

## Study of Disease Profile of Patients Admitted in Cardiac Unit in a District Hospital of Bangladesh

Md. Abdul Mannan<sup>1</sup>, Solaiman Hossain<sup>2</sup>, Md. Zahidul Islam<sup>1</sup>, Sahidul Islam Talukdar<sup>1</sup>, Mohammadullah Feroz<sup>3</sup>, AAS Majumder<sup>3</sup>

### Abstract:

**Objectives:** Aim of our study was to predict the pattern of disease of patients admitted in cardiac unit in a district hospital of Bangladesh.

**Material and Methods:** This observational study was conducted in the department of cardiology, General hospital, Sirajgonj, Bangladesh during the period of 02 months from June to July, 2019. Total of 504 patients were enrolled who were admitted in cardiac unit in Sirajgonj 250 bed General Hospital during two months' period from 1<sup>st</sup> June to 31<sup>st</sup> July, 2019. Every admitted patient was included in the study and history, clinical examination and investigation was done. Risk factors and complications were noted. After diagnosis, treatment was given and outcome was recorded.

**Result:** Age ranges was 23 to 74 year mean age was 55.9±13.6, 322 were male and 182 were female. According to risk factors, 211 were smoker, 206 were hypertensive, 166 have dyslipidemia, 110 have diabetes mellitus, 146 were prediabetic, 70 have family history of IHD and 20 were obese. The patients were diagnosed as AMI (ST

elevation)-115, NSTEMI-45, UA-40, CSA-100, CCF-20, HTN-50, MS-7, MR-5, AS-5, RMI-15, OMI-20, ICM-13, ASD-3, VSD-5, TOF-2, PPCI-2. Admitted patients have following complications- LVF-50, PE-2, PVC-55, AF-30, Cardiogenic shock-20, SVT-15, VT-10, CHB-10, VF-5 and atrial flutter-5. Comorbidity profile were COPD-36, Bronchial Asthma-40, CKD-30, Musculoskeletal pain-20, AN-15, PUD-10, RTI-10, CVD-76, Tubercular pleural effusion-10, Anaemia-15, Cervical spndylosis-5, UTI-5, RA-5, Sacroilitis-5. Following were the treatment outcome cured-40, improved-414, referred-35 and death-15.

**Conclusion:** Most of the patients were male and smoking was the predominant risk factor. Acute ST-elevation MI was the predominant primary disease. PVC was the most common complication and CVD was the highest comorbidity. Death was 2.9% and it was most commonly due to Acute ST elevation MI with development of LVF with cardiogenic shock.

**Key Word:** Acute ST Elevation Myocardial Infarction, Congestive Cardiac Failure, Primary Percutaneous Coronary Intervention.

(Bangladesh Heart Journal 2022; 37(1): 10-15)

### Introduction:

In Bangladesh, districts hospitals are secondary level hospitals. Some district hospitals have CCU and department of cardiology like Sirajgonj 250 bed district hospital. In this hospital in the cardiology ward in addition to cardiovascular diseases, patients are admitted with

comorbid conditions and diseases that simulate to cardiovascular diseases.

Cardiovascular disease is a group of diseases that include both the heart and blood vessels <sup>1</sup>, thereby

- 
1. Department of Cardiology, Shaheed M. Monsur Ali Medical College, Sirajgonj.
  2. Department of Cardiology, Enam Medical College and Hospital, Savar, Dhaka
  3. Department of Cardiology, National Institute of Cardiovascular Disease and Hospital.

