

Implication of risk factors for coronary heart disease**MS Basher¹, ABMM Haque², S Kabir³, MK Khan⁴, MR Hassan⁵, S Akhter⁶****Abstract**

A Case Control study was carried out to identify the risk factors of Coronary Heart Disease (CHD) at Mymensingh Medical College Hospital. As many as 96 patients were selected purposively as cases who were admitted with CHD at Coronary Care Unit, whereas an equal number of age, sex and religion matched controls were selected from patients admitted into Medicine Units during the study period. Data were collected by using pretested interview schedule after obtaining informed verbal consent. The mean age of the cases and controls, were 58.88 years with a Standard Deviation of 10.52 years. A highest number of cases and controls (87-90.62%) were males, while the rest 9 (9.38%) were females. Among cases 27 (28.13%) were illiterate, while of controls, 36 (37.50%) were illiterate. The association of smoking with the development of Coronary Heart Disease was statistically significant ($P<0.05$) with an odds ratio of 2.07. Family history of CHD had a very high statistical significance ($p<0.001$) with odds ratio 3.53. High statistical significance ($p<0.01$) was also observed between Diabetes Mellitus and Coronary Heart Disease with an odds ratio of 3.34. Coronary Heart Disease can be prevented through primordial prevention by hindering the development of baneful behaviours like habit of smoking, chewing betel leaf, use of tobacco and jarda, having fatty diet like meat.

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Introduction

Coronary Heart Disease (CHD), sometimes referred to as coronary artery disease¹, a spectrum of disease, with an imbalance between myocardial oxygen demand and supply.^{2,3} It is a significant global public health problem.⁴ In the past several decades, morbidity and mortality from CHD have increased to an epidemic form worldwide.⁵ It is assuming new epidemic proportions in the Indian subcontinent.⁶ Cardiovascular diseases (CVDs) accounts for the second largest number of non communicable diseases patients after mental illnesses.⁷ At present, the greatest public health challenge is to control epidemics of chronic non-communicable diseases, particularly CVD, CHD, diabetes and stroke.⁸ CHD results in sudden and premature deaths in middle aged productive people, thus hindering the economic progress of a nation, developing country in particular.^{3,7} Incidence of heart disease showing an upward trend primarily due to economic transition in developing countries.⁹ Currently, Indian Subcontinent is experiencing rapid increase of CHD.¹⁰ Various studies have been carried out in Subcontinent immigrants in developed countries¹¹, and locally

in indigenous population.¹² These studies suggest an earlier onset of aggressive coronary artery disease with higher rate of complications afterward. Clustering of risk factors was also commonly found in Asians.¹³ The prevalence of cardiovascular disease is 2 to 3 times higher in the urban population as compared to the rural population.¹⁴ Age, hypertension, family history, dyslipidaemia diabetes mellitus, overweight, obesity, physical inactivity, tobacco use, stress amongst others are the risk factors for CHD.⁶

CHD is not only the leading cause of adult mortality but also common cause of chronic disability. WHO has recommended for the development of national programs for the prevention and control of CHD through examination of the of population risk factors.³ So, epidemiological studies are needed in our country to provide baseline data against which future trends in risk factor levels can be assessed and preventive strategies can be planned. So, it is essential to assess the CHD risk factors in different socioeconomic classes of urban and rural population of Bangladesh. Identification of the risk

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factors will help in preventing the morbidity, disability and mortality resulting from CHD. This study was conducted to assess the risk factors and their strength of association with CHD. Thereby, preventive measures can be taken to avoid untimely deaths and disabilities.

Methodology

This Case control Study was carried out at Mymensingh Medical College Hospital (MMCH), Mymensingh with a view to determine the risk factors of CHD for a duration of ten months from September 2012 to June 2013. Patients with angina pectoris, unstable angina, cardiac arrhythmia, heart failures and myocardial infarction were selected as cases. However, patients with myocardial infarction with complications were not included in the study. Thus Ninety six patients who got admitted at Coronary Care Unit (CCU) during the study period were the Cases. For each case, one control, matched by age, sex and religion was selected from Medicine wards of the same hospital. Data were collected by using pre-tested interview schedule after obtaining verbal consent from the cases and controls. Interview was carried out, for the cases in particular, when the patient became stable enough, preferably before being discharged from the hospital. Collected data were checked for omission, consistency and relevancy. Data were analyzed manually by using scientific calculator. Chi Square test was used for assessing the statistical associations, whereas strength of association was measured by Odds Ratio (OR).

Results

A Case control study was carried out to identify the risk factors of Coronary Heart Disease (CHD) among 96 cases and as many controls. The mean age was 58.88 years with a standard deviation of 10.52 years. At least 39 (40.62%) subjects were within 50 to 59 years. An overwhelming majority 87(90.62%) were males and 9(9.38%) were females

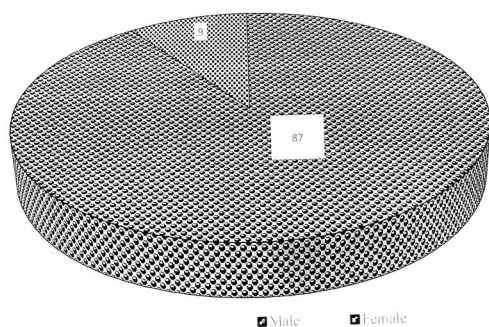


Fig. 1 :Pie diagram showing gender status of cases and controls

(Fig. 1). Religion of 87 (90.62%) cases and controls was Islam, whereas 9 (9.38%) was hinduism. Of cases, 69 and of controls 53 were smokers. The association of smoking with CHD was statistically significant (P<0.05) with an odds ratio of 2.07 (Table 1).

