Original Article

Awareness of Risk Factors for Ischemic Heart Disease in Patients with Acute Myocardial Infarction in a Tertiary Care Hospital

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Abstract

Objective: Ischemic heart disease (IHD) is the most common form of heart disease and the single most important cause of premature death all over the world. The aim of this study is to identify risk factors responsible for IHD among Bangladeshi people and to assess awareness and practice about risk factors of ischemic heart disease (IHD). Methods:This cross-sectional observational study included all acute myocardial infarction (AMI) patients admitted in department of cardiology, BSMMU, Dhaka from September 2011 to December 2011. Diagnosis was confirmed by ECG and cardiac biomarkers. **Results:** In this study out of all the participants, majority were male (84%) and 16% were female and male female ratio was around 5:1. Most of our patients were 41-50 years of age (37%) and only minority of them were illiterate and education level of majority were SSC and above. The most frequent risk factors were hypertension (64%), diabetes mellitus (47%), smoking (32%), obesity, dyslipidaemia, family history of IHD. Awareness about relation of AMI with hypertension-7.8%, diabetes mellitus-38.3%, smoking-14.75%, obesity-13.16%, dyslipidaemia- 5.72%. **Conclusion:** This study reveals that hypertension is the most prevalent risk factor in AMI patients admitted in a tertiary level hospital followed by diabetes mellitus and smoking. But amongst patients, awareness about these risk factors is less than that of developed countries. So community based IHD education program will be helpful to reduce the incidence of IHD.

Keywords: *Ischemic heart disease, acute myocardial infarction, risk factors, patient awareness*

Received on: 23.12.2024 **Accepted on:** 22.02.2025

Introduction

Ischemic heart disease (IHD) is a condition in which there is an inadequate supply of blood and oxygen to a portion of the myocardium[1]. Coronary heart disease (CHD) is now the leading cause of death worldwide. It is expected that 82% of the future increase in coronary heart disease mortality will occur in developing countries[2].

A number of 'risk' factors are known to predispose to the IHD. Some of these, such as age, gender, race and family history, cannot be changed, whereas other major risk factors can be modified[3]. While genetic factors play a part, 80% to 90% of people dying from coronary heart disease have one or more major risk factors that are influenced by lifestyle. This highlights not only the need for early recognition of the warning signs of a heart attack, but also the need for prevention[2].

Despite the search for novel risk factors for CHD, established risk factors still play a major role[4]. These are the dyslipidaemias, hypertension, cigarette smoking, diabetes, obesity and physical inactivity. These have been shown to be associated with an increased risk in major prospective epidemiological studies[5–9].

Heart disease risk factor knowledge is the first step in risk factor reduction[10]. Ours is a country with low literacy rate (51%) and in general health awareness and level of healthy lifestyle practice are very poor. So it is very important to assess the level of awareness about IHD risk factors and practice of healthy lifestyle to improve its primary and secondary prevention. Evaluation of clinical risk profile and awareness about risk factors for IHD in our population can help us to determine which preventive measures should be emphasized.

To date, no studies have been conducted in our country to evaluate public awareness regarding the consequences of risk factors associated with ischemic heart disease

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(IHD). Recognizing this gap, the present study was undertaken to assess this awareness, with the objective of informing and enhancing preventive strategies aimed at reducing the burden of IHD.

Methods

Study Design and Setting:

This cross-sectional observational study was conducted in the Department of Cardiology, Bangladesh Medical University (BMU), Dhaka.

Study Population:

The study included 100 patients with a confirmed diagnosis of AMI (by ECG and cardiac biomarkers) admitted in the Department of Cardiology, Bangladesh Medical University (BMU), Dhaka, between September 2011 and December 2011.

Sampling Method:

Patients were recruited through consecutive purposive sampling.

Data Collection:

Data were gathered using a structured questionnaire that captured demographic details, educational and socioeconomic status, risk factor prevalence (hypertension, diabetes mellitus, obesity, dyslipidemia, family history, alcohol intake, and smoking), lifestyle modifications, and awareness regarding the association of these factors with AMI.

Data Analysis:

Collected data were analyzed using SPSS version 11.5. Results are presented using frequency distributions in tables and a bar graph illustrating the prevalence of smoking.

