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Sociodemographic Characteristics of Coronary Artery Disease (CAD) Patients

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Abstract
Objective: *In this study our main goal is to evaluate sociodemographic characteristics of Coronary artery disease (CAD) patients.*
Method: *This cross-sectional observational study was done in the in the NICVD, Dhakafrom October 2010 to September 2011. A total of 100 consecutive patients were included. Study populations were sub-divided into two groups on the basis of cTn I level. In group I cTn I level ≥20ng/ml and in group II cTn I level <20ng/ml. 50 patients were included in group I and 50 patients were included in group II.*
Results: *In group-1 and group-2 most of patients were male, only 10% and 12% were female. Mean random blood sugar was 11.4±5.4 mg/dl in group I and 9.1±4.1 mg/dl in group II, with statistically significant difference (p=0.02) between the two groups. The mean serum creatinine of the group I was 1.0±0.2 mg/dl and of group II was 1.0±0.3 mg/dl. six percent patients had left ventricular ejection fraction (LVEF) <40%, 41% had LVEF between (40 - 49%) and 52% had LVEF at the level of (50% or >50%). In contrast, none of the patients in group II had ejection fraction <40% and 40% had ejection fraction between (40 - 49%) and 60% had ejection fraction at the level of (50% or >50%).*
Conclusion: *From our study we can conclude that, poor sociodemographic and economic characteristics rationally affect CAD patients. However, the result of this study needs further confirmation in a large scale multi Centre prospective cohort study.*
Keywords: *Coronary heart disease (CHD), sociodemographic characteristics, serum creatinine.*

Introduction

Coronary artery disease (CAD), an epidemic cardiac disease is known for one of the significant causes of morbidity and mortality around the world[1]. Around 30 percent people die for cardiovascular disease worldwide, where more than half of them due to coronary artery disease. [2] The percentage rate of mortality for cardiovascular disease is around 80 in the developing countries.[3] There was an estimation that worldwide coronary artery disease was responsible for 11.8 per cent of all death in low income countries in 2001[2] Another report suggested that Incidence of coronary artery disease in Bangladesh has increased from 3.3 per thousand to 14 per thousand from the year 1975 to 1985[4]

In 1990, 47% of all cardiovascular disease (CVD)-related deaths in developing countries occurred before the age of 70 years, in contrast with only 23% in high-income industrialized countries. This has a consequence in that there is a difference in the number of disability-adjusted life years (DALYs) resulting from CVD; the burden of CVD expressed in DALYs from 1990 to 2020 was estimated for different populations in the Global Burden of Disease Study. In India and China, a spectacular rise in the number of DALYs is expected in the coming years from a figure of less than 25 million DALYs in each country in 1990, to 30 million and 35 million in India and China, respectively, in 2020.The gap between industrialized countries and developing countries will significantly increase, and the increasing burden of CVD in terms of DALYs will clearly mostly affect developing countries in the next two decades. In different parts of the world, the dynamics of the CHD epidemic are also very different in terms of pattern, magnitude, and timing.[5]

In this study our main goal is to evaluate sociodemographic characteristics of Coronary artery disease (CAD) patients.

Objective

General Objective

- To evaluate sociodemographic characteristics of Coronary artery disease (CAD) patients.Specific objective:

Specific Objective

- To detect baseline investigations findings of patients.
- To identify economic status of the patients and privilege of Coronary artery disease

Methodology

Type of study	Cross sectional study.
Place of study	NICVD, Dhaka
Study period	October 2010 to September 2011
Study population	All patients diagnosed as acute STEMI admitted in NICVD and undergoing coronary angiography during hospital admission were taken
Sampling technique	Purposive

Study Population: All patients diagnosed as acute STEMI admitted in NICVD and undergoing coronary angiography during hospital admission were taken as study population. A total of 100 consecutive patients were included. Study populations were sub-divided into two groups on the basis of cTn I level. In group I cTn I level ≥20ng/ml and in group II cTn I level <20ng/ml. 50 patients were included in group I and 50 patients were included in group II.

