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Original Research Article

A Study Evaluating the Association of Socio-Demographic Profile and Life-Style Factors with Acute Myocardial Infarction: An Observational Study

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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to study the association of socio- demographic and life-style factors with acute myocardial infarction.

Methods: A retrospective study conducted in the Department of General Medicine. Sample size was 200 patients. Patients of acute STEMI who were admitted in our ICCU and thrombolysed were included in this study.

Results: In this study, 65% patients were males and 35% patients were females. In this study, there were 56% patients between 40-60 years. In this study, patients had BMI 3% patients had BMI <25 kg/m2, 72% patients had BMI between 25-30 kg/m2, 24% of the patients had BMI between 30-40 kg/m^2. In this study 119 (59%) patients had AWMI indicating high prevalence of AWMI in STEMI. 39% patients had inferior wall MI. In our study 32% patients had diabetes. In our study, 45% patients had hypertension indicating it's the one of the common cause for acute coronary syndrome. 60% had habit of smoking. In this study, 20 patients had depression even though it's not a significant factor treating depression lowers the ACS risk. In our study patients only 40% patients had Serum cholesterol more than 200 mg/dl. In this study, 85% patients had TGL more than 200 mg/dl indicating TGL is more correlating with. In this study, 28% patients had LDL more than 100 mg/dl indicating LDL is not a good predictor of ACS. In this study, 56% patients had NON-HDL more than 130 mg/dl.

Conclusion: Prevention and control of the risk factors for CAD can reduce the rate of CAD. This requires changes in the individual as well as at the community level. Modifying risk factors such as smoking, increased levels of body fat, consuming too much fat and salt, and a sedentary lifestyle together with the use of accessible and affordable preventive medicines, can lower the risk of CAD.

Keywords: Acute myocardial infarction, Emerging risk factors, Lipid profile.

Introduction

Cardiovascular diseases (CVDs) are the number one cause of death worldwide. They are a group of disorders of the heart and blood vessels. [1] Among the conditions under this umbrella name, myocardial infarction (MI), from the group of coronary artery diseases (CADs), is the most common cause of mortality in different populations. CAD and MI are the fourth major cause of the burden of diseases in the world. [2] They lead to almost a third of the deaths worldwide. [3] They can also bring about numerous complications and severe disabilities, and represent a major economic burden on the health care systems of different countries. [4] Despite significant developments in cardiology, CVDs are still one of the world's greatest silent killers. K [5]

The first half of the 20th century witnessed a rapid growth in the prevalence of CVDs due to industrialization, urbanization, and increase in social development and welfare in developed countries. However, there was a significant decline in the mortality rates of CVDs in the second half of the 20th century. As a result of aging and population growth, the mortality rates of CVDs have increased by 29.5% worldwide. The highest mortality rates are related to developing countries. [6] In 50% of cases, CAD patients had one or more non-modifiable risk factor, such as old age, male gender, and family history of CVDs. The 4 modifiable risk factors of hypertension, diabetes mellitus (DM), smoking history, and hyperlipidemia have been reported as the major

risk factors for the development of CAD and its complications. [7]

The World Health Report also estimated that 78% of the non-communicable disease (NCD) burden and 85% of the cardiovascular burden was borne by the low and middle-income countries including India. [8] A cross-sectional population-based study in a developed country has suggested that participants from most deprived socio-economic areas had unhealthier ultrasound markers of atherosclerosis, [9] suggesting that socio-economically deprived groups share a disproportionately higher share of the disease. A similar socio-economic disadvantage could be expected to exist in India and other developing countries. Atherosclerosis is a multi-factorial disease involving the interplay of genetic and environmental factors. [10] The causation of atherosclerosis in humans is an active area of research that has culminated in the discovery of several new risk factors over the last two decades. These include biochemical factors like lipid peroxidation [11] and socioeconomic deprivation.9 Infectious agents like Helicobacter pylori, Chlamydia pneumoniae and Cytomegalovirus have also been implicated in the causation of coronary heart disease. [12]

The aim of the present study was to study the association of socio- demographic and life-style factors with acute myocardial infarction.

