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Profile of Coronary Artery Disease Patients: A Single Center Study

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Abstract **Original Research Article**

Background: Coronary artery disease (CAD) is a leading cause of morbidity and mortality worldwide. Analyzing the profile of CAD patients involves exploring various demographic and clinical factors that may influence the occurrence, progression, and management of the disease. This study aimed to analyze the profile of patients with coronary artery disease, focusing on demographic and clinical characteristics. ***Methods:*** This prospective observational study was conducted in the Department of Cardiology, 250 Bed General Hospital in Meherpur, Bangladesh, from June 2021 to July 2022. A total of 87 coronary artery disease patients were enrolled in this study as the study subjects. MS Office tools were applied for data analysis. ***Results:*** The mean age of the participants was 46.83 ±14.31 years; males were 70%. Approximately one-third of them had a BMI (Kg/m2) of ≥30. The most common symptom was chest pain, present in 70% and the most common complication was mitral regurgitation, affecting 26% of individuals. The predominant risk factors were diabetes mellitus (21%) and hypertension (18%). Angiographic findings revealed normal findings in 37% of patients. Single-vessel disease (SVD) was observed in 28% of cases, while double-vessel disease (DVD) and triple-vessel disease (TVD) were found in 20% and 14% of patients, respectively. ***Conclusion:*** Middle-aged male individuals are mainly prone to coronary artery diseases (CAD). For CAD patients, chest pain is the most common symptom, diabetes mellitus and hypertension are predominant risk factors and mitral regurgitation is the most prevalent complication.

Keywords: Angiographic profile, Coronary artery disease, CAD, Vessel involvement, Hypertension.

1. INTRODUCTION

Coronary artery disease (CAD) is a leading cause of mortality and morbidity in both developed and developing countries [1]. Despite its recognition as a significant burden on healthcare systems, there has been a lack of large prospective cohort studies to determine the incidence of CAD among Indians. Consequently, the extent of the problem can only be approximated through cross-sectional point prevalence studies [2]. CAD tends to manifest at a younger age, often with more extensive angiographic involvement, influenced by genetic, conventional, metabolic, and non-conventional risk factors [3]. Socio-economic changes resulting from industrialization and urbanization have likely contributed to the increased prevalence of major cardiovascular risk factors [4, 5]. Clinical presentations exhibit significant variability, particularly among various age groups and between the two genders. Furthermore, differences exist with regard to risk factors, such as hypertension, dyslipidemia, diabetes mellitus, smoking, and alcohol consumption [1]. Over the past five decades, considerable progress has been made in identifying a multitude of factors associated with coronary heart disease, encompassing aspects of lifestyle, biochemistry, and genetics [6]. Additionally, the surge and subsequent reduction in the epidemic of coronary artery disease (CAD) in nearly all industrialized countries during the latter half of the twentieth century have been extensively documented [7]. As per another study [8], nine standard risk factors, including dyslipidemia (high apolipoprotein B/apolipoprotein A1 ratio), smoking, hypertension, diabetes, high waist-hip ratio, unhealthy diet, low physical activity, irregular alcohol consumption, and psychosocial stress, are accountable for more than 90% of initial acute myocardial infarction cases. The early onset of these same biological risk factors has been demonstrated to contribute to the incidence of premature ischemic heart disease in the South Asian region in a prior study [8]. Notably, there are substantial differences in coronary artery disease (CAD) prevalence concerning

age, gender, and ethnicity [1]. Furthermore, cardiovascular diseases (CVD) have presently emerged as a significant health challenge in developing nations [9]. The objective of this current study was to assess the profile of coronary artery disease patients.

2. METHODOLOGY

This was a prospective observational study that was conducted in the Department of Cardiology in 250 Bed General Hospital, Meherpur, Bangladesh, from June 2021 to July 2022. A total of 87 coronary artery disease patients were included in this study as the study subjects. Sample selection was conducted using a purposive sampling technique, and all participants provided proper written consent before data collection. The inclusion criteria for this study encompassed patients with acute coronary syndrome who had undergone coronary angiography. Conversely, patients who underwent coronary angiography for surgical fitness, such as those with rheumatic heart disease, congenital heart disease, and pregnant women, were excluded according to the study's exclusion criteria. Demographic and clinical information of all participants was recorded, and data analysis was performed using MS Office tools.