Method: All patients admitted in Cardiology department of NICVD, Dhaka, fulfilling the inclusion criteria and exclusion criteria was considered for study. Informed written consent was taken from all patients or from legal guardian before enrollment. Acute STEMI was diagnosed by ESC/ACC guideline 2004.Initial evaluation of the patients by history and clinical examination was performed and recorded in patients' data collection sheet. Demographic profile, and pulse, blood pressure, body weight were recorded. Serum cTn I level was estimated and recorded by Immulite 1000 Troponin I. (SIEMENS Medical Solutions Diagnostic, Los Angeles, CS, USA). Echocardiographic ejection fraction was recorded on second or third day of hospitalization. Coronary angiogram was done during hospital admission. Angiographic severity of coronary artery disease was assessed by Vessel score and Stenosis score.

Statistical Analysis: Data were processed and analyzed using computer-based software SPSS (Statistical Package for Social Sciences) for windows version 22. Unpaired t-test was used to compare quantitative variables. Variables were expressed as range and mean ± SD. p value < 0.05 were taken significant. Students' t test, Pearson's correlation coefficient test, multivariate logistic regression analysis and Fisher's exact test as applicable.

Result

In figure-1 shows age distribution of the patients where in both group-1 and group-2 very few patients belong to < 40years age group. The following figure is given below ion detail:

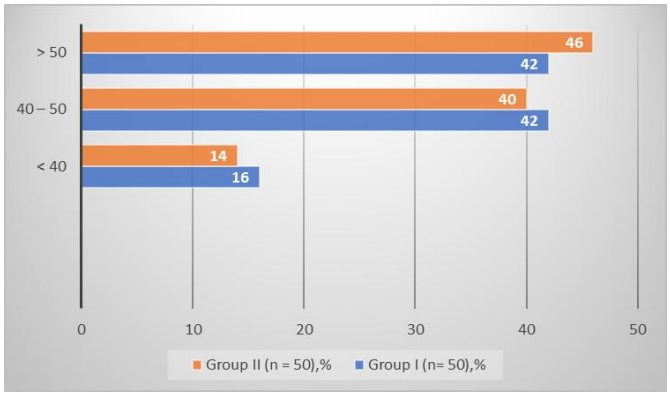

Figure-1: Age distribution of the patients.

In figure-2 shows gender distribution of the patients where in group-1 and group-2 most of patients were male, only 10% and 12% were female. The following figure is given below in detail:

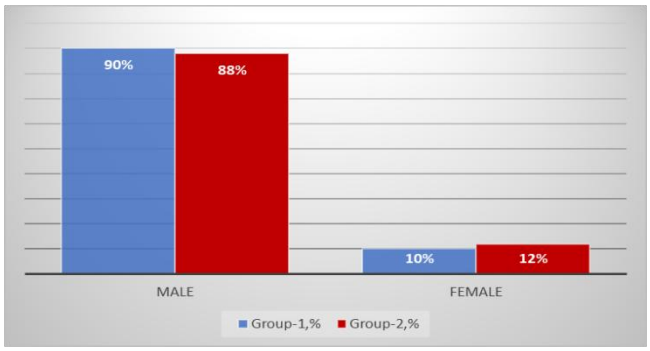

Figure-2: Gender distribution of the patients

In table-1 shows baseline investigations findings of patients between groups where the mean random blood sugar was 11.4±5.4 mg/dl in group I and 9.1±4.1 mg/dl in group II, with statistical significant difference (p=0.02) between the two groups. The mean serum creatinine of the group I was 1.0±0.2 mg/dl and of group II was 1.0±0.3 mg/dl. The differences was statistically insignificant (p=0.37). The total cholesterol level of group I and group II were 209.0±48.6 mg/dl and 180.0±50.5 mg/dl respectively with statistically significant difference (p=0.004). The low density lipoprotien cholesterol of group I and group II were 114.5±23.2 mg/dl and 104.6±24.7 mg/dl respectively with statistically significant difference (p=0.04). The high density lipoprotien cholesterol of group I and group II were 39.7±4.7 mg/dl and 41.1±7.1 mg/dl respectively, the difference was statistically insignificant (p=0.23). The triglyceride level of group I and group II were 220.8±52.5 mg/dl and 204.6±85.9 mg/dl respectively which is statistically insignificant (p=0.25). All the tests of the above table were done by χ^2 (Chi square) test. The following table is given below in detail:

