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Original Article

Association of Family History, Drinking and Transient Ischemic Attach with Coronary Artery Disease in a tertiary Care Hospital of Lahore, Pakistan

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ABSTRACT:

Coronary artery disease (CAD) is the most common cardiac disease, caused by the accumulation of a waxy substance called plaque inside the coronary arteries' lumens. CAD is the main cause of cardiovascular death worldwide, accounting for more than 4.5 million deaths in developing countries. **Objective:** To determine the association of family history, alcohol consumption and transient ischemic attack with coronary artery disease in Pakistani population. **Methods:** It was case-control research conducted in Lahore's Mayo Hospital, a tertiary medical facility. A total of 200 people were included in the study, with 100 being cases and the other 100 being controls. Non-probability sampling was used to enroll 77 males and 23 females in the cases and 52 males and 48 females in the controls. The data was analyzed with SPSS software, which was utilized to determine the relationship between various risk variables and CAD. **Results:** Results showed that CAD is more prevalent in males as compared to females (38.5% versus 11.5%). Family history was found to be substantially associated with coronary artery disease patients (p-value=0.000, OR=4.00). 24 had a history of Transient Ischemic Attack (TIA) and 76 did not have TIA, whereas in controls only 3 had TIA, and 97 did not have TIA. There is a statistically significant association of TIA with CAD. In CAD patients, 4 were alcoholics and 96 were non-alcoholics. In controls, 3 were alcoholic and 97 were nonalcoholic. There is no statistically significant association between alcohol and coronary artery disease. **Conclusions:** The current study has brought attention to the rising prevalence of coronary artery disease (CAD) and associated risk factors, such as gender, family history, and Transient Ischemic Attack (TIA). The development of targeted efforts to raise knowledge about coronary artery disease and its associated risk factors, as well as an emphasis on lifestyle adjustment, is urgently required.

KEYWORDS:
Coronary Artery Disease, Age, Gender, Mortality

INTRODUCTION

Coronary artery disease (CAD) is the most common cardiac disease, caused by the accumulation of waxy substance called plaque inside the coronary arteries' lumens [1]. Factors that can restrict coronary arteries from supplying oxygen-rich blood to your heart muscle smoothly are the main reasons of coronary heart disease's formation and progression [2]. The symptoms of stable angina pectoris are caused by an adult atherosclerotic

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plaque. The plaque's complications (rupture, erosion) cause coronary thrombosis, which leads to myocardial infarction and/or sudden death [3]. Angina pectoris, myocardial infarction, heart failure, arrhythmia, and sudden death are among possible complications of coronary artery disease [4].

CAD is the main cause of cardiovascular death worldwide, accounting for more than 4.5 million deaths in developing countries [5]. CAD is the leading cause of death in the globe [1]. In the United States and other industrialized countries, it is the leading cause of morbidity and mortality [6]. Coronary artery disease is a critical factor in the advancement of heart failure and left ventricular systolic dysfunction (HF). Recognizing that coronary artery disease is a primary cause of HF in the United States is crucial to lowering HF mortality [7]. The Indo-Pakistani community has the highest risk of coronary artery disease. In urban Pakistan, one in every five middle-aged adults may develop CAD [8]. The development of cardiovascular disease is influenced by lifestyle, environmental factors, and hereditary factors. The high incidence of risk variables in healthy people indicates that CAD will most likely arise in the near future [9].

Cardiovascular disease strikes women seven to ten years later than it does males, but it remains the leading cause of death in women. Due to the misconception that women are 'protected' from cardiovascular disease, the risk of heart disease in women is frequently overestimated [10]. In Pakistani men, the relative risk of having CAD is highest while they are young. The majority of persons who suffer from CAD are from the lower middle socioeconomic class [11]. Coronary artery stents are artificial linings that are put by a catheter into coronary arteries to widen the vessel and enhance blood flow to ischemic heart muscle [12]. CAD is a challenging clinical entity to manage, and all existing treatments are only temporary [13]. Despite a high literacy rate, there is a lack of knowledge about coronary heart disease and its risk factors. In developing nations, there is a need for initiatives to raise knowledge of CHD, its risk factors, and how to live a healthy lifestyle [14].

