ORIGINAL ARTICLE

Comparison of Awareness of risk factors for Coronary Artery Disease in medical and non-medical students of Karachi

HAMZA NAJAM SALAM, ALI HASAN, BILAL KHAN, *HAMMAD KAZMI, MARYAM HASAN, ZAINAB AFZAL, MOHAMMAD AHMED, NADIYA RAZA, SAQIBA TAHER, AMARA MASHOOD, SEHREEN MUMTAZ*

ABSTRACT

Aim: To compare awareness of CAD and its risk factors between medical and non-medical college students and to determine the prevalence of modifiable risk factors for CAD in both groups of students.
Methods: A sample of 311 medical and 320 non-medical students was taken from 4 universities (2 medical and 2 non-medicals) of Karachi, Pakistan. A self-administered questionnaire was used to collect the data regarding awareness and practices of smoking, obesity, physical activity and hypertension. Using SPSS version 22 descriptive analysis was done to calculate the overall prevalence of the sample. Chi squared test and Independent t-test were used to compare categorical and continuous variables, respectively. P-value ≤ 0.05 was considered as significant.
Results: Out of the 311 medical students interviewed, 121(38.9%) were male and 190(61.1%) were female. 267(85.9%) medical students turned out to be overall aware as opposed to 200(62.5%) non-medical students. 98(30.6%) non-medical students were modifying lifestyles against CAD as opposed to only 89(28.6%) medical students. Amongst medical students chi squared test of significance showed an insignificant association between awareness and modifying lifestyle (p value >0.05). Amongst non-medical students we found a statistically significant relationship between awareness and modifying lifestyle (p value <0.05).
Conclusion: The results of our study showed that medical students had higher awareness than non-medical students in terms of the risk factors leading up to the development of CAD. In contrast to medical students, non-medical students who were aware of the risk factors of CAD were significantly more likely to modify their lifestyles and to avoid practices leading up to the development of CAD.
Keywords: Dyslipidemia, ischemic heart disease, determinants, risk factors

INTRODUCTION

Coronary artery disease (CAD) stands out to be the leading cause of death and disability worldwide[1]. The burden of CAD is increasing at a faster rate in South Asia compared to any other region globally[2]. Evidence has strongly linked modifiable risk factors with CAD; however a majority of South Asians still believed CAD to be non-preventable[3]. A Pakistani study conducted in the medical colleges of the country found out that 21.5% of all medical students with at least 2 years of medical education were ever smokers and 9.1% of them were current smokers[4].

Although there is evidence indicating a genetic predisposition to CAD, as with South Asian immigrants living in western regions having a higher morbidity and mortality when compared to western natives[5], the presence of modifiable risk factors leading up to the disease are also increasing due to certain lifestyle modifications. Habits contributing to these modifications mainly include a sedentary life style, high calorie diet, smoking, stress and obesity. There also seems to be a knowledge gap along with misconceptions regarding CAD amongst the South Asian population[6]. Most of the risk factors for CAD are acquired during the adolescent period[7]. It is important that these lifestyle factors for CAD are assessed and intervened at an earlier age, such as adolescence, to prevent it from getting established as a lifelong behavior[7]. Knowledge about the risk factors for a disease is the key to its prevention. So the basic purpose of this study was to compare awareness of CAD and its risk factors between medical and non-medical college students and to determine the frequency of preventive measures of modifiable risk factors.

Aga Khan University Karachi
Correspondence to Ali Hasan Email: alihasan_zbd@hotmail.com

MATERIALS AND METHODS

In this comparative cross sectional study we selected 4 colleges using simple random sampling. We collected data from 631 students (2 medical and 2 non-medical colleges). Data from 311 medical students was collected from Aga Khan University and Jinnah Medical and Dental College. A total of 320 non-medical students were collected from College of Business Management and Indus Valley School of art

and architecture. Our targeted age group was 18-25 years of either gender. The questionnaire was divided into 6 sections. These included demographics and personal health status, smoking habits, physical activity assessment, obesity assessment, hypertension assessment and family history.

The questionnaire was designed to evaluate the participants on both, awareness of risk factors for CAD as well as frequency of preventive measures being taken to avoid the respective risk factors the various variables we used to determine awareness and preventive measures adopted by the students was physical activity, cigarette smoking, obesity and uncontrolled hypertension. Physical activity will be assessed according to number of hours spent in the last week doing vigorous exercise and walking. Dietary modifications were considered as reducing the total fat intake, eating fruits, vegetables, whole grains and pulses etc. Cigarette smoking was counted for people who regularly indulge in smoking cigarettes on a daily bases (at least one cigarette per day). Overweight was identified as having a body mass index of greater than or equal to 25 and obesity was defined as having a body mass index of greater than or equal to 30.