Results:

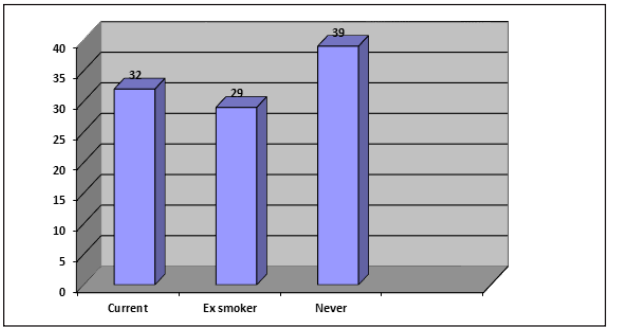

Figure 1. Bar diagram showing association of smoking with AMI (n=100)

Table 1. Demographic and Socioeconomic Characteristics of AMI Patients (n = 100)

Characteristic	Subcategory	Frequency (%)
Age group (years)	31–40	21 (21.0)
	41–50	37 (37.0)
	51–60	29 (29.0)
	>60	13 (13.0)
Sex	Male	84 (84.0)
	Female	16 (16.0)
Occupation	Service holder	40 (40.0)
	Businessman	30 (30.0)
	Housewife	16 (16.0)
	Others	14 (14.0)
Educational level	Illiterate	7 (7.0)
	Below SSC	35 (35.0)
	Above SSC	58 (58.0)
Socioeconomic status	High	7 (7.0)
	Average	80 (80.0)
	Low	13 (13.0)

Table 2. Risk Factor Profile of AMI Patients by Sex (n = 100)

Risk Factor	Male, n (%)	Female, n (%)	Total, n (%)
Hypertension	53 (63.1)	11 (68.8)	64 (64.0)
Diabetes mellitus	38 (45.2)	9 (56.3)	47 (47.0)
Obesity	33 (39.3)	5 (31.3)	38 (38.0)
Dyslipidaemia	31 (36.9)	4 (25.0)	35 (35.0)
Family history	32 (38.1)	6 (37.5)	38 (38.0)
Alcohol use	5 (6.0)	0 (0.0)	5 (5.0)
Smoking*	—	—	61 (61.0)

Table 3. Lifestyle Modification and Awareness among AMI Patients

Risk Factor	Practiced (%)	Not Practiced (%)	Not Known (%)	Total (%)
Hypertension	21 (32.8)	39 (60.9)	4 (6.3)	64 (100)
Diabetes mellitus	34 (72.3)	6 (12.8)	7 (14.9)	47 (100)
Obesity	7 (18.4)	4 (10.5)	27 (71.1)	38 (100)
Dyslipidaemia	6 (17.1)	2 (5.7)	27 (77.1)	35 (100)

Table-4. Awareness about relation of different risk factors with AMI among patients known to have them

Relation of AMI with	Known (%)	Not Known (%)	Total (%)
Hypertension	5 (7.8)	59 (92.2)	64 (100)
Diabetes mellitus	18 (38.3)	29 (61.7)	47 (100)
Obesity	5 (13.16)	33 (86.84)	38 (100)

Table 5. Clinical Control, Risk Burden, and Follow-Up among AMI Patients

Measure	Frequency (%)
Hypertension Treatment (n = 64)	
Regular	28 (43.8)
Irregular	23 (35.9)
First-time detected	13 (20.3)
Diabetes Status (n = 47)	
Controlled	14 (29.8)
Uncontrolled	20 (42.6)
First-time detected	13 (27.7)
Number of Risk Factors	
0	0 (0.0)
1	18 (18.0)
2	37 (37.0)
3	29 (29.0)
>3	16 (16.0)
Exercise Practice (n = 100)	
Practiced	41 (41.0)
Regular	27 (27.0)
Irregular	14 (14.0)
<30 min/day	19 (19.0)
≥30 min/day	22 (22.0)
<3 days/week	14 (14.0)
≥3 days/week	27 (27.0)
Not practiced	59 (59.0)
Follow-Up with Physician	
Regular	21 (21.0)
Irregular or none	23 (23.0)
Not known	56 (56.0)

RESULTS:

Table-1 shows demographic pattern of AMI patients. Highest number of patient (37%) was in the age group 41-50 years, next being between 51-60 years (29%) & in between 31-40 years only 21%. This shows incidence of IHD increases with age. It also shows that 84% of patients were male &16% were female with a male female ratio of around 5:1. Incidence of IHD was higher in male. Out of 100 AMI patients most of the patients were in the groups of businessman and service holder probably due to sedentary lifestyle.

