

# Insight and Behaviour of General Population Regarding Modifiable Risk Factors for the Prevention of Cardiovascular Disease

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## ABSTRACT

**Aim:** To assess the awareness of general population regarding risk factors and prevention of cardiovascular disease (CVD).

**Study Design:** Cross-sectional study

**Place and Duration of Study:** Department of Medicine, Shaikh Zayed Hospital Lahore from 1<sup>st</sup> January 2021 to 30<sup>th</sup> September 2021.

**Methodology:** Four hundred and ninety two subjects were enrolled. A self-designed questionnaire was used to collect data concerning knowledge attitude and practices of study participants regarding CVD.

**Results:** Majority of the participants were aware of the fact that by reducing BMI <25.237(48.1%), good control of blood pressure 335 (68.1%), regular exercise, 286(58.1%), reduce stress 457(92.9%), and avoid smoking 391(79.5%) were the majors modification of risk factors that are required for the prevention of CVD. Only few 76(15.4%), 120(24.4%) 54(10.9%) were aware of other risk factors modification including; maintain high level of HDL and maintain low levels of LDL, avoidance smokeless tobacco respectively as preventive measure of CVD. However there was a misconception that the fatty meals and saturated fats do not increase cholesterol and are beneficial for heart health. Major reasons for not being able to adopt a healthy lifestyle were limited access to outdoor and indoor exercise (68%), financial constraints (61%) inability of individuals to avoid passive smoking (51%) and busy life style (44%).

**Conclusion:** General population has sufficient knowledge regarding risk factors and prevention of CVD. Somehow they are not practicing healthy lifestyle for disease prevention. There is a need to counsel people to adopt healthy lifestyle and avoid risk factors leading to CVD.

## INTRODUCTION

Cardiovascular disease (CVD) among people is the economic burden and major threat to public health of society and is the main reason for the morbidity and death in the world. In the last ten years, although the mortality rate due to heart disease has been declined, still the prevalence and incidence of long lasting heart disease is high.<sup>1</sup> There are two types of risk factors for CVD including modifiable and non-modifiable risk factors. Non-modifiable risk factors include age, gender and family history. However; the modifiable risk factors include hypertension, diabetes mellitus, tobacco use, physical inactivity, obesity, unhealthy diet, stress, anxiety and depression.<sup>2</sup> One of the most important risk factor associated with cardiovascular disease is the incidence of blood pressure. The people who have uncontrolled blood pressure may have greater chances of getting cardiovascular disease.<sup>3</sup> It is an hour of need to control and prevent cardiovascular disease. It is important to have knowledge of increasing intake of fruits and vegetables in diet in order to manage and control CVD.<sup>4</sup> The plant based dietary intake is good for prevention of CVD. There is inverse proportion between fruits and vegetables intake with the risk of CVD.<sup>5</sup>

Another key factor for prevention of CVD is vitamin D intake. The deficiency of vitamin D may lead to hypertension while disturbing calcium homeostasis. Therefore; the intake of vitamin D prevents cardiovascular diseases.<sup>6</sup> Honey is another important key factor in controlling CVD. It has a lot of biological activities which are associated with its effect on cardiovascular system. With the regular intake of honey in diet can prevent CVD. It is also used in the treatment of CVD.<sup>7</sup> One of the most important factors in controlling and prevention of cardiovascular disease is counselling and providing support to patients. Counselling and support make them cut down their smoking need. They are given sessions on how to reduce their alcohol consumption. Routine diagnosis of patients is carried out in order to maintain check and balance on their habits.<sup>8</sup> In this way the cardiovascular diseases are managed among people.

The purpose of this research is to study the insight and behavior of university students of Lahore regarding modifiable risk factors for the prevention of cardiovascular disease. As there is

increasing risk of incidence of CVD in people under the age of 40 and there are very few studies in Pakistan regarding knowledge of prevention of cardiovascular diseases in university students. Therefore; it is necessary to counsel the youth so that they can take precautions beforehand.

## MATERIALS AND METHODS

This cross-sectional study was carried out at Department of Medicine, Shaikh Zayed Medical Complex from 1<sup>st</sup> January 2021 to 30<sup>th</sup> September 2021. An ethical approval was obtained from IRB Shaikh Zayed Hospital Lahore. Study population was all healthy individuals visiting or working in Shaikh Zayed Hospital. After taking informed consent 492 participants fulfilling inclusion criteria (male and female having age of 25 years and above were included in the study. Participants who were not willing to fill the questionnaire or having clinical history of cardiovascular disease, chronic kidney disease or tuberculosis were excluded from the study.

