Original Research Article

Demographic and Clinical Status of Patients with Coronary Artery Disease

ABSTRACT

Background: *Coronary artery disease (CAD), which results from coronary artery narrowing or blockage, is a major global cause of illness and death. In cardiovascular medicine, the demographic and clinical characteristics of coronary artery disease (CAD) patients are essential areas of investigation. Analyzing these profiles offers valuable information on CAD's epidemiology, risk factors, and effects on diverse patient groups.* ***Aim of the study:*** *This studyaimed to assess the demographic and clinical status of patients with coronary artery disease.* ***Methods:*** *This prospective observational study conductedinthe Department of Cardiology, 250 Bed General Hospital in Meherpur, Bangladesh, fromJanuary 2021 to December 2021. A total of 90 confirmed coronary artery disease (CAD) patients, selected through purposive sampling method. Data was collected using a semi-structured pre-designed questionnaire, and MS Office tools and SPSS version 22.0 were used for data analysis.* ***Results:*** *The majority of participants (43%) were aged 66-75 years, with a mean BMI of 23.79 ± 2.54 Kg/m2. Seventy percent were male. Initial ECG findings showed 13% with left bundle branch block and 10% with right bundle branch block. The mean QRS duration was 123.12 ± 29.41 ms. Single-vessel disease (SVD) was present in 23%, double-vessel disease (DVD) in 15%, and triple-vessel disease (TVD) in 21%. Normal findings occurred in 29% of cases. Hypertension was a risk factor in 30%, while smoking was a risk factor in 26%.* ***Conclusion:*** *Coronary artery disease (CAD) predominantly affects middle-aged males. The high frequency of triple-vessel disease, accounting for 21% of CAD patients, is a cause for concern. In Bangladesh, hypertension and smoking are the most prevalent risk factors among CAD patients.*

Keywords: *Demographic status, Clinical status, Coronary artery disease, CAD, IHD.*

INTRODUCTION

Coronary artery disease (CAD) stands as a significant contributor to mortality and disability in developed nations. The global burden of ~~cardiovascular disease (~~CVD~~)~~ is on the rise, with cardiovascular-related deaths representing 30% of all global fatalities.[1] A study conducted in 2009 highlighted that cardiovascular diseases are the primary cause of death, accounting for 20.3% of males and 16.9% of females among Indian adults aged 25 to 69 years.[2] A systematic review of 31 studies further emphasized that the prevalence of CAD is notably higher in urban areas when compared to rural regions.[3] In essence, CAD remains a major factor in the mortality and morbidity landscape of developed countries. In 2017, the American Heart Association's Heart Disease and Stroke Statistics update revealed that 16.5 million individuals aged 20 years or older in the USA were afflicted by ~~coronary artery disease (~~CAD~~)~~, with a slight male predominance of 55%. In contrast, the Global Burden of Disease's 2013 report estimated that 17.3 million deaths worldwide were attributed to cardiovascular disease, representing a 41% increase since 1990[4]. The primary objective of treating coronary artery disease (CAD) is to reduce the frequency and severity of angina symptoms while enhancing one's functional capacity. There are three main approaches for treating stable angina: drug therapy, coronary balloon angioplasty, and coronary artery bypass graft surgery [5,6]. To address CAD effectively and establish nationwide policies, it is imperative to gain a comprehensive understanding of its various facets, encompassing disease burden, treatment strategies, clinical presentations, and patient outcomes. ~~Coronary artery disease (~~CAD~~)~~ stands as the leading cause of cardiovascular mortality worldwide among non-communicable diseases, contributing to over 4.5 million deaths in developing nations [7]. In countries like Iraq, cardiovascular disease claims the top spot as the leading cause of death related to diseases [8,9]. Furthermore, there are troubling indications in developing countries, including Iraq, of an increased prevalence of CAD among young individuals. Notably, CAD tends to manifest at an earlier age in patients who exhibit a clustering of cardiovascular risk factors and often involves the coronary arteries with more aggressive lesions [10,11]. The objective of this current study was to assess the demographic and clinical status of patients with coronary artery disease.