This study reveals that most of the AMI incidence among higher educated group, highest being in above SSC group (58%) and least among illiterate group (7%). It also shows that out of 100 AMI patients 80% were from average socioeconomic group and 13% from low and 7% from high socioeconomic group.

Table-2 shows that 64% patients were Hypertensive and incidence of AMI in hypertensive male and female is almost same. It also shows that 47% of AMI patients were diabetic, with higher incidence among female patients. Out of 100 patients 38% had H/O obesity, 35% had dyslipidaemia, 38% had family H/O IHD and only 5% had H/O alcohol and all of them were male patients. Out of 100 participants 61% had positive smoking history with 32% current smokers and 29% ex-smokers and all were male patients.

Table-3 shows most of the hypertensive patients either did not practice healthy life style in spite of having knowledge (60.90%) or did not know the methods for life style modification for hypertension (6.30%). It also shows that most of the known diabetic patients (72.30%) practiced lifestyle modification for diabetes. Out of 100 patients, 12.80% patients did not practiced healthy life style in spite of having knowledge.

27 (71.10%) out of 38 obese patients did not know about lifestyle modification for obesity and only 18.40% practiced healthy life style although another 10.50% knew about life style modification for obesity. Out of 35 dyslipidaemic patients only 77.10% patients did not know about life style modification for dyslipidaemia and in spite of having knowledge 5.70% did not adopt life style modification and only 17.10% practiced healthy life style.

In Table-4. This study shows that most of the hypertensive patients (92.2%) did not know and only 7.8% knew the relation of hypertension with IHD. Most of the known diabetic patients (61.7%) did not know the relation of diabetes mellitus with IHD. Only 38.3% patients knew about relation of diabetes mellitus with AMI. Out of 38 obese patients only 13.16 % knew the relation of obesity with IHD and only 2 (5.72%) knew and 33 (94.28%) out of 35 patients with dyslipidaemia did not know the relation of dyslipidaemia with IHD. Most (85.25%) of the patients did not know about the relation of smoking with IHD, 14.75% identified smoking as a risk factor for IHD.

Table 5. Shows that among 64 hypertensive patient, 28% were on regular treatment, 23% irregularly treated & 13% hypertensions were 1st time detected. Out of 47, most (42.6%) of the patients had uncontrolled diabetes mellitus and 27.7% of the patients did not know that they are diabetic and 1st time detected in hospital after AMI. This study also shows that most of the patients either had two (37%) or three (29%) risk factors at a time. Only 16% had more than three risk factors and there was no patient without any identifiable risk factor for IHD. Although a good number of patients (41%) took exercise, very few of them maintained it to a desired level as shown by only 27 % took regular exercise >3 days/week even not all of them continuing up to > 30 minutes (22%).It is also shows that out of 100 patients, 56% patients did not know about regular medical follow up and only 23% were not on regular follow up in spite of having knowledge.

Discussion

Incidence of AMI increases with age, our study shows most of the patients' age were 41-60 year (66%) and only 21% between 31-40 years. This study shows similarity with many current studies in abroad [11, 12, 13]. In this study, out of 100 participants, majority (84%) were male & only 16% were female; which is similar with a recent study done by Piwowarska W. and Zylińska M. in Poland[14]. This is may be due to cultural background of our society that female has less entry into hospital & another cause is smoking, which is an extra risk factor for male as female are usually non smoker in our country.

Majority of the patients in our study were either businessman or service holder (total 70%), which indicates, sedentary life style is responsible for high incidence among those groups. This result is comparable with two other studies done in Bulgaria and Pakistan [12, 15].

This study reveals that risk is high among SSC and above group in male and among illiterate and below SSC group in female. But studies in abroad shows higher incidence in less educated group[16, 17]. This is may be due to higher access of educated & affluent patient to a tertiary level coronary care unit (CCU).But higher incidence among illiterate group in female patients is quite comparable with studies in abroad[18]. It indicates that awareness about risk factors for IHD is more among literate group & help in reduction IHD incidence among them.

Hypertension is the single most important risk factor for IHD. In this study 64% of the patients were hypertensive, among them 13% were detected as hypertensive for the first time after admission in hospital. It was similar as reported in other studies[12, 15,19] .Among hypertensive patient 28% were on regular treatment, 23% irregularly treated & 13% hypertension were 1st time detected.