Table-1: Baseline investigations findings of patients between groups (n=100)

Baseline investigations	Group I (n= 50)	Group II (n =50)	p-value
	Mean ± SD	Mean ± SD	
R B S. (mmol/L)	11.4±5.4	9.1±4.1	0.02^{s}
S. creatinine (mg/dl)	1.0±0.2	1.0±0.3	0.37^{ns}
TC (mg/dl)	209.0±48.6	180.0±50.5	
LDL-C (mg/dl)	114.5±23.2	104.6±24.7	0.04^{s}
HDL-C (mg/dl)	39.7±4.7	41.1±7.1	0.23^{ns}
TG (mg/dl)	220.8±52.5	204.6±85.9	0.25^{ns}

s= Significant
ns= Not significant

In table-2 shows comparison of LVEF between groups where in group I, six percent patients had left ventricular ejection fraction (LVEF) <40%, 41% had LVEF between (40 - 49%) and 52% had LVEF at the level of (50% or >50%). In contrast, none of the patients in group II had ejection fraction <40% and 40% had ejection fraction between (40 - 49%) and 60% had ejection fraction at the level of (50% or >50%).Table also showed the mean left ventricular ejection fraction was 48.8± 6.8 in Group I and 53.9 ± 9.0 in Group II. The difference was statistically significant (p=0.002) in Student's t-test. The following table is given below in detail:

Table-2: Comparison of LVEF between groups (n=100)

LVEF (%)	Group I (n= 50)		Group II (n =50)		p-value
	Number	%	Number	%	
< 40	3	6.0	0	0.0	
40 – 49	21	41.0	20	40.0	
≥ 50	26	52.0	30	60.0	
Mean ± SD	48.8± 6.8		53.9 ± 9.0		0.002^{s}

s = Significant

In table-3 shows residential area distribution of the patients where 80% patients in group-1 belong to urban area where in group-2 it was 75%. The following table is given below in detail:

Table-3 shows residential area

Residential area	Group-1, %	Group-2, %
Urban	80%	75%
Rural	20%	25%

In table-4 shows economic status of patients where in group-1 60% were upper class where as in group-2 it was 65%. The following table is given below in detail:

Table-4: Economic status of patients

Economic Status	Group-1, %	Group-2, %
Upper Class	60%	65%
Middle class	35%	25%
Lower class	5%	10%

In figure-3 shows correlation between serum cardiac troponin I level and stenosis score where the two variables exhibit significantly positive high correlation (r=0.91, p=0.01).

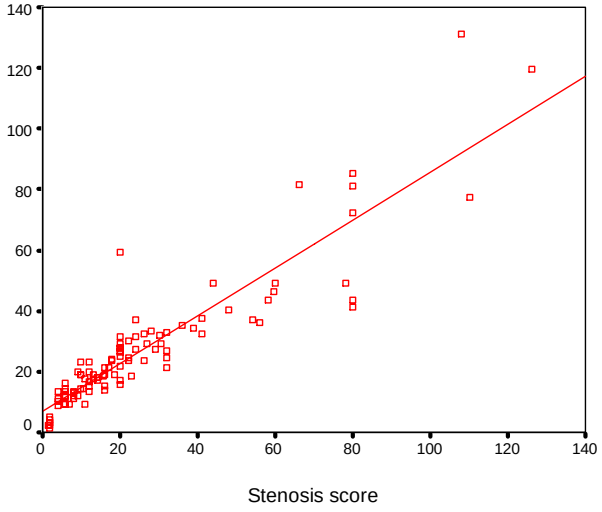

Fig-3: Correlation between serum cardiac troponin I level and stenosis score (Modified Gensini Score).

