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ASSOCIATION OF KNOWLEDGE, ATTITUDE AND BEHAVIORAL RISK FACTORS WITH CORONARY ARTERY DISEASE

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Contribution
SZ, AMG did literature review and research design and also finalized the manuscript. HST helped in data collection and MHS did data analysis. TA helped in final draft. All authors contributed significantly to the submitted manuscript.

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ABSTRACT

Objective: To assess knowledge, attitudes and behavioral risk factors and their association with CAD.

Methodology: We conducted a hospital based, case control study in two major hospitals in Peshawar from 1st April 2015 to 30th June 2015. Individuals who were well oriented in time, space and voluntarily agreed to participate in the study were selected. Patients with diagnosed CAD were selected as per Monica criteria. The cases and controls were matched on the basis of their gender, age, occupation and level of education. An original questionnaire was used for data collection. The data was analyzed using SPSS Version 20 and presented in the form of graphs and text.

Results: About 177 patients were selected, out of which 59 were cases and 118 were controls (1:2). Our study showed a significant association between lack of knowledge of risk factors of CAD and the odds of developing CAD. Participants with poor knowledge scores were 3.73 times more likely to develop CAD than those with good knowledge scores. People with poor attitude scores were 9.34 times more likely to suffer from heart disease. Smoking and high carbohydrate diet were the most significant risk factors among the participants.

Conclusion: On the basis of findings of our study, we conclude that knowledge and attitude significantly affects the development of coronary artery disease and there is a strong relationship between the KAP variables and behavioral risk factors of CAD. Educating general population about CAD and its risk factors can significantly reduce the incidence of CAD.

Key Words: Coronary Artery Disease, Knowledge, Attitude and Behavioral Risk Factors

INTRODUCTION

Coronary artery disease also known as ischemic heart disease (IHD), atherosclerotic heart disease, atherosclerotic cardiovascular disease and coronary heart disease (CHD) is a global problem. It is a group of diseases that includes: stable angina, unstable angina, myocardial infarction and sudden coronary death.[1] Coronary artery disease (CAD) is characterized by atherosclerosis in the epicardial coronary arteries. Atherosclerotic plaques, the hallmark of atherosclerosis, progressively narrow the coronary artery lumen and impair ante grade myocardial blood flow.[2] A common symptom is chest pain or discomfort that may involve the shoulder, arm, back, neck or jaw. Occasionally it feels like heart burn. Risk factors include high blood pressure, smoking, aging, diabetes mellitus, lack of exercise, obesity, unfavorable lipid profile, stress, poor diet and excessive alcohol consumption.[3]

In 2013, CAD was the leading cause of death globally, resulting in 8.14 million deaths (16.8%) up from 5.74 million deaths (12%) in 1990.[4] Ageing and growth of populations has led to an increase in the total number of cardiovascular deaths.[5] Males are affected more often than females.[5]

In 2009, 16,419 deaths among Asians and Pacific Islanders were due to CVD; 7,752 due to CHD; and 2,462 due to myocardial infarction.[6] About 18.7% of Asians have high blood pressure and 9.6% of Asian adults are current smokers.[6] In 2011, only 16.7% of Asian adults met the 2008 Federal Physical Activity Guidelines.[6] Among youths in 2011, 9.3% of Asian/Pacific Islander were obese and among adults 18 years and older, Asians were more likely to be at a healthy weight than other races.[6] The prevalence of diabetes mellitus was more than twice as high for Asian Indian adults (14%) compared with Chinese (6%) or Japanese adults (5%).[6]

In Pakistan, mortality from coronary heart disease is 410/100000.[7] According to the National Health Survey of Pakistan (NHSP), the prevalence of hypertension is 17.9% and that of diabetes is 10%.[8] The prevalence rates for obesity in an urban Pakistani population are 22% and 37% in males and females respectively while high blood cholesterol is prevalent in 13% of Pakistani adults.[8] Tobacco use has been documented in 29% of adult Pakistani men.[8] The increasing prevalence of these risk factors points to the fact that Pakistan shares the encroachment that non-communicable disease risk factors have been making in most developing countries. Moreover, it is the urban population that is affected more than the rural population regarding prevalence of hypertension, obesity, hypercholesterolemia and cigarette smoking.[8] Therefore, the urban population of Pakistan constitutes the "high risk" group for CAD.

