Knowledge of Coronary Artery Disease (CAD) risk factors and Coronary Intervention among University Students

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Abstract

Objective: To elucidate knowledge of coronary artery disease (CAD) risks factors and coronary intervention in adult students of Karachi East. To calculate the mean knowledge score about CAD risk factors among them.

Methods: A multi center crossectional study was conducted in Universities and colleges of Karachi East from April - September 2005. Questionnaires were distributed to 200 adult students of different non-medical universities and colleges. The questionnaire contained assessment of knowledge of risk factors on CAD and awareness about coronary angiography. Those belonging to medical colleges and universities were excluded from the study. Knowledge was assessed as a continuous variable. Risk factors for CAD were taken as categorical variables

Results: The mean age of students was 20 yrs ± 2.2 years and 62% were females. The mean score of knowledge about risk factors of CAD was 11.47 ± 2.37. Sixty percent students thought that heart diseases are the number one cause of death in our population. Twenty five percent students graded smoking as the top most risk factor for CAD. Twenty five percent students refused to quit smoking for CAD prevention. Forty eight percent students correctly defined coronary angiography. Eighty five percent students thought that cost is the major hindrance in getting timely treatment. Knowledge of fifty percent students was based on personal and family experience of heart disease.

Conclusion: Students graded smoking as the topmost risk factor for CAD and cost as the major hindrance in getting timely treatment for heart disease. Only half of the students were aware about coronary angiography .The mean knowledge score among them was above the median score but not up to the mark (JPMA 58:553; 2008).

Introduction

Coronary heart disease is the leading cause of death in the United States among men and women.[1] It is also a major cause of physical disability, particularly in the rapidly growing elderly population. Low and middle-income countries including the South Asian countries of India and Pakistan contribute significantly to the global burden of cardiovascular diseases accounting for 75% of all deaths and 86.3% of all loss of disability adjusted life years attributable to this cause.[2]

Risk factors for Coronary artery disease (CAD) are now well recognized and modification of these factors can prevent heart attacks and prolong life.[3] Primary prevention refers to risk reduction in patients without evidence of CAD. High cholesterol, cigarette smoking, hypertension, positive family history, age and diabetes mellitus are the major risk factors of CAD.[4] Age, male sex and family history are the non-modifiable risk factors. Smoking, hypertension, Diabetes mellitus, sedentary lifestyle, obesity and high cholesterol diet are the modifiable risk factors. High risk of cardiovascular disease has been reported in south Asian population regardless of whether they live overseas or in the native country.[5]

Knowledge about risk factors is an important prerequisite for an individual to implement behavioral changes towards CAD prevention. In a country like ours, where resources are limited and so are the facilities to combat effectively against diseases, preventive measures and lifestyle modification appears to be the only essential weapon. The prevention of subsequent coronary events and the maintenance of physical functioning in such patients are major challenges in preventive care.[6] Data is scant on the level of knowledge about CAD in population of Pakistan.[5] Awareness has been poor about risk factors of CAD in lower middle class in urban population in Karachi.[7] Life style is in many respects not governed by the intellect but the result of education, life long habits and possibly also genetically determined.[8] This study was conducted to elucidate knowledge of CAD risk factors, coronary intervention in Adult non medical students of Karachi East. The mean knowledge score about CAD risk factors were also calculated.

Subjects and Methods

This was a multi center crossectional study conducted at four different educational institutions of Karachi from April 2005 to September 2005. A total of 200 adult students were invited to participate in the study based on convenience sampling. Adult students were defined as those who were attaining education at graduate

and post graduate levels. They were approached in their respective universities and colleges. Those above 18 years of age who agreed to fill the questionnaire were included. Those belonging to medical college/university were excluded from the study. Four different educational institutions of Karachi were chosen in order to achieve a varied spectrum of students. These institutions were; The Karachi University (KU), a public sector university where graduate and postgraduate courses are offered, The Nadirshaw Edulgy Dinshaw University of Engineering and Technology (NED), The Baharia University of Management and computer sciences and Khatoon-e-Pakistan College for women. Knowledge was the dependent variable and computed as a continuous variable. Demographics, level of education were taken as the independent variables. The students were asked to fill questionnaires regarding CAD risk factors and coronary intervention (angiography/angioplasty) by trained research officers (Annexure). The questionnaire was developed using themes of identification of coronary artery disease risk factors as a positive answer, like used in study conducted on students of Warsaw University.[9] The questionnaire was scored accordingly on the pattern of questions used in study conducted by Jafar etal.[10] This questionnaire, eventually consisted of close-ended questions on risk factors of CAD, knowledge about coronary interventions (angiography and angioplasty) and education about heart diseases. It had 16 questions and was scored out of 16 points in all. Each question was assigned 1 point for the correct answer. Wrong responses were not given any points. The questionnaire was pretested on 20 students belonging to institutions other than that included an the study.

Annexure: Questions for assessment of awareness of CAD.

