



Risk factors for coronary artery disease among judicial officers.

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ABSTRACT... Objectives: This study was to find out the prevalence of risk factors for coronary artery disease in very important group of population who are expected to have sedentary lifestyle. **Study Design:** Cross-Sectional study. **Setting:** Faisalabad Institute of Cardiology, Faisalabad. **Period:** January 2015 to June 2017. **Material & Methods:** Officers from age of 25 years to 60 years and of either sex were enrolled in study. FLP, FBS, BP, weight and height were measured at FIC. Frequency of coronary artery disease risk factors including Diabetes, HTN, smoking, dyslipidemia, physical activity and obesity was noted considering diagnostic criteria. **Results:** Mean age was 40.86 ± 7.49 , 84.4% (n=76) were male, 15.6% (n=14) were females, 11.1% (n=10) were diabetic, 88.9% (n=80) were non-diabetic, 4 were known case of ischemic heart disease with one having CABG. Smoking was present in 27.8%(n=25). Hypertension was found in 22.2%(n=20). LDL cholesterol was raised in 24.4%(n=22) officers. 46.7%(n=42) were having high BMI i.e.>25. A high proportion was found to have sedentary lifestyle with 72.2%(n=65) being physically less active. **Conclusion:** Major conventional Risk factors for coronary artery disease are prevalent in young healthy judicial officers who were not patient of any significant disease.

Key words: Coronary Artery Disease, Fasting Blood Sugar, Hypertension, Obesity, Smoking.

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INTRODUCTION

Though cardiovascular disease is major cause of morbidity and mortality worldwide but 75% of its lethal effect is in low-middle income countries.¹ Along with many other risk factors, ethnicity is also an important indicator of future development of CAD.² And different communities in the same ethnicity can have variable prevalence of Disease depending on its risk factors. Presence of these risk factors depend on the type of profession, type of duties, working hours, stress level, accompanying population and accessibility to healthcare facility.

Traditional risk factors for Coronary artery disease including Smoking, Diabetes, Hypertension, dyslipidemia, physical activity, dietary habits and psychosocial stress are important modifiable factors which need attention in every community and profession to explore its prevalence and

accordingly need of preventive strategy to avoid Ischemic heart disease in relevant subgroup of population.

Smoking and exposure to second hand smoke leads to significant number of premature deaths according to 1st surgeon general's report.³ Smoking causes 32% of coronary heart disease deaths. Use of tobacco products is increasing globally with almost 80% of world's smokers living in low- and middle-income countries.⁴ In Pakistan, 33% of men and 4% of women are found to have smoking.⁵ Tobacco is used for smoking mainly which is basic harmful product and is used in various other forms also. It is a causative factor for CAD whether used in smoke or smokeless form.

Diabetes, one of the most common chronic diseases in the world affected 285m adults in

2010.⁶ It is estimated that diabetes will affect more than 430m persons by 2030.⁶ Hyperglycemia leads to endothelial vasomotor dysfunction, vascular effects of advanced glycation end products, increased systemic inflammation and prothrombotic state. Out of these the 1st one is the hallmark of diabetic cardiovascular disease. Timely identification and Optimal strategies to control diabetes is very important to avoid its cardiovascular effects.

Systolic BP above 130 and diastolic BP above 80 is termed hypertension which is present in over 1 billion worldwide population.⁷ Hypertension causes 7.6 million premature deaths worldwide annually, with 80% of this burden occurring in low and middle income countries.⁸ Risk factors for development of Hypertension include ethnicity, family history, increasing age, genetic factors, lower education, psychosocial stressors, tobacco use, sedentary lifestyle, increased weight, sleep apnea and dietary habits. Development of hypertension also coincides with development of hyperglycemia.⁹

Dyslipidemia is very established risk factor for cardiovascular disease with LDL cholesterol significantly linked to MI and cardiovascular death.¹⁰ HDL is 2nd important agent with increase of 1mg/dl HDL levels are associated with 2 to3% decrease in total CV death.