METHODOLOGY

This prospective observational study was carried out in the Department of Cardiology in 250 Bed General Hospital, Meherpur, Bangladesh, from January 2021 to December 2021. A total of 90 confirmed diagnosed with ~~coronary artery disease (~~CAD~~)~~ patients were recruited as the study population. The study population were selected using a purposive sampling technique.The patients whoreceived conservative~~coronary artery disease (~~CAD~~)~~ treatment included in this study.While the patients who had undergone surgical procedures, angioplasty, valvular heart disease and cardiomyopathy were excluded as per the study criteria. Demographic and clinical data for all participants were meticulously recorded, and data processing, analysis and dissemination were carried out using MS Office& SPSS version 22.0.

RESULT

In this study, the majority of participants (43%) fell within the 66-75 years' age group. Additionally, 30.0% of participants were in the 56-65 years' age group, 13.3% were in the >75 years' age group, 8.9% were in the 46-55 year's age group, and 4.4% were in the 35-45 year's age group. The mean BMI (Body Mass Index) for the cases was calculated to be 23.79 ± 2.54 Kg/m^2.The study comprised a predominantly male group, constituting 70% of the participants, while the remaining 30% were female. Initial ECG findings revealed that 13% of cases exhibited left bundle branch block (LBBB), and 10% had right bundle branch block (RBBB). The mean ± SD QRS duration (ms) for all participants was measured at 123.12 ± 29.41. The mean (± SD) values for total cholesterol (mg/dl), ESR (mm in the 1st hour), and serum creatinine (mg/dl) among the participants were determined as 178.19 ± 32.95, 25.87 ± 5.21, and 1.7 ± 0.04, respectively.In our analysis of vessel involvement among the participants, we found that 23% had single-vessel disease (SVD), 15% had double-vessel disease (DVD), and 21% had triple-vessel disease (TVD). Normal findings were observed in 29% of the total cases. Hypertension was identified as a risk factor for CAD in nearly one-third of the cases (30%), while smoking was a risk factor in one-fourth of the cases (26%). Obesity and ischemic heart disease were also notable, with 21% and 20% of cases affected, respectively.

Table 1: Age and BMIdistributionof participants.(N=90)

Age (Year)	n	%
35-45yrs.	4	4.4%
46-55yrs.	8	8.9%
56-65yrs.	27	30.0%
66-75yrs.	39	43.4%
>75yrs.	12	13.3%
BMI distribution		
BMI (Kg/m^2)	23.79± 2.54	

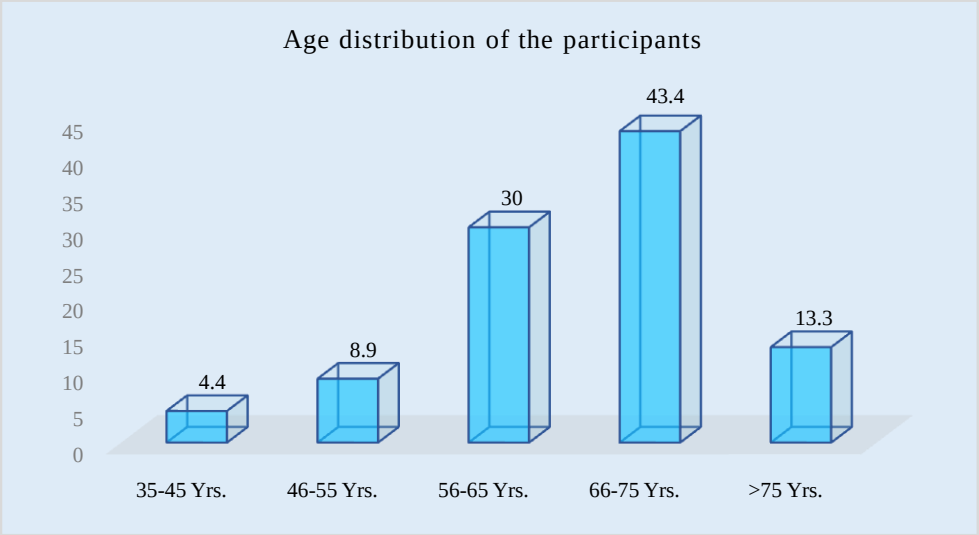

Figure I: Column chart showed age wise participants distribution. (N=90)

