Cardiovascular risk profile of the undergraduate medical students in a Medical College, Chennai - A cross sectional study

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Abstract

Introduction: Chronic non-communicable diseases especially cardiovascular diseases are assuming great importance among the world population because of the upward surge in their prevalence. In view of this, this study was initiated to study the cardiovascular risk behaviour of the most vulnerable group- the students.

Objective: To ascertain the cardiovascular risk profile of the undergraduate students studying in a medical college, Chennai

Materials and Method: This is a descriptive, cross sectional study conducted among the undergraduate medical students studying in a private medical college in Chennai. Cardiovascular risk profile was assessed by getting information about their food habits, physical activity, tobacco and alcohol consumption and BMI. Data was collected after getting informed consent using a pre tested, structured self administered questionnaire.

Results: Out of the 298 participants, 153 were females and 145 were male students with a mean age of 20.68±0.88 years. It was seen that 93 (31.2%) of the study population had poor diet habits as per the ICMR recommended dietary guidelines. 194 (65%) lead sedentary life style, 37 (12.4%) smoked, 40 (13%) had positive alcohol history, and 203 (68%) had poor night sleep. The sedentary life style, poor physical activity and poor night sleep was significantly higher among the females. The mean height and weight of the study group were 162.94±8.33cms and 59.47±10.54kilograms respectively. It was seen that 30% of the study group had BMI more than the cut off BMI for Asians.

Conclusion: Modifiable cardiovascular risk behaviours are widely prevalent among medical students and more among the female medical students. Promotions of supportive environment for strengthening student-based approaches are essential to target these risk behaviours among our future doctors.

Keywords: Risk profile, Undergraduate Medical students, Cross sectional study.

Introduction

Chronic non-communicable diseases are assuming great importance among the world population in both developed and developing countries with their prevalence showing an upward trend. South Asians are at unusually high risk for developing coronary artery disease (CAD)[1] and diabetes.[2] The age of onset of Coronary artery disease among the south Asians is also found to be a decade earlier than their western counterparts.[3] The important reason being the change in the life style and behavioural patterns of the people which favours the early onset of chronic diseases.[4] The development of atherosclerosis the main culprit for the cardiovascular diseases is also a continuum in which the vessel passes from a healthy state, through an intermediate stage that is influenced by modifiable and non modifiable risk factors, until it reaches the clinical stage. This is the main reason for accumulated cardiovascular disease risk throughout a man's life. Risk exposure begins with influences during pregnancy and continues into childhood, adolescence and adulthood. Coronary artery disease and diabetes are preceded by constellation of risk factors which include abdominal obesity, hypertension, dyslipidaemia, pre diabetes and sedentary lifestyle as shown in various epidemiological and observational studies.[5-7] The more the risk factors an individual presents with, the greater the overall risk of cardiovascular disease.[8] The accurate estimation of risks to future disease event is therefore critical to the determination of the most cost effective means of preventive and curative Therapies.[9] Nevertheless, strategies for CVD prevention are designed mainly for patients and high-risk individuals, particularly middle-aged and elderly adults. Furthermore, the most common approach has been based on the individual and on medication. Favourable levels of all major cardiovascular risk factors and/or a healthy lifestyle at younger ages may encompass not only lower age, specific mortality, greater longevity and substantially lower health care costs but also higher quality of life with less illness in older ages.[10] It is believed that as individuals continue to modify their lifestyle, and maintain an interest in personal health, incidence of coronary heart disease may continue to decrease.[11] In view of this, the importance of studying the risk behaviour of the students was realised which initiated this study.

Objectives

To ascertain the cardiovascular risk profile of the undergraduate students studying in a medical college, Chennai and to find out the factors associated with it.

Materials and Method

This is a descriptive, cross sectional study conducted among the undergraduate medical students studying in a private medical college in Chennai from January to June 2016. Approval of Institutional ethical committee was obtained before the start of the study. All the undergraduate medical students of the ongoing 2nd, 4th and 6th semesters during the study period were involved in the study. Those students with pre diagnosed cardio vascular illness were excluded. Data was collected after getting informed consent using a pre tested, structured, self administered questionnaire.

Data of each participant covered the following:

1. Socio demographic details, medical history, relevant family medical history, dietary habits, physical activity and Smoking and alcohol consumption in the past 1month and fruit, vegetable consumption, Salt intake, Fish intake, Junk food/ carbonated drink consumption in the past one week was enquired. **Physical activity**: 30minutes of moderate intensity physical activity in most days of the week was classified as active, the rest were taken as inactive.

2. Anthropometric measurements and Blood pressure: Participants' heights and weights measured using standard measures. Weight was measured using a beam balance, to the nearest 0.1 kg and height to the nearest centimeter, using a tape stuck to the wall. BMI was calculated with these measurements using Quetlet index (Weight Kg / Height M^2). BMI of 18.5 to 22.9 BMI is normal, 23 to 24.9 is considered as overweight and BMI of ≥ 25 is considered as obesity.[12,13] Waist circumference was also calculated and normal values taken for waist circumference was <90 cm for men and <80 cm for women.[13]

Blood pressure: Blood pressure taken after about ten minutes of quiet sitting using the mercury sphygmomanometer. Two measurements taken 10-15mins apart and the average value was used as the mean blood pressure.

Statistical analysis: SPSS version 16 is used for analysis. Descriptive statistics of mean, percentage, graphs and bar charts are used to describe data obtained. Inferential statistics including independent t-test was used to compare the risk profiles of male and female participants Significance was set at p<0.05 level.

