

# Coronary Heart Disease among Male Patients of Age between 25-39- and 40-70-Years Attending Cardiology Outdoor of BSMMU, Dhaka, Bangladesh

Dr. Md. Hasibul Hasan<sup>1\*</sup>

<sup>1</sup>Consultant, Department of Cardiology, Mugda Medical College Hospital, Dhaka, Bangladesh

DOI: [10.36347/sasjm.2023.v09i09.018](https://doi.org/10.36347/sasjm.2023.v09i09.018)

| Received: 12.08.2023 | Accepted: 15.09.2023 | Published: 22.09.2023

\*Corresponding author: Dr. Md. Hasibul Hasan

Consultant, Department of Cardiology, Mugda Medical College Hospital, Dhaka, Bangladesh, Email: [hasibmbbs@gmail.com](mailto:hasibmbbs@gmail.com)

## Abstract

## Original Research Article

**Background:** Coronary heart disease (CHD) is a major health concern and the top cause of death in Bangladesh. Similar to other South Asian nations, Bangladeshis are highly susceptible to CHD, with early onset and severe progression. The exact pathophysiology remains unclear, but genetics, metabolic syndrome, and traditional risk factors are significant contributors. **Aim of the study:** The aim of the study was to compare the risk factors and coronary heart disease severity in male patients between 25-39 and 40-70 years. **Methods:** This cross-sectional observational study took place in the Cardiology Department of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, spanning from September to December 2013. It involved 166 male CHD patients aged 25-70. Group A comprised 83 patients aged 25-39, while Group B consisted of 83 patients aged 40-70, selected purposively. **Results:** The mean age of all participants was 43.6±10.6 years. In both groups, most patients had stable angina (Group A: 80%, Group B: 78%). Group A had 70% smokers, 34% with hypertension, and 30% with a family history of IHD, overweight/obesity, and impaired fasting glucose (IFG). In contrast, Group B had 48% hypertensive patients, with 45% smokers, 39% IFG, 31% overweight/obesity, 29% diabetes, and 12% family history of IHD. Vessel involvement was evenly distributed in Group A, while in Group B, 46% had triple vessel involvement. **Conclusion:** Among coronary heart disease patients aged 25-39 years, the smoking rate is higher, while diabetes prevalence is lower compared to the 40-70 year's age group. Conversely, in the 40-70-year-old patient group, there is a higher incidence of hypertension, double vessel diseases, and triple vessel diseases compared to the younger group.

**Keywords:** Coronary heart disease, Artery, Stable angina, Male patients, CHD, IHD.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## 1. INTRODUCTION

Coronary heart disease (CHD) encompasses various syndromes resulting from myocardial ischemia, including stable angina, unstable angina, acute myocardial infarction, and sudden death. Its primary cause is often coronary artery abnormalities; hence it's also termed "coronary artery disease" [1]. The main pathology involves atheromatous plaque deposits in coronary arteries [2]. The likelihood of CHD and its severity depends on cardiovascular risk factors and their persistence over time [3]. It is a significant cause of morbidity and mortality in developed countries, with rising prevalence in developing nations due to changing urban lifestyles [4]. Although CHD is typically associated with the elderly, young individuals can be affected, termed Premature Coronary Artery Disease (CAD) when occurring before 65 in women and 55 in men, or simply coronary artery disease in young below 40 [5]. While CHD's impact is greater in developed

countries, it's more frequent among young people in developing nations, particularly of the Indian sub-origin [6]. Bangladesh is no exception, with various cardiovascular diseases prevalent [7]. Cardiovascular diseases are emerging as a major concern in developing countries like Bangladesh due to socioeconomic improvements, urbanization, dietary changes, and lifestyle shifts [8]. Incidences of IHD are on the rise, and unstable angina is emerging as a prominent cause of morbidity and mortality [9-11]. Risk factors appear to play a stronger role in young populations, especially factors like BMI, blood pressure, LDL, triglycerides, smoking, and family history. Studies indicate that smoking, hyperlipidemia, and a positive family history are more strongly associated with CHD in young individuals compared to diabetes and hypertension [12]. Younger patients also tend to exhibit less extensive disease and lower severity, with fewer affected coronary arteries [13]. The objective of this study is to compare

**Citation:** Md. Hasibul Hasan. Coronary Heart Disease among Male Patients of Age between 25-39- and 40-70-Years Attending Cardiology Outdoor of BSMMU, Dhaka, Bangladesh. SAS J Med, 2023 Sep 9(9): 1009-1013.

the risk factors and severity of CHD in male patients aged 25-39 and 40-70 years.