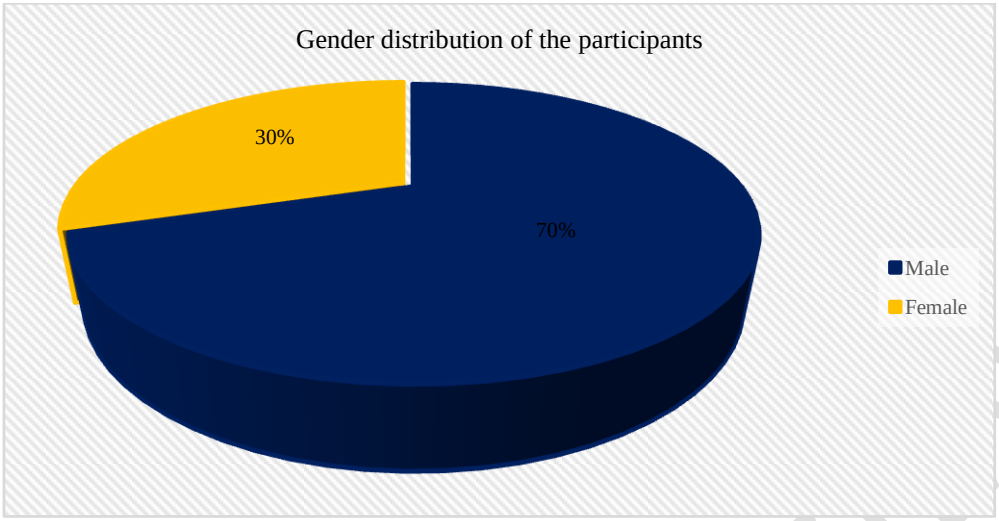

Figure II: Pie chart showed gender wise participants distribution. (N=90)

Table 2: Initial ECG findings of participants. (N=90)

Characteristics	n	(%)/Mean ±SD
Ant. Q	26	29%
Inf. Q	14	16%
Left bundle branch block	12	13%
Normal	3	3%
Poor R	22	24%
Right bundle branch block	9	10%
QRS duration (ms)		123.12 ± 29.41
Arrhythmias	10	11%
Atrial Flutter (AF/AFL)	3	3%
PVC	11	12%