The questionnaire was designed for the purpose of data collection. The questionnaire was consisted of different sections. First section was consisted of questions related to demography of the participants. The second section was consisted of questions regarding their self-reported risk factors of cardiovascular disease (CVD). The other sections included the questions for assessing awareness of participants regarding modifiable risk factors (Clinical and lifestyle) of CVD. Fourth section was related to behavior and believes of participants for taking preventive measures for the prevention of CVD. Last part of the questionnaire was about the barriers faced by study for not adopting preventive measures. All the data was entered and analyzed using SPSS software version 22.

## RESULTS

After taking informed consent a total of 492 were included in the study. Out of 492 participants majority 302(61.4%) were in the age group of ≤40 years. Almost equal number of male (50.8%) and female (49.2%) participated in the study. Out of 492, 229(46.5%)

belong to middle income group (having monthly income 25-50K), mostly participants were married 236(47.9%) [Table 1].

The participants were asked about the presence of cardiovascular risk factors. The self-reported risk factors i.e. age >40 years 119(53.6%), family history of CVD 171(53.6%), high waist to hip ratio 101(59.8%), obesity/overweight 129(60.8%), sedentary lifestyle 209(63.3%) and exposure to passive smoking 188(60.8%) were more prevalent in females than in males (Table 2).

Majority of the participants were aware of the fact that by reducing BMI <25, good control of blood pressure, regular exercise, reduce stress and avoid smoking were the majors modification of risk factors that are required for the prevention of CVD. Out of 492 participants, 237(48.1%), 335(68.1%), 286(58.1%), 457(92.9%), 391(79.5%) participants knew about these modifiable risk factors respectively. However only few 76(15.4%), 120(24.4%) 54(10.9%) were aware of other risk factors modification including; maintain high level of HDL and maintain low levels of LDL, avoidance smokeless tobacco respectively as preventive measure of CVD. (Table 3)

Table 1: Demographical characteristics of study participants (n=492)

Characteristic	No.	%
Age (years)		
≤40	302	61.4
>40	190	38.6
Gender		
Male	250	50.8
Female	242	49.2
Monthly Income		
<25 K	170	34.5
25-50 K	229	46.5
>50 K	93	18.9
Education		
Illiterate	62	12.6
Matric	100	20.3
Higher Secondary School	152	30.9
Graduate/Postgraduate	178	36.2
Profession		
Field Job	53	10.8
Desk Job	224	45.5
Housewife/jobless	215	43.7
Marital Status		
Unmarried	189	38.5
Married	236	47.9
Single Married	67	13.6

Major reasons for not being able to adopt a healthy lifestyle were limited access to outdoor and indoor exercise (68%), financial constraints (61%) and inability of individuals to avoid passive smoking (51%). Due to busy life style some people did not have time to look after themselves (44%). Few people did not take it seriously stating that change in behavior won't result in reducing risk (12%) and God determines fate of everything (21%). Some individuals were unwilling to quit smoking (38%) and 325 didn't perceive themselves in risk of heart diseases (Figure 1).

Table 2: Frequency of self-reported cardiovascular risk factors of study participants

Risk Factors	Male	Female	Total
Age > 40 years	103(46.4%)	119(53.6%)	222(100%)
Family History	148(46.4%)	171(53.6%)	319(100%)
Increased Waist/Hip Ratio	68 (40.2%)	101(59.8%)	169(100%)
Obesity/overweight	83(39.2%)	129(60.8%)	212(100%)
Hypertension	106(56.4%)	82(43.6%)	188(100%)
Sedentary lifestyle	121(36.7%)	209(63.3%)	330(100%)
High Cholesterol	78(60.5%)	51(39.5%)	129(100%)
Diabetes	34(30.6%)	77(69.4%)	111(100%)
Stress	169(52.6%)	152(47.3%)	321(100%)
Smokeless tobacco	41(78.8%)	11(21.2%)	52(100%)
Smoking	137(98.6%)	02(1.4%)	139(100%)
Exposure to passive smoking	121(39.2%)	188(60.8%)	309(100%)

Table 3: Awareness regarding modification in risk factors for the prevention of cardiovascular disease

