

Myocardial Infarction: An analysis of Socio-demographic and Modifiable Risk Factors among Armed Forced Personnel in Bangladesh

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ABSTRACT

Introduction: Myocardial Infarction, major part of Coronary Artery Disease (CAD) is the leading cause of death for both men and women in the World. In 2008 among all death caused by non-communicable diseases CAD causes more than 27% of death in Bangladesh.

Objective: To analyze the socio-demographic and modifiable risk factors of Myocardial Infarction among Armed Forces personnel attended at the Combined Military Hospital Dhaka

Methods: This cross sectional study was conducted in July 2012 to Dec 2012 among 104 purposively selected armed forces personnel reported in Combined Military Hospital Dhaka. Data were collected through face-to-face interview using a pretested semi-structured questionnaire.

Result: Majority of the respondents (66.3%) age group was 45-60 years and 93.3% were Muslim and most are (69.2%) retired. Smoking rate were 61.5% and almost all of them used to do physical exercise in terms of mild, moderate and strenuous forms (26.0%, 54.8% and 19.2%) respectively. About 62.5% had a history of taking extra salt with food. Almost all of them had several chronic diseases like hypertension, DM and Bronchial Asthma.

Conclusion: The study found group of Socio-demographic and modifiable risk factors are responsible for Myocardial Infarction which could be minimized by preventive measures taken by competent authority. Study on larger sample size is necessary for more appropriate description.

Keywords: Myocardial Infarction, Socio-demographic and Modifiable risk factors.

Introduction:

Cardiovascular diseases (CVD) are the leading causes of morbidity and mortality in the industrialized countries and they are also emergencies as a prominent public health problem in the developing countries.¹ Incidents of Ischemic Heart Diseases (IHD) are also increasing in the developing countries including Bangladesh with the improvement of sociodemographic status, urbanization and changes of dietary habits and lifestyle.² The incidence of myocardial infarction is higher in Bangladesh than the developed countries among smokers.³

Coronary artery disease (CAD) is the leading cause of death for both men and women in Bangladesh.

According to WHO, out of 34 million deaths from non-communicable diseases, CAD caused 27% death in 2008 in Bangladesh. CVDs are the number one cause of death globally⁴. At the beginning of 20th century, CVDs accounted for less than 10% of all death world-wide. In the year 2000, 16.7 million people died from cardiovascular disease accounting 30.3% of all death world-wide, more than 50% of these death was in developing countries. Based on the current trends, by 2020, these diseases are expected to account for 43% death and 60% disease burden. By 2020 IHD will claim 25 million deaths annually and coronary heart disease will be greater than infectious disease as the world's

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number one death and disability.⁵ By 2030, almost 23.6million people will die from CVDs, mainly from heart disease and stroke.⁶

In Bangladesh, then socio-demographic indicators shows it's in an early stage of demographic transition. The proportion of population over 65 years and above is only 3.2%. Life expectancy is 66years in both sexes. Almost one fourth of the population lives in urban area. Major NCD reported by the principal investigator is cardiovascular disease, diabetes mellitus, injuries and chronic respiratory disease³.The total number of CHDs are typically increasing and flowing through developing countries. CHD is the leading cause of morbidity and mortality in the developing countries and also emerging as an important public health problem in Bangladesh. However, it has been recognized mostly among the adults. In some cases CHD causes sudden death, in other cases it is the cause of chronic morbidity. Death and chronic morbidity from CHD deprive family as well as the country to get service from the victim. On the other hand, the survivors afterwards becomes the liability on the family as well as for the nation due to chronicity of the disease and heavy cost of the treatment⁷. The burden of the disease is rising day by day in the country and as well as Bangladesh Armed Forces. The main affected group is 40 to 60 years that refers to productive period of life. Fortunately at the end of service most of the cased IHD occur in all ranks of Armed Forces personnel of Bangladesh Army. IHD is linked with high morbidity, disability and mortality in most of the countries. Epidemiological research has identified risk factors that increase the likelihood of coronary heart disease (CHD) events. When risk factors coexist, they multiply the risk of CHD several folds. The risk factors defined broadly as any habit or traits that developing that disease. Risk factors management should be thought of as treatment or prevention of the atherosclerotic disease process itself and as such should be included as an integral part of any management plan for many acute or chronic disease⁸.

