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ORIGINAL PAPER

Prevalence of risk factors of coronary heart disease amongst MBBS students of Gauhati Medical College

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ABSTRACT

***Background:** In India, CHD has been increasing over the couple of years. Early identification and intervention can prevent the occurrence of CHD in later life. MBBS students representing the late adolescence may be more prone to risk factors of CHD due to their stressful lifestyle. **Objectives:** To study the prevalence of risk factors associated with CHD along with its Socio-demographic correlates. **Methods:** A cross-sectional, institution-based study was conducted among MBBS students of GMC, Guwahati, Assam from 1st Feb 2018 to 30th March 2018. A total of 400 students were taken for this purpose. The data were collected using predesigned and pretested schedule. Both interview and observation techniques were used for collecting information. DASS 21 questionnaire was used for assessing stress, depression and anxiety. The data were analyzed and association was tested using Chi-square test. **Result:** Anxiety and depression were seen in 71.75% and 62% respectively.The physical activity was inadequate. Physical activity was significantly associated with gender, residence and socio-economic status. Use of alcohol was associated with gender, and residence. Smoking was associated with age, gender, residence and socio-economic scale. Conclusion: This study on MBBS students clearly revealed the high prevalence of risk factors of CHD.*

***Keywords:** CHD, DASS scale, physical activity, risk factors.*

INTRODUCTION

Coronary Heart Diseases (CHD) are epidemic in south Asian countries. Over the past two decades, burgeoning mortality rate in India was observed in the prevalence of CHD. In India, from CHD, increasing trends in years of life lost (YLLs) and disability-adjusted life years (DALYs) are also highlighted by the World Health Organization (WHO) and Global Burden of Disease Study.[1]diabetes, hypertension, smoking, abdominal obesity, psychosocial stress, unhealthy diet, and physical inactivity are also reported to be an important risk factors for CHD in India by various case-control studies.[1,2] However, no previous studies examined the prevalence of risk factors of Coronary Heart Disease (CHD) among MBBS students of Gauhati Medical College (GMC), Guwahati, Assam. MBBS curriculum being a vast and hectic one, in spite of the knowledge about the CHD, many students acquires some of the risk factors of CHD. Early interventions are crucial for the prevention of CHD in later part of life.

So the present study has been conducted among the MBBS students with the following objectives: (1) To study the prevalence of risk factors associated with CHD and (2) To study the relationship of different risk factors with socio-demographic correlates.

METHODS

A cross-sectional, institution-based study was conducted among MBBS students of GMC, Guwahati from 1st Feb 2018 to 30th March 2018. Informed consent was obtained from all the participants. Due to non-availability of sufficient data on prevalence of risk factors in young adults, sample size was calculated considering p = 0.5.[3] Taking allowable error as 10%, the sample size was calculated as 400 by applying the formula of $4PQ/L^2$. From each semester, equal number of students (44) who were willing to participate in the study was included. Only in the last semester 48 students were included to meet the required sample size. The attendance register for each semester was considered as sampling frame

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and the students were selected randomly by lottery method. Known or diagnosed cases of heart disease were excluded, in this case the next roll number has been included. Body Mass Index (BMI) as per WHO Guidelines was used for assessing obesity.[4,5,6] Further, physical activity was measured using International Physical Activity Questionnaire (IPAQ).[7,8] Alcohol intake was measured using Alcohol Use Disorders Identification Test (*AUDIT*) questionnaire.[9,10] Classification of smoking status was done as per Centers for Disease Control and Prevention (CDC) guidelines.[11,12] To see the relationship between smoking, BMI, alcohol and physical activity with socio-demographic correlates only current smokers, BMI>25, low alcohol users and low physical activity has been considered. Operational definitions were made for classifying individuals based on type of diet. Those who have been taking vegetarian diet for the last 6 months were considered vegetarian and vice versa. DASS 21 was used for measuring stress, anxiety and depression.To measure symptoms of depression, anxiety and stress in both clinical and non-clinical samples of adults, DASS-21 is a well-established instrument.[13,14,15] A predesigned and pretested schedule was used to collect the information. Association

