

# STUDY OF THE PROFILE OF THE PATIENTS UNDERGOING CORONARY ANGIOGRAPHY IN TERTIARY CARE HOSPITAL IN RURAL CENTRAL INDIA

**Running Title:** Profile of the patients undergoing coronary angiography in rural centre.

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## Abstract

### **Objectives**

Coronary artery disease (CAD) is leading cause of mortality. It tends to occur at a younger age in Indians, with more angiographic involvement contributed by genetic, metabolic, conventional and nonconventional risk factors. Invasive coronary angiography is the gold standard for diagnosis of coronary artery disease. With the different pattern of stenosis in the coronaries and the associated multiple risk factors with it, we carried out this study.

### **Methodology**

After getting the approval of the institutional ethical committee, all subjects were briefed about the study and informed consent in the regional language was taken. The study was carried for a period of two years.

### **Results**

From our study hypertension, obesity, dyslipidemia, smoking, alcohol and Post-menopausal age still play very important risk factors. Surprisingly, diabetes mellitus was found in down fall trend. Probably the extensive awareness of diabetes and its complications in the last decade has created fear and therefore patients have started adapting lifestyle modifications..

### **Conclusion**

Deadly fear of the sudden cardiac death has made this investigation of coronary angiography a routine investigation because in our study we found 20% of the patients reported self and underwent angiography.

**Keywords: coronary angiography; angioplasty; ischemic heart disease; risk factors**

## **INTRODUCTION**

Coronary artery disease (CAD) is leading cause of mortality in the western world (1). While the death rates have been declining in past three decades in the west, these rates are rising in India. In India during the last three decades, the prevalence of CAD has increased from 1.1% to about 7.5% in the urban population and from 2.1% to 3.7% in the rural population. (2) CAD tends to occur at a younger age in Indians, with more extensive angiographic involvement contributed genetic(3), metabolic, conventional and nonconventional risk factors. (3) It has also been projected that CAD mortality rates will double from 1990-2020 with approximately 82% of the increase attributable to the developing world. Social and economic changes that have occurred with urbanization and industrialization have probably led to a higher prevalence of the main cardiovascular risk factors. (4,5)

With the wide variability in clinical presentation especially among different age groups and between the two sexes, there are also differences regarding risk factor such as hypertension, Diabetes Mellitus, dyslipidemia, smoking, and alcohol consumption.

Worldwide, there has been a significant increase in the number of people undergoing “coronary angiography” (CAG) since the last few years. This evolutionary change may be attributed to multiple reasons. Education, improvement in economic condition and awareness regarding heart disease of people, coronary angiography has become a part of routine investigation. Invasive coronary angiography (CAG) is the gold standard for diagnosis of coronary artery disease (CAD) and it defines therapeutic options and determines prognosis. Varied nature of the composition, distribution and site of atherosclerotic plaque within the coronary artery lead to unique morphology of stenosis in patients with coronary artery disease. With the different pattern of stenosis in the coronaries and the associated multiple risk factors with it, we carried out this study in our tertiary care hospital where the patient visit the cardiologist for the coronary angiography.

## AIM

To study the characteristics of patients undergoing coronary angiography in Cardiac intensive care unit in the tertiary care hospital.

## OBJECTIVES

- To study different patterns of coronary artery disease
- To study risk factors for coronary artery disease

## MATERIAL AND METHOD

**Study design:** Prospective observational study.

**Study setting:** After getting the approval of the institutional ethical committee, the study was carried out in the cardiac intensive care unit in the department of medicine in a rural tertiary care hospital situated in central India. The use of confidential patient data in this study was fully within the recent guidelines from the Indian Council of Medical Research.

**Study period:** The study was carried out for 18 months from October 2019 to April 2020.

**Study population:** All the patients who came to cardiac intensive care unit for coronary angiography procedure.

### Inclusion criteria:

All subjects undergoing coronary angiography.

### Exclusion criteria:

Those unwilling to give consent.

### Methodology:

All patients enrolled were questioned and detailed proforma was filled under the following headings.

#### 1. Demographical data.

2. **Clinical Data** of chest pain type, Blood Pressure was recorded, BMI was calculated.

3. History of Hypertension, DM, IHD, alcohol consumption, smoking, drug compliance if in case they are taking, family history of IHD, history of consumption of oral contraceptives

#### 4. History of Indications for angiography-

- Referred by treating physician
- Self-reported-

#### 5. Biochemical profile

#### 6. ECG findings

#### 7. 2 D Echocardiography

#### 8. Angiography findings

## STATISTICAL ANALYSIS

1. The data was entered in Excel sheet and analyzed for frequency, percentages and means on Statistical Package for Social Sciences (SPSS) software.
2. Simple descriptive statistics was used throughout.
3. Possible statistical associations between categorical variables were evaluated using Pearson x2 analysis.

