

# Prevalence of Coronary Artery Disease at National Institute of Cardiovascular Disease Hyderabad (NICVD) Sindh

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## ABSTRACT

**Objective:** To determine the prevalence of coronary artery disease at the NICVD Hospital, Hyderabad.

**Methods:** At the National Institute of Cardiovascular Disease, a teaching hospital in Hyderabad, cross-sectional descriptive research was carried out. Total 130 patients were participated in study and all individuals were adults (18-60 years old) who presented at the general checkup clinic with a history or signs of CAD. A self-administered questionnaire designed for the study.

**Results:** Among 130 patients, the proportions of significant risk factors for CAD were: 70% Hypertension, 36.2% Obesity, 36.2% Family history, and 36.9% diabetes mellitus. Signs and symptoms of the patients were Heart attacks 31.5%, heartburn 68.5%, AOT 36.9%, Chest pain 48.5%, and vomiting 7.7%. 80.8% of patients took chest pain tablets under the tongue. Patients currently smoking was 16.2%. Practical implication:- This study will prove very helpful for physician in management of coronary artery disease.

**Conclusion:** Diabetes, hypertension, and high cholesterol are all modifiable risk factors that must be appropriately controlled. The community should place a high value on screening programs that may identify diseases before they develop and on adopting healthy habits.

**Keywords:** Coronary artery Disease, Heart disease, NICVD

## INTRODUCTION

More than 15 million people throughout the globe die each year from cardiovascular disease<sup>1</sup>. Many people who die before age 65 are premature, considering today's longer life expectancy.

Cardiovascular disease may be exacerbated by some conditions, including hypertension and diabetes mellitus (CAD). Cigarette smoking, inactivity, dyslipidemia, male gender, age, a history of the disease in one's family, as well as high levels of the amino acid homocysteine in the blood have also been linked to coronary artery disease (CAD)<sup>2</sup>. Controlling these risk factors has led to a significant decrease in the number of people dying from coronary heart disease<sup>2</sup>.

CAD kills 410 people for every 100,000 people in Pakistan<sup>3</sup>. Hypertension affects 17.9% of Pakistanis, whereas diabetes affects 10%, according to the National Health Survey of Pakistan (NHSP)<sup>4</sup>. An urban Pakistani population has an obesity incidence of 22 percent for men and 37 percent for women, whereas 13 percent of Pakistani adults have high blood cholesterol<sup>4</sup>. It has been found that 29% of adult Pakistani men use tobacco<sup>4</sup>. The fact that these risk factors are becoming more common shows that Pakistan is experiencing the same kind of spread that risk factors for noncommunicable diseases have been making in most developing countries.

Also, people in cities are more likely to be affected by high blood pressure, obesity, high cholesterol, and smoking cigarettes than people in rural areas<sup>4</sup>. So, the people who live in Pakistan's cities are in the "high risk" group for CAD. CAD is more likely to happen if you have high blood pressure, high cholesterol, smoke, or a family history of heart disease. Knowing about these risk factors, like high blood pressure, high cholesterol, smoking, and a history of heart disease in your family, can help policy, so risk assessment is an essential part of keeping CAD from happening and taking care of it when it does.

The objective of this study was to estimate the proportions of CAD risk factors and behaviors among ambulatory Pakistanis in a teaching hospital.

## PATIENTS AND METHODS

This study was carried out at National Institute of Cardiovascular Disease Hyderabad, Sindh Province, Pakistan. A self-administered

questionnaire designed for the study. Questionnaire included demographic questions (age, sex, and marital status), sign & symptoms, risk factors and previous history about disease. Patients were managed by family doctors who have received the necessary training. They provide services by providing a general checkup package, which included thorough history taking, physical examination, and basic laboratory tests. 20% (n = 26), 21.5% (n = 28), and 2.3% (n = 3) patients had performed with angioplasty, angiography, and bypass, respectively.

**Data Collection Method:** Before the interview, informed permission was gained from each individual. Before the patient's doctor appointment, an Urdu interview was done. A survey was also given out in Urdu. The subject's medical file included laboratory and clinical data. The institution's Ethical Committee gave the research its approval.

**Analysis:** The Statistical Package of Social Sciences (SPSS) application was used to input and analyze data. Reports on demographic information and the frequency of risk variables provide percentages of each.

## RESULTS

The mean age of patients was  $49.0 \pm 11.9$  years, and the mean BMI was  $23.9 \pm 6.6$  kg/m<sup>2</sup>. Patients' mean systolic blood pressure was  $134.9 \pm 22.9$  mm hg, and diastolic blood pressure was  $83.3 \pm 13.5$  mm hg.

Hypertension was seen in 70% (n = 91) patients. BMI above the normal was found in 36.2% (n = 47) patients. 43.1% (n = 56) patients had normal BMI. 93.8% (n = 122) belongs to middle class and 6.2% (n = 8) related with lower class.

