A SURVEY ON PRESCRIPTION TRENDS FOR HYPERTENSION IN FAISALABAD

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ABSTRACT

Background: High blood pressure or hypertension has been called the "silent killer", because it often has no warning signs or symptoms, and many people do not even know they have it. Over time, the constant pressure overload causes accumulating damage that eventually becomes more than your circulatory system can handle, often leading to serious health problems. **Method:** The present study is conducted to observe its prevalence in the city Faisalabad and its prescription trends by using retrospective method. The objective of this was to evaluate trends in prescription drug use among population living in the Faisalabad. Several hospitals in the area were visited for this article which includes DHQ, Allied Hospital, FIC and National hospitals. **Results:** The study explores which age group people, which gender is more prone towards this ailment. How lifestyle, diet and other factors affect blood pressure Moreover, it tells us how other diseases are interrelated with hypertension. It also provides information about the prescription trends of anti-hypertensive drugs. It elaborate that almost 47% male and 53% female are affected by this disease. **Conclusion:** Major cause of hypertension in female patients is angina and depression. Moreover, our data suggested that most of the outpatients with hypertension receive monotherapy and most frequently used class of drugs is the CCBs and ARBs. Studies showed that hypertension mostly coexist with heart diseases and other co-morbidities like diabetes. Any how the incidence of hypertension is dependent upon several factors like age, ethnicity, diet, and life style, environmental and physiological factors.

Key words: Hypertension, Brand preference, Risk factors

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INTRODUCTION

Hypertension is a hemodynamic function in which there is persistent abnormal elevation of systemic blood pressure, (diastolic or systolic) above the level of normal blood pressure of 120/80 mmHg [1]. The National Health Survey of Pakistan estimated that hypertension affects 18% of adults and 33% of adults above 45 years old [2] In another report, it was shown that 18% of people in Pakistan suffer from hypertension with every third person over the age of 40 becoming increasingly vulnerable to a wide range of diseases. Risk factor are Smoking, Being overweight or obese, Lack of physical activity, Too much salt in the diet, Too much

alcohol consumption (more than 1 to 2 drinks per day) Stress, Older age and Genetics [3]. Left untreated, hypertension can result in permanent damage organs such as the heart, brain and kidneys, leading to heart attacks, stroke and kidney failure. Elevated blood pressure levels significantly increase your risk for coronary heart disease [4].

Uncontrolled high blood pressure (HBP) can injure or kill you. It's sometimes called "the silent killer" because HBP has no symptoms. Diet, definitely, plays a crucial role in the development of hypertension along with stress [5]. High cholesterol and high blood pressure can both be huge contributors towards hypertension. Depending on the type of hypertension, the cause could be known or unknown [6] .Primary hypertension is the most common type of hypertension and accounts for 95% of cases. Causing factors include obesity, diet, environment, stress, and sedentary lifestyle. Second one is secondary hypertension. Cause is mostly thyroid problem or Cushing's syndrome, problems with the kidneys [7].

Blood Pressure is generated when the heart pushes the blood into the blood vessels and arteries resist the blood flow. *Ohm's Law* used to calculate cardiac output is as follows:

F = ΔP/R

F = *Flow,* **ΔP** = *Change in pressure,* **R** = *Resistance*

Many doctors tend to treat hypertension with drugs. However guidelines suggest that physicians carefully weigh treatment options, taking into consideration many factors, including the patient's age, race, co-morbidities and come with a stepped approach. The objective is to reduce and maintain a blood pressure level below 140/90 and lower for people with other conditions, such as diabetes and kidney disease [8]. Different types of national and international guidelines have been published for the treatment of hypertension, but JNC7 guidelines recommend diuretics as the first line treatment for hypertension. On the other hand any of the five antihypertensive classes can be used unless a special indication exists according to European guidelines. In severe hypertension a combination therapy has been recommended as first line therapy. For long term management a number of drugs in various combinations have been used [9].

Sign and symptoms of hypertension are Headache, Chest pain, Shortness of breath, Vomiting, Blurred vision, Dizziness, Often none [10].

METHODOLOGY

Study Design

Ethical approval for the study was obtained from Ethical Committee of Clinical Research, University College of Pharmacy, University of the Punjab, reference number (ECCR/UCP/08/2015) and Hospital committee of ethics on human research. This report was based on evaluation of the prescription. A retrospective observation study was carried out for a period of 4 weeks in the month during October 2016 to November 2016. During this period 150 prescriptions were collected.

Study Population

Prescriptions were collected from the hypertensive patients attending the outpatient department in Allied Hospital, DHQ Hospital Faisalabad, National Hospital Faisalabad and Institute of Cardiology Faisalabad. Some private prescriptions were also collected.

Data Collection Procedure

Pharmacy undergraduates adept in data collection visited various public and private hospitals of the Faisalabad for data collection. Prescriptions were collected from the patients who visited outpatient department in hospital. All patients were well informed about the objective of collecting prescription from them and verbal informed consent was taken from them. Short interview of the patients were also

taken to get idea about qualification, occupation, socioeconomic status, dietary habits and lifestyle.

Data Collection Tools

A comprehensive data was collected by reviewing prescriptions and patient interviews. At first, patients were categorized according to the generic they were prescribed to find out the overall picture of drugs used to treat HTN among population. Then the generics were categorized according to the drug class they belong to. Drug classes were at last subcategorized to find out what generics are profuse in use. Patient demographics, dietary and personal habits were taken into consideration for rational drug prescribing pattern evaluation.

Data Analysis

Statistical analysis was performed using the Microsoft Excel. Various secondary sources like books, journals, project reports, project documents, unpublished reports, news reports and internet are also used for this study.

RESULTS

In this study it was found that among the population in Faisalabad 47 % male and 53% female were victimized by hypertension (figure 1). Age distribution revealed that population above 40 years was more prone to hypertension due to advancing age and physiological alterations (figure 2).