## SAMPLE SIZE:

- Population Proportion = 30%
- Sample Proportion = 21%
- Power (%) = 90
- Alpha Error (%) = 5
- Sided = 2
- Required sample size = 250

## RESULTS

- This study included 250 patients who came for coronary angiography. Their baseline characteristics are as shown in Table 1.
- Out of 250 patients, 134 male, 61 female-total 195 patients were referred by physician due to ECG changes, effort angina and post MI angina. 55 patients wanted to undergo coronary angiography on their own without consulting cardiologist or physician as shown in Table 2.

The angiography reports of 33 males and 34 females had normal angiography. 17 male and 14 female had mild coronary artery disease. 41 male and 19 female had single vessel disease (SVD), 32 male and 10 female had double vessel disease(DVD), 38 male and 7 female had triple vessel disease(TVD), 4 male and 1 female had severe TVD

Of the total patients ,107 (42.8%)were advised to have medical treatment,79(31.6%) were advised percutaneous angioplasty(PTCA),47 bypass graft of coronaries(CABG),13 were advised early bypass graft and 4 were advised thallium stress test to further investigate viable myocardium and blood flow to the myocardium.

There were 55 patients who self-reported for angiography, 38 had normal angiography,5 had mild CAD, 7 had SVD, 2 had DVD, 2 had TVD, 1 male had severe TVD.

## DISCUSSION

With the increase in the risk factors the trend of increasing coronary artery disease has also increased.. We would no longer believe this disease to be a rich man disease, as in our study the profile of the 250 patients who underwent coronary angiography half belonged to urban and other half was from rural area. Two third of our study population were overweight and obese, indicating the biggest risk for coronary artery disease similar to south Asian cohort of INTERHEART study(6). This epidemicity of obesity is the warning bell for the Indians wherein the dietary and the cooking patterns should be the next burning topic of the research. Half of the study patients were hypertensive which was very high as compared to INTERHEART study (6) but near to CREATE study (7). Fifty percent of the study group was smokers as equal to that seen in Sharma et al study (8). Only one fifth of the patient had diabetes mellitus which was low compared to Tewari et al (9). Half of the patients had dyslipidemia which was relatively high as shown same in Hughes et al study (10). One third of the patients were having family history of ischemic heart disease. More than half of the patients were compliant to the drugs for risk factors. In the female most of them, that is around two third, were in postmenopausal age indicating this to be the pertaining risk factor for atherosclerosis and acute coronary syndrome(11).

250 patients who underwent coronary angiography, three fourth had the findings in the increasing order of mild CAD, double vessel disease, triple vessel disease and single vessel diseases similar to Kumar et al(12) and Tewari et al Studies. One fourth of the patients had normal coronaries.

Most Common indication for coronary angiography was anginal chest pain and post myocardial infarction angina referred either by treating physician or cardiologist. Most interestingly were those 55 patients who self-reported and underwent coronary angiography, their angiography reports were normal in three fourths and the rest had some coronary blockages.

From our study we could draw the facts that hypertension, obesity, dyslipidemia, smoking and alcohol still play very important risk factors in the coronary artery disease. Post-menopausal age again stands to be one of the risk factor. Surprisingly diabetes mellitus was found in down fall trend .Probably the extensive awareness of DM and its complications in the last decade has created fear and therefore patients have started adapting lifestyle modifications. Besides modifiable and non modifiable risk factors one also needs to see for the compliance of the drugs for risk factors which will emerge as one of the main risk factor for coronary artery disease. Fear of the sudden cardiac death has made this investigation of coronary angiography a routine investigation because in our study we found 20% of the patients reported self and underwent coronary vessel graphy.

## CONCLUSION

Despite decrease in cardiovascular disease mortality in developed countries substantial increases have been experienced in developing countries equally in urban and rural. Ischemic heart disease is gradually emerging as a major health challenge in India. Among the risk factors for coronary artery disease, the most common ones are

systemic hypertension, obesity, dyslipidemia, post-menopausal age, non complaint to the drugs and family history of IHD in first degree relatives. Changes in lifestyle, unhealthy habits (smoking, alcoholism etc.) economic development are considered to be responsible for the increase.

Secondly, the interventional investigation that is coronary angiography has become the routine investigation. No sooner the days will come when it will stand as the first line diagnostic and therapeutic for ischemic heart disease.

**Table 1: Baseline characteristics of study population**

<b>Risk factors</b>	<b>Number of patients (n=250)</b>	<b>Percentage (%)</b>
Male	165	66.0
Female	85	34.0
Urban	125	50
Rural	125	50
<b>Hypertensive</b>	118	47.2
<b>Diabetic</b>	52	20.8
<b>Family History</b>	83	33.2
<b>H/O Old IHD</b>	47	18.8
<b>H/O Smoking</b>	121	48.4
<b>H/O Alcohol</b>	107	42.8
<b>H/O Drug Compliance</b>	137	54.8

**Table 2: Table showing the reasons referral to the cardiologist for angiography**

Gender	Physician	Self-Reported	Total	$\chi^2$ -value
Male(n=165)	134(53.6%)	31(12.4%)	165(66%)	<b>2.91</b> <b>p=0.08,NS</b>
Female(n=85)	61(24.4%)	24(9.6%)	85(34%)	
Total	195(78%)	55(22%)	250(100%)	

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