Regarding physical activity, it is said that inactivity can cause similar number of deaths as smoking.¹¹ Heart healthy guidelines recommend that adults should have 150 minutes per week of moderate intensity physical activity. Obesity is one additional factor associated with CAD. It is becoming serious health problem worldwide.¹² It is quite difficult to treat after it has developed.¹³ Obesity alone is associated with all cause mortality regardless of physical activity.¹⁴ Considering all these factors as the most important contributors of cardiovascular disease, we decided to conduct study in very important sub-population who have quite less physical activity and are expected to be more prone to develop coronary artery disease. Frequency of risk factors will clear the attention they needed to improve primary preventive

strategies if existing are not sufficient.

MATERIAL & METHODS

This Cross-sectional study was conducted at Faisalabad institute of cardiology, from January 2015 to June 2017 with 95% confidence interval and absolute precision of 8%. Judicial officers of age 25 to 60 years, of either sex, with ongoing service, presenting to FIC for general evaluation were included in study.

After approval from hospital Ethical committee Faisalabad Institute of Cardiology, total 90 judicial officers were enrolled. Procedure of research was explained to the patients and informed consent was taken. Smoking is labelled if anyone has smoked 100 cigarettes throughout life and last cigarette in last 28 days. Hypertensive is labeled when BP is more than 130/80 on 2 different occasions or already on antihypertensive medication. Diabetes is based on blood sugar levels if more than 126 fasting or more than 200 random blood levels or those taking medicine for diabetes with normal blood sugar levels. Obesity was labeled on BMI. Physical activity was assessed either as sedentary or active lifestyle. Demographic data and required information were collected through prescribed proforma.

Data was analyzed by SPSS-25. Quantitative variable like age was calculated by mean and standard deviation. Qualitative variables like gender, Presence of hypertension, diabetes, smoking, obesity, dyslipidemia, physical activity presented in the form of frequencies and percentages. Effect modifiers like age, and gender were stratified to control its effect on outcome variables. Post stratification chi-square test was applied. P value ≤ 0.05 was considered significant.

RESULTS

A total of 90 judicial officers were enrolled fulfilling the inclusion and exclusion criteria. Mean age was 40.86 ± 7.49 , 84.4% (n=76) were male, 15.6% (n=14) were females, 11.1% (n=10) were diabetic, 88.9% (n=80) were non-diabetic. Majority of the diabetics were taking oral hypoglycemic agents with well controlled diabetes. 4 were known case

of ischemic heart disease with one having CABG. Out of these four patients, one had PCI 5 years back. Smoking was present in 27.8%(n=25). 24.4% have smoking of more than 1pack per day. Hypertension was found in 22.2%(n=20). It was uncontrolled in 2 officers. Others were taking antihypertensive medications with good compliance and control. LDL cholesterol was raised in 24.4%(n=22) officers. Two of them were found to have levels more than 190mg/dl. Rest were having levels between 150 to 190mg/dl. 46.7%(n=42) were having high BMI i.e.>25.

Obesity was further divided into overweight, mild, moderate and severe obesity and morbidly obese patients. It was found that 2.2%(n=2) were morbidly obese. 17.8%(n=16) were overweight, 15.6%(n=14) had mild obesity, 6.7%(n=6) had moderate obesity with BMI between 35 to 39.9. and 6.7%(n=6) were morbidly obese with BMI above 40. A high proportion was found to have sedentary lifestyle with 72.2%(n=65) being physically less active.