As the Pakistani population has an elevated incidence of CAD, the goal of this study is to determine whether there is a substantial link between multiple potential risk factors for the beginning of CAD in the Pakistani population. Finding a clear link will make it simpler to raise public awareness about the elements that cause CAD and, as a result, reduce the incidence of the disease.

METHODS

A case-control study was conducted in the Radiology Department, King Edward Medical University Lahore. The research took a year to complete. The approach of non-probability sampling was used. In this study, there were 100 control volunteers and 100 patients who served as cases. Patients who arrived with chest pain and agreed to be evaluated by coronary angiography were included, as were patients of both genders and patients over the age of 30, whereas pregnant women and children under the age of 30 were excluded. It was a case-control study conducted at Mayo Hospital in Lahore in various wards, including the CCU, ICU, Medical Ward, and Outpatient Departments.

A qualified radiologist performed the angiography. The Radiologist's examination of the patient could take up to an hour, including waiting time. A handheld transducer was brushed over the area of the carotid arteries after the gel was applied to the sides of the neck. There is no radiation exposure because sound waves are used for imaging. The common carotid is imaged longitudinally and transversely. The radiologist gives a typed report within 36 hours. The latest version of SPSS was used to enter and analyze the data. The quantitative variables were described using mean ± SD. The qualitative data was represented using frequency tables, bar charts, and pie charts. The Chi-square was used to determine the relationship between the variables, and the odds ratio was calculated to determine the risk in relation to the other factors.

RESULTS

The study sample was 200, from which 100 were cases and other 100 were controls. The mean age and standard deviation (SD) of cases was 51.62±11.23 and of controls was 47.15±9.35. The minimum age of cases was 30 and of controls was 28 years. The maximum age of cases was 78 years and of controls was 70 years (Table: 1).In cases, 77 males and 23 females, and in controls, 52 males and 48 females were enrolled. In cases mean age and

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SD of males was 52.53±11.40 and in females mean age and SD was 48.56±10.30. In controls mean age and SD of males was 46.36±9.7 and in females it was 48.00±8.8. (Table: 2).In cases 77 males and 23 females had coronary artery disease where as in controls 52 males and 48 females were normal. (P-value=0.000 &OR=3.09) (Table: 3)

Variables	**Total Cases**	**Total Controls**
Sample Size (n)	100	100
Mean	51.62	47.15
Standard Deviation	11.23	9.35
Minimum Age	30	28
Maximum Age	78	70

Table 1: Mean age SD and range of patients with CAD

P-value=0.003

Variables	Cases		Controls	
Gender	Male	Female	Male	Female
Sample size (n)	77	23	52	48
Mean	52.53	48.56	46.36	48.00
Standard Deviation	11.40	10.30	9.7	8.8

Table 2: Mean age SD and range with respect to gender

Odds Ratio=3.09, p-value=0.000, (p-value<0.01)

Gender	**Cases**	**Control**	**Total**
Male	77(38.5%)	52 (26%)	129
Female	23 (11.5%)	48 (24%)	71
Total	**100**	**100**	**200**

Table 3: Gender and CAD

In coronary artery disease patients 24 had history of Transient Ischemic Attach (TIA) and 76 did not had TIA. Where as in controls only 3 had TIA and 97 did not have TIA. The proportion of TIA among coronary artery disease patients were more (24%) as compared to their respective controls (3%) resulting into the Odds Ratio ≈Relative Risk as 10.21 i.e.; the risk of developing coronary artery disease was 10.21 times more in patients who suffered from TIA as compared to the patients who did not suffered from TIA. There is statistically significant association of TIA with coronary artery disease (p-value=0.000) (Table 4).