## 2. METHODOLOGY

This cross-sectional observational study was conducted at the Department of Cardiology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from September to December 2013. The study cohort consisted of 166 male patients, ranging in age from 25 to 70 years, all with a primary diagnosis of coronary heart disease (CHD) who were admitted for coronary angiograms. The participants were meticulously categorized into two distinct groups: Group A, which encompassed 83 patients aged 25 to 39 years, and Group B, comprising 83 patients aged 40 to 70 years. The selection of participants was carried out using a purposive sampling technique, and the study protocol was approved by the hospital's ethical committee. Before data collection, explicit informed consent was obtained from all participants. Exclusion criteria were established, encompassing individuals below 25 or above 70 years of age, those with renal impairment, unwillingness to undergo coronary angiograms, individuals with a history of prior coronary artery bypass graft (CABG) or percutaneous transluminal coronary angioplasty (PTCA) procedures, and those residing outside the city of Dhaka. Comprehensive demographic and clinical information were meticulously recorded, processed, analyzed, and managed using MS Office software.

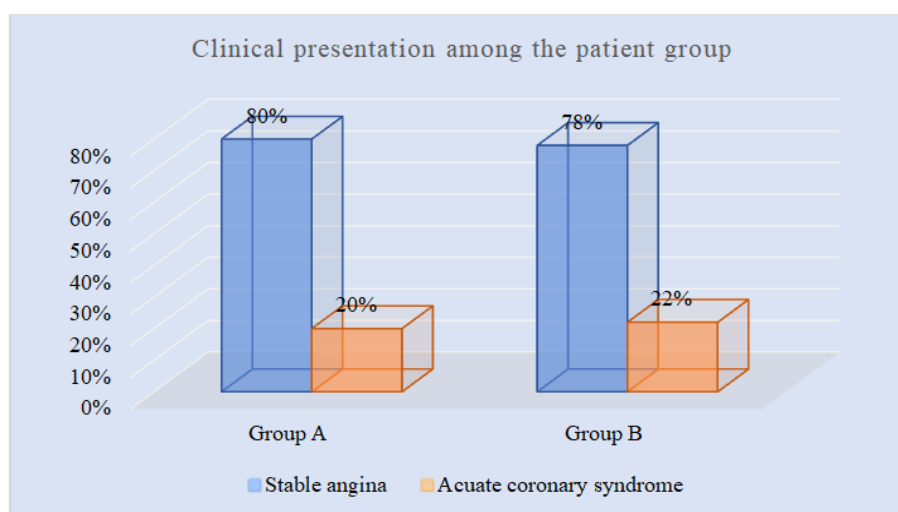
## 3. RESULT

In this study, the age distribution of the total (N=166) participants revealed that 3% were below 30 years old, 48% were in the 30-39 age range, 19% were aged 40-49, 18% fell within the 50-59 age group, and 11% were 60 years or older; the mean age was  $43.6 \pm 10.6$  years. In Group A, comprising individuals aged 25-39 years, 80% of the cases presented with stable angina, while 20% exhibited acute coronary syndrome. In

contrast, in Group B, which included individuals aged 40-70 years, 78% had stable angina, and 22% presented with acute coronary syndrome. The distribution of traditional risk factors among the study participants in Group A (aged 25-39) and Group B (aged 40-70) revealed notable differences. In Group A, the majority of participants were smokers (70%), and a significant portion had hypertension (34%), impaired fasting glucose (29%), and a family history of ischemic heart disease (33%). However, the prevalence of diabetes was relatively low in this group (4%). In contrast, Group B had a lower percentage of smokers (45%) but a higher prevalence of hypertension (48%), diabetes (29%), impaired fasting glucose (39%), and overweight/obesity (31%). Family history of IHD was less common in Group B (12%). These findings highlight distinct risk factor profiles between the age groups. The assessment of coronary artery involvement in the study groups, Group A (aged 25-39) and Group B (aged 40-70), yielded distinct patterns. In Group A, single vessel disease (SVD) was found in 18% of cases, double vessel disease (DVD) in 10%, and triple vessel disease (TVD) in 11%. A noteworthy percentage of participants in this group (11%) had normal coronary arteries. In contrast, in Group B, there was a higher prevalence of coronary artery disease severity, with 25% exhibiting SVD, 23% with DVD, and a substantial 46% with TVD. The percentage of individuals with normal coronary arteries was lower in Group B (6%). These findings underscore a notable difference in the extent of coronary artery involvement between the two age groups.