We used EpiData v 3.1 (EpiData Association, Odense, Denmark), for data entry and SPSS 22 for analyzing the entered information. Descriptive analysis was done to calculate the overall frequency and confidence interval of the sample. Chi-square test and Independent t-test were used to compare categorical and continuous variables, respectively.

RESULTS

The cleaned data set included responses from a total of 631 college students with a mean age of 21.15 ± 1.677. Of this total sample 368 (58.3%) were females and 263(41.7%) were males. Among the medical students in our study sample there were 121(38.9%) males versus 190 females (61.1%). Amongst the non-medical students in our study sample there were 142(44.4%) males and 178(55.6%). 243(78.1%) were aware of the link between smoking and coronary artery disease and identified smoking as a risk factor for CAD as opposed to 141(44.1%) non-medical students (p value = 0.001). 250 (78.1%) non-medical students took preventative measures against smoking as compared to 267(85.9%) medical students (p value = 0.012). Awareness about lack of physical activity as a risk factor for CAD was higher amongst the medical students with 299(96.1%) medical students being aware of this link as compared to 289(90.3%) non-medical students (p value =0.004). 199(62.2%) non-medical students were taking this preventative measure as opposed to 154(49.5%) medical students (p-value=0.001). Medical students were substantially more aware about hypertension as a risk factor for CAD with 254(81.7%) medical students aware of this link as opposed to 199(62.2%) non-medical students (p value =0.000). When inquired about the preventative measures to control hypertension, 21(75%) non-medical students adopting this preventive measure as opposed to 12(54.5%) medical students (p value = 0.130). Medical students demonstrated greater awareness about obesity as a risk factor for CAD, 269(86.5%) were aware as compared to 232(72.5%) non-medical students (p value =0.000).A slightly greater number of medical students were taking the necessary preventative measures to prevent obesity, 186 (59.8%) as opposed to 183(57.2%) non-medical students (p value 0.504). There were 267(85.9%) medical students turned out to be overall aware as opposed to 200(62.5%) non-medical students. The odds ratio turned out to be 3.64 with a p-value <0.05 at 95% Confidence interval (2.46–5.38) (Table 2). Total of 98(30.6%) non-medical students were modifying lifestyles against CAD as opposed to only 89 (28.6%) medical students. The odds ratio turned out to be 0.91 with a p-value > 0.05 at 95% Confidence interval (0.65 – 1.28) (Table 3).

Amongst medical students chi squared test of significance showed an insignificant relationship between awareness and modifying lifestyle (p value > 0.05). The odds ratio turned out to be 0.95 at 95% Confidence interval (0.47 -1.91) (Table 4). From non-medical students we found a higher probability of awareness and modifying lifestyle (p value <0.05). The odds ratio turned out to be 1.77 at 95% Confidence interval (1.06-2.96) (Table 5).

DISCUSSION

Across-sectional community based survey in the lower middle class urban localities of Karachi showed a very high prevalence of hypertension, obesity and sedentary life style. Despite a high literacy rate, awareness regarding CAD risk factors was low and so the authors suggested the need for increasing awareness regarding CAD and its risk factors for a healthier lifestyle in developing countries. [8] Smoking is widely accredited to be one of the leading modifiable risk factors for CAD. Our study reported high rates of awareness about smoking and obesity being identified as a risk factor for CAD among medical students when compared to non-medical students. This was expected due to advanced medical knowledge that medical students receive with regards to atherosclerosis and other harmful effects on the heart due to obesity and cigarette smoking. The numbers of smokers identified from our

results were significantly higher when compared to a previous study, which identified only 8% of medical students as smokers[9]. While government advertisement campaigns rely heavily on demeaning smoking through its association with lung cancer; less association is publicized regarding its effects on the cardiovascular system. Exercise, particularly regular aerobic exercise has been shown to be an important mechanism to lower the risk of CAD, a fact corroborated by a number of high profile studies[8].

Many studies have shown an increased prevalence of psychological distress among medical students. A cohort study in Malaysia showed that the prevalence and level of unfavorable stress and depression in medical university students was significantly higher than prior to entering the university[10]. Stress, lack of time and tough academic schedules may be the most important reason in justifying the reason that despite increased awareness among the medical students, a lesser number of medical students took measures to prevent hypertension and indulge in physical activities[10]. The figure of medical students being engaged in regular exercise in our study matched with a previous research done in 2008 at a private medical school in Karachi[11].