Table 1 Prevalence of risk factors of CHD

RISK FACTORS	TOTAL (N=400)	
	No.	%
SMOKERS		
NEVER SMOKERS	348	87
FORMER SMOKERS	14	3.5
CURRENT SMOKERS	38	9.5
ALCOHOL INTAKE		
LOW	360	90
MEDIUM	24	6
HIGH	12	3
ADDICTION	4	1
PHYSICAL ACTIVITY		
LOW	94	23.5
MODERATE	196	49
HIGH	110	27.5
BMI		
UNDERWEIGHT	36	9
NORMAL	288	72
OBESITY	10	2.5
OVERWEIGHT	66	16.5
DIET		
NON-VEG	376	94
VEG	24	6
EXTRA SALT INTAKE		
NO	328	82
YES	72	18
STRESS		
ABSENT	219	54.75
PRESENT	181	45.25
ANXIETY		
ABSENT	113	28.25
PRESENT	287	71.75
DEPRESSION		
ABSENT	152	38
PRESENT	248	62

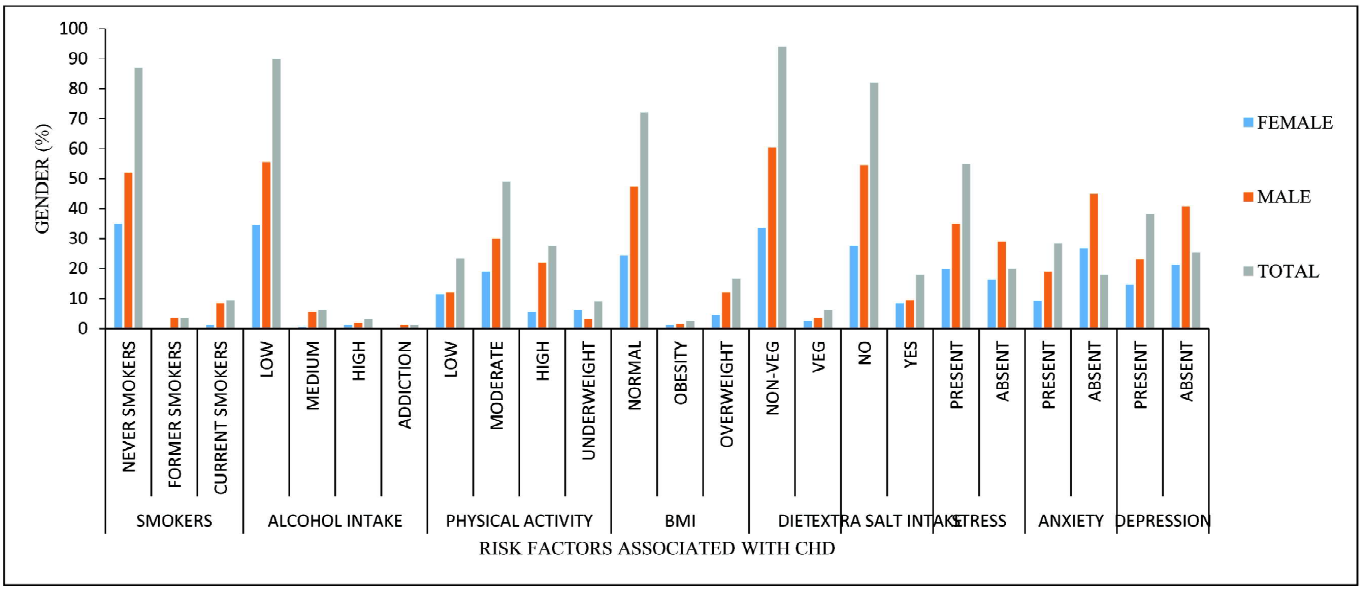

Figure 1 Prevalence and association of risk factors associated with gender

between different variables of risk factors of CHD with socio-demographic was studied. The data were analyzed by using excel, instatgraphpad and SPSS version 25 software. All comparisons were considered significant at $p<0.05$.Informed consent was taken from each participant. Permission from the Institutional ethics committee was obtained.