**Address of Correspondence:** Dr. Md. Abdul Mannan<sup>1</sup>, Assitt. Professor, Department of Cardiology, Shaheed M. Monsur Ali Medical College, Sirajgonj. E-mail: drmannan80@gmail.com

DOI: <https://doi.org/10.3329/bhj.v37i1.60099>

Copyright © 2017 Bangladesh Cardiac Society. Published by Bangladesh Cardiac Society. This is an Open Access articles published under the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC). This license permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

including coronary heart disease and acute coronary syndrome among several other conditions. Coronary heart disease is one of the leading causes of death in the developed world as well as in developing countries like Bangladesh<sup>2</sup>. Coronary heart disease is a major cause of death and disability in developed countries<sup>3</sup>. Although the mortality for this condition has gradually declined over the last decades in western countries, it still causes about one-third of all death in people older than 35 years<sup>4-6</sup>. The Framingham Heart Study perfectly summarizes the risk factors that contribute to the development of CHD, providing critical information regarding objectives for the primary and secondary prevention of CHD. Rapid globalization, urbanization, aging of society and an increase in chronic disease pose new challenge to modern health care system<sup>7, 8</sup>. CVD is preventable, but physical inactivity, nicotine abuse and bad nutrition practices<sup>9</sup> are leading to an increase of prevalence in most countries<sup>10</sup>. Further, social inequalities increase CVD mortality<sup>10-12</sup> and negative life style influences such as increased physical inactivity in more obesogenic environment are reverting the improvement in CVD data that were obtained in some countries<sup>13</sup>.

The 2016 Heart Disease and Stroke Statistics update of the American Heart Association (AHA) has recently reported that 15.5 million persons more than 20 years of age in the USA have CHD<sup>14</sup>, whilst the reported prevalence increases with age for both women and men and it has been estimated that approximately every 42 second an American will suffer for a MI<sup>15</sup>.

Among the risk factors genetics linked to about half of cases, smoking and obesity are associated with about 36% and 20% of cases respectively. Hypertension is one of the major risk factor of CVD and preventable causes of CVD and all-cause death globally.

Although the trend has tended to reach a plateau since 1990, the overall mortality rates for CVD and CHD have fallen in most developed countries by 24-50% since the 1975. Approximately one half of this effect was accounted for factors like improvement in therapy, including secondary preventive measure after MI or revascularization, initial treatment of ACS, therapy for heart failure and revascularization for chronic angina accounted for one –half of the decline in CHD mortality<sup>16</sup>.

In addition, valvular heart disease, cardiomyopathy, congenital heart disease and associated comorbid

conditions also cause morbidity and mortality in district hospital.

So, this study is undertaken to evaluate the pattern of diseases among the admitted patients in the department of cardiology in Sirajgonj district hospital.

**Material and Methods:**

This observational study was conducted in the department of cardiology, General hospital, Sirajgonj, Bangladesh during the period of 02 months from June to July, 2019. Total of 504 patients were enrolled who were admitted in cardiac unit in Sirajgonj 250 bedded General Hospital during two months’ period from 1<sup>st</sup> June to 31<sup>st</sup> July, 2019. Every admitted patient was included in the study and history, clinical examination and investigation was done. ECG, cardiac biomarker, Echocardiography, blood sugar, lipid profile and serum creatinine was done. Risk factors and complications were noted. After diagnosis, treatment was given and outcome was recorded. Appropriate statistical techniques were applied for data analysis. Results were presented with tables and graphs where required.