In this study, out of 100 patients 47% were diabetic, 45.2% among male and 56.3% among female. This is comparable with some studies [18, 19] but the incidence is lower in a Polish study (13.79%) 26. Out of known diabetic patient only 29.79% had normal blood sugar and 42.55% had high blood sugar after admission i.e. incidence of AMI is higher in patients with overt Diabetes mellitus and this is comparable with an Indian study[19].

Smoking is an important risk factor for IHD. In our study 32% were current smoker & 29% were ex-smoker and all of them were male. This is comparable with different studies done by Vladimirov V, Draganov V, Krunchev N and Petkov P; Wenger NK. and Pietrzak-Nowacka M, Safranow K, Rulkowska H et al[12, 19, 20].

In this study 39.3% of male and 31.3% of female patients were found to be obese and dyslipidaemia was detected in 36.9% of the male and 25% of the female patient. This is similar to that reported by Vladimirov V, Draganov V, Krunchev N and Petkov P[12], Pais P et al[18], and Wenger NK[19] but the incidence is lower in a Polish study[20].

38.1% patients out of 84 male patient and 37.5% out of 16 female patients had positive family history of IHD, which correlates with one recent study[12]. Only 6.0% of the male patients had positive history of alcohol consumption which supports the fact described in one Indian study that alcohol consumption was not found to be a risk factor for AMI in South Asians[11].

This study also revealed that most of the patients had at least two (37%) or more identifiable risk factors for IHD which is comparable with different studies done in Bulgaria, India, and Pakistan[12,15,18]. Lack of awareness about risk factors for IHD & absence of lifestyle modification for those contribute to increase incidence of IHD especially in developing & underdeveloped countries.

In this study only 7.8% hypertensive patient were aware about hypertension as a cause of IHD and 92.2 % did not know the relation of hypertension with IHD. The study done in the Canadian Heart Health Surveys shows awareness about hypertension is more than double (16%) among Canadian people than that of our people [21]. Majority of the hypertensive patients in our study did not practice healthy life style to reduce severity of hypertension in spite of having knowledge.

In this study 38.3% of diabetic patient knew of diabetes mellitus to be a risk factor for IHD. This result correlate with study done in India which shows awareness was 30% among them[17] but lower (19.1%) in another study[22]. Among diabetic patient most of them (85.11%) knew about lifestyle modification for diabetes & 72.3% adopt healthy lifestyle.12.8% did not practice life style modification advice in spite of having knowledge. So awareness for diabetes is more in our population than hypertension, probably due to campaign by Bangladesh International Research for Diabetes Endocrine and Metabolic disorders (BIRDEM) & its different branches (NHN) throughout the country.

This study revealed awareness about relation of IHD with smoking, obesity & dyslipidaemia in 14.75%, 13.16, & 5.72% patients respectively. This result shows similarity with study done in Saudi Arabia[23] but differs with the study done by Canadian Heart Health Surveys[21] which shows awareness about dyslipidaemia 23%.

This study also shows that although a good number of patients (41%) took exercise as healthy life style, very few of them maintained it to a desired level as shown by only 27 % took regular exercise >3 days/week even not all of them continuing up to >30 minutes (22%). This is comparable with a study done in East Africa[16].

In this study only 21% patient were on regular medical follow up. 56% patients did not know about regular medical follow up and only 23% were not on regular follow up in spite of having knowledge. This result has similarity with a study done in East Africa [16].

From this study it is obvious that despite a high literacy rate of the study group, awareness regarding CHD risk factors was low. This is also comparable with a study done in Pakistan[15].

Due to the limited availability of data on awareness of ischemic heart disease (IHD) risk factors in our country, this study provides valuable insights into the population's current level of knowledge. The findings highlight the urgent need for public health initiatives aimed at enhancing awareness of coronary heart disease (CHD), its modifiable risk factors, and the importance of adopting a healthy lifestyle, particularly in the context of developing countries.

Limitations

This study, conducted in 2011, has several important limitations. Firstly, it is a single-center, hospital-based study with a relatively small sample size, which limits the generalizability of its findings to the broader population. The data used are also relatively outdated, and may not reflect the current status of public awareness regarding ischemic heart disease (IHD) risk factors. Moreover, the study was carried out in a tertiary-level coronary care unit (CCU), where the patient population is typically skewed toward urban residents with higher socioeconomic status and better educational backgrounds. As a result, the findings may not accurately represent the awareness levels among rural populations, individuals from lower socioeconomic strata, or those with limited formal education.

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