Questions	Response	Score
Do you think that heart diseases are preventable:	Yes/ No	1
Risk factors:		
Age:	Yes/ No	1
Male Sex:	Yes/ No	1
Family history of heart disease:	Yes / No	1
Smoking:	Yes/ No	1
High blood pressure:	Yes/ No	1
Increase Cholesterol:	Yes / No	1
Diabetes (Sugar):	Yes / No	1
Sedentary (Less active) lifestyle	Yes / No	1
Obesity:	Yes / No	1
High cholesterol diet:	Yes / No	1
Do you think doing exercise prevents heart disease?	Yes/ No	1
Do you think you will consider quitting smoking to prevent heart disease? (If you smoke)	Yes/ No.	1
Angiography and angioplasty is a: (choose 1)		1
a) Medicine for heart disease		
b) Major Operation (surgery)		
c) Never heard of it		
d) Minor operation for diagnosing and treating heart disease		
Do you think Angioplasty/ heart bypass operation Saves lives of people who have heart attack? :	Yes/ No	1
Do you think patients with heart disease have to Take medications for life?	Yes/No	1
	Maximum score	16

Data was collected by trained data collectors qualified upto graduate level who had a pre medical background but did not belong to the respective institutions. They had a training period for 2 weeks during which they were trained by the primary investigator. They went to the respective college/university and 50 students were conveniently selected from each institution. The questionnaires were distributed to them in the campus and they were asked to complete and return them there and then. Those who did not understand English terminologies were given urdu translated versions. After collection of the forms, the students were told about the correct responses with explanations by the data collectors for ethical reasons. The questionnaire was marked by a separate graduate person who was provided with the correct answers and was not a participant.

Data was edited and entered on SPSS version 13. Mean and standard deviation was calculated for quantitative variables and frequency and percentage for categorical variables. In univariate analysis t test was used to assess the association of knowledge with gender and education level.

Results

The mean age of students was 20 ± 2.2 years. Sixty two percent were females and 38% were males. Forty percent were qualified up to graduate level, 26% intermediate, 15% engineering, 13% Masters in Business Administration and 4.5% up to master's level. Sixty percent students thought that heart diseases were the leading cause of death in our population, followed by cancer (12%), diabetes mellitus (11%), infection (11%), kidney diseases (4%) and stroke (0.5%). Eighty five percent students thought that heart diseases were preventable. Twenty five percent students graded smoking as the top most risk factor for CAD followed by hypertension high cholesterol, age, Family history, and high cholesterol diet. Correct identification of risk factors in the form of positive responses was highest for cholesterol levels (91%) (Table). Eighty eight percent students thought that exercise prevents heart diseases. Fifty five percent students would consider quitting smoking to prevent heart disease, while 25% refused to quit smoking. Forty eight percent students correctly

Table: Correct Identification of risk factors of CAD.

Risk Factor	n= 200 n	%
Age	130	65
Male sex	94	47
Family history of CAD	136	68
Smoking	169	84.5
Hypertension	178	89
High serum Cholesterol	183	91.5
Diabetes Mellitus	126	63
Sedentary life style	126	63
Obesity	144	72
High Cholesterol diet	173	86.5

defined coronary angiography, 28% thought that it was a major operation for heart disease, 16% had never heard of it and 7.5% considered it as a medicine for heart disease. Eighty one percent students thought that it could help in saving lives. Forty two percent students considered cost to be the major hindrance in getting timely treatment for heart diseases (Figure I) and 77% thought that heart medications had to be taken for life. The mean score of knowledge about risk factors of CAD was 11.47 ± 2.31out of 16.The mean calculated percentage is 71.37%. The mean score in males was 11.68 and in females 11.2 (p value 0.32). The mean score of graduate students was 11.42 and post graduate student was 11.59 (p value: 0.36).

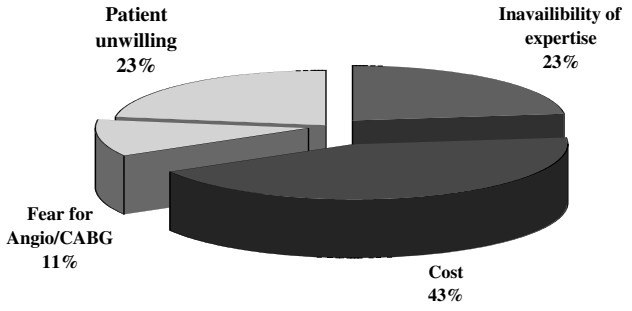

Figure I: Hindrances in Timely treatment for heart attacks.

Knowledge of fifty percent students was based on personal and family experience of heart disease (Figure II) and 88% students thought that education should be provided regarding heart disease at high school levels.