The prevalence of CAD and its risk factors in Peshawar is on the rise. Thus, risk assessment becomes quite important in the prevention and management of CAD. In this context, this study is aimed at assessing knowledge, attitudes and behavioral risk factors and how they are associated with CAD and to present recommendations based on our findings.

METHODOLOGY

A hospital based case control study was carried out to assess the knowledge, attitude and behaviourial risk factors of patients regarding coronary artery disease in Peshawar region. The study duration was from 1st April 2015 to 30th June 2015. This study was carried out in Khyber Teaching Hospital, Peshawar and Lady Reading Hospital, Peshawar.

Ethical committee approval was taken from the hospitals research ethical committee. Informed consent was taken from all patients before conducting the interview. The study population was adult people between the ages of 30 and 80 years, from different regions of Peshawar.

The sample size was calculated after conducting the pilot study by using the following formula:

$$N = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 \, pq \, (r+1)}{(P_1 - P_2)^2 r}$$

r is the case control ratio which is 1:2

Exposure in cases=P_1= 0.50 Exposure in control=P_2= 0.25

p = 0.375

q = 0.625

Z_1=1.96

Z_2= 0.84

Putting the above values in the formula we get 59. We used 1:2 in our study for controls and cases. The formula and method of calculating the sample size was adopted from an earlier study.[9]

Patient with diagnosed case of CAD were selected as per the Monica criteria i-e:

1. 2 or more ECGs showing specific changes.
2. An ECG showing probable changes plus abnormal cardiac injury enzymes.
3. Typical symptoms such as a retrosternal pain.

Conscious and co-operative individuals who were well oriented in time and space were selected for the study to avoid bias from respondent's answers.

A control was defined as an individual who was admitted in

hospital for any condition other than angina pectoris and myocardial infarction. In order to select a proper control, the person's prior history regarding CAD was asked and it was assured that the patient had never been admitted to a hospital or taken treatment for acute myocardial infarction or angina pectoris.

Disoriented patients were excluded from the study due to the fact that they were unable to give reliable answers regarding their condition.

The cases and the controls were matched regarding their gender, age, occupation and level of education.

An original questionnaire was used for data collection, and was filled by interviewing patients. The p value was obtained using the Chi square test. The p value of <0.01 was considered significant.

RESULTS

In a 1:2 case control study, out of 177 participants, 59 were cases and 118 were controls. About 81 (45.7%) were males. Participants' age ranged from 30 to 80 years. The mean age of the total population studied was 57.05 ±12.21 years. Among the study participants, 62 were diabetics, 79 were hypertensive and 61 had dyslipidemia.

Among the participants, 60% had knowledge regarding the risk factors of CAD, where as 40% of the participants did not have any knowledge about coronary artery disease (Figure 1). We calculated the odds ratio for exposed vs non-exposed with a confidence interval of 95%, the odds ratio came out to be 3.73 (p <0.01) for knowledge, meaning that participants with poor knowledge scores of CAD were 3.73 times more likely to develop CAD than participants with good knowledge scores. The odds ratio for attitude was 9.34 (p <0.01), showing a significant association between poor attitude scores and odds of developing CAD (Table 1). Regarding the distribution of risk factors among the study participants, 72.3% were smokers, 38.98% were physically inactive,

Table 1: Risk Factors of CAD Identified Among the Study Group

Variables	Odds Ratio	P-value	Chi-Square
Knowledge	3.73	<0.01	15.7
Attitude	9.34	<0.01	39.6
Smoking	3.4	<0.01	31.4
Lack of Exercise	2.5	<0.003	13.1
High Fat Diet	1.9	<0.01	16.6
High Carbohydrate Diet	3.7	<0.01	16.3

Table 2: Association between KAP Variables with Attitude and Practice Score

Variable	Unit increase in score	P value
Attitude	0.3	<0.01
Practice	0.27	0.003

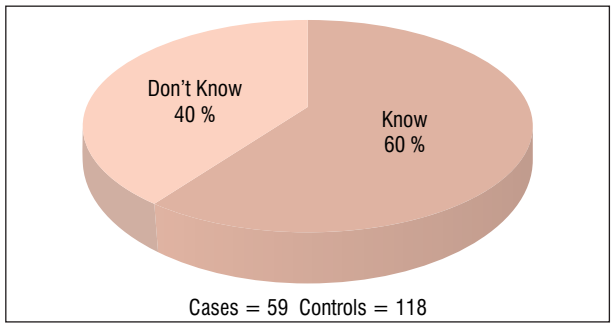
36.72% regularly consumed a high fat diet and 38.41% regularly consumed a high carbohydrate diet. We calculated the odds ratio for each risk factor, which was 3.4 (p <0.01) for smoking, 2.5 (p<0.003) for physical inactivity, 1.9 (p<0.01) for high fat diet and 3.7 (p <0.01) for high carbohydrate diet(Table 1). Smoking and high carbohydrate diets were the most significant risk factors among the participants. In our study, smoking and high fat diet were significant risk factors among men and high carbohydrate diet was noteworthy among women.