3. RESULT

In this study, the majority of the patients (70%) were male and the rest of the patients (30%) were female. The mean ± SD age of the total patient was 46.83 ±14.31 years and the mean (SD) body weight was 64.9 (13.04) Kg. In about one-third of our participants, the BMI (Kg/m^2) was ≥30. Chest pain was the most common symptom among our participants which was present in 70% of cases. Besides fever and nausea were found in 33% and 25% of the cases respectively. Upon analyzing the baseline laboratory findings of the subjects, it was observed that the mean ± SD fasting blood sugar (FBS in mg/dl), left ventricular ejection fraction (%), left ventricular internal diameter at end-diastole (mm), Hb (gm/dl), and S. creatinine (mg/dl) were 7.74 ± 2.94, 59.68 ± 9.46, 48.08 ± 5.81, 13.30 ± 1.76, and 1.08 ± 0.26, respectively. Mitral regurgitation was the most common complication, found in 26% of cases. Additionally, heart failure, pericarditis, arrhythmia, cardiogenic shock, survivor of cardiac arrest, death, and AV block were observed in 21%, 15%, 10%, 8%, 7%, 1%, and 1% of cases, respectively. The most common risk factors were diabetes mellitus and hypertension which were found in 21% and 18% of the cases respectively. Besides smoking (9%), family history (3%) and hypothyroidism (1%) were found in some of the cases. As per the angiographic findings we observed that a significant proportion of patients, 37%, had normal findings. Single-vessel disease (SVD) was identified in 28% of cases, while double-vessel disease (DVD) and triple-vessel disease (TVD) were observed in 20% and 14% of patients, respectively. A smaller subset of individuals, 2%, exhibited minor CAD.

Table 1: Demographic status of participants (N=87)

Characteristics	n	%
Gender		
Male	61	70%
Female	26	30%
Mean ± SD	46.83 ±14.31 years	
Mean ± SD		
Weight (Kg)	64.9 (13.04)	
BMI <25	22.5 (2.21)	
BMI 25–29.9	27.7 (1.29)	
BMI ≥30	33.9 (4.16)	

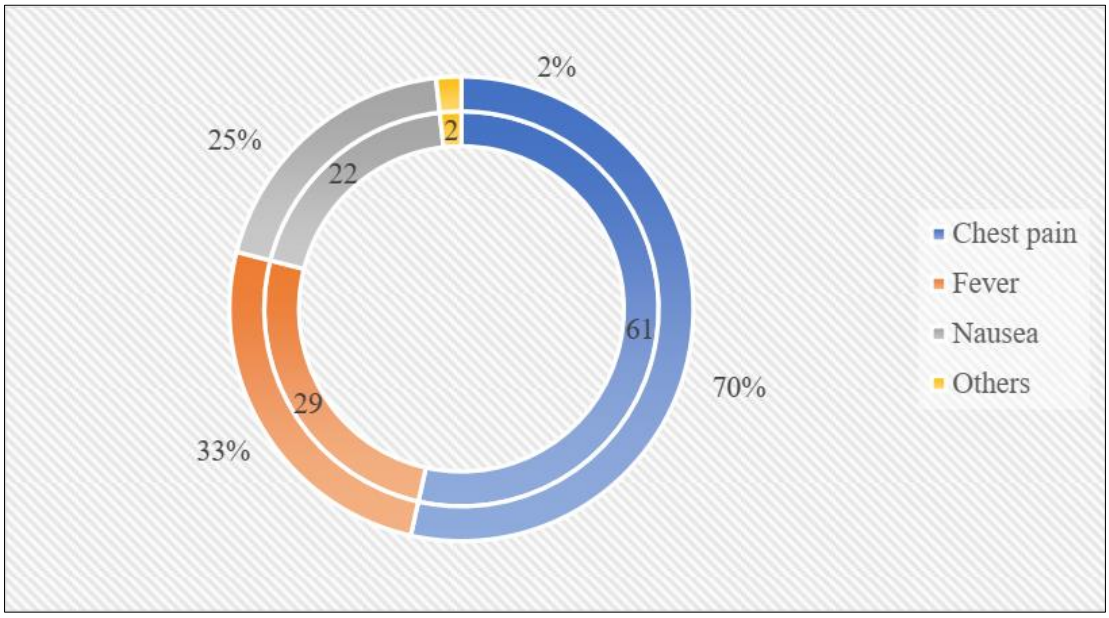

Figure I: Symptoms and complaints of participants. (N=87)

Table 2: Baseline laboratory findings (N=87)

Variables	Mean ±SD
FBS (mg/dl)	8.14 ± 3.05
LVEF (%)	58.77 ± 8.89
LVIDD (mm)	47.76 ± 6.25
Hb (gm/dl)	12.76 ± 1.82
S. creatinine (mg/dl)	1.1 ± 0.3

Table 3: Distribution of the complications among the participants (N=87)

Complications	n	%
Mitral regurgitation	23	26%
Heart failure	18	21%
Pericarditis	13	15%
Arrhythmia	9	10%
Cardiogenic shock	7	8%
Survivor of cardiac arrest	6	7%
Death	1	1%
AV block	1	1%

Table 4: Risk factors distribution of participants (N=87)

Risk factors	n	%
DM	18	21%
HTN	16	18%
Smoking	8	9%
Family history	3	3%
Hypothyroidism	1	1%

