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Research Article

**CARDIOVASCULAR RISKS OF ESSENTIAL
HYPERTENSION: INFLUENCE OF CLASS, NUMBER AND
TREATMENT- TIME REGIMEN OF HYPERTENSION
MEDICATIONS****¹Dr Ahmad Ilyas,²Dr Muhammad Ahmad Naseer,³Dr Bilal Hussain**
^{1,2,3}MBBS,Ameer u din Medical College, Lahore.**Article Received:** December 2019 **Accepted:** January 2020 **Published:** February 2020**Abstract:**

In this research paper various factors are discussed that affect the risk levels of cardiovascular diseases, one way or another in essential hypertensive patients. Those factors include class, number and treatment regimen of hypertension medications in patients belonging to Pakistan (Asia). This paper not only deals with the risk factors, but also shows the negligence of people towards their health which significantly contribute to hype the risks of CVD.

Survey conducted in Pakistan, with greater number of patients belonging to Lahore, the medical statistical representation, factors influencing the CVD risks and results are the main parts of this paper. The purpose of this survey is to monitor the pervasiveness of CVD linked with essential hypertension.

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INTRODUCTION:

Hypertension is a pervasive health issue owing to which more than one billion people are affected all around the globe. ¹ Essential hypertension is among the most common health issues in Asia as well. This problem is the biggest contributor to various other deadly diseases like stroke, heart failure, renal failure and myocardial infarction (MI). Therefore, it is very important to control blood pressure before it leads to any serious problem. ²

The major concern of the doctors is the detection, control and proper monitoring of this silent disorder. Prevalence of hypertension increases with the age despite of proper care and monitoring, so the risks of cardiovascular diseases also increase with it. This issue is more common among Asians, which leaves an extra burden upon the socio-economic sector. ¹ According to the report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC- 8), if systolic/ diastolic blood pressure is above 140/90 mm HG, the person is considered to be a hypertensive patient.

Essential hypertension is a multifactorial disease which is linked with gender, ethnicity, age, education, socio- economic status, overall health, lifestyle and body mass index (BMI). Studies have shown that cardiovascular risks in hypertensive patients are closely linked with their family medical history, age, poor dietary habits, smoking, improper medication, no use of drug combination and gaps in treatment cycles of the hypertension medicines. ³ CVD risks are greatly affected by the type and number of medicines used by the patients. Diabetes and hypercholesterolaemia are another primary risk that participates in worsening the situation in essential hypertension patients that will ultimately lead to coronary heart diseases. Diabetes weakens the heart muscles and causes various disorders like retinopathy and nephropathy. When diabetes combines with hypertension disorder, the chances of CVD increases to a greater extent, as both equally affects the blood arteries and heart walls. In the cardiovascular risk factor prevalence study, it was found that 58% patients had diabetes and essential hypertension, and most of them were resistant to insulin. In spite of extensive research and development in the field of medicine, control of diabetes along with essential hypertension is a serious issue and major concern all around the world. ³

As limited study is available on the attitude, behavior and family history of patients with essential hypertension that are susceptible to coronary heart diseases in Pakistan, this research

paper includes a survey to bring to light some statistical data of patients that lack some guidelines as per medical requirement to treat their conditions.

Survey Conduction

The research was done in different areas of Lahore by specifically targeting hypertensive patients, including various shopping malls, hospitals, parks, shops and residential colonies. The target population was both male and female, educated and uneducated with the age range from 30 years to 70 years.

A well designed questionnaire with multiple choice options was made. Attitude and practice, status and treatment regimen regarding parts were included in the question paper.

Data was analyzed and entered via Statistical Package for the Social Sciences (SPSS) Programme version 21.0. Statistics were conducted to get tables, frequencies, charts, percentages and graphs. Here in this paper, we are only going to mention the table statistics.

RESULTS:

The results of this survey were surprising. Out of 200 participants, 60% were male and 40% female. Almost 29.5% of them belonged to age group between 30 to 49, 25% belonged to 60- 70+ age group, 27% belonged to 50- 69 age group.

