

# Effect of Lifestyle on Coronary Artery Disease in Patients Presenting at Doctors Hospital, Lahore

Seema Imdad<sup>1,\*</sup>, Farrakh Mehmood Alvi<sup>1</sup>, Naheeda Kousar<sup>2</sup> and Fatima Shuja<sup>1</sup>

<sup>1</sup>Department of Nutrition and Dietetics, Institute of Public Health, 6-Abdul Rehman Chughtai Road, Lahore, 54000, Pakistan

<sup>2</sup>145/146 A Guldasth Town, Zarar Shaheed Road, Lahore Cantt, 54850, Pakistan

**Abstract:** *Objectives:* To study the effect of lifestyle on coronary artery disease and to identify the strength of association between coronary artery disease and lifestyle factors among patients belonging to upper class of Lahore.

*Method:* Seventy-two cases and 72 controls were recruited using convenient purposive sampling technique. Dietary pattern, activity level and socio-demographic profile were assessed with well-designed interview questionnaire.

*Results:* According to statistical analysis of dietary factors, consumption of red meat, bakery products, restaurant food, fast food, soft drinks showed significant association with disease, whereas role of fruits and vegetables was found protective. Use of desi ghee had no significance in causing CAD in current study. Results of BMI and hip-waist ratio showed insignificance. Activity level was also insignificant while smoking and stress were significant. In socio demographic profile, sex of the respondents showed that 68.1% were male and 31.9% were females having CAD, so it was also statistically significant that heart diseases were more in males. Married individuals also showed significant result.

*Conclusion:* According to results, consumption of red meat, bakery products, restaurant food, fast food, soft drinks showed significant association with disease, whereas role of fruits and vegetables was found protective. Whole wheat, desi ghee had no significance in causing CAD in current study. Results of BMI and hip-waist ratio showed insignificance. Activity level was also insignificant while smoking and stress was found to be associated. In socio demographic profile male sex, married individuals showed significant relation with CAD. Education, family type and income had no relation with heart disease in this study.

**Keywords:** Coronary Artery Disease (CAD), Cardiovascular disease (CVD) Life Style, Dietary factors, Food habits, BMI.

## INTRODUCTION

“Life style is the way a person lives”. This includes the habits of an individual and customs that society follows, shaped by the life-long evolution of social behavior, including daily activity, dietary habits and use of substances such as tobacco. All of these have important implications for health. Hence lifestyle which a person leads can influence his health.

Risk factors for heart diseases include age, use of tobacco, sedentary life style, excessive alcohol intake, family history, unhealthy diet, obesity, hypertension, diabetes mellitus, hyperlipidemia [1], psychosocial factors, stress [2], poverty, illiteracy and pollution [3,4].

Cardiac related diseases are the leading cause of death in the world causing 17.1 million deaths per year (that is 29 percent of all deaths). Coronary artery disease (CAD) and stroke account for more deaths in male as compared to female [5,6]. Typically, onset of the disease is seven to ten years earlier among men as

compared to women [6]. Life style can also cause high blood pressure which in turn causes 13% of cardiovascular related (CVD) deaths. Use of tobacco is another factor which results in 9% of CVD deaths, diabetes (6%), lack of exercise (6%) and obesity (5%) being other factors [3]. Among developing countries rate of increase in CVD is twice as high as compared with developed countries [6].

Apart from immutable risk factors like age, gender or family history, interventions can be done to reduce alarmingly high rate of CVD related death. Hence many of these cardiovascular risk factors can be modified by lifestyle change, change in social behavior, treatment and prevention of diabetes, hypertension and hyperlipidemia. The objective of this study was to find out the risk factors for the upper middle class families living in Lahore.

