triglycerides and Low-density lipoprotein ( $F(7, 425) = 296.085$ ), of which LDL ( $\beta = 0.755$ ) contributed the most.

The limitation of the study is the small sample size.

## CONCLUSION

Authors found that high LDL-C, an ALT level, smoking, drunkenness, inactivity, obesity, and a favorable family history were all prevalent risk factors for CHD.

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