

COMPARISON OF CARDIOVASCULAR RISK FACTORS BETWEEN HEALTH AND NON HEALTH PROFESSIONALS

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Contribution

All the authors contributed significantly to the research that resulted in the submitted manuscript.

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ABSTRACT

Objective: To determine the percentage prevalence of cardiovascular risk factors among males of Karachi aged above 40 years and to compare them between health and non-health professionals.

Methodology: It was a descriptive cross-sectional study. The participants were males aged above 40 years and were divided in two equal groups, one comprising of health professionals and the other of non-health professionals. Data was collected by a questionnaire which contained variables including hypertension, diabetes, hypercholesterolemia, smoking, excessive alcohol consumption, type A personality, obesity, sedentary lifestyle, family history of CVD and past history of CVD. Frequencies were calculated for each variable and their association with the profession was determined by Chi-Sq test and p value.

Results: Among male population of Karachi above 40 years of age, prevalence of hypertension, diabetes, hypercholesterolemia, smoking, alcoholism, Type A personality, obesity, physical inactivity, family history of CVD and past history of CVD were found to be 33.3%, 21%, 21.4%, 15.7%, 2.4%, 35.7% and 21.4%, 46.7%, 84.8% and 12.4% respectively. Except for physical inactivity, all the risk factors were found to be more common among non-health than health professionals.

Conclusion: CVD risk factors are present but not very commonly among males of Karachi aged above 40 years. Non-health professionals have a higher prevalence of CVD risk factors. Physical inactivity was more common in health than non-health professionals.

Key Words: Cardiovascular, Risk Factors, Karachi, Health

INTRODUCTION

Cardiovascular diseases (also called heart diseases) are diseases that involve the heart, the blood vessels (arteries, capillaries, and veins) or both. These include coronary heart disease, cerebrovascular disease (stroke), raised blood pressure (hypertension), peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure. It is the leading cause of death in the world. There are numerous causes of cardiovascular diseases.¹

World Health Organization (WHO) estimates 80% of the deaths in the world due to CVD and 86% of the global burden of CVD is in the developing countries including Pakistan. It is estimated that 17.3 million (30% of all deaths worldwide) people died from CVDs in 2008, of which about 7.3 million were due to coronary heart disease and 6.2 million due to stroke. This number will increase to approximately 23.3 million by 2030.²

Risk factors for CVD are numerous and commence from early age. Indeed fatty streaks which can lead to plaque formation are seen even in the heart of infants.³ CVD risk factors can be modifiable or non-modifiable. Modifiable ones include hypertension, diabetes, obesity, high serum cholesterol, smoking, excessive alcohol consumption, type A personality and sedentary life style. Non-modifiable ones are age, gender (male being more prone) and family history.⁴ Women before menopause are less prone to CVD than men of similar age due to the protective effect of estrogen, however postmenopausal women are at as much risk of CVD as counter men of their age.^{4,5}

In spite of the prevailing knowledge about cardiovascular diseases and their risk factors in every nook and corner of the world, a large percentage of the population in every country is suffering from them.⁶⁻¹³ Physical inactivity and obesity are very important risk factors as they cause fat deposition in the body, making it passive and also serve as an important element in plaque formation.^{14,15} Diet also plays a central role in developing CVD. A fat rich diet is harmful as it increases fat. Higher social status is also a sign of CVD as people of such class have habits of increased alcohol consumption and high caloric fat rich food and decreased physical activity.^{16,17} Stress also contributes to the development of CVD.¹⁸ CVD risk factors are also found associated with other diseases.¹⁹

In Pakistan as well, CVD risk factors are very common and are present in all age groups of the society.²⁰ It is surprising that women in Pakistan are more prone to CVD than men.¹³

A big proportion of our population is suffering from CVD and a large majority of the rest is suffering from its risk factors. People from all professions and social status are a victim of these risk factors which can lead to tremendous morbidities in future.

This study proposes to estimate the prevalence of CVD risk factors in male population of 40 years and above in Karachi and will also compare the results between male health and non-health professionals of same sample population.

METHODOLOGY

It was a cross-sectional, descriptive study. Sample technique was non-probability, purposive sampling. Using open sample size, with reference sample of 16%, margin of error (D) 5% and confidence interval (CI) 95%, the sample size was calculated to be 207.²¹

The study was conducted randomly in Karachi, Pakistan, from June 2012 to Sept 2013. The participants were all males above 40 years of age. Men above 40 years of age were included because cardiovascular diseases are more common after this age.

The participants were divided in two groups with 105 participants in each. One group comprised of health professionals and the other of non-health professionals. Informed consent was taken from all participants verbally. The subjects were interviewed according to a pre-designed questionnaire.