The study was carried out at Combined Military Hospital, Dhaka Cantonment. The study will help to

determine the distribution of the modifiable risk factors in different ranks and age groups of MI cases in Bangladesh Armed Forces personnel. That will help to take effective preventive measure and provide guideline to control the incidence of Myocardial Infarction.

Materials and Methods:

This is a descriptive cross-sectional study was conducted from July 2012 to Dec 2012 among theMyocardial Infarction cases attending either at cardiac OPD or CCU ward or CVTS ward of Combined Military Hospital , Dhaka cantonment for treatment or follow-up. It is beside the main road of Dhaka Cantonment extending from Jahangir gate to Signal gate having easy access for all almost all types of patients. All available and willing patients who were diagnosed as a case of Myocardial Infarction were the study population. A semi structured interviewer administered questionnaire was developed and tested and used for the interview of the respondents.

After explaining the purpose of the study to the respondents and verbal consent taken from them, data collection was carried out by researcher through face to face interview in Bangla.

The Data was checked and edited after collection through checking and rechecking and processed by using SPSS-19 program.

Results:

More than half (66.3%) of the respondents were in the age group of 45-60 years. Average age of the respondents was 51.98 years with SD of 7.78 years and their age range was 31 to 70 years [Table-1]. About half of them (47.11%) were educated up to class X level. Majority of them (93.3%) were Muslims and 85.6% were married. About 49.03% were retired military personnel.

About 40.38% of the respondents gave history of monthly family income < 15,000 Taka with average income of 12561(±10462) Taka. Minimum monthly family income was 4000 and maximum was 60000 Taka. [Table-I]

Table I: Socio-demographic characteristics of respondents (n=104).

Socio-demographic characteristics	Number	Percentage
Age group of respondents (years)		
≤45	22	21.1
45 – 60	69	66.3
≥61	13	12.5
Mean (SD)	51.98(±7.78) years	
Min-Max	31-70 years	
Religion		
Islam	97	93.3
Hindu	7	6.7
Marital Status		
Married	89	85.6
Wifeless	15	14.4
Educational level of respondents		
Up to class X	49	47.11
SSC	38	36.53
HSC	17	16.34
Occupational Status of the Respondent		
Serving military personnel	37	35.57
Civilian paid from defense estimate	16	15.38
Retired	51	49.03
Monthly income (Taka)		
≤ 15000	42	40.38
15001-30000	40	38.46
≥ 30001	22	21.15
Mean (SD)	12561(±10462) Taka	
Min-Max	4000-60000 Taka	
Service length of the Respondents		
< 20	32	30.8
>20	72	69.2

As Armed Forces personnel most of them were active and used to do physical exercise in terms of mild, moderate and strenuous forms (26.0%, 54.8% and 19.2%) respectively. Majority of the respondents (61.5%) were. About 62.5% had a history of taking extra salt with food and 16.34% were obese in terms of BMI. Almost all of them had several chronic diseases like hypertension, DM and Bronchial Asthma. [Table-II]

Table II: Distributions of the respondents by modifiable risk factors (n=104)

Modifiable risk factors	Number	Percentage
Physical Activity		
Mild	27	26.0
Moderate	57	54.8
Strenuous	20	19.2
Smoking Habit		
Smoker	64	61.5
Non-Smoker	40	38.5
Extra salt intake		
Yes	65	62.5
No	39	37.5
BMI Status of the Respondents		
<18.5	12	11.53
18.5-24.99	75	72.11
>25- 29.99	17	16.34
Chronic diseases		
Diabetes mellitus	59	(78.66%)
Hypertension	43	(57.33%)
Bronchial asthma	15	(20%)

To see the association between modifiable risk factors and socio-demographic risk factors Chi-square (χ^2) test done. Association of modifiable and socio-demographic risk factors found only smoking have the statistically significant association with the age ($p < 0.05$) but association with other variables like education level, monthly income were not significant ($p > 0.05$) (Table-III)