Table 2 Association of lifestyle related risk factors with socio-demographic correlates

SOCIO-DEMOGRAPHIC CORRELATES	PHYSICAL ACTIVITY		Chi-square	ALCOHOLIC	NON-ALCOHOLIC	Chi-square	SMOKER	NON-SMOKER	Chi-square
	INADEQUATE n=94	ADEQUATE n=306		n=40	n=360		n=38	n=362	
	No.(%)	No.(%)	*p*-value	No.(%)	No.(%)	*p*-value	No.(%)	No.(%)	*p*-value
AGE									
19-20 YEARS	22(5.5)	88(22)	0.9005	14(3.5)	96(24)	0.862	12(3)	98(24.5)	**0.0371***
21-22 YEARS	68(17)	186(46.5)		20(5)	234(58.5)		14(3.5)	240(60)	
23-24 YEARS	4(1)	32(8)		6(1.5)	30(7.5)		12(3)	24(6)	
GENDER									
MALE	48(12)	208(52)	**0.003***	6(1.5)	138(34.5)	**0.004***	4(1)	140(35)	**0.001***
FEMALE	46(11.5)	98(24.5)		34(8.5)	222(55.5)		34(8.5)	222(55.5)	
RELIGION									
CHRISTIAN	6(1.5)	24(6)	0.003	4(1)	26(6.5)	0.794	4(1)	26(6.5)	0.554
HINDU	68(17)	212(53)		28(7)	252(63)		26(6.5)	254(63.5)	
MUSLIM	16(4)	60(15)		6(1.5)	70(17.5)		8(2)	68(17)	
OTHERS	4(1)	10(2.5)		2(0.5)	12(3)		-	14(3.5)	
RESIDENCE									
HOME	34(8.5)	98(24.5)	**0.017***	2(0.5)	130(32.5)	**0.000***	4(1)	128(32)	**0.001***
HOSTEL	50(12.5)	128(32)		26(6.5)	152(38)		26(6.5)	152(38)	
OTHERS	4(1)	30(7.5)		8(2)	26(6.5)		6(1.5)	28(7)	
PAYING GUEST	6(1.5)	50(12.5)		4(1)	52(13)		2(0.5)	54(13.5)	
MODIFIED KUPPUSAMY SCALE									
LOWER MIDDLE	4(1)	24(6)	**0.012***	6(1.5)	22(5.5)	0.139	6(1.5)	22(5.5)	**0.023***
UPPER LOWER	-	6(1.5)		-	6(1.5)		2(0.5)	4(1)	
UPPER MIDDLE	60(15)	222(55.5)		28(7)	254(63.5)		22(5.5)	260(65)	
UPPER	30(7.5)	54(13.5)		6(1.5)	78(19.5)		8(2)	76(19)	

Table 3 Association of stress, anxiety and depression with socio-demographic correlates and other risk factors of CHD

VARIABLES	STRESS		Chi-square	ANXIETY		Chi-square	DEPRESSION		Chi-square
	PRESENT	ABSENT		PRESENT	ABSENT		PRESENT	ABSENT	
	No.(%)	No.(%)	*p*-value	No.(%)	No.(%)	*p*-value	No.(%)	No.(%)	*p*-value
AGE (YEARS)									
19-20	53(13.5)	57(14.25)	0.578	80(20)	30(7.5)	0.958	74(18.5)	36(9)	0.111
21-22	110(27.5)	144(36)		181(45.25)	73(18.25)		148(37)	106(26.5)	
23-24	18(4.5)	18(4.5)		26(6.5)	10(2.5)		26(6.5)	10(2.5)	
GENDER									
MALE	142(35.5)	114(28.5)	0.7	76(19)	180(45)	0.395	98(24.5)	158(39.5)	0.877
FEMALE	77(19.25)	67(16.75)		37(9.25)	107(26.75)		54(13.5)	90(22.5)	
RESIDENCE									
HOME	59(14.75)	73(18.25)	0.272	89(22.25)	43(10.75)	0.354	76(19)	56(14)	**0.010***
HOSTEL	81(20.25)	97(24.25)		130(32.5)	48(12)		107(26.75)	71(17.75)	
OTHERS	20(5)	14(3.5)		28(7)	6(1.5)		30(7.5)	4(1)	
PAYING GUEST	21(5.25)	35(8.75)		40(10)	16(4)		35(8.75)	21(5.25)	
SMOKING									
NON-SMOKER	160(40)	202(50.5)	0.192	256(64)	106(26.5)	0.157	219(54.75)	143(35.75)	0.056
SMOKER	21(5.25)	17(4.25)		31(7.75)	7(1.75)		29(7.25)	9(2.25)	
ALCOHOL INTAKE									
ALCOHOLIC	20(5)	20(5)	0.525	27(6.75)	13(3.25)	0.529	30(7.5)	10(2.5)	0.074
NON-ALCOHOLIC	161(40.25)	199(49.75)		260(65)	100(25)		218(54.5)	142(35.5)	