The questionnaire contained questions regarding the risk factors of CVD e.g. hypertension, diabetes, hypercholesterolemia, smoking, excessive alcohol consumption, type A personality, obesity, sedentary lifestyle, family history of CVD and past history of CVD.

The range of hypertension was determined by Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure.²² Obesity and BMI were determined according to World Health Organization report published in 2000.²³

Participants were labeled Type A personality by Friedman and Rosenman criteria by asking certain questions about their competitive and high work involvement, if they do work in time or are relaxed about it and their aggressive nature. After asking these questions, the option in the questionnaire was accordingly marked by the investigator.²⁴

Physical activity was determined according to the age groups as recommended by World Health Organization. The participant explained his answer to the question, and the investigator marked its option in the questionnaire accordingly.²⁵

The data collected was analyzed by Statistical Package for Social Sciences version 16.0.

RESULTS

SPSS version 16.0 was used for analysis. Each risk factor was analyzed individually and then compared between health and non-health professionals.

Table 1: Prevalence of CVD Risk Factors

CVD Risk Factor	Total Prevalence among Males
Hypertension	33.3%
Diabetes	21%
Hypercholesterolemia	21.4%
Smoking	15.7%
Alcoholism	2.4%
Type A Personality	35.7%
Obesity	21.4%
Physical Inactivity	46.7%
Family History of CVD	84.8%
Past History of CVD	12.4%

A total of 210 people were included. Among male population of Karachi above 40 years of age, prevalence of hypertension, diabetes, hypercholesterolemia, smoking, alcoholism, Type A Personality, obesity, physical inactivity, family history of CVD and past history of CVD found are 33.3%, 21%, 21.4%, 15.7%, 2.4%, 35.7%, 21.4%, 46.7%, 84.8% and 12.4% respectively. This is given in Table 1.

The same variables were also compared between health and non-health professionals, which were found to be more common in non-health than health group, except physical inactivity. Figure 1 shows some of these variables. The association of these variables with the profession was also calculated by determining p value. Table 2 shows these results, indicating that only diabetes, type A personality (aggressive nature) and a positive past history of CVD have significant association with the profession ($p = 0.09, 0.031$ and 0.012 respectively).

All the risk factors mentioned are more common in non-health professionals than health professionals, except physical inactivity.

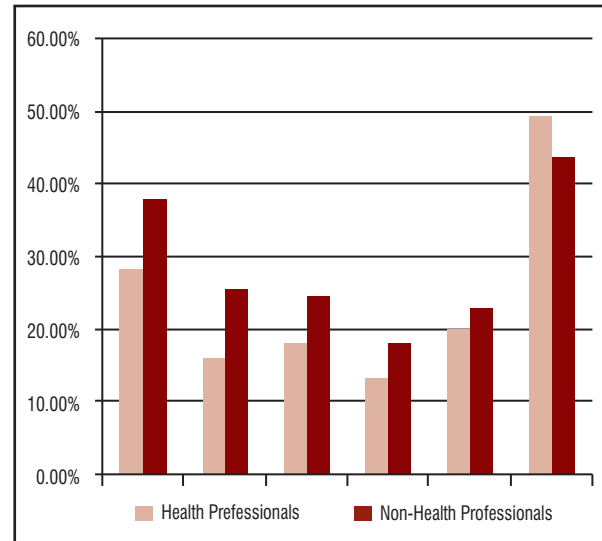
The severity of diabetes and hypertension was also compared in general sample population. It was found that majority of people had diabetes and hypertension within controlled limits (77.3% and 82.9% respectively) and only a small percentage had these in high range.

Frequency of smoking was analyzed in sample population and found out that only 3% of sample population is highly addictive to smoking, consuming more than 3 packs per day, while majority (63.6%) consumes less than 1 pack a day.

The risk factors were also compared in different age groups. However there was no association of these variables with age and p value could not be determined for them.

We also compared the risk factors with each other. Of these,

Figure 1: Comparison between Health and Non-Health Professionals



hypertension was studied first and it was found that there was a significant relation of hypertension with diabetes and hypercholesterolemia ($p = 0.001$ and 0.004 respectively). So it can be stated that people having hypertension are more prone to develop diabetes and hypercholesterolemia than non-hypertensive people.

When diabetes was analyzed, it showed strong association with hypertension, hypercholesterolemia and type A personality ($p = 0.001, 0.007$ and 0.026 respectively). This indicates that diabetics are more prone to be suffering from hypertension, hypercholesterolemia and aggressive nature.

Smoking and obesity did not show association with any CVD risk factor. This was a surprising and interesting result.