**Table 1: Age distribution of participants, (N=166)**

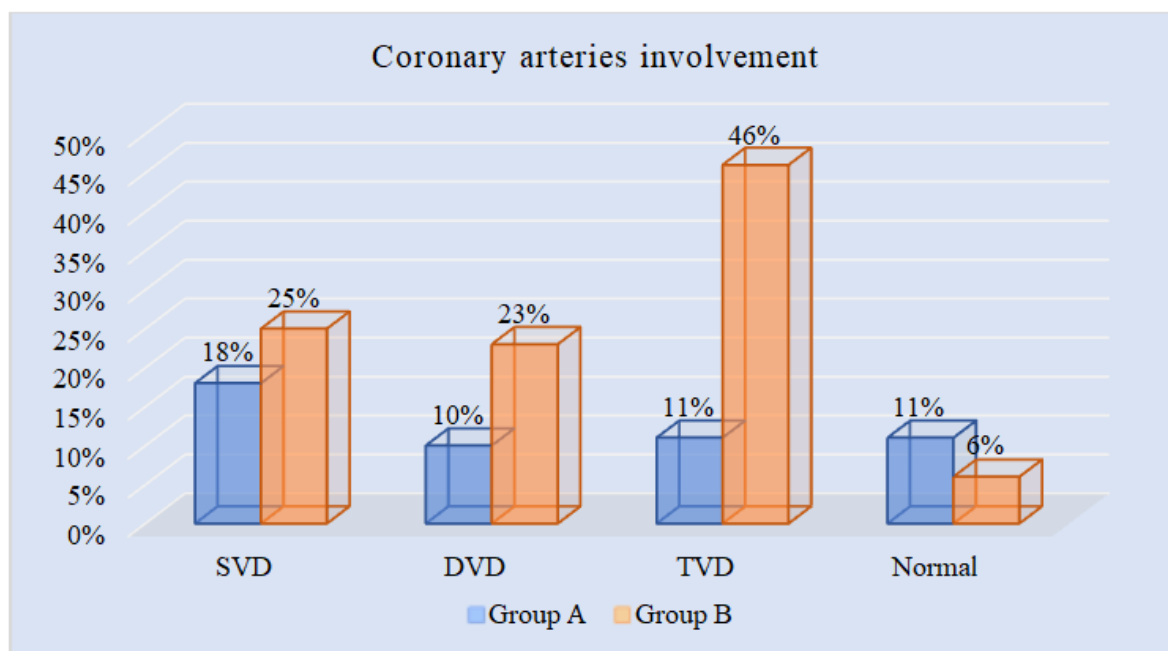
Age (Year)	n	%
<30 yrs.	5	3%
30-39 yrs.	80	48%
40-49 yrs.	32	19%
50-59 yrs.	30	18%
≥60 yrs.	19	11%



**Figure I: Colum chart showed patient's group wise clinical presentations, (N=166)**

**Table 2: Traditional risk factor distribution, (N=166)**

Risk factors	Group A		Group B	
	(n=83)		(n=83)	
	n	%	n	%
Smoking habit	58	70%	37	45%
Overweight and obese	25	30%	26	31%
Hypertension	28	34%	40	48%
Diabetes	3	4%	24	29%
Impaired fasting glucose	24	29%	32	39%
Family history of IHD	27	33%	10	12%