30% were illiterate, 36.7% were educated at primary level and the rest of them were educated to high levels. 89.4% of them married, 37% were unemployed, 12% were working in the government sector and 28% were working as private employees. Only 46% people were aware of the severity of hypertension and risks leading to cardiovascular disorders and 33% were aware of the fact that keeping blood pressure normal would be in their favor. When patients were asked specific questions regarding health issues linked with blood pressure, they were not very sure with their answers.

Out of 200 patients, only 33% belonged to upper and middle high class. 40% of the patients stuck to their prescribed medication schedule and only 30% were also taking care of their lifestyle by including exercise and a daily walk. Only 20% of patients were taking a combination of prescribed drugs to reduce CVD risks linked with hypertension. The concept of adherence was found in only 25% patients and most of the patients were not taking their health seriously.

Let's move on to the statistical data of the survey!

Statistical Representation

Table 1: Selected factors to check cardiovascular risks in essential hypertensive patients in participants n= 200

Upper Class/ Status	Family History	Medical Care	Diabetes	Lifestyle	Stressed	Multiple drug useage
66	69	80	68	60	140	40
33%	34.5%	40%	34%	30%	70%	20%

Table 2: Essential Hypertension with increased CVD risks observed in people with/ without a family history

B.P	Males with family history	Males without family history	Females with family history	Females without family history
No of individuals	55	64	14	67
Systolic B.P ± 5 mm Hg	142	123	143	140
Diastolic B.P ± 5 mm Hg	90	73	89	85

Table 3: Essential Hypertension percentage, treatment regimen, fine and poor lifestyle

B.P	Males having proper medicinal care	Females having proper medicinal care	Males with poor lifestyle	Females with poor lifestyle	Males with fine lifestyle	Females with fine lifestyle
No of individuals	40	40	50	90	35	25
Systolic B.P ± 5 mm Hg	130	140	142	147	130	139
Diastolic B.P ± 5 mm Hg	74	81	80	86	74	83

Table 4: Hypertension observed in people with/ without stress/ depression with increased CVD risk ratio

B.P	Males with stress	Males without stress	Females with stress	Females without stress
No of individuals	64	30	76	25
Systolic B.P ± 5 mm Hg	142	138	143	138
Diastolic B.P ± 5 mm Hg	85	82	83	75

Hypertension Associated with Constellation of CVD Risk Factors

Hypertension is something that leads to structural and functional abnormalities that affects kidneys, heart, vasculature, brain and other organs which ultimately leads to death. It is also called as silent killer. CVD risk factors can be present before hypertension issue, so essential hypertension cannot solely be called as the only reason behind the risks. But, if target organ is identified at the earliest stage and high blood pressure levels are constantly observed, then the person might be at the higher stake of CVD.

Hypertension is best explained as the changes in the walls of arteries, not just an increase in blood pressure. Changes in arterial walls are the indicators of the disease process. Endothelial

dysfunction, metabolic syndrome components, nephropathy, and arterial stiffness are all multifactorial contributors to this disease process. The underlying pathology of CVD starts in the early life despite of the fact that it began to show its symptoms in the middle age. Medical research has shown that there are some therapies that can block the RAAS (rennin angiotensin aldosterone system). These antihypertensive therapies can reduce the cardiovascular disease risks. Essential hypertension is a very common issue worldwide, affecting almost 30% of the adults. Out of this percentage only 32% are successful in keeping their B.P below 140/ 90 mm Hg. ^{4,5}

The recommended strategy to reduce the risks of CVD associated with hypertension is lifestyle modification, strict adherence to treatment- time

regimen, suitable drug choice and diet modification.

Following are some main points that elaborates the importance of monitoring and proper control of hypertension and how choice of drug, its combination and proper treatment timing leaves positive or negative impacts upon the risks of cardiovascular diseases.