## MATERIAL & METHODS

Case control study was designed. Patients were recruited from a private hospital of Lahore. Seventy-two cases were selected from admitted coronary artery disease patients and 72 controls age matched controls were also recruited. Critically ill patients or those

\*Address correspondence to this author at the Department of Nutrition and Dietetics, Institute of Public Health, 6-Abdul Rehman Chughtai Road, Lahore, 54000, Pakistan; Tel: +92 03234773796; Fax: +92 042 99204394; E-mail: seemaimdad94@gmail.com

suffering from complications of CAD or below the age of 35 were excluded from this study. The data collection tool comprised of semi-structured interview questionnaire containing questions for socio demographic profile, lifestyle and dietary pattern. Height, weight, hip –waist ratio was also measured of cases and controls. The completed questionnaires were entered into computer for data analysis. SPSS 20 was used for data entry and analysis. Frequency and percentages were calculated for qualitative variables. Chi square and odds ratio were calculated to find out possible associations. This study design was approved by the institutional ethics committee. The confidentiality of the information was ensured and maintained as per Helsinki Protocol.

## RESULTS

Socio-demographic characteristics of the participants of this are listed in Table 1. Fifty-six

percent of the participants were male (68.1% cases vs 46 percent controls) majority were married. and educated. Majority of the patients and controls had family income level of above 100 thousand per month and since they were visiting to an expensive private hospital, participants were placed in upper income level. Participants were doing private jobs/ business or were house wives (86%).

Among variable studies consumption of red meat (odds ratio 2.653), use of bakery (odds ratio 1.284), carbonated soft drinks (odds ratio 2.111), frequent eating in hotels (odds ratio 2.125) and taking fast food (odds ratio 3.804) were found to be risk factors for the onset of CVD (Table 2).

Whereas use of whole wheat (odds ratio 0.334), milk products (odds ratio 0.732), Desi ghee (odds ratio 0.520) fruits and vegetables (odds ratio 0.319 and 0.125 respectively), were found to be protective factors against coronary artery disease.

**Table 1: Socio-Demographic Characteristics of Respondents**

Socio-Demographic Profile	Frequencies			
	Cases		Controls	
Sex	Frequency	%age	Frequency	%age
Male	49	68.1	33	45.8
Female	23	31.9	39	54.2
<b>Marital Status</b>				
Single	03	4.2	26	36.1
Married	69	95.8	46	63.9
<b>Education</b>				
Illiterate	10	13.9	07	9.7
Literate	62	86.1	65	90.3
<b>Occupation</b>				
Housewives	16	22.2	19	26.4
Government Job	11	15.3	19	26.4
Private/ Business	41	56.9	35	34.7
Job less	04	5.6	09	12.5
<b>Job Type</b>				
Office Job	22	44.9	15	35.7
Field Work	30	41.6	01	1.4
Both	04	15.3	26	36.1
<b>Family Type</b>				
Nuclear	44	61.1	48	66.7
Extended	28	38.9	24	33.3
Total	72	100	72	100

**Table 2: Distribution and Statistical Analysis of Diets with Coronary Artery Disease**

Variable		Coronary Artery Disease			Odds Ratio	Remarks
		Cases	Controls	Total		
Red Meat	Yes	13 (61.9%)	8 (38.1%)	21	2.653 (1.763 – 5.321)	Significant
	No	59 (48%)	64 (52%)	123		
Whole Wheat	Yes	3 (23.1%)	10 (76.9%)	13	0.334 (0.076 – 2.085)	Insignificant
	No	62 (47.3%)	69 (52.7%)	131		
Bakery	Yes	15 (75%)	05 (25%)	20	1.284 (1.1 – 2.545)	Significant
	No	12 (20.3%)	47 (79.7%)	49		
Milk Products	Yes	10 (43.5%)	13 (56.5%)	23	0.732 (0.298 – 1.797)	Insignificant
	No	62 (51.2%)	59 (48.8%)	123		
Soft Drink	Yes	24 (47.1%)	27 (52.9%)	51	2.111 (1.708 – 2.610)	Significant
	No	48 (51.6%)	45 (48.4%)	93		
Desi Ghee	Yes	12 (37.5%)	20 (62.5%)	32	0.520 (0.232 – 1.165)	Insignificant
	No	60 (53.6%)	52 (46.4%)	112		
Fast Food	Yes	17 (45.9%)	20 (54.1%)	37	3.804 (1.786 – 4.976)	Significant
	No	22 (32.4%)	46 (67.6%)	68		
Restaurant Food	Yes	12 (40%)	18 (60%)	30	2.125 (1.231 – 3.216)	Significant
	No	60 (52.6%)	54 (47.4%)	114		
Fruits	Yes	14 (31.1%)	31 (68.9%)	45	0.319 (0.151 – 0.674)	Significant
	No	58 (58.6%)	41 (41.4%)	99		
Vegetables	Yes	26 (54.2%)	22 (45.8%)	48	0.125 (0.015 – 0.984)	Significant
	No	46 (47.9%)	50 (52.1%)	96		
Total		72	72	144		