Discussion

Cigarette smoking can result in at least two-fold increase in risk of CAD.[11] Adult students graded smoking as the top most risk factor for coronary artery disease. Similar results have also been demonstrated in other studies conducted in this region. In a multi center crossectional study conducted in four tertiary care

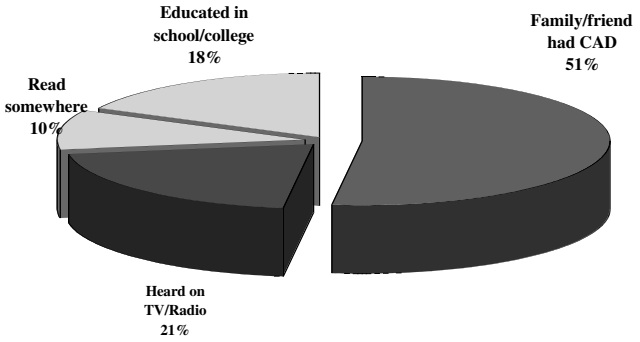

Figure II: Current Knowledge of Heart Disease.

hospitals, 31% patients' attendants identified smoking as a risk factor. It was however third on list as a risk factor after stress and dietary fat.[12] The risk is higher in those who smoked heavily and those who started smoking earlier in life < 18 years age.[13] The awareness about smoking as a risk factor for coronary heart disease is substantial. In spite of this fact, a good 25% of the students refused to quit smoking as a preventive measure for heart disease. This outlines the fact that tremendous efforts need to be made in forms of anti tobacco media coverage and prohibit this young generation from smoking. The best results have been obtained through strong recommendations by physicians to stop smoking combined with interventions managed by nurses.[14] It has also been reported that reduction in smoking caused a drop of 13% age adjusted incidence of CAD.[15]

High blood pressure and high serum cholesterol results in significant increase in incidence of CAD.[16] Hypertension and high cholesterol were ranked as the second and third most common risk factor in our study. Adult students were able to recognize high blood pressure as a major risk factor for CAD as apposed to the group of people (Patients` attendant) in the multi centered study conducted in a tertiary care hospital.[17]

Modifiable risk factors for heart disease, like high cholesterol diet, diabetes mellitus, obesity and sedentary life style were graded as risk factors by a substantial number of students. This is in agreement with results of a study conducted on students of Warsaw University, in whom the knowledge of modifiable risk factors was better.[16] Another study by Jafer et al in the south Asian population demonstrates relatively poor knowledge about modifiable risk factors for coronary heart disease.[10] The correct identification of risk factors in their study was as follows; smoking (31%), Obesity (14%), lack of exercise (17%) and dietary fat (39%). These modifiable risk factors are actually the cornerstone in the prevention of

CAD. Hence it is of utmost importance that the younger generation be made aware of them. More seminars on awareness of risk factors of heart diseases are required.

Eighty eight percent students thought or knew that exercise prevents heart diseases. Trials of exercise combined with nutritional counseling have demonstrated a slowing of artherosclerotic process.[17] In a randomized control trial moderately intense aerobic exercise reduced overall mortality from heart disease.[18] So exercise promotion programmes on mass scales would make it easier for the general population to remain physically active and would help remarkably in preventing heart disease. Exercise regimen of 6 daily 10 minutes session of bicycle ergo meter at an intensity of 802% of maximal heart rate is associated with an improvement in endothelial dependent vasodilatation of coronary artery after 4 weeks.[19]

Less than half of the students were able to correctly define angiography. Almost 16% of the students had never heard of angiography. This clearly indicates that the young generation is only partly aware of the treatment modalities for acute myocardial infarction. Also a significant number of students considered cost as the major hindrance in getting timely treatment for angina followed by unavailability of expertise and fear of angiography. This variation in use of coronary angiography and revascularization is also found internationally. The reason for this is that widespread expertise in this field is not even present in the west.[18] The risk of cardiac events in patients with heart disease is lower among hospitalized patients who undergo angiography.[18] Therefore more awareness needs to be generated regarding timely use of angiography/angioplasty in patients with acute myocardial infarction.

It is interesting to note that only a small number of students had received formal education about risk factors of coronary artery disease and angiography, at school/college level. A large number of students therefore strongly felt that knowledge regarding risk factors of coronary artery disease should be imparted at school level.

Jafer et al also in thier study on 792 subjects concluded that a proper health education programme in the country should be established to spread awareness about these risk factors in the masses. The mean knowledge score of the adult students in our study was 11.47 out of a total score of 16, making the calculated percentage + 71.16%. Although this is well above the median score but still there is a good 25-30% defict on knowledge about CAD risk factors. Only when these students are well updated in their knowledge about CAD risk factors would they be able to adopt primary prevention measures in their routine lives. Also these are figures from 4 well reputed Institutes, which cater to above average students, and the knowledge is lower than our results. In a case control study conducted on 442 teenage girls in Queen`s college, Newyork, intervention in the form of promotion of exercise and, lectures on heart diseases had a beneficial effect on knowledge and behaviours of the girls.[19]

There are limitations in the study , that the sample size is small and the study cannot be generalized to the whole population of Pakistan Never the less this is the first study of its kind that elaborates on the knowledge of CAD risk factors in adult students.

Conclusion

Students graded smoking as the top most risk factor. In spite of this only a small number agreed to quit smoking. Only half of the students were aware about coronary angiography. The mean knowledge score among them was above the median score but not up to the mark.

Recommendations

More studies with multicentre cluster sampling should be conducted to estimate the level of knowledge on risk factors of CAD.

Education on risk factors imparted through health programmes is necessary to create awareness and thus prevent CAD.

Regular antismoking campaigns should be held for school and college students.

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