Table 1: Demographic information of patients

Variable	Mean $\pm$ SD
Age (years)	49.0 $\pm$ 11.9
BMI (Kg/m <sup>2</sup> )	23.9 $\pm$ 6.6
Blood pressure (mm hg)	
Systolic	134.9 $\pm$ 22.9
Diastolic	83.3 $\pm$ 13.5

The total number of patients was 130. Out of 130, 36.2% (n=47) were female and 63.8% (n=83) were male patients. Social

economic status 6.2% (n=8) lower class and 122 participants were belonging from 93.8% (n=122) middle class. Five patients were unmarried, and 125 patients were married.

Table 2: Family History of patients

Family History	Yes	No
Is this disease ever found in your family history?	47	83
If yes, so what do you have the relation to the patients?		
Maternal	5	125
Parents	14	116
Paternal	28	102

36.2% (n = 47) patients' family found with coronary artery disease. This disease is more found in paternal 21.5% (n = 28) patients than in 3.8% (n = 5) patients from the mother side (Table 1).

Table 3: Patients history

Patients History	Yes	No
Have you had or ever been told you have _____?		
Heart Attack	41	89
Heart Pain	89	41
Do you know about CAD Symptoms _____?	127	3
If yes, so what are the symptoms are shown		
AOT	48	82
Chest pain	63	67
Heartburn	8	122
Vomiting	10	120
Do you take a pill to be placed under the tongue for chest pain _____?	105	5
Do you visit a hospital after feeling pain _____?	127	3
Do you use tobacco in any form?	56	74
Did you smoke before this disease?	47	83
Do You Smoke Currently?	21	109
Are you suffering from diabetes disease?	48	82

Table 4: Diet of patients

Diet	Yes	No
Did you eat meat?	118	12
How many times did you eat meat in a month?		
Everyday	1	129
One time per week	50	80
Two time per week	39	91
Three time per week	29	101
How much quantity of salt you take in food?		
Normal	125	5
Salty	5	125
How much quantity of sugar you took daily?		
Normal	85	45
More than normal	45	85
Do you eat cheese?	81	49
How much fatty cheese do you take per month?		
One time per month	2	128
One time per week	46	84
Three times per week	33	97
Do you eat yoghurt?	94	36
How much do you eat yoghurt in a month?		
Everyday	14	116
One time per week	55	75
Two times per week	6	124
Three times per week	19	111
Do you drink milk?	102	28
How many times did you drink milk?		
Everyday	83	47
One time per week	15	115
Two times per week	1	129
Three times per week	3	127
How many glasses?	103	27
Do you drink alcohol?	6	124
How many times did you drink alcohol in a month?		
One time per week	2	128
Two times per week	2	128
Three times per week	2	128

Signs and symptoms of the patients were 31.5% (n = 41) myocardial infarction, 68.5% (n = 89) heartburn, 97.7% (n = 127) knowledge about CAD, 36.9% (n = 48) AOT, 48.5% (n = 63) Chest pain, 7.7% (n = 10) and vomiting. 80.8% (n = 105) patients took chest pain tablets under the tongue. Patients who used any form of tobacco, smoked before the disease, and currently smoking status were 43.1% (n = 56), 36.6% (n = 47), and 16.2% (n = 21), respectively. 36.9% (n = 48) patients had diabetes mellitus (Table ).

90.7% (n = 118) patients ate meat. Patients who ate meat once per week were 50. 38.5% (n = 125) of patients took the average quantity of salt in the meal. Only 34.6% (n = 45) of patients took more sugar than usual. The high number of CAD Patients who ate cheese was 62.3% (n = 81). 35.4% (n = 46) of Patients ate cheese once per month. Patients who used yogurt were 72.3% (n = 94). Patients who used yoghurt once per month were 42.3% (n = 55). 79.2% (n = 103) of Patients with a history of drinking milk. Patients with CAD drank milk daily were 63.8% (n = 83). 4.6% (n = 6) patients also reported alcohol intoxication.

Table 5: Physical activity of patients

Exercise	Yes	No
Did you do exercise?	98	32
How long you go for exercise?		
Everyday	80	50
One time per week	11	119
One time per month	6	124
Have you ever felt any type of pain during exercise?	21	109
Did you feel shortness of breath during exercise?	94	36
Did you ever experience rapid fatigue during exercise during walking or climbing?	99	31
Do you face stress in this disease?		
After	6	124
Before	90	40

67.7% (n = 88) patients said they did regular exercise. 61.5% (n = 80) patients worked out regularly. Patients who felt any type of pain were 16.2% (n = 21). A lot of patients, 72.3% (n = 94), said they felt shortness of breath during exercise. Patients who got tired quickly while working out, walking, or climbing was 76.2% (n = 99).

## DISCUSSION

Because there were less females in the research, the age and sex distribution of the population is not similar to that of the whole population of Pakistan<sup>5</sup>. This is most likely because men have easier access to health care than women or because women are less likely to take advantage of health screenings.