Results

Demographic details: During the study period there were 87 students in the 6th semester, 99 in 4th semester and 112 in the first year of MBBS, making a total of 298 students. None among them had any pre diagnosed cardiac illness, hence we had included all the students for our study. Among them, 153 were females and 145 were male students with a mean age of 20.68±0.88 years. 169 students were hostellers and 129 were day scholars. 16% of the study participants hailed from village and the majority of them were city breeders (44%).

Dietary habits: 87% of the study participants consume both vegetarian and non vegetarian food stuffs. Based on the ICMR recommended dietary guidelines the dietary risk profile of the study group was assessed[14]. 84% of the study population were consuming the recommended 9-12 serving of cereals. But it was seen that only 12 % of the students were taking 3 servings of vegetable and only 34 % students were consuming the minimum recommended pulse serving of 2-3(Table 1).

Table 1: Gender wise distribution of dietary habits of the study participants

	Rice 9-12servings (%)	Pulse 2-3serving (%)	Vegetables minimum 3servings (%)	Fruits atleast 1serving (%)
Female	123(80.4)	62(40.5)	25(16.3)	33(21.5)
Male	127(87.5)	40(27.5)	11(7.5)	27(18.6)

Poor food habits of frequent consumption of junk food and carbonated drinks were seen in 48% and 31%of students respectively. Also 18% students were taking more than 3 servings of animal food per day which is clearly more than the ICMR recommendation.[14] It was seen that 93 (31.2%) of the study population had poor diet habits as per the ICMR recommended dietary guidelines.[14]

There was no significant difference between the male and the female study population in terms of their dietary habits (p>0.05).

Physical activity: Physical activity for at least 30 min/day for 5 or more days was reported by 35% students, while occasional or nil physical activity was reported by 65% students. 94 (65%) lead sedentary life style, 37 (12.4%) smoked, 40 (13%) had positive alcohol history, and 203 (68%) had poor night sleep. About 31.5% students reported spending more than 4 hr in sedentary activities on a typical day. Number of students who were inactive in past week and those spending more hours in sedentary activities were more among the female students when compared to the male students as shown in table 2. And it was found to be statistically significant.

Table 2: Gender wise distribution of physical activity among study participants

		Female N=153	Male N=145	P value
Physical activity	Yes	41	63	0.023*
	No	112	82	
Sedentary lifestyle	Yes	53	41	0.036*
	No	100	104	
Recreational activities	Yes	113	121	0.127
	No	40	24	
Night Sleep satisfaction	Yes	55	118	0.042*
	No	98	27	

Physical characteristics: The mean height and weight of the study group were 162.94±8.33cms and 59.47±10.54kilograms respectively. It was seen that 30% of the study group had BMI more than the cut off BMI for Asians.[13] And there was no statistically significant difference in BMI between the male and female students.(Table 3)

Table 3: Distribution of anthropometric measurements and blood pressure among study participants

		Mean ±S.D					
		Weight (kg)	Height (cms)	BMI	SBP	DBP	Waist circumference (cms)
Total population N=298		59.47±10.54	162.94±8.33	23.8±4.57	112.7±9.6	74.5±5.7	101.67±5.66
Sex	Male N=145	71.2±7.9	172.1±8.1	23.4±5.7	124.12±10.6	80.23±7.4	109.4±9.89
	Female N=153	57.6±5.5	160.2±10.1	23.89±6.2	112.45±8.76	74.5±7.91	94.3±7.7

Discussion

Currently in India deaths due to CVD occur at least a decade earlier than in developed countries. Understanding this upward surge of CVD in young adult, a cross sectional study of cardiovascular risk factor profile of 298 medical undergraduates of private medical college in Chennai was conducted.

In our study males were more physically active than females. The observed gender differences in physical activity were also reported in adolescents by Akil et al[15] from Delhi. About 65% spend sedentary life style could be attributed to laziness, lack of time and exhaustion from academic activities. Similarly study done in Delhi[16] reported 46.2% of occasional or nil physical activity and Brandão MP et al[17] reported 62% among Portuguese university students. So the importance of performing light activities (e.g., walking/standing) in between long sedentary hours must be emphasized, especially among students of senior semesters.

Alcohol consumption and smoking prevalence was around 13% among medical students from urban areas. But other studies conducted among medical students showed considerable higher prevalence of smoking (43%)[18] and alcoholism (19.1%).[19]

30% of the study group had BMI more than the cut off BMI for Asians and also mean waist circumference was 101.67(±5.66) which could be attributed to high consumption of junk food and carbonated drinks and sedentary life styles. This finding is of utmost importance as even a moderate increase in BMI make south Asians more prone to develop non communicable diseases like Diabetes and other related diseases.

Though none of the study participants were found to be pre-hypertensive or hypertensive, other cardiovascular risk factors like BMI >23, increased waist circumference, high fat food consumption and sleep disturbances were observed. Study done in Kolkata[20] shows a significant association of hypertension with BMI, junk food intake and physical activity and study done in Ethiopia shows higher rates of hypertension among individuals who had sleep duration of ≤ 5 hours.[21]

Conclusion

Modifiable cardiovascular risk behaviours are widely prevalent among medical students and more among the male students. Promotions of supportive environment for strengthening student-based approaches are essential to target these risk behaviours among our future doctors.

Implications

It is important to note that all these risk factors are amenable to modification through lifestyle changes. Today's risky behaviours are tomorrow's risk factors. Today's risk factors are tomorrow's disease. Thus, primary and secondary prevention of chronic diseases

and their common risk factors provide the most sustainable and cost-effective approach to chronic disease prevention and control.

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