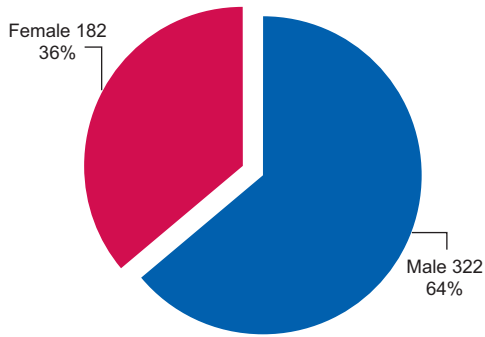
**Result:**

**Table-I**  
*The socio demographic characteristics of the study patients participated in the study (n=504)*

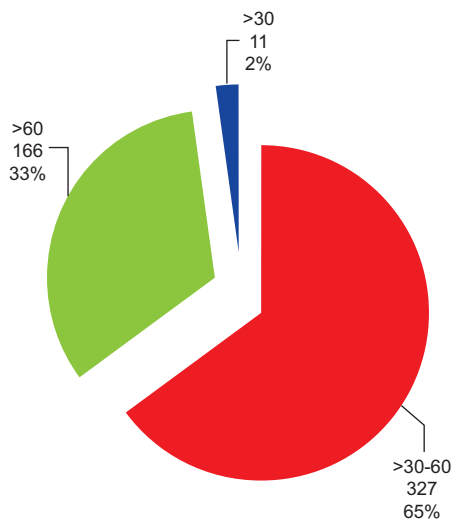
Variables	Sociodemographic characteristics		Frequency Per(%)	
Sex	Male		322	63.9
	Female		182	36.1
Age (years)	≤30		11	2.2
	30-60		327	64.9
	≥60		166	32.9
	Mean ± SD		55.9±13.6	

The above table shows the demographic characteristics of the study subjects. Qualitative and quantitative variables were presented as percentage and mean ± SD respectively.

Out 504 patients, 322 (63.9%) were male and 182 (36.1%) were female. The study patients were in the age ranged 23-74 years. The mean age of the subjects noticed was 55.9±13.6. It was observed that most of the cardiac patients were in the age group 30-60 followed by >60 and the lowest <30 years. All types of patients irrespective of age and sex were included randomly.



**Fig.-1:** Pie diagram showing sex distribution of the studied patients (n=504).



**Fig.-2:** Pie diagram showing age (yrs) distribution of the studied patients (n=504).

**Table-II**  
Distribution of the study patients according to risk factors (n=504).

Risk factors	Number	Percent (%)
Smoking	211	42.0
Hypertension	206	41.0
Diabetes mellitus	110	22.0
Dyslipidemia	166	33.0
Family H/O CAD	70	14.0
Obesity	20	4.0
Pre-diabetic	146	29.0

Table II shows the risk factors of CAD among the population under study. Smoking habit was found in 42%.

Hypertension was found in 41%. Diabetes mellitus was found in 22%. Dyslipidemia was found in 33%. Family history of CAD was found 14%. Obesity was found 4% and finally pre-diabetic was found 29%. Among the risk factors smoking is on the top of the list.

**Table-III**  
Distribution of the study patients according to dyslipidemia (n=504).

Lipid type	Number	Percent (%)
TC↑	171	34.0
LDL↑	100	20.0
TG↑	65	13.0
HDL↓	25	5.0

The above table describes that dyslipidaemia status among the study patients. Abnormal fasting total cholesterol, LDL cholesterol, TG cholesterol and HDL cholesterol were found in 34%, 20%, 13% and 5% patients respectively. It is true that dyslipidemia is important modifiable risk factors of CVDs.

**Table-IV**  
Distribution of patients according to diagnosis (n=504).

Diagnosis	Frequency	Percent (%)
AMI (ST elevation)	115	22.8
NSTEMI	45	8.9
UA	40	7.9
CSA	100	19.8
CCF	20	3.9
HTN	50	9.9
MS	7	1.4
MR	5	1.0
AS	5	1.0
RMI	15	3.0
OMI	20	4.0
ICM	13	2.6
PPCI	2	0.4
ASD	3	0.6
VSD	5	1.0
TOF	2	0.4

The above table depicts that Acute Myocardial Infarction (AMI) and Chronic Stable Angina were most common diagnosis among the study patients. Hypertension, NSTEMI and UA were also remarkable diagnosis among the study patients. The study reveals that the prevalence of AMI, CSA, HTN, NSTEMI and UA were higher in the

study. The remaining diagnosis and their percentage were shown in the above table. It can be concluded that early detection of disease can largely reduce morbidity and mortality and alternative undue burden on our limited budget.