Hypertension was found in 70% (n = 91). Hypertension is a stand-alone risk factor for cardiovascular disease that may double the risk by two to three times<sup>6</sup>. Hypertension was a risk factor, was present in 18.9%, which matches well with the NHSP<sup>4</sup> data where overall prevalence was 17.9%. 40 percent of individuals had their hypertension under control due to a lack of emphasis on the need to adhere to medication and lifestyle changes. Patients should be aware of the increased risk of coronary artery disease (CAD) that comes with high blood pressure.

Patients who used any form of tobacco, smoked before the disease, and currently smoking status were 43.1% (n = 56), 36.6% (n = 47), and 16.2% (n = 21), respectively<sup>21</sup>. percent of this group were found to be regular smokers, which is equivalent to the NHSP<sup>4</sup> result of 34 percent and to the Samad et al<sup>3</sup> study's finding that 21 percent of the population smokes regularly. The study's findings indicate that the fight against smoking in society has to be stepped up.

The frequency of 61.5% (n = 80) of regular exercise in this group is comparable with another report of 23%<sup>7</sup>. But since our population is well-educated and likely to be better aware of the advantages of regular exercise, it is believed that this estimate may be overstated. Despite the quick pace of contemporary life,

the necessity to prevent inactive lifestyle habits must be emphasized.

For both men and women, it is preferable to maintain a healthy BMI in the 20–25 range<sup>8</sup>. A BMI of 25 and above was found in 36.2% (n = 47). However, given the research group's mostly high socioeconomic class, it is assumed that this may be an exaggeration. However, it is anticipated that the prevalence of obesity would increase in a developing nation like Pakistan, which is going through an economic transformation. According to data from the long-term Framingham study<sup>9</sup>, the amount of obesity is directly correlated with the pace at which cardiovascular disease develops.

The synergistic impact of many risk factors on total cardiovascular disease risk is the defining feature of cardiovascular disease risk. Multiple risk factors that are somewhat elevated together raise the risk of cardiovascular disease<sup>10</sup>. We did not add a sedentary lifestyle, which would have further raised this percentage, but the research population showed that 38% had at least one risk factor.

In this study 93.8% (n = 122) belongs to middle class and 6.2% (n = 8) related with lower class. Socioeconomic status is predicted to affect the prevalence and knowledge of risk factors. Although they are less likely to recognize these characteristics as risk factors, people with lower levels of education (a proxy indicator of socioeconomic position) are more likely to have cardiovascular disease risk factors. Lower socioeconomic groups are less aware of high blood pressure and increased blood cholesterol as risk factors than higher socioeconomic groups<sup>11</sup>.

Cheese was ate by 62.3% (n = 81). Each individual consumes 15.5 kg of cheese annually (or 42.5 grammes per day) in the USA and 17.9 kg (or 49.0 grammes per day) in Europe<sup>12</sup>. Cheese is a commonly used, readily digestive, and well-tolerated dairy food<sup>12</sup>. Each 50 gramme serving of hard cheese contains around 360 milligrammes of calcium, making cheese an abundant source of calcium for the human diet<sup>13</sup>. Cheese, as a substitute to milk for those who are unable to digest lactose, may serve individuals' needs to preserve bone health just as well as milk does. On the other hand, the high quantity of saturated fatty acids in cheese may lead to higher levels of low-density lipoprotein cholesterol, a known risk factor for cardiovascular disease<sup>14</sup>. Consuming more low-fat dairy products and avoiding high-fat dairy products as part of a healthy diet may help prevent cardiovascular disease (CVD)<sup>15,16</sup>.

In this study we found that 69.2% (n = 90) patients experienced stress before disease and 4.6% (n = 6) patients reported stress after the disease. Stress and coronary heart disease (CHD) are linked by a number of different risk factors. It has been shown that acute stress raises both systolic and diastolic blood pressure as well as the oxygen demand of the myocardium. Concurrently, there is a relative reduction in coronary artery perfusion, which in turn promotes myocardial infarction. Catecholamine levels that are abnormally high in people with significant depression are linked to an increased risk of cardiovascular disease. Catecholamines have significant impacts on platelets, vascular reactivity, and hemodynamic variables, in addition to increasing myocardial excitatory activity. Because of this, the risk of ischemia and arrhythmic cardiac events is increased, as is the stimulation of platelet aggregation and the alteration of vascular permeability<sup>17</sup>. 4.6% (n = 6) patients also reported alcohol intoxication. In the general population, moderate alcohol use has been related to a reduced risk of coronary artery disease (CAD)<sup>18</sup>. While prior research has shown that light-to-moderate alcohol intake is also related to a decreased risk of cardiovascular disease in the general population<sup>19-23</sup>.

## CONCLUSION

Diabetes, hypertension, and high cholesterol are all modifiable risk factors that must be appropriately controlled. The community should place a high value on screening programs that may identify diseases before they develop and on adopting healthy habits.

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