Materials and Methods

A retrospective study conducted in the Department of General Medicine, Jannayak Karpuri Thakur Medical College and Hospital Madhepura, Bihar, India for one year. Sample size was 200 patients. Patients of acute STEMI who were admitted in our ICCU and thrombolysed were included in this study.

Inclusion Criteria

- Patients with acute ST elevation Myocardial Infarction (STEMI)
- Typical rise of cardiac biomarkers either in the form of Creatine Kinase-MB (CKMB) or Tro-ponin.

Exclusion Criteria

- Non Stemi
- History of previous revascularization
- Patients who were already on statin and anti-platelets.

Baseline characteristics like age, sex, clinical history, conventional risk factors, duration of symptoms, type of thrombolytic agent used and coronary angiogram results were analyzed in detail.

Statistical Analysis

The information collected regarding all the selected cases were recorded in a master chart. Data analysis was done with the help of computer by using SPSS 16 software and Sigma Stat 3.5 version (2012). Using this software mean, standard deviation and 'p' value were calculated through Student 't' test, one way ANOVA, Chi square test and correlation coefficient from Pearson correlation and P value of <0.05 was taken as significant.

Results

Table 1: Demographic data

Sex	No. of patients	%
Male	130	65
Female	70	35
Age		
< 30	4	2
31-40	16	8
41-50	40	20
51-60	72	36
61-70	40	20
71-80	20	10
>80	8	4
BMI kg/m^2		
<25	6	3
25-30	144	72
31-35	48	24
>35	2	1

In this study, 65% patients were males and 35% patients were females. In this study, there were 56% patients between 40-60 years. In this study, patients had BMI 3% patients had BMI <25 kg/m2, 72% patients had BMI between 25-30 kg/m2, 24% of the patients had BMI between 30-40 kg/m^2 indicating CAD is more common in overweight patients than obese patients.

Table 2: Type of MI and risk factors

Type of MI	Patients	%
AWMI	118	59
IWMI	78	39
LWMI	4	2%
Risk factors	Present N (%)	Absent N (%)
Diabetes present	136 (68)	64 (32)
Hypertension	90 (45)	110 (55)
Smoking	120 (60)	80 (40)
Depression	20 (10)	180 (90)

In this study 119 (59%) patients had AWMI indicating high prevalence of AWMI in STEMI. 39% patients had inferior wall MI. In our study 32% patients had diabetes indicating Diabetes is one of the most common risk factors. In our study, 45% patients had hypertension indicating it's the one of the common cause for acute coronary syndrome. 60% had habit of smoking. In this study, 20 patients had depression even though it's not a significant factor treating depression lowers the ACS risk.

Table 3: Serum cholesterol, serum Triglyceride, Serum LDL cholesterol and non-HDL cholesterol in acute coronary syndrome

Serum cholesterol	No. of patients	%
<200 mg/dl	120	60%
200-400	72	36%
>400 mg/dl	8	4%
Serum triglyceride (mg/dl)		
<200 mg/dl	30	15%
200-400	144	72%
>400 mg/dl	26	13%
LDL Cholesterol (mg/dl)		
<100	144	72%
100-200	52	26%
>200	4	2%
Non-HDL cholesterol		
<100	44	22%
100-130	44	22%
>130	112	56%

In our study patients only 40% patients had Serum cholesterol more than 200 mg/dl indicating serum cholesterol is not a significant to predict ACS. In this study, 85% patients had TGL more than 200 mg/dl indicating TGL is more correlating with. In this study, 28% patients had LDL more than 100 mg/dl indicating LDL is not a good predictor of ACS. In this study, 56% patients had NON-HDL more than 130 mg/dl indicating NON-HDL is more correlating with ACS.