DISCUSSION

Our study shows that more than half of the patients could not identify the risk factors for coronary artery disease and were not familiar with coronary artery disease. Our findings are consistent with the findings of another study done in India which showed that CAD is an epidemic in developing countries and more than half of the population had poor knowledge score about CAD.[10]Our study has shown that people with low knowledge score are at a greater risk of developing CAD (OR=3.73). Psychological counseling can help to manage as well as prevent heart disease by imparting knowledge about CADs. Jane Reid, Chantal F. Ski and David R. Thompson showed in their study that psychological intervention of coronary artery disease patients along with their partners could result in a positive health behavior of the patients.[11] Various teaching programs can be adopted to increase the knowledge of patients regarding CAD. Rajesh Kumar Sharma showed in his study that to increase the knowledge of the patient, planned teaching program is an effective policy and can lead to decrease in the incidence of CAD.[12]

There is a strong association between poor attitude scores

Figure 1: Knowledge of Modifiable Risk Factors in study Population



of the patients and CAD as shown by our study (OR=9.34). Relationship of poor attitude score with CAD is quite complex. Other studies have also shown that there is significant convincing evidence that psychosocial factors contribute significantly to the pathogenesis and expression of coronary artery disease (CAD).[13] Rozanski Blumenthal and Kaplan's study done on the same topic showed that psychosocial and behavioral risk factors for CAD are highly interrelated.[14] Attitude can affect the adoption of healthy behavior, direct alteration of physiology of the human body, development of traditional risk factors for CVD and lack of compliance with therapy. This is emerging as a new field of behavioral cardiology.[15]

Our study showed a significant association between attitude and knowledge scores. For 1 unit increase in knowledge score the attitude score increases by 0.3($p<0.01$) (Table 2). There is also a strong association between practice and knowledge. One unit increase in knowledge score increases practice score by 0.27 ($p = 0.003$) (Table 2). Another study done on the same topic showed significant association between the different KAP variables.[16] Positive relationship between knowledge, attitude and practice will encourage primary care doctors to take this challenge to educate and motivate community and provide full support to those who wish to modify their lifestyle and decrease the incidence of CAD. Another study concludes that there is a need for enhancing mothers' general knowledge about the disease, because of the increasing rates of CVD in females. This will lead to improvements in attitude and practice.[17]

Significant association was found between cigarette smoking and CAD. People who had a sedentary lifestyle and unhealthy diet were at a greater risk of developing heart disease. Cigarette smoking was a significant risk factor among men. High fat and carbohydrate diet was a significant risk factor among women. The findings are consistent with the findings of another study done on the same topic.[17]In our study, lack of exercise was not a major risk factor for women as compared to men. Another case control study on CAD conducted in India shows that lack of exercise is a significant risk factor for CAD The reason why exercise was not an important risk factor for women was the protective role of estrogen.[18]

CONCLUSION

On the basis of the findings of our study, we conclude that knowledge and attitude significantly affect the risk of developing coronary artery disease and there is a strong relationship between the KAP variables and behavioral risk factors of CAD.

The knowledge of the subjects of our study regarding CAD and its risk factors was greatly lacking. Same can be said for attitude and practice. At this rate, CAD will become an epidemic in our society and it is our responsibility to prevent that. Serious and urgent intervention is required to tackle this pressing issue.

RECOMMENDATIONS

The analysis of our study highlighted the importance of lack of knowledge as an important predictor of the risk of developing coronary artery disease. In view of our findings, we present the following recommendations:

- Doctors present in primary care setting like BHU should counsel all patients regarding CAD and its behavioral risk factors.
- Psychological counseling of all heart patients should be carried out after they are diagnosed with CAD.
- General practitioners should educate all patients above 35 years of age about diabetes, hypertension and other CAD risk factors.

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