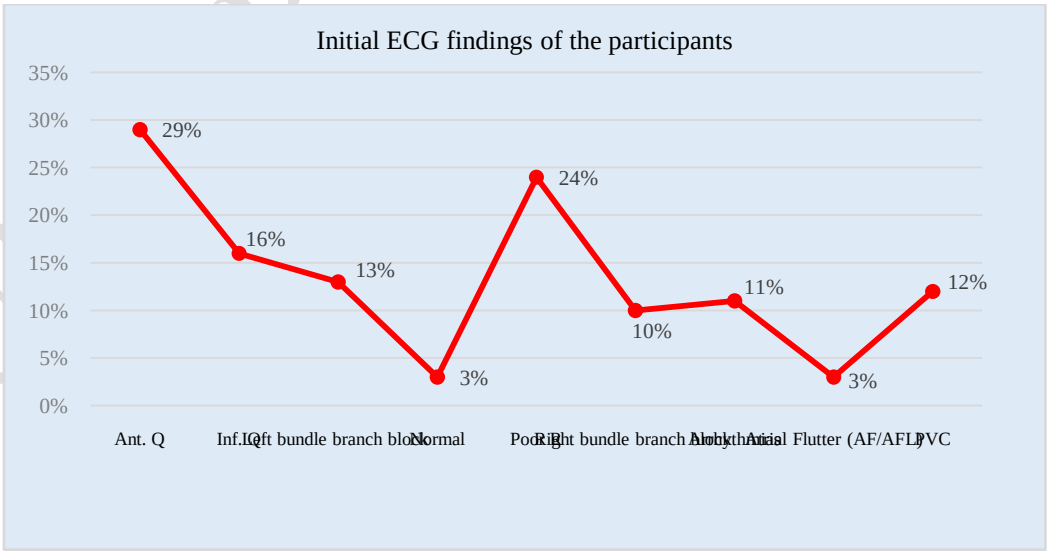

Figure III: Line chart showed Initial ECG findings amongparticipants. (N=90)

Table3: Laboratoryfindings amongparticipants.(N=90)

Variables	Mean ±SD
FBS (mmol/L)	6.92±0.73
HbA1C	7.14±0.61
Total Cholesterol (mg/dl)	178.19±32.95
HDL (mg/dl)	37.6±7.78
LDL (mg/dl)	113.19±15.82
TG (mg/dl)	191.14±29.06
ESR (mm in 1st hour)	25.87±5.21
S creatinine (mg/dl)	1.7±0.04

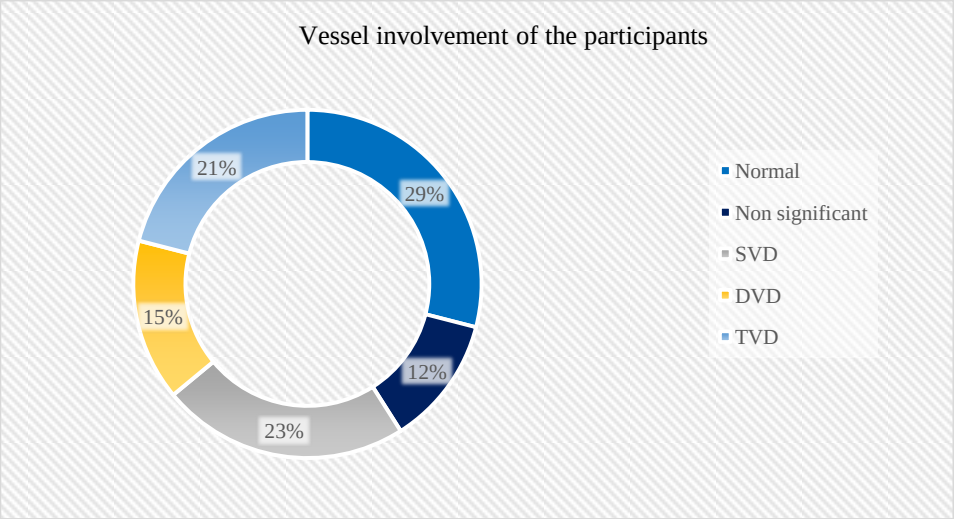

Figure IV: Line chart showed vessel involvementamongparticipants. (N=90)