PHYSICAL ACTIVITY									
INADEQUATE	41(10.25)	53(13.25)	0.716	70(17.5)	24(6)	0.503	49(12.25)	45(11.25)	**0.024***
ADEQUATE	140(35)	166(41.5)		217(54.25)	89(22.25)		199(49.75)	107(26.75)	
BMI									
BMI>25	34(8.5)	42(10.5)	0.92	54(13.5)	22(5.5)	0.881	46(11.5)	30(7.5)	0.769
BMI≤25	147(36.75)	177(44.25)		233(58.25)	91(22.75)		202(50.5)	122(30.5)	
TYPE OF DIET									
NON-VEGETARIAN	171(42.75)	205(51.25)	0.716	273(68.25)	103(25.75)	0.132	235(58.75)	141(35.25)	0.415
VEGETARIAN	10(2.5)	14(3.5)		14(3.5)	10(2.5)		13(3.25)	11(2.75)	

RESULT

Out of the total of 400 study subjects, 54% were males.Majority (63.5%) belong to the age group of 21-22 years.

Table 1 Revealed that out of the 400 students, 52(13%) was found to be smokers either former or current. Almost all the participants were found to using alcohol in different quantity. However majority (90%) were found to be low alcohol users. Majority of the overweight subjects were males.

While seeking the association between different risk factors with socio demographic variables, in table 2,a statistical significant association was seen between physical activity, alcohol and smoking with gender. Physical activity was significantly associated with residence and socio-economic scale. Alcohol was significantly associated with residence. Smoking was found to be significantly associated with age, residence and socio-economic scale**.**

Table 3 Revealed that there was statistically significant association between residence and physical activity with depression.

DISCUSSION

High prevalence of smoking was observed in male students which was in conformity with another study done on Asian population.[16] Smoking was seen more with higher prevalence above the age of 21 years is in conformity with other report.[12] The current finding of more alcohol use among males is consistent with other studies.[17]

A comparatively high prevalence (23.5%) of low physical activity in the present study is in consistent with other study.[18] A significant association of physical activity with gender, socio-economic class and residence is an important observation in which there is great scope for intervention. The significant relationship between place of residence and physical activity could be attributed to the fact that those who reside in hostel may have less physical activity compared to those who reside in home.Though high prevalence of physical inactivity seen in this study. it is found to be comparatively lower than Pinto BM *et al*. study.Low physical activity has been identified as major risk factor for overweight and obesity.[19,20]

It was found that approximately one-fifth of the study population had a BMI >25 kg/m2 (19%), in which males were comparatively higher than females.It may be due to lesser time spend in outdoor games, sports and inappropriate diet intake. The prevalence of overweight and obesity in this study was found to be slightly less than the prevalence found in the study Huang TT *et al.*[21] Lower prevalence of obesity in the present study may be due to the study population (Medical students).An immediate intervention which include health promotional activities is crucial among the medical students.Provision of outdoor or games facilities and encouragement for the same is necessary.

High prevalence of stress, anxiety and depression among the study population could be due to the hectic schedule of medical school. The stress, anxiety and depression has been found to be major risk factor for CHD.[22,23,24] The finding of high prevalence of stress and anxiety were also reported among medical students in Vaidya *et al*. But the prevalence of depression was found to be higher in our study which was in contrast to Vaidya *et al*. study.[22] It clearly indicates that depression were found to be increasing in the MBBS students which may be due to change in the lifestyle and less time spent in the physical activities.

Limitation: All the risk factors associated with CHD were not considered for the study. Due to lack of resources the biochemical parameters were not taken into account for this study.

CONCLUSION

The prevalence of risk factors associated with CHD were found to be high in study population. Considering high prevalence of stress, anxiety and depression, a thorough and indepth evaluation along with some interventions for improving the issues in mental health is the need of the hour. However a qualitative research will answer many potential factors for such a high prevalence among group who are supposed to know the risk factors. This is crucial in regard early identification and intervention to prevent occurrence of CHD in the later life.

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