- **Adherence Strategies**

This point emphasizes on the importance of adherence to reduce the risks of CVD. Poor adherence is the prominent reason of atherosclerosis and the reason behind uncontrolled hypertension issues. The best adherence is observed with the treatment of ARBs. The starting 3- 6 months of treatment are critical for patient and requires best adherence practices so that the issue can be stabilized. The percentage of adherence patients were observed at 30% after the treatment of 1 year, and overall only 20 to 33% patients are partially adherent. The aim of adherence is goal achievement, and the goal is to minimize the risk of CVD. ⁶

- **BP Control at Early and Aggressive Stages**

Blood pressure issues began to show up in the early stages of life; late teenage. Early and aggressive blood pressure minimization is necessary because if this condition is prolonged it leads to long- term CVD risks. A study has revealed that early treatment of pre- hypertension can prevent the development of any type of hypertension. ⁷

Framingham study data have shown that normal to high hypertension is the reason behind 32% of strokes. In VALUE study, the experimental survey upon patients who were treated with amlodipine and valsartan. The patients treated with the former drug showed significant improvement because it rapidly reduced and controlled hypertension. So, blood pressure should be treated in its initial stages: the earlier the better. ⁷

- **Target- Treatment Levels**

The lower the better is the new hot study in the medical field while concerning the blood pressure in patients with diabetes, and those prone to higher risks of CVD. This “lower the better” target is these days achieved with the combination of different drugs. However, fewer number of patients stick to their medication schedules to maintain the target blood pressure levels.

Only around 29- 33% patients are achieving their blood pressure targets, while there is a huge capacity for other patients to achieve their targets by using appropriate drug combinations and adopting a proper lifestyle.

- **Drug Selection**

On the basis of pathophysiological studies, it is found that various drug categories can significantly help in lowering blood pressure. Beyond adverse

effects of drugs, drug selection must be based on beneficial pleiotropic impacts on vasculature, blood pressure and overall metabolic profile. The class of drug and number drugs used in combination must compliment patient’s medical profile. For instance, drug combinations like Angiotensin II receptor antagonistic and diuretics, beta and alpha blockers and CCB (Calcium Channel Blockers) with ACEI are best known for lowering CVD and renal risks in hypertensive patients.

There is early protection policy that throws light upon RAAS blockade. Kidney disease monitoring and trials greatly help in the provision of important evidence regarding other health issues. RAAS modulation along with lowering of blood pressure is considered as the best way for optimum CVD risk reduction.

- **Control of Dislipidemia**

The most prominent and dangerous risk factor that comes along with hypertension is dislipidemia. These both issues occur, usually in unison, almost 65% hypertensive patients have cholesterol issues. Scientists have found a complicated relationship between lipids and hypertension, which isn’t constant. Inverse relations are observable in both these conditions; low cholesterol level has prominent high blood pressure and high cholesterol level has prominent low blood pressure. It is noteworthy that 10% reduction in cholesterol level and hypertension reduces the risks of CVD up to 45% (10% + 10%= 45%).

Biologically, it is found that LDL-C has considerable potency in mediating vascular damage. This damage can occur when LDL- C oxidation is enhanced which also trigger the transmigration of these oxidized molecules through the vessel walls. These oxidized LDL- C has adverse impacts upon endothelial functions which plays a vital role in triggering the development of hypertension. This issue is also observed in children with a family history of hypercholesterolaemia. Men who have high quintile of HDL- C, which is considered as good cholesterol, have 32% decreased risk factors of developing hypertension and CVD.

This synergistic relation of LDL- C and hypertension highlights the importance of its control to prevent vascular diseases, ranging from endothelial dysfunction to severe arterial wall damages which then leads to other severe cardiovascular diseases.

CONCLUSION:

Optimal strategy to decrease the risk factors of cardiovascular diseases in hypertensive patients is to control it at the early stages by modifying lifestyle, sticking to the adherence therapy, proper

drug selection, use of a combination of medicines to overcome multiple hypertension related issues and taking care of underlying diseases like hypercholesterolaemia.

Patients with family history of hypertension needs some extra care to avoid serious health issues. It is extremely important for hypertensive patients to reach their target levels of blood pressures, otherwise they cannot reduce the risk of CVD. Evidence supports the use of multiple drugs and statins for patients with complicated medical history. No doubt, reducing blood pressure is the main purpose of these drugs, but as CVD risks are a growing factor these days, so reducing these risks must also be a part of treatment target levels.

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