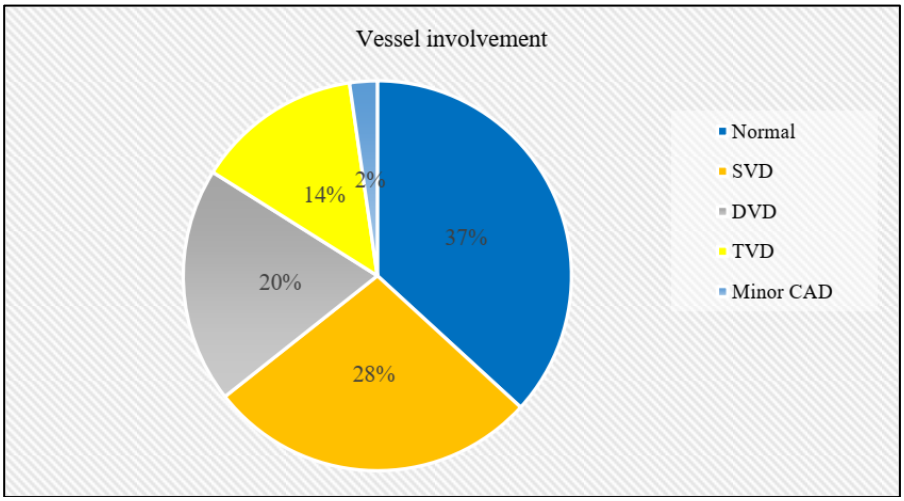

Figure II: Angiographic findings. (N=87)

4. DISCUSSION

This study aimed to analyze the profile of patients with coronary artery disease, focusing on demographic and clinical characteristics. In this study, the majority of the patients (70%) were male, while the remaining patients (30%) were female. A similar study conducted by Dr. Mohammad Morshedul Ahsan *et al.*, [10] showed that 76% were male, and the remaining 24% were female. The mean age of the total patients in this study was 46.83 ± 14.31 years, and the mean (SD) body weight was 64.9 (13.04) kg. In about one-third of our participants, the BMI (kg/m²) was ≥30. On the other hand, the mean (SD) of weight (kg), BMI <25, BMI 25–29.9, and BMI ≥30 was found to be 64.9 (13.04), 22.5 (2.21), 27.7 (1.29), and 33.9 (4.16), respectively. A similar study [11], reported findings regarding BMI that were consistent with our results. Chest pain was the most common symptom among our participants, present in 70% of cases. Additionally, fever and nausea were found in 33% and 25% of the cases, respectively. Mitral regurgitation was the most common complication, found in 26% of cases. Furthermore, heart failure, pericarditis, arrhythmia, cardiogenic shock, survival after cardiac arrest, death, and AV block were observed in 21%, 15%, 10%, 8%, 7%, 1%, and 1% of cases, respectively. In a similar study conducted by Deepa Sanjeev Sajjannar *et al.*, [12], the common complications noted were mitral regurgitation (29.32%) and heart failure (25.5%).

Another study [13] reported an in-hospital mortality rate of just 1%, supporting the fact that young patients have fewer in-hospital complications and a lower mortality rate. In our study, the most common risk factors were diabetes mellitus and hypertension, which were found in 21% and 18% of the cases, respectively. Additionally, smoking (9%), family history (3%), and hypothyroidism (1%) were found in some cases. In another study, dyslipidemia was found in 37.96% of patients, obesity in 29.64% of patients, and a family history of CAD was significant among 9.73% of cases [14]. However, similar to our study, hypertension was observed as the most prevalent risk factor (14.8%), followed by diabetes in 10.5%, smoking in 2.8%, and dyslipidemia in 2.4% [15]. In another study [16], hypertension was found in 35% of patients, and diabetes mellitus in 10% of patients. In the current study, based on angiographic findings, we observed that a significant proportion of patients, 37%, had normal findings. Single-vessel disease (SVD) was identified in 28% of cases, while double-vessel disease (DVD) and triple-vessel disease (TVD) were observed in 20% and 14% of patients, respectively. A smaller subset of individuals, 2%, exhibited minor CAD. In another study, SVD was the most prevalent, seen in 68.7% of cases, followed by DVD in 22.6% and TVD in 8.7% of cases. Among the SVD cases, the location of stenosis was in the LAD in 41.3%, LCX in 10%, RCA in 15.3%, and left main coronary artery in 2% of cases [17]. In a study conducted in India, SVD was found in 57.1% of the patients, followed by DVD in 11.5%, and TVD in 7.1% of cases [18]. Khadkikar GD, *et al*., reported that SVD, DVD, TVD, and no vessel disease were observed among 50%, 13.6%, 4.5%, and 31.8% of patients, respectively [19]. Colkesen AY, *et al*., in their study on CAD in young adults, also found that the LAD was the most commonly involved vessel, followed by RCA, LCX, and LMCA [20].

Limitation of the Study

This study was conducted at a single center with a limited sample size. Additionally, the research was carried out over a relatively short duration. Therefore, it's important to note that the findings of this study may not provide a comprehensive representation of the entire country.

5. CONCLUSION & RECOMMENDATION

Coronary artery diseases (CAD) primarily afflict middle-aged males, with chest pain emerging as the most prevalent symptom in CAD cases. Prominent risk factors among CAD patients include diabetes mellitus and hypertension, underscoring their significance in disease development. Notably, the most common complication observed in CAD patients is mitral regurgitation, highlighting its clinical importance in this context. These findings shed light on the demographic characteristics, symptoms, risk factors, and complications associated with CAD, aiding in the comprehensive understanding and management of the disease.

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Conflict of Interest: None declared.

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