**Figure II: Colum chart showed patient's group wise coronary arteries involvement, (N=166)**

#### 4. DISCUSSION

This study aimed to compare the risk factors and coronary heart disease severity in male patients between 25-39 and 40-70 years. In our study involving a total of 166 participants, the age distribution showed that 3% were under 30 years old, 48% were in the 30-39 age bracket, 19% were between 40-49, 18% were in the 50-59 age category, and 11% were 60 years or older. The mean age of the participants was  $43.6 \pm 10.6$  years. In a study [14], it was found that the highest proportion of cases (32%) were in the age group of 41-50 years, while the lowest percentage (18%) was in the age group under 40 years. When analyzing the clinical presentation of all participants, it was observed that in Group A, the majority of patients (80%) had stable angina, while the remaining 20% presented with acute coronary syndrome. Conversely, in Group B, more than three-quarters of patients (78%) exhibited stable angina, and the remaining 22% had acute coronary syndrome. Another study defined stable coronary artery disease or SIHD as the syndrome characterized by recurrent, transient episodes of chest pain indicative of demand-supply mismatch, commonly known as angina pectoris, attributed to flow-limiting coronary artery disease [15]. In this study, the traditional risk factor distribution

between Group A (aged 25-39) and Group B (aged 40-70) exhibited significant disparities. Group A had a higher prevalence of smoking (70%), hypertension (34%), impaired fasting glucose (29%), and a family history of ischemic heart disease (33%), while diabetes was less common (4%). In contrast, Group B had a lower proportion of smokers (45%) but higher rates of hypertension (48%), diabetes (29%), impaired fasting glucose (39%), and overweight/obesity (31%). Family history of IHD was less frequent in Group B (12%). These findings underscore distinct risk factor profiles associated with age groups. In a separate study [16], it was noted that significant national progress has occurred in the past decades regarding the prevention of coronary heart disease (CHD). Notably, in the United States, there has been a substantial decrease in the prevalence of key risk factors like hypertension, hyperlipidemia, and smoking. Furthermore, McCollum *et al.*, [17] discovered that, even after accounting for sociodemographic and comorbid variables, women with diabetes tended to report higher levels of self-rated health when compared to men with diabetes. The assessment of coronary artery involvement in the study groups, Group A (aged 25-39) and Group B (aged 40-70), revealed distinct patterns. In Group A, 18% had single vessel disease (SVD), 10% had

double vessel disease (DVD), and 11% had triple vessel disease (TVD), while 11% had normal coronary arteries. In contrast, Group B exhibited a higher prevalence of coronary artery disease severity, with 25% having SVD, 23% with DVD, and a substantial 46% with TVD, while only 6% had normal coronary arteries. These findings align with results from previous studies [18, 19], demonstrating consistency in the observed patterns. On the other hand, Deora *et al.*, (2016) [20], in their study, reported a notably higher prevalence of single vessel disease (SVD) at 56.6% within the STEMI group.

#### Limitation of the study:

Several limitations should be acknowledged in this study. Firstly, it was conducted as a single-centered investigation with relatively small-sized samples. This limited scope may not fully capture the diversity and complexity of the entire population. Additionally, the study was conducted over a relatively brief period, potentially not allowing for a comprehensive assessment of long-term trends or variations. Consequently, the findings presented in this study should be interpreted with caution, recognizing that they may not precisely mirror the broader and more diverse landscape of the entire country.

#### 5. CONCLUSION & RECOMMENDATION

In the context of coronary heart disease, age plays a significant role in the prevalence of certain risk factors and disease manifestations. Among patients aged 25-39 years, there is a notably higher rate of smoking, suggesting that this age group may be more prone to tobacco-related cardiovascular issues. Conversely, diabetes is less prevalent in this younger cohort, possibly indicating that diabetes-related heart disease becomes more prominent with age. In contrast, the 40-70-year-old age group exhibits a higher incidence of hypertension, double vessel diseases, and triple vessel diseases, emphasizing that these risk factors and advanced disease stages tend to accumulate as individuals grow older. This highlights the importance of age-specific management strategies and interventions for coronary heart disease patients.