Which of the following factors can prevent CVD?	Yes	No	Don't know
BMI< 25	237(48.1%)	112(22.8%)	143(29.1%)
Good control of Blood pressures	335(68.1%)	68(13.8%)	89(18.1%)
Good control of diabetes	101(20.5%)	95(19.3%)	296(60.2%)
Maintain high levels of HDL-Cholesterol	76 (15.4%)	48 (9.8%)	368(74.8%)
Maintain Low levels of LDL- Cholesterol	120(24.4%)	61 (12.4%)	311(63.2%)
Regular Exercise/Brisk walk/Running/Jogging	286(58.1%)	82(16.7%)	124(25.2%)
Reduce Stress	457(92.9%)	11(2.2%)	24(4.9%)
Avoid Smokeless tobacco	54(10.9%)	338(68.7%)	100(20.3%)
Quit Smoking	391(79.5%)	47(9.6%)	54(10.9%)
Avoid passive smoking	125(25.4%)	189(38.4%)	178(36.2%)

Table 4: Awareness regarding healthy diet for the prevention of cardiovascular disease

Which of the following dietary modifications can prevent CVD?	Yes	No	Don't know
It is beneficial to eat 3 portions of vegetables/fruits daily	255(52.0%)	81(16.5%)	156(31.7%)
It is harmful to eat red meat more than thrice a week	310(63.0%)	67(13.6%)	115(23.4%)
Eating excess salty food leads to increase in blood pressure and CVD	329(66.9%)	71(14.4%)	92(18.7%)
Fatty meals do not increase the cholesterol level in blood	302(61.4%)	77(15.6%)	113(23.0%)
Fats that are solid at room temperature are beneficial for heart health	341(69.3%)	31(6.3%)	120(24.4%)
Low-fat dairy products, whole grains, fish, vegetable oil, nuts are good for heart health	264(53.6%)	21(4.3%)	207(42.1%)

Table 5: Behaviors of study participants for adopting healthy lifestyle for the prevention of CVD

Would you like to take following measures to prevent CVD?	Yes	No	Indecisive
Cut down on salt intake	235(47.8%)	78(15.8%)	179(36.4%)
Eat less sugar	241(49.0%)	106(21.5%)	145(29.5%)
Limit saturated fat intake	102(20.7%)	118(24.0%)	272(55.3%)
Go for more fish	211(42.9%)	189(38.4%)	92(18.7%)
Fill up on fruits and vegetables	172(34.9%)	209(42.5%)	111(22.6%)
Quit smoking(active/passive)	98(19.9%)	132(26.8%)	262(53.2%)
Get more Exercise	331(67.3%)	64(13.0%)	97(19.7%)
Reduce Stress	110(22.4%)	23(4.6%)	359(73.0%)
Regular medical check-up	201(40.8%)	122(24.8%)	169(34.3%)

The participants were asked about their knowledge regarding which type of diet is good for their cardiovascular health. It was found that 255(52.0%) knew that eating more vegetables and fruits are good for healthy heart. Likewise majority 310(63.0%) and 329(66.9%) respectively were aware of the fact that eating red meat more than thrice a week as well as excess salt may lead to high blood pressure and CVD. However there was a misconception that the fatty meals and saturated fats do not increase cholesterol and are beneficial for heart health (Table 4).

Participants were inquired regarding their behavior to adopt healthy lifestyle to prevent CVD. 235(47.8%) participants were ready to reduce their salt intake, 241(49.0%) were willing to cut

down the sugar and only 102(20.7%) were prepared to control intake of saturated fat. 211(42.9%) and 172(34.9%) individuals were ready to add more fish as well as fruit and vegetables to their diet respectively. More than half partakers were eager to increase their physical activity (67.3%) whereas, very few were willing to quit smoking (19.9%). 40.8% were ready to go for regular medical check-ups and 22.4% were willing to work on controlling their stress (Table 5).