**Table-V**  
*Distribution of patients according to complications (n=504).*

Complaints	Frequency	%
PVC	55	11.0
LVF	50	9.9
AF	30	5.9
A.Flutter	5	1.0
SVT	15	3.0
VT	10	2.0
CHB	10	2.0
VF	5	1.0
Cardiogenic Shock	20	4.0
PE	2	2.6

The above table expresses that PVC, LVF, AF and Cardiogenic Shock were most frequent complications among the study patients.

**Table-VI**  
*Distribution of patients according to co-morbidity (n=504).*

Co-morbidities	Frequency	%
COPD	35	7.0
Bronchial Asthma	40	8.0
CKD	30	6.0
MSK pain	20	4.0
AN	15	3.0
PUD	10	2.0
RTI	10	2.0
CVD	76	14.9
Cervical Spondylosis	5	1.0
UTI	5	1.0
TB-PI effusion	10	2.0
RA	5	1.0
Anaemia	15	3.0
Sacroilitis	5	1.0

The above table shows that CVD, COPD and bronchial asthma were most frequent co-morbidities among the study patients.

**Table-VII**  
*Investigation status of the study patients (n=504).*

Investigations	Abnormal		Normal	
	Frequency	%	Frequency	%
ECG	378	75.0	126	25.0
Troponin I	125	24.8	362	71.8
RBS	258	51.2	246	48.8
Lipid Profile	247	49.0	257	51.0
S. Creatinine	31	6.1	473	93.8
Echocardiogram	100	19.8	404	80.2

The above table describes the investigation status among the study patients.

**Table-VIII**  
*Distribution of patients according to treatment outcome (n=504).*

Outcome	Frequency	%
Cured	40	7.9
Improved	414	82.1
Referred	35	6.9
Death	15	2.9

The above table revealed the outcome status of the study patients. Among the study patients, cured 7.9%, improved 82.1%, referred 6.9% and death rate 2.9%.

**Discussion:**

In Bangladesh district hospital is a secondary level hospital. In district hospital in the department of cardiology in addition to patients with cardiovascular diseases, patients with other diseases simulate with CVS symptoms are also admitted in cardiology ward. In these study we observed the disease profile among the all the admitted patient in two months' duration. Among 504 patients, male was predominant and most of the cardiac patients were in the age group 30-60 years followed by 60 years and the lowest less than 30 years.

Among the risk factors of ischaemic heart disease smoking and HTN were almost same and it was highest. Study of lipid profile of the patients, total cholesterol was highest then high LDL. Similar results were found in the study of SM Rezaul Irfan et. al<sup>17</sup> and Mohsin Ahmed et al.<sup>18</sup>

Acute ST-elevation myocardial infarction and chronic stable angina were most common diagnosis among the study patients. Ischaemic heart diseases were the

highest number and congenital and valvular heart diseases were lowest number among the admitted patients. Increased number of ischemic heart disease most probably due to less control of risk factors and awareness of chest pain. Most of the complications were due to ischaemic heart disease. PVC was the highest followed by LVF. A large number of patients developed cardiogenic shock. Most cardiogenic shock developed in patients with Acute extensive and anterior ST-elevation MI. Less common complication was VF. This results were similar in the study of Mohsin Ahmed et al.<sup>18</sup>. Most of patients with cardiogenic shock were managed in CCU and some were referred to higher center for CVS diseases.

Cerebrovascular (CVD) was the most prevalence comorbid disease followed by Bronchial Asthma and COPD. Because of same risk factors admitted patients with CVD have associated ischaemic heart diseases. Bronchial Asthma and COPD were admitted due to simulating symptom of LVF like dyspnea. A large number of patients with musculoskeletal pain were also admitted. Patients with anxiety neurosis were admitted due to palpitation. But more than half (51.1%) of the patients visit cardiologist with non-cardiac problems stated by G K Paul et al.<sup>19</sup>

Most of the patients improved and a sufficient number of patients cured. Percentage of death is low due proper management because referral percentage is also low.