Discussion

Coronary artery disease (CAD) is one of the most common causes of mortality and morbidity in both developed and developing countries. It is a leading cause of death in India, and its contribution to mortality is rising. [13] According to reports from the National Commission on Macroeconomics and Health, 62 million people in India will have CAD by 2020, with 23 million of these below 40 years of age. [14] The World Health Report also estimated that 78% of the non-communicable disease (NCD) burden and 85% of the cardiovascular burden was borne by the low and middle-income countries including India. [15] A cross-sectional population-based study in a developed country has suggested that participants from most deprived socio-economic areas had unhealthier ultrasound markers of atherosclerosis suggesting that socio-economically deprived groups share a disproportionately higher share of the disease. A similar socio-economic disadvantage could be expected to exist in India and other developing countries. [16]

In this study, 65% patients were males and 35% patients were females. In this study, there were 56% patients between 40-60 years. In this study, patients had BMI 3% patients had BMI <25 kg/m2, 72% patients had BMI between 25-30 kg/m2, 24% of the patients had BMI between 30-40 kg/m2 indicating CAD is more common in overweight patients than obese patients. In this study 119 (59%) patients had AWMI indicating high prevalence of AWMI in STEMI. 39% patients had

inferior wall MI. In our study 32% patients had diabetes indicating Diabetes is one of the most common risk factors. In our study, 45% patients had hypertension indicating it's the one of the common cause for acute coronary syndrome. 60% had habit of smoking. In this study, 20 patients had depression even though it's not a significant factor treating depression lowers the ACS risk. An increasing prevalence of impaired glucose tolerance and diabetes in urban residents of Chennai was reported by Ramchandran et al, in 2002, Gupta et al, showed that smoking and low physical activity levels were widespread in 20–39-year-old urban adults. [17,18] Another important independent risk factor for CAD is a family history of CAD, as reported by Goel et al, in 2003.11 In Jaipur Heart Watch-5 study by Gupta et al, That study found that 46.2% of men and 50.7% of women were overweight or obese. [18]

In our study patients only 40% patients had Serum cholesterol more than 200 mg/dl indicating serum cholesterol is not a significant to predict ACS. In this study, 85% patients had TGL more than 200 mg/dl indicating TGL is more correlating with. In this study, 28% patients had LDL more than 100 mg/dl indicating LDL is not a good predictor of ACS. In this study, 56% patients had NON-HDL more than 130 mg/dl indicating NON-HDL is more correlating with ACS. Similar results were found by a study by Prabhakaran et al19 among men working in an industry in northern India. A high serum total cholesterol/HDL ratio was found in 62% of the population, overweight in 47%, hypertension in 30% and diabetes in 15%. Prabhakaran et al [19], also showed that 47% of their subjects had at least two CAD risk factors, compared with 78.6% with two or more CAD risk factors in the present study. India is experiencing an epidemiological transition with high rates of urbanisation. [20] This has led to economic improvement, the consequences of which are increased fast food consumption and tobacco usage and decreased physical activity. With the introduction of an era of refined foods, sugar and hydrogenated oils, the traditional high complex carbohydrate, high fibre and low fat diet has been replaced by a diet rich in fats and simple sugars low in dietary fibre. [21] More importantly, CAD is affecting young Indians who comprise the productive workforce. The incidence of CAD in young Indians is 12- 16%, which is higher than in other ethnic groups worldwide. Prevention and control of the risk factors for CAD can reduce the rate of CAD. This requires changes in the individual as well as at the community level. Modifying risk factors such as smoking, increased levels of body fat, consuming too much fat and salt, and a sedentary lifestyle together with the use of accessible and affordable preventive medicines, can lower the risk of CAD.

Conclusion

Prevention and control of the risk factors for CAD can reduce the rate of CAD. This requires changes in the individual as well as at the community level. Modifying risk factors such as smoking, increased levels of body fat, consuming too much fat and salt, and a sedentary lifestyle together with the use of accessible and affordable preventive medicines, can lower the risk of CAD. Therefore, there is an immediate need to raise awareness among the general population about these risk factors, promote the correct diet and physical activity, and at the same time develop guidelines for screening and preventive therapeutic programmes to identify and manage individuals at high risk for future CAD.

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