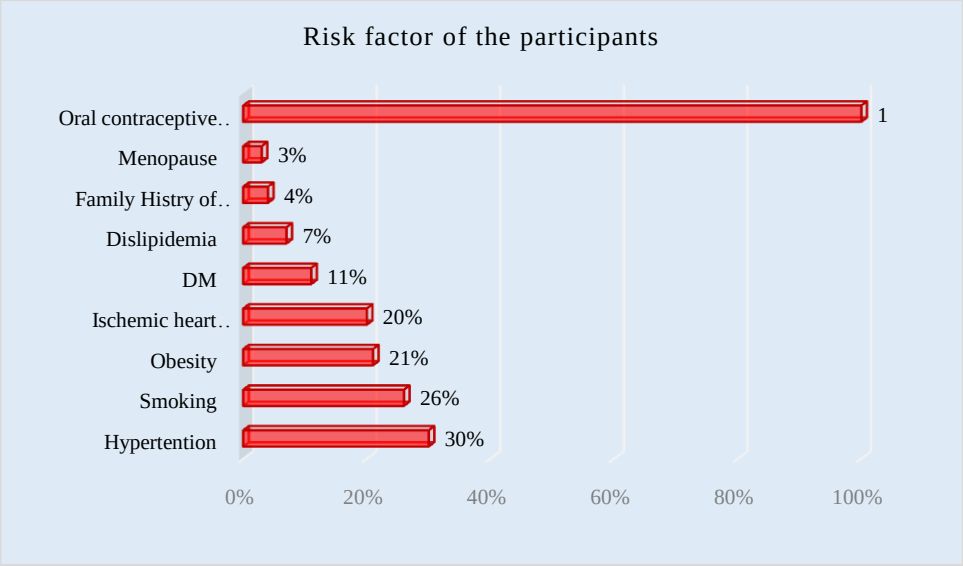

Figure V: Line chart showed Riskfactor wise participants distribution. (N=90)

DISCUSSION

This study aimed toassess the demographic and clinical status of patients with coronary artery disease. The majority of our participants (43%) were aged 66-75 years, and 30% were in the 56-65 years' age group. A smaller portion of participants (13.3%) were over 75 years old, with 8.9% aged 46-55 years, and 4.4% aged 35-45 years. The mean BMI was 23.79 ± 2.54 Kg/m^2. A similar pattern was observed in a study conducted by Shahadat Hossain et al. [12]. The prevalence of coronary heart disease was higher in male patients, accounting for 70%, whereas it was 30% in female patients. These findings were in line with the INTERHEART study and its South Asian cohort, which reported an overall male prevalence of 76% and a South Asian cohort prevalence of 85% [13].The study mainly included males (70%), with females comprising the remaining 30%. Initial ECG findings showed that 13% had a ~~left bundle branch block (~~LBBB~~)~~, while 10% had a ~~right bundle branch block (~~RBBB~~)~~. The mean QRS duration was 123.12 ± 29.41 ms for all participants.A study conducted by Mir Sufian [14] reported similar findings when compared to the results of the current study. The mean values for total cholesterol, ESR, and serum creatinine among participants were 178.19 ± 32.95 mg/dl, 25.87 ± 5.21 mm in the 1st hour, and 1.7 ± 0.04 mg/dl, respectively. In terms of vessel involvement, 23% had single-vessel disease (SVD), 15% had double-vessel disease (DVD), 21% had triple-vessel disease (TVD), and 29% had normal findings. In another study conducted by Ameen M Mohammad [15], it was observed that the rate of normal coronary angiograms was 29.3%. The major comorbidities observed in CAD cases in our study included diabetes mellitus, hypertension, and chronic kidney disease. A previous study [14] reported similar major comorbidities among the participants, with 79% having diabetes mellitus, 73% having hypertension, and 46% having chronic kidney disease. In our study, we identified hypertension as a risk factor for CAD in nearly one-third of the cases (30%), while smoking was a risk factor in one-fourth of the cases (26%). Additionally, we observed that obesity and ischemic heart disease were notable, affecting 21% and 20% of cases, respectively. These findings were comparable to those reported in an Indian study [16]. The insights gained from this current study can provide valuable contributions to future research in this area.

LIMITATION OF THE STUDY

This study was conducted at a single center and utilized a relatively small sample size. Furthermore, the study had a relatively short duration. Therefore, it is important to note that the findings of this study may not be fully representative of the entire country's situation.

CONCLUSION & RECOMMENDATION

~~Coronary artery disease (~~CAD~~)~~ primarily impacts middle-aged males, highlighting their vulnerability. The high incidence of triple-vessel disease, affecting approximately 21% of CAD patients, emphasizes the importance of early detection and intervention to prevent advanced stages. In Bangladesh, major CAD risk factors include hypertension and smoking. Hypertension, marked by elevated blood pressure, is common among CAD patients, necessitating effective prevention and management strategies. Additionally, smoking, with its adverse effects on cardiovascular health, contributes significantly to CAD in Bangladesh. Addressing these risk factors is crucial to combat the CAD epidemic and enhance public health outcomes in the region.

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