The top three risk factors for CVD are hypertension,

Table 2: Comparison of CVD Risk Factors Among Health and Non-Health Professionals

CVD Risk Factor	Prevalence among Health Professionals	Prevalence among Non-Health Professionals	Chi Square Test	P-Value
Hypertension	28.6%	38.1%	2.143	0.143
Diabetes	16.2%	25.7%	2.875	0.09
Hypercholesterolemia	18.1%	24.8%	1.386	0.239
Smoking	13.3%	18.1%	0.899	0.343
Alcoholism	1.9%	2.9%	0.205	0.651
Type A Personality	28.6%	42.9%	4.667	0.031
Obesity	20%	22.9%	0.789	0.674
Physical Inactivity	49.5%	43.8%	0.689	0.407
Family History of CVD	81%	88.6%	1.263	0.261
Past History of CVD	6.7%	18.1%	6.321	0.012

hypercholesterolemia and smoking. In our study, we tried to find their combined prevalence and fortunately, our results showed that the triad of these three risk factors (hypertension, hypercholesterolemia and smoking) was very low in the sample population (prevalence 1.4%), being lower in health (1.0%) than non-health professionals (1.9%).

DISCUSSION

CVD are the leading cause of death in the world. In order to prevent them, it is crucial to minimize their risk factors to the best possible limit. There are a number of CVD risk factors including hypertension, diabetes, hypercholesterolemia, obesity, tobacco consumption, alcoholism, lack of physical activity, past history, age, gender and family history. Of these, the latter three are non-modifiable and cannot be controlled. However by mass awareness and incorporating proper lifestyle, we can reduce the risks of CVD by repressing the modifiable ones.

According to World Heart Federation, hypertension is the biggest threat to CVD⁽⁴⁾. Our study found a high prevalence of 33.3% of hypertension among males of Karachi aged above 40 years. However, prevalence of hypertension among health professionals turned out to be lower than non-health professionals (28.6% and 38.1% respectively).

Similarly other risk factors, i.e. diabetes, obesity hypercholesterolemia, tobacco consumption, alcoholism and aggressive personality showed a higher prevalence among non-health than health professionals. Diabetes showed a prevalence of 21%, with 16.2% prevalence among health professionals and 25.7% among non-health. Hypercholesterolemia showed 21.4% prevalence, with domination in non-health professionals' group (24.8% in non-health and 18.1% in health).

It is interesting to note that hypertension is more common than diabetes or hypercholesterolemia among males of Karachi above 40 years of age. This might be due to the stressful living conditions and consumption of improper diet. Also hypertension, diabetes and hypercholesterolemia were found to be closely related to each other and are significantly affected by aggressive nature.

Smoking trend is very common in people of Karachi from adolescent age, but this trend declines with increasing age. This was proved by our study which showed its prevalence to be 15.7% in total sample population, 13.3% among health professionals and 18.1% among non-health professionals. Smoking is still more common among non-health than health professionals.

Obesity and physical inactivity showed 21.4% and 46.7% prevalence respectively. Obesity followed the normal trend of low prevalence among health (20%) than non-health professionals (22.9%). But it was surprising to note that our

variable of physical inactivity deviated from the usual pathway and was found to be more common among health than non-health professionals (49.5% and 43.8% respectively).

The difficult living conditions, stressful life and lack of patience make a person prone to aggressiveness and this is seen in general people of Karachi. No doubt our study also showed a high prevalence of Type A personality i.e. 35.7%, with 28.6% prevalence among health and 42.9% prevalence among non-health professionals, being more common in non-health group. A wide difference between the two groups in terms of aggressive nature can be appreciated.

The two risk factors related to subject's history, i.e family history and past history of CVD, showed 84.8% and 12.4% prevalence in sample population. As anticipated, both the variables were more common among non-health than health professionals (Family History: 81% versus 88.6% and Past history: 6.7% versus 18.1% in health and non-health groups respectively). Positive past history of CVD among health professionals was found to be very low as compared to their counter group of non-health professionals. This was probably due to the fact that health professionals take greater care of their health owing to their extended knowledge of its consequences.

The top three risk factors for CVD are hypertension, tobacco consumption and hyperlipidemia.²³ This triad was fortunately very low in prevalence, only 1.4%, following the general trend of being high among non-health professionals than health professionals (1.9% versus 1.0% respectively).

In a nutshell, this study showed that CVD risk factors are more common among male non-health professionals of Karachi aged above 40 years than health professionals of similar age, with a close association among hypertension, diabetes, hypercholesterolemia and aggressive nature. This is most probably due to the augmented awareness and knowledge of CVD, their risk factors and their consequences among health professionals. By bridging this gap with education and understanding of causes and consequences of CVD risk factors in masses, we can decrease their prevalence and hamper the development of CVD.

CONCLUSION

CVD risk factors are present but not very commonly among males of Karachi aged above 40 years. Among these, non-health professionals have a higher prevalence of CVD risk factors than health professionals. However physical inactivity was found to be more common in health than non-health professionals.

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