#### Conclusion:

Most of the patients were admitted with ischaemic heart disease, among them Acute ST-elevation was predominant. Lowest numbers of patients were admitted with congenital and valvular diseases. CVD was the highest comorbid condition followed by Bronchial Asthma and COPD. Most of the patients were improved and a sufficient number of patients were cured. Percentage of death were low due to proper management because referral percentage is also low.

#### Reference:

1. Global Atlas on Cardiovascular Disease Prevention and Control. World Health Organization, 2011. (Google Scholar).
2. Islam MN, Ali MA, Ali M. Spectrum of cardiovascular disease: The current scenario in Bangladesh. *Bangladesh Heart Journal* 2004; 19:1-7
3. Roger VL. Epidemiology of myocardial infarction. *Med Clin North Am* 2007; 91:537-52.

4. Rosamond W, Flegal K, Furie K. Heart Disease and stroke statistics-2008 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 2008;117: e25-146.
5. Lloyd-Jones D, Adams RJ, Brown TM. Executive summary: heart disease and stroke statistics-2010 update: a report from the American Heart Association. *Circulation* 2010; 121:948-54.
6. Nichols M, Townsend N, Scarborough P. Cardiovascular disease in Europe 2014: epidemiological update. *Eur Heart J* 2014; 35:29.
7. Horton R. Offline: Chronic disease-the social justice issue of our time. *Lancet* 2015; 386:2378.
8. Danaei G, Singh GM, Paciorek CJ. The Global Cardiovascular Risk Transition: Association of Four metabolic Risk Factors with National Income, Urbanization and western Diet in 1980 and 2008. *Circulation* 2013; 127:1493-502.
9. Danaei G, Ding EL, Mozaffarian D. The cause of death in United State: comparative risk assessment of dietary, lifestyle and metabolic risk factors. *PLoS Med* 2009; 6: e1000058.
10. World Health Organization. World Health Report 2013. Available online: <http://www.who.int/whr/2013/report/en>.
11. Wilkinson RG, Pickett KE. Income inequality and population health: A review and explanation of the evidence. *Soc Sci Med* 2006; 62:1768-84.
12. Leischik R, Dworrak B, Strauss M. Plasticity of Health. *German journal of Medicine* 2016; 1:1-17.
13. Laatikainen T, Critchley J, Vartiainen E. Explaining the decline in coronary heart disease mortality in Finland between 1982 and 1997. *Am J Epidemiol* 2005; 162:764-73.
14. Writing Group Members, Mozaffarian D, Benjamin EJ. Executive Summary: Heart Disease and Stroke Statistics-2016 update: A report from the American Heart Association. *Circulation* 2016; 133:447-54.
15. Ergin A, Muntner P, Sherwin R. Secular trend in cardiovascular disease mortality, incidence, of coronary heart disease and acute coronary syndrome and case fatality rate in adult in the United States. *Am J Med* 2004; 117:219-27.

16. Ford ES, Ajani UA, Croft JB. Explaining the decrease in U.S. death from coronary disease 1980-2000. *N Engl J Med* 2007; 356:2388-98.
17. SM Rezaul Irfan, Samira Humaira Habib, Shabnam Jahan Hoque, AKM Mohibullah. Pattern of Cardiovascular Diseases in Diabetic population - a seven-year study in a tertiary care hospital of Bangladesh. *Bangladesh Crit Care J* September 2020; 8(2): 96-101.
18. Mohsin Ahmed, Khandaker Abu Rubaiyat, Mohammed Abaye Deen Saleh et al. Clinical Characteristics and Angiographic Profile of Acute Coronary Syndrome Patients in a Tertiary Hospital of Bangladesh. *Bangladesh Heart Journal* 2018; 33(1): 10-15.
19. G K Paul, B Sen, M K Khan, T K Bhowmik, T A Khan, A K Roy. Pattern of Disease among Patients Attending Cardiology Outpatient Department of a Private Hospital of Mymensingh. *Mymensingh Med J.* 2018 Apr;27(2):270-274.