Among anthropometric characteristics, body mass index (odds ratio 1.000), hip-waist ratio (odds ratio 0.618) and physical activity level (odds ratio 0.647) were not found to be linked with CAD in this study. While smoking habit (odds ratio 1.836) and level of stress (odds ratio 2.2) were significantly linked with coronary artery disease. Similarly, male and married individuals had significant association with CAD (Table 3).

## DISCUSSION

Favorite protein source of the Pakistani population is red meat (beef and mutton). Affording families usually consume red meat more frequently. No surprise that intake of red meat was significantly associated with CAD in our study. Intake of red specially processed meat has been found to be linked with serious diseases like incidences of heart disease, stroke and diabetes [7]. Use of bakery product is on the rise in Lahore chains of new bakeries are coming up and this reflects in our results as use of bakery products was on rise in respondents and was linked with CAD. Whole grains like wheat in our study are not linked with heart disease in fact it has been found to be protective [8]. But in

processed bakery products animal and vegetable oils are added and then baked and so this might be the reason that commercially baked products are linked with CAD as has been shown previously that eating more meat and sugar containing food can lead to obesity [9], which is leading cause of CAD [10]. Use of servings of milk and milk products was not according to WHO guidelines, still they were not actually causative factor of heart diseases. Soft drinks are considered as free of calories, there was plenty of its usage due to unawareness. When use of desi ghee was had no significant effect on CAD. Though it is an animal fat but a natural product which are protective for CAD. Intake of fast food and restaurant food were significantly associated with CAD because these products contain a lot of fat and fried meat. Intake of fruits and vegetables was protective on CAD. BMI and hip-waist ratio showed most of the respondents were in normal range for both categories. This may be due to the reason that population studied was affluent and were already nutritionally counseled by their health care. In this study activity level was divided into two groups sedentary and active groups. Although active lifestyle has had a beneficial effect on lipid profile and other cardiac parameters but in this study due to sample size result

**Table 3: Relationship of Physical Characteristics with Coronary Artery Disease**

Variable		Coronary Artery Disease			Odds Ratio	Remarks
		Cases	Controls	Total		
Body Mass Index	Above 25	40 (50%)	40 (50%)	80	1.000 (0.518 – 1.930)	Insignificant
	Up to 25	32 (50%)	32 (50%)	64		
Hip-Waist Ratio	Abnormal	17 (41.5%)	24 (58.5%)	41	0.618 (0.297– 1.285)	Insignificant
	Normal	55 (53.4%)	48 (46.6%)	103		
Activity Level	Sedentary	66 (49.3%)	68 (50.7%)	134	0.647 (0.175–2.397)	Insignificant
	Active	6 (60%)	4 (40%)	10		
Smoking	Yes	31 (59.6%)	21 (40.4%)	52	1.836 (1.021 – 3.66)	Significant
	No	41 (44.6%)	51 (55.4%)	92		
Stress	Yes	13 (26.5%)	36 (73.5%)	49	2.20 (1.67 – 4.7)	Significant
	No	59 (62.1%)	36 (37.9%)	95		

was insignificant. Male sex showed preponderance to heart disease, this might be due to more males in this study or they were prone to heart diseases, due to outside exposure to fast food and stresses of life. Marital status showed that married individuals had significant association with CAD but most studies showed the other way round.

## CONCLUSION

It could be concluded that consumption of red meat, bakery products, fast food, restaurant food and soft drinks, smoking and stress, male sex and marriage were significant in causing CAD while activity level, education, family income and family type had no relation with heart disease in this study.

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