IJMRP

Original Research Article.

Analysis of Prevalence of Various Cardiovascular Risk Factors among Siblings: An Institutional Based Study

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ABSTRACT

Background: Coronary heart disease (CHD) is a major cause of mortality and morbidity worldwide. The burgeoning burden of CHD in India can be explained by the alarming rise in the prevalence of coronary risk factors like diabetes, hypertension, atherogenic dyslipidaemia, smoking, central obesity and physical inactivity. Hence; the present study was planned for assessing the prevalence of various cardiovascular risk factors among siblings.

Materials & Methods: The study was conducted among the patients reporting to OPD for routine medical check-up, admitted in ward or in emergency and their sibling over a period of 1 year. A total of 50 pairs of siblings were included in the present study. Detailed history including history of hypertension, diabetes mellitus, dyslipidaemia, smoking and alcohol intake was taken. Blood investigations of all the subjects were carried out for obtaining the lipid profile and other haematological parameters.

Results: Non-significant results were obtained while comparing the residence type among the CAD patients and their siblings. Significant results were obtained while comparing the smoking habit, stress, raised blood pressure and dyslipidemia among CAD patients and their siblings.

Conclusion: Various socio behavioral habits were considerably high in CAD patient in comparison to theirs healthy sibling. Therefore; for preventing CAD these factors should be controlled.

Key words: Cardiovascular, Risk factors, Sibling.

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Access this article online	
Website: www.ijmrp.com	**Quick Response code**
DOI: 10.21276/ijmrp.2018.4.6.068	

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; it typically occurs when there is an imbalance between myocardial oxygen supply and demand.[1, 2]

Non communicable diseases like cardio vascular disorders, cancer, respiratory disorders and diabetes constitute 38 million (68%) of all the deaths globally and to about 5.87 million (60%) of all deaths in India. Coronary heart disease (CHD) is a major cause of mortality and morbidity worldwide. The burgeoning burden of CHD in India can be explained by the alarming rise in the prevalence of coronary risk factors like diabetes, hypertension, atherogenic dyslipidaemia, smoking, central obesity and physical inactivity. Rapid urbanization and change in lifestyle that occurred during the past two decades have led to the growing burden of coronary risk factors in India.[3- 5]

Due to several genetic and environmental factors population, first degree relatives of patients with coronary heart disease have a significant higher risk of getting cardiovascular events.[6, 7] Under the light of above mentioned data, the present study was planned for assessing the prevalence of various cardiovascular risk factors among siblings.

MATERIALS & METHODS

The present study was conducted in the Department of General Medicine, Rama Medical College Hospital & Research Centre, Hapur, Uttar Pradesh (India) and it included assessment of prevalence of various cardiovascular risk factors among siblings. Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. The study was conducted among the

patients with coronary heart disease attending OPD, admitted in ward or in emergency and their sibling over a period of one year. A total of 50 pairs of siblings were included in the present study.

Inclusion Criteria
1) Patients within the age group of 20 to 60 years
2) Patients of either gender
3) Patients and their siblings without without known coronary heart disease.

Detailed history including history of hypertension, diabetes mellitus, dyslipidaemia, smoking and alcohol intake was taken. Patients with smoking habit were categorized into the following groups based on criteria described previously in literature: Non-smokers and smokers.[8] Blood investigations of all the subjects were carried out for obtaining the lipid profile and other haematological parameters. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

Table 1: Age-wise distribution of patients

Age group (years)	n
< 30	2
30-40	12
41-50	40
51-60	46
Total	100

Table 2: Comparison of residence type among CAD patients and their siblings

Residence	Patient	Sibling	p- value
Rural	15	18	0.40
Urban	35	32	

Table 3: Smoking as a risk factor

Smoking	CAD patients	Siblings	p- value
No	32	48	0.00
Yes	18	2	

Table 4: Stress as a risk factor

Stress	CAD patients	Siblings	p- value
No	26	45	0.00
Yes	24	5	

Table 5: Raised Blood pressure as a risk factor

Raised blood pressure	CAD patients	Siblings	p- value
No	20	44	0.00
Yes	30	6	

Table 6: Dyslipidemia as a risk factor

Dyslipidemia	CAD patients	Siblings	p- value
No	15	42	0.00
Yes	35	8	

RESULTS

The present study was conducted among 50 CAD patients and their siblings. Therefore, the total samples size of the present study was 100 (50 sibling pairs). In the present study, among the 100 subjects, 40 subjects were between the age group of 41 to 50 years, while 46 subjects were between the age group of 51 to 60 years. Out of 50 CAD patients 35 had urban and 15 had rural residence. Out of 50 siblings, 32 had urban and 18 had rural residence. Non-significant results were obtained while comparing the residence type among the CAD patients and their siblings. Out of 50 CAD patients, 18 were smokers and out of 50 siblings, only 2 were smokers. Significant results were obtained while comparing the smoking habit among CAD patients and their siblings. Stress was present among 24 CAD patients while it was present in 5 CAD patients. Significant results were obtained while comparing the presence of stress as a risk factor for CAD. Raised blood pressure was present in 30 CAD patients while it was present in 6 siblings. Significant results were obtained while comparing the presence of raised blood pressure as a risk factor for CAD. Dyslipidemia was present in 35 CAD patients while it was present in 8 siblings. Significant results were obtained while comparing the presence of dyslipidemia as a risk factor for CAD.