Table III: Association between smoking habits with selected socio-demographic variables of the respondents

Sociodemographic Attributes	Smoker	Non-Smoker	χ^2	p
Age group				
≤45	8	14	13.28	<0.05*
45 – 60	51	18		
≥61	5	8		
Education				
Up to Class X	31	18	6.712	>0.05
SSC	24	14		
HSC	9	8		
Monthly income				
≤ 15000	22	22	4.8843	.086
15001-30000	28	10		
≥ 30001	14	8		

Discussion:

This research was conducted to analyze the socio-demographic and modifiable risk factors of myocardial infarction among the armed forces personnel attended to Combined Military Hospital Dhaka. Myocardial Infarction is the topmost leading medical challenge among the CVDs of the twenty-first century. A WHO expert committee report (1982) states that CVDs were one of the leading cause of death in industrial countries and also appearing as a public health problem in developing countries of south Asia. Among Cardiovascular disease Myocardial Infarction had been emerging as a notorious public health problem in Bangladesh as well as in Bangladesh Armed Forces. A tertiary level hospital based data showed a clearly increasing trend of coronary heart disease in Bangladesh since 1996.⁹

The principal focus of the study was to determine the associated factors in terms of socio-demographic and modifiable risk factors of Myocardial infarction. Aging is the most contributory factors of the MI. Majority (66.3%) of the respondents were in the age group 45-60 years. This study finding was not similar to the study findings observed by Zaman et al, where the mean age of the respondents was 38.1 years but highest prevalence of MI was observed by Rahman et al, among civilian employees serving in armed forces within the age group 41-50 years¹⁰. This study is also similar to the study conducted by Rahman et al¹¹.

In the present study it was observed that 85.60% respondents were married and 14.40% were wifeless. It does not correspond with the BBS findings 2010, where it was shown that marriage rate was 90.36%.¹² This may be due to many of respondents had lost then-wife as in the extreme age. Religion did not play any significant role in association between factors or prevalence of CHD among Armed Forces personnel. Among the 104 respondents 98.1% were literate. It did not accord with BBS 2012 literacy rate where it was shown about 62%. In this study literacy rate was high because education is a pre-requisite for joining in Armed Forces.

Smoking is the number one risk factors of CHD worldwide. Among the respondents about 61.50% were smoker where 96.88% were regular smoker and 3.12% were occasional. The study findings were not consistent with the study findings observed by Patwary MSR et al, where he found 73.33% smokers.¹³ Ahmed et

al. who found 79% smoking rate¹⁴. Shahidullah et al, found 69.7%, Kabir found smoking rate 53%, and Khandoker et al, found rate of smoking 74% as most important risk factor of coronary heart disease^{15,16,17}. It was revealed from the study that about 8.65% respondents were suffering from hypertension. (Blood pressure > 140/90 mm of Hg). This study finding was not similar to the study findings of Zaman et al, where it was shown that 13% respondents were hypertensive, Malik et al found 58.9% respondents were hypertensive in his study and Ullah et al found 20% were hypertensive among adult Bangladeshi.^{18,19,20}

The mean body mass index of this study population was 22.54 with standard deviation +1.67 and over-weight were 6.73%. This finding of mean BMI is similar to the study conducted by Rahman MM, who had found mean body mass index (22.97) but overweight is who found it 22.90%²¹.

Among the all modifiable risk factors of MI, smoking have the statistically significant association with the age ($p < 0.05$)

Conclusions:

Among the respondents aged 45-60 were the most affected (66.3%) group of MI. Among the major factors smoking was found most prevalent (61.5%) followed by Diabetes mellitus, Hypertension, and Bronchial Asthma. The association between smoking and age found statistically significant association. Current data support that appropriate preventive measures should be taken by the competent authority against socio- demographic and modified risk factors of Myocardial Infarction prevailing among the study population, but as the study was done in a highly selected group of patients in one hospital only, it needs large scale study to explore further details.

Conflict of interest: None.

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