Discussion

Over the last decade, cardiovascular disease (CVD) has become the single largest cause of death worldwide. In 1990, CVD accounted for 28% of the world's 50.4 million deaths and 9.7% of the 1.4 billion lost DALYs. By 2001, CVD was responsible for 29% of all deaths and 14% of the 1.5 billion lost DALYs. By 2020, the world population will grow to 7.8 billion and 32% of all deaths will be caused by CVD; by 2030, when the population is expected to reach 8.2 billion, 33% of all deaths will be caused by CVD[6,7]

WHO projection indicates that a pattern of premature CVD mortality is likely to persist and may accentuate further in developing countries. In 2006, CVD was more prevalent in China and India than in all developed countries combined. Developing countries will account for 70% of death caused by coronary heart disease and 75% of death caused by stroke.[8]

High rates of coronary heart disease in people of South Asian (Indian, Pakistani, and Bangladeshi) origin were first reported from Singapore, South Africa, and Trinidad in 1950s, similar findings were recorded in the United Kingdom at the time of the 1971 census. The clinical picture in South Asian patients with coronary heart disease is similar to that in Europeans. Smoking in South Asian patients is generally less common, average plasma cholesterol concentrations are lower and diabetes is more common than in European patients.[9]

Several studies in India and Pakistan have suggested substantial morbidity caused by CHD in this region. An estimated 31.8 million people are living with CHD in India alone, a 10-fold increase over 40 years ago, which translates into an overall prevalence of about 11% in urban India and an age-adjusted prevalence of 9%, based on 2001 figures [10]. More recently, a CHD study in Pakistan found a prevalence of about 6% in men and 4% in women, but active ischemia was twice as high in women.[11]

In this study it was found that the mean (±SD) random blood sugar (RBS) was 11.4±5.4 mmol/l and 9.1±4.1 mmol/l in group I and group II respectively, the difference between the two groups was statistically significant (p=0.02). The mean (±SD) serum creatinine was found 1.0±0.2 mg/dl in group I and 1.0±0.3 mg/dl in group II. The mean difference was not statistically

significant (p=0.37) between the two groups. Similar observations were found in the study done by one study.[12]

The total cholesterol level of group I was 209.0±48.6 mg/dl and 180.0±50.5 mg/dl in group II, the difference was statistically significant (p=0.004). The LDL cholesterol level in group I and group II were 114.5±23.2 mg/dl and 104.6±24.7 mg/dl respectively the difference was statistically significant (p=0.04).

The HDL cholesterol of group I and group II were 39.7±4.7 mg/dl and 41.1±7.1 mg/dl respectively without statistically significant difference. TG level in the two groups were 220.8±52.5 mg/dl and 204.6±85.9 mg/dl which was also statistically insignificant. One study found in their study total cholesterol; 201±47.1 mg/dl vs. 183±18 mg/dl, p=0.004, in the two groups respectively, which were consistent with the present study[13]. There were similarities with the study done by article where they found in their study the total cholesterol 205.03±50.1 mg/dl and 197.7±49.0 mg/dl, LDL129.6±43.8 mg/dl and 117.2±40.0 mg/dl, HDL 47.6±13.8 mg/dl and 51.8±15.9 mg/dl, TG were 116mg/dl and 117mg/dl, in group I and in group II respectively. [12]This discordance in the level of TG between the two studies might be due to differences in dietary habit of taking increase amount carbohydrate in food in our population.[13]

Conclusion

From our study we can conclude that, poor sociodemographic and economic characteristics rationally affect CAD patients. However, the result of this study needs further confirmation in a large scale multi Centre prospective cohort study.

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