DISCUSSION

In high income countries, cardiovascular disease (CVD) risk factors are generally more prevalent among adults with lower socioeconomic position (SEP). A substantial proportion of the inverse associations between SEP and CVD are driven by the higher prevalence of CVD risk factors by lower SEP.[9, 10]

The present study was conducted among 50 CAD patients and their siblings. Therefore, the total samples size of the present study was 100 (50 sibling pairs). In the present study, among the 100 subjects, 40 subjects were between the age group of 41 to 50 years, while 46 subjects were between the age group of 51 to 60 years. Childhood SEP, usually indicated by parental level of education or occupational class, is associated with adult CVD risk factors in several populations. Proposed mechanisms for this association include both biological factors such as poor maternal nutrition and health, intrauterine growth retardation, poor growth in early childhood, obesity in adolescence and repeated childhood infections, and include also environmental factors such as health behaviour and psychosocial factors in the family and surroundings. CVD risk factors might track from childhood to adulthood, but are also modifiable in adult age. Body height, in contrast, is a stable trait through adult life.[7, 8]

In the present study, out of 50 CAD patients 35 had urban and 15 had rural residence. Out of 50 siblings, 32 had urban and 18 had rural residence. Non-significant results were obtained while comparing the residence type among the CAD patients and their siblings. Out of 50 CAD patients, 18 were smokers and out of 50 siblings, only 2 were smokers. Significant results were obtained while comparing the smoking habit among CAD patients and their siblings. Stress was present among 24 CAD patients while it was present in 5 CAD patients. Significant results were obtained while comparing the presence of stress as a risk factor for CAD. Family history of cardiovascular disease (CVD) has been shown to be a risk factor for the subsequent development of disease, and a potential screening tool to identify individuals with increased risk who may be candidates for enhanced prevention strategies. In the

elderly, parental medical history may be difficult to obtain or is often inaccurate, and a positive sibling history of CVD is a stronger independent predictor of incident cardiovascular events than parental history. Siblings' health history has been proposed as a marker to stratify populations for genetic research.[11, 12]

In the present study, raised blood pressure was present in 30 CAD patients while it was present in 6 siblings. Significant results were obtained while comparing the presence of raised blood pressure as a risk factor for CAD. Dyslipidemia was present in 35 CAD patients while it was present in 8 siblings. Significant results were obtained while comparing the presence of dyslipidemia as a risk factor for CAD. Murabito JM et al determined, using validated events, whether sibling CVD predicts outcome in middle-aged adults independent of other risk factors. Participants (n = 2475) were members of the offspring cohort aged 30 years or older, free of CVD, and with at least 1 sibling in the study; all were followed up for 8 years. A secondary analysis restricted to offspring with both parents in the study assessed the joint impact of parental and sibling CVD occurrence. Among 973 person-examinations in the sibling CVD group (mean age, 57 years) and 4506 person-examinations in the no sibling CVD group (mean age, 47 years), 329 CVD events occurred during follow-up. Baseline risk factors were more prevalent in the sibling CVD group compared with the no sibling CVD group. Sibling CVD was associated with a significantly increased risk for incident CVD. Adjustment for risk factors did not substantially attenuate the risk. In the analysis restricted to persons with both parents in the study, in models adjusting for both sibling and parental CVD, the multivariable-adjusted OR for sibling CVD exceeded that for parental CVD. Using validated events, sibling CVD conferred increased risk of future CVD events above and beyond established risk factors and parental CVD in middle-aged adults.[10]

Recent national survey data document that adults believe family history information is important to their health, but few have systematically collected this information from relatives. Risk estimates for sibling history may also be inflated due to confounding such as that caused by the sharing of higher risk factor levels by siblings of persons with CVD. Associations between reported sibling history and subclinical CVD are attenuated when adjusted for CVD risk factors.[11, 12]

CONCLUSION
Under the light of above obtained data, the authors conclude that various socio behavioral habits were considerably high in CAD patient in comparison to theirs healthy sibling. Therefore; for preventing CAD these factors should be controlled. However; further studies are recommended.

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