Uneven scheduling hours of medical students particularly in clinical years might lead to schedule disruption and therefore a lack of appointed time to exercise. Other than the time consumed during physical activities, the effect of physical exertion on academic focus might be another reason contributing to physical inactivity among medical students. Our results showed that the increased knowledge on the effects of physical activity and uncontrolled hypertension were not translated into preventive practices. Interestingly, with regards to preventive measures to prevent obesity and smoking medical students had a greater initiative when compared to non-medical students. One of the limitations of our study includes the need to consider more variables. We did not take into account variables such as university or workplace stress, workload, hostel residence etc. These variables have an effect on the adoption of lifestyle modifications and hence have to be considered to increase the feasibility of this screening model. The study has highlighted the increasing prevalence of CAD risk factors and behaviors among a sample population of college students that has a higher literacy rate than the general Pakistani population. There is a need to develop customized strategies to improve awareness of CAD and its risk factors, with an emphasis on lifestyle modifications among the illiterate spectrum of the population as well.

CONCLUSION

The results of our study showed that medical students had more overall awareness than non-medical students in terms of the risk factors leading up to the development of CAD. In contrast to medical students, non-medical students who were aware of the risk factors of CAD were significantly more likely to modify their lifestyles and to avoid practices leading up to the development of CAD. Further research needs to be done to take into consideration “university or workplace stress and workload” as a separate variable that can affect application of preventative methods against modifiable risk factors for CAD.

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Table 1: Descriptive characteristics of medical and non-medical students of Karachi, Pakistan (n =631)

Variables	Medical Students	Non-Medical Students	Overall	P-value
Gender Male Female	 121(38.9%) 190(61.1%)	 142(44.4%) 178(55.6%)	 263(41.7%) 368(58.3%)	0.164
Age (years) Mean ± S.D	21.53 ± 1.43	20.79 ± 1.82	21.15 ± 1.68	
BMI Underweight Normal Overweight Obese	 57 (18.4%) 177 (57.1%) 64 (20.6%) 12 (3.9%)	 68 (21.3%) 185 (57.8%) 58 (18.1%) 9 (2.8%)	 125 (19.8%) 362 (57.5%) 122 (19.4%) 21 (3.3%)	0.635
Socioeconomic status High Medium Low	 55 (18.6%) 138 (46.6%) 103 (34.8%)	 72 (23.9%) 121 (40.2%) 108 (35.9%)	 127 (21.3%) 259 (43.4%) 211 (35.3%)	0.177
Awareness about smoking as a risk factor for CAD	243 (78.1%)	141 (44.1%)	384 (60.9%)	0.000
Takes preventative measures (smoking) stop or decrease smoking	267 (85.9%)	250 (78.1%)	517 (81.9%)	0.012
Awareness about lack of physical activity as a risk factor for CAD	299 (96.1%)	289 (90.3%)	588 (93.2%)	0.004
Performs physical activity to prevent CAD	154 (49.5%)	199 (62.2%)	353 (55.9%)	0.001
Awareness about hypertension as a risk factor for CAD	254 (81.7%)	199 (62.2%)	453 (71.8%)	0.000
Takes preventative measures to control hypertension	12 (54.5%)	21 (75%)	33 (66%)	0.127
Awareness about obesity as a risk factor for CAD	269 (86.5%)	232 (72.5%)	501 (79.4%)	0.000
Take preventative measures to prevent obesity	186 (59.8%)	183 (57.2%)	369 (58.5%)	0.504
Family history HTN CAD	 97 (31.2%) 30 (9.6%)	 47 (14.7%) 20 (6.3%)	 144 (22.8%) 50 (7.9%)	0.000

Table 2: Comparison of awareness of risk factors of CAD between medical and non-medical students of Karachi (n = 631)

	Medical students	Non-medical students	OR (C.I)
Aware	267 (85.9%)	200 (62.5%)	3.64 (2.46, 5.38)
Unaware	44 (14.1%)	120(37.5%)	

Table 3: Comparison of prevention of risk factors of CAD by modifying lifestyle between medical and non-medical students of Karachi (n = 631)

	Medical students	Non-medical students	OR (C.I)
Modifying lifestyle	89 (28.6%)	98(30.6%)	0.91 (0.65, 1.28)
Not modifying lifestyle	222(71.4%)	222 (69.4%)	

Table 4: Comparison of awareness of risk factors of CAD and the necessary life style modifications being taken to avoid them among medical students (n = 311)

	Modifying risks	Not modifying risks	OR (C.I)
Aware (% within modifying risks)	76(85.4%)	191(86%)	0.95 (0.47, 1.91)
Unaware (% within modifying risks)	13 (14.6%)	31(14%)	

Table 5: Comparison of awareness of risk factors of CAD and the necessary life style modifications being taken to avoid them among non-medical students (n=320)

	Modifying risks	Not modifying risks	OR (C.I)
Aware(% within modifying risks)	70(71.4%)	130(58.6%)	1.77 (1.06, 2.96)
Unaware(% within modifying risks)	28(28.6%)	92 (41.4%)	