Transient Ischemic Attack	**Cases**	**Controls**	**Total**
Yes	24 (12%)	3 (1.5%)	27
No	76 (38%)	97 (48.5%)	173
Total	**100**	**100**	**200**

Table 4: Case-Control study between TIA and CAD

Odds Ratio=10.21, p-value=0.000, (p-value<0.01)

In coronary artery disease patients, 4 were alcoholics and 96 were non-alcoholics. In controls 3 were alcoholic and 97 were nonalcoholic. The proportion of alcoholics among coronary artery disease were more (4%) as compared to their respective controls (3%) resulting into the Odds Ratio ≈Relative Risk as 1.34 i.e.; the risk of developing coronary artery disease was 1.34 times more in alcoholic cases as compared to the nonalcoholic cases. There is no statistically significant association of alcoholics with coronary artery disease (p-value=0.700) (Table 5).

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Alcohol	Cases	Controls	Total
Yes	4 (2%)	3 (1.5%)	7
No	96 (48%)	97 (48.5%)	193
Total	**100**	**100**	200

Table 5: Case Control study between alcohol and CAD

Odds Raito=1.34, p-value=0.700 (p-value<0.01)

Results showed that total 50 cases were having a family history of CAD while only 20 participants had a family history of CAD (Table 6).

Family History	Cases	Controls	Total
Yes	50 (25%)	20 (10%)	70
No	50 (25%)	80 (40%)	130
Total	**100**	**100**	**200**

Table 6: Family History and CAD

Odds Ratio=4.00, p-value=0.000 (p-value<0.01)

DISCUSSION

Cardiovascular disorders are associated with a high mortality rate and are frequently undetected before clinical symptoms appear; therefore, a reliable tool for early diagnosis is required. The majority of epidemiological data is expressed in terms of cerebrovascular accidents, ischemic heart disease (IHD), often known as CHD, or the number of fatalities caused by coronary heart disease. In clinical practice, both interventional and non-interventional approaches for detecting atherosclerosis are frequently employed. The American Heart Association recommends CIMT testing as the most effective method for detecting atherosclerosis [15]. A total of 200 patients with chest discomfort were enrolled in this research. One hundred individuals were cases (coronary artery disease was diagnosed via angiography), while the other one hundred were controls (whose angiography finding was normal).

Based on our study, CAD is more prevalent in males as compared to females (38.5% versus 11.5%). These findings were similar to a study conducted in Iran that also showed more cases of CAD in males than in females (19.1% versus 14.2%) [16]. Furthermore, according to the findings of Wegner's study [17], CAD strikes women several years later than it does men. Before menopause, women's bodies' well-known biological resistance against CAD can induce a ten-year delay in the appearance of CAD symptoms. Finally, Wegner found that 49% of men and 32% of women over the age of 40 are at risk of coronary artery disease. Family history was found to be substantially associated with coronary artery disease patients (p-value=0.000, OR=4.00) in the current study. Similarly, a study found that young individuals with a positive family history of CAD have a higher prevalence, extent, and severity of CAD, all of which are linked to a higher risk of myocardial infarction. Positive family history in young individuals is the highest clinical predictor of future unexpected myocardial infarction when compared to other clinical CAD risk factors [18]. Contrary to our results, a study concluded that a family history of coronary artery disease was not a factor [19]. Coronary artery disease was found to be substantially linked with stroke/transient ischemic attack (p-value=0.000 & OR=10.21). A prior study found a link between coronary artery disease and ischemic stroke. Over a seven-year period, the presence and severity of coronary artery disease were linked to an increased risk of death, cardiac death, and myocardial infarction, as well as ischemic stroke [20].

CONCLUSIONS

The current study has brought attention to the rising prevalence of coronary artery disease (CAD) and associated risk factors, such as gender, family history, and Transient Ischemic Attack (TIA). The development of targeted

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efforts to raise knowledge about coronary artery disease and its associated risk factors, as well as an emphasis on lifestyle adjustment, is urgently required.

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