Characteristics	n=81	Gender		P-Value
		Male	Female	
Age	40.86± 7.49	84.4%(76)	15.6%(14)	
Diabetes	11.1%(10)	11.8%(9)	7.1%(1)	0.612
HTN	22.2%(20)	23.7%(18)	14.3%(2)	0.443
Obesity	56.7%(42)	44.7%(34)	57.14% (8)	0.398
Increased LDL	24.4%(22)	23.7%(18)	28.6%(4)	0.262
Smoking	27.8%(25)	28.9%(22)	21.4%(3)	0.569
Physical activity	27.8%(n=25)	27.6%(n=21)	28.6%(4)	.943

Table-I. Risk factors for metabolic syndrome with gender specification

DISCUSSION

CAD risk factors either modifiable or non-modifiable, are of immense significance as their control is the primary goal of treatment in patients who have developed CAD and for prevention of those who have not entered into the red zone yet. Along with other risk factors, age is very important single factor as we see CAD in old age patients without any other contributing condition. Many studies have supported this fact.¹⁵ And it is the most common factor as everybody will definitely get advanced age if living. Mean age of our population was 40 years which itself carries moderate risk of ischemic heart disease if anyone has atypical chest pain.

Among modifiable risk factors, we found, obesity as the most common factor in our evaluated population. BMI is the most commonly used measure of obesity.¹⁶ Obesity was 56.7% in our population. Based on NHANES data USA had 37.7% prevalence of obesity overall in year 2013, 2014.¹⁷ We had higher prevalence which might be because of the nature of work our community has. They have long sessions of sitting which

may contribute to their obesity. Obesity is the 5th leading risk of death worldwide and it has well recognized association with diabetes as among obese patients, 44% patients have diabetes.¹⁸

Second most common risk factor found in our community was lack of physical activity. Smoking had similar prevalence as of physical activity. Both are said to be equally dangerous risk factor for CAD. 27.8% judicial officers had sedentary lifestyle and similar number were smokers. In PROMIS study (Pakistan risk of Myocardial Infarction) it was found to be 9% in general population who did not have CAD.¹⁹ Others were having moderate or heavy physical activity. In PURE-HIS study, 27.2% male and 17.2% female were found to have low level of physical activity.²⁰ It was again nature of job which contributes to the low level of physical activity. Our population found higher prevalence of sedentary lifestyle causing this population to be at higher risk of coronary artery disease.

Smoking being well known risk factor for CAD was 27.8% in judicial officers. This was bit less than those found in PROMIS study (32%) in controls. An

Indian study showed 30% prevalence of smoking in urban population of Bangalore and Delhi.²¹ It was found to be 20.8% in Karachi.²² Diabetes is quite common in our society. CARRS study found it to be 16.3% in Karachi and 22.8% in Chennai.²³ Our study found 11.1% prevalence of diabetes which was lower than that found in CARRS study. This was most probably due to relatively younger population in our study. Sri Lankan population was found to have 12.6% diabetes.²⁴

Hypertension is another important modifiable risk factor for CAD. It was found to be 22.2%. Prevalence of Hypertension was 16.3% in a study conducted by Rastogi and colleagues.²⁵ Hypertension have many contributing factors as it is associated with lack of rest, psychosocial stress, increased salt intake and sedentary lifestyle along with dietary habits. Our population has more prevalence because of nature of job and some dietary habits which contribute to HTN. Dyslipidemia was also higher in our population being 24.4%. Increased level of LDL cholesterol is most important for CAD. It was more prevalent in those with sedentary lifestyle.

CONCLUSION

Judicial officers being important subset of society should have better lifestyle and best form of primary preventive strategies. To evaluate the weightage of risk factors in this population we conducted study in judicial officers working in Faisalabad. We found higher prevalence of common risk factors than general population here in Pakistan as well as other Asian countries. This is most probably due to their nature of job. But whatever the reason is, our aim is to control CAD. With the help of our study we are able to better guide that how much attention this community needs for prevention of coronary artery disease.





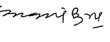
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AUTHORSHIP AND CONTRIBUTION DECLARATION

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3	Faisal Ali	Editing.	
4	Muhammad Akram	Data collection.	
5	Shahid Iqbal	References.	
6	Ali Farahe	Proof reading.	