**Funding:** No funding sources.

**Conflict of interest:** None declared.

#### REFERENCES

- Schoen, F. J. (2004). "The Heart" in Vinay Kumar, Abul K. Abbas, Nelson Fausto (eds) Robbins and Cotran Pathologic basis of disease, Saunders, Philadelphia, pp. 558-59, 571-572.
- "Genetic Disorders". (2004). in Vinay Kumar, Abul K. Abbas, Nelson Fausto (eds) Robbins and Cotran Pathologic basis of disease, Saunders, Philadelphia, pp.156-157.
- Amanullah, M., & Zeher, A. (1989) Trends of ischemic heart disease and relation with known risk factors in Bangladesh in National Congress of Cardiology, Dhaka, pp12.
- Ashley, E. A., Hershberger, R. E., Caleshu, C., Ellinor, P. T., Garcia, J. G., Herrington, D. M., ... & Worrall, B. B. (2012). Genetics and cardiovascular disease: a policy statement from the American Heart Association. *Circulation*, 126(1), 142-157.
- Chen, L., Chester, M., & Kaski, J. C. (1995). Clinical factors and angiographic features associated with premature coronary artery disease. *Chest*, 108, 364-369.
- Egred, M., Viswanathan, G., & Davis, G. K. 2005. Myocardial infarction in young adults. *Postgraduate Medical Journal*, 81, 741-745.
- Rissanen, A. M. (1979). Familial aggregation of coronary heart disease in a high incidence area (North Karelia, Finland). *Heart*, 42(3), 294-303.
- Hassan, M. R., Haque, S. A., Rahman, M. M., Mosleuddin, A. K. M., & Jalaluddin, M. (1995). Acute myocardial infarction young and in elderly: A comparative study. *Bangladesh Heart J*, 10, 5-9.
- Khandaker, R. K., Hossain, D., Hossain, M., & Zaman, S. (1986). Retrospective analysis of acute myocardial infarction: A 4-year study of 2690 patients. *Bangladesh Heart J*, 1, 14-17.
- National Cholesterol Education Program (US). Expert Panel on Detection, and Treatment of High Blood Cholesterol in Adults. Third report of the National Cholesterol Education Program (NCEP) Expert Panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III). No. 2. The Program, 2002.
- Franklin, S. S., Khan, S. A., Wong, N. D., Larson, M. G., & Levy, D. (1999). Is pulse pressure useful in predicting risk for coronary heart disease? The Framingham Heart Study. *Circulation*, 100(4), 354-360.
- Burkadze, N. N., Perashvili, M. M., Bidzinashvili, B. G., Sadradze, N. F., & Trapaidze, D. D. (2004). Young patients with hypertension and family history. *American Journal of Hypertension*, 17, 439.
- Klein, L. W., & Nathan, S. (2003). Coronary artery disease in young adults. *Journal of the American College of Cardiology*, 41(4), 529-531.
- Sharma, N. (2021). Time Taken in Conversion of Stable Angina to Acute Coronary Syndrome in Patients with Coronary Artery Disease. *Sch Int J Anat Physiol*, 4(10), 160-164.
- Task Force Members, Montalescot, G., Sechtem, U., Achenbach, S., Andreotti, F., Arden, C., ... & Zamorano, J. L. (2013). 2013 ESC guidelines on the management of stable coronary artery disease: The Task Force on the management of stable coronary artery disease of the European Society of Cardiology. *European Heart Journal*, 34(38), 2949-3003.
- Cigarette smoking among adults: United States, 2002. MMWR Morb Mortal Wkly Rep. 2004; 53: 427-431.

17. McCollum, M., Hansen, L. B., Ghushchyan, V., & Sullivan, P. W. (2007). Inconsistent health perceptions for US women and men with diabetes. *Journal of Women's Health, 16*(10), 1421-1428.
18. Maroszynska-Dmoch, E. M., & Wozakowska-Kaplon, B. (2016) Clinical and angiographic characteristics of coronary artery disease in young adults: a single centre study, *Kardiologia Polska, 74*(4), 314-321.
19. Tamrakar, R., Bhatt, Y. D., Kansakar, S., Bhattarai, M., Shaha, K. B., & Tuladhar, E., (2013) Acute Myocardial Infarction in Young Adults: Study of Risk factors, Angiographic Features and Clinical Outcome. *Nepalese Heart Journal, 1*(1), 13-14.
20. Deora, S., Kumar, T., Ramalingam, R., & Manjunath, C. N. (2016). Demographic and angiographic profile in premature cases of acute coronary syndrome: analysis of 820 young patients from South India. *Cardiovascular Diagnosis and Therapy, 6*(3), 193-198.