Table I

Cases-Control according to their smoking status

Smoking status	Case(%)	Control(%)
Smoker	69(56.56)	53(43.44)
Non-Smoker	27(38.57)	43(61.43)
Total	96	96

* $\chi^2 = 5.76$; $p < 0.05$

Association between duration of smoking (≤ 10 years and >10 years) with CHD had high statistical significance ($p < 0.001$) with an odds ratio of 3.09. As many as 61 cases and 41 controls chewed betel leaf. The association between betel leaf chewing and CHD was statistically significant ($p < 0.01$) (Table II) with an odds ratio of 2.34.

Table II

Cases and controls by their habit of betel leaf chewing

Betel Leaf Chewing Habit	Case(%)	Control(%)
Present	61(59.80)	41(40.20)
Absent	35(38.89)	55(61.11)
Total	96	96

* $\chi^2 = 8.36$; $p < 0.01$

Moreover, the association between duration of betel leaf chewing (<10 years and >10 years) and development of CHD had very high statistical significance ($p < 0.001$) with an odds ratio of 2.63.

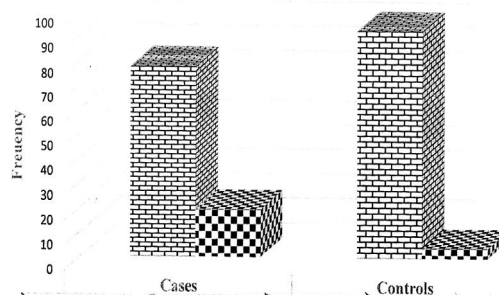


Fig. 2 : Multiple Bar diagram showing status of eating meat by cases and control

In addition, very high statistical significance ($p < 0.001$) was established between CHD and having betel leaf with tobacco and jarda with an odds ratio of 2.86. Association between having

meat and CHD was highly significant ($p < 0.001$) (Fig.2). Fifty four cases and 26 controls were hypertensive. A very high statistical significance ($p < 0.001$) was revealed between hypertension and CHD with an odds ratio of 3.46. Association between Diabetes Mellitus and CHD had high statistical significance ($p < 0.01$) with an odds ratio of 3.34. Association of physical exercise and use of hormonal contraceptives with CHD could not be established ($p > 0.05$). This might be due to not considering physical activities as physical exercise

Table III

Cases and controls by their family history of CHD

Family History of CHD	Case (%)	Control (%)
Present	36 (37.50)	15 (15.62)
Absent	60 (62.50)	81 (84.38)
Total	96	96

* $\chi^2 = 11.76$; $p < 0.001$

by the subjects, and relatively small number of females having hormonal contraceptives. Thirty six (37.50%) cases and 15(15.62%) controls had family history of CHD. High statistical association ($p < 0.01$) was observed between family history of CHD and development of coronary heart disease with an odds ratio of 3.53 (Table III). However, association of family history of Diabetes Mellitus (DM) with CHD was statistically insignificant ($p > 0.05$).

Discussion

A Case Control study was carried out in Coronary Care Unit (CCU) and Medicine wards of Mymensingh Medical College Hospital (MMCH), Mymensingh for duration of ten months to identify the risk factors of Coronary Heart Disease (CHD). The mean age of the cases and controls were 58.88 years with a standard deviation of 10.52 years. Khan RJ et al. in their study with respect to assess association between obesity and CHD revealed that mean age was 53.1 ± 8.3 years for men, while $51.9 (\pm 8.4)$ years for women.¹⁵ This is inconsistent with the study findings that might be due to small sample size. A highest number of cases and controls 87 (90.62%) were male and 9 (9.38%) were female. A highest number of cases and controls 87 (90.62%) were Muslims, while 9 (9.38%) were Hindus. Among cases, 27 (28.13%) were illiterate, while the rest 69 (71.87%) were literate. On the other hand, of controls, 36 (37.50%) were illiterate, while 60 (62.50%) were literate. Smoking with its duration, betel leaf chewing with tobacco and jarda, history of

comorbidities, like hypertension and diabetes mellitus, taking meat, and family history of CHD and diabetes mellitus were statistically associated with the development of Coronary Heart Disease (CHD). However, the association between family history of diabetes mellitus, taking physical exercise, use of hormonal contraceptive with the development of Coronary Heart Disease (CHD) were statistically insignificant ($p > 0.05$). The association between hypertension with the development of Coronary Heart Disease (CHD) had very high significance ($p < 0.001$) with odds ratio 3.46. Pais prem et al. in their studies observed that hypertension as an independent, risk factor for CHD with odds ratio 2.69 which is more or less consistent with the study findings.¹⁶ The association between family history of coronary heart disease (CHD) with the development of CHD was highly significant ($p < 0.001$) with odds ratio 3.53. NaZeer M et al. in their study revealed an odds ratio of 2.3 with family history of Coronary Artery Disease (CAD) with occurrence of CHD, which is more or less consistent with the study findings.¹⁷ Yusuf S et al. in their studies observed an odds ratio of 1.55 in relation to family history of CHD with the occurrence of CHD a bit low in comparison to the study findings.¹⁸

Conclusion

Life style factors such as smoking, betel leaf chewing, use of tobacco and jarda, having fatty diet like meat, co morbidities like hypertension and diabetes mellitus, and family history of coronary heart disease are the identified risk factors of coronary heart disease. CHD can be ward off through behaviour changes, avoidance of developing harmful life styles and the prevention of getting hypertension and diabetes mellitus.

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