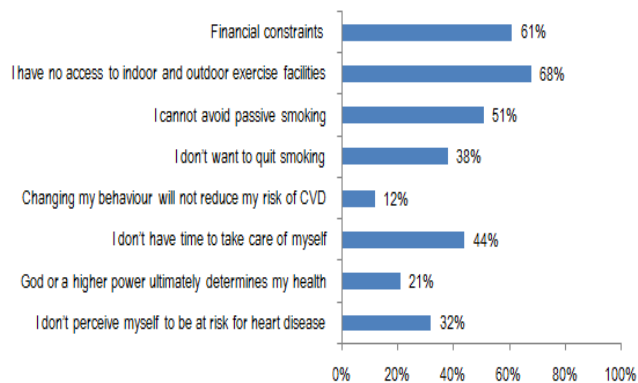


Figure 1: Barriers for not adopting Healthy lifestyle

## DISCUSSION

Results revealed that death rate due to CVD are very high in Pakistan. Along with being hereditary, CVD can also be caused due to sedentary lifestyle and behavioral changes.<sup>9</sup> Most of the participants in this study were knowledgeable of the fact that increasing physical activity or exercising can help in avoiding CVD. This was supported by a study where 41.8% people were aware of physical inactivity leading to CVD.<sup>10</sup> Lack of physical activity leads to obesity due to less calorie expenditure causing CVD.<sup>11</sup> A large ratio of participants in current research was obese probably due to physical inactivity as university students are always busy in studies.

Very few numbers of participants were aware of role of cholesterol level in CVD. A large number was consuming high cholesterol diet and were not willing to cut it down. CVD risk-factors might increase due to intake of excessive fat and oil content.<sup>12</sup> Most of the contestants were also hesitant of adding more vegetables and fruits to their diet. In a study it was reported that 20% heart related diseases are caused by less fiber intake, furthermore, elements found in vegetable and fruits are capable of fighting CVD.<sup>13</sup> In current study, 92.9% persons were aware of stress being one of the causative factors in CVD which was higher than another study conducted in Lahore, where 64% participants were able to identify it as a risk factor.<sup>10</sup> This might be due to the fact that latter research was conducted in a rural area where most of the population is uneducated whereas present work is performed on university students. On the contrary, another study reported that 86% subjects were of the belief that heart diseases can be prevented by reducing stress which was similar to our findings.<sup>14</sup> It was also reported that more than half participants were facing stress and a very few people were ready to reduce it. Most were indecisive which might mean they didn't know how to reduce it.

It has been proven that smoking leads to cardiovascular diseases and is capable of increasing the risk.<sup>15</sup> According to this study 98.6% male participants were smokers and were knowledgeable of the fact that smoking leads to heart diseases but were not willing to control it. In a number of previous studies, conducted in various countries, the knowledge regarding risk factors associated with CVD has been very low.<sup>16-19</sup> Which proves that with time people are becoming more and more aware.

Less than 50% respondents were willing to change their lifestyle to prevent the risk factors of cardiovascular diseases. Not

many individuals were ready to cut down salt, sugar and fat intake in their diet. This might be due to the fact that these are main ingredients in many food recipes and are found in a number of junk food and beverages.

One of the barrier in maintenance of healthy lifestyle for CVD prevention mentioned in this study by respondents was financial constraint. With rising prices of food products in Pakistan, the people with weak financial status might not be able to control the quantity and type of food they purchase. A large number of individuals were unable to change their lifestyle as they had no access to indoor and outdoor exercise. Other participants were not able to or unwilling to quit smoking as it is an acquired habit which is not easy to get rid of. There were few who did not find the need to change their habits because they thought they did not have any CVD symptoms or believed that changing habits cannot reduce the risk. This can be tackled by spreading more and more awareness regarding CVD.

According to a study, it was stated that 78% of people gained information regarding cardiovascular diseases from health professional which was in contrast with our findings where only 40% of individuals gained information from doctors. This might be due to the reason that our study is based on university students whereas the other study is based on diabetes patients. In current research, 17%, 11%, 26%, 10% and 22% respondents claimed Books, newspapers, TV/radio, internet/social media and family/friends to be their source of information regarding cardiovascular diseases respectively which was similar to results found in the other study.<sup>20</sup>

Highest numbers of participants were using TV/radio as their source of information which is probably because almost all kind of people (educated, uneducated, young and old) watch television or listen to radio. Whereas, the lowest number of individuals were getting information from social media or internet which might be due to the fact that not many people are interested in social media and very few use internet to research about diseases.

## CONCLUSION

General population has sufficient knowledge regarding risk factors and prevention of CVD. Somehow they are not practicing healthy lifestyle for disease prevention. Major constraints included, low socioeconomic status, inability to avoid smoking and busy lifestyle. A few didn't take it seriously claiming fate is determined by God and lifestyle change won't reduce risk. There is a need to counsel people to adopt healthy lifestyle and avoid risk factors leading to CVD. Health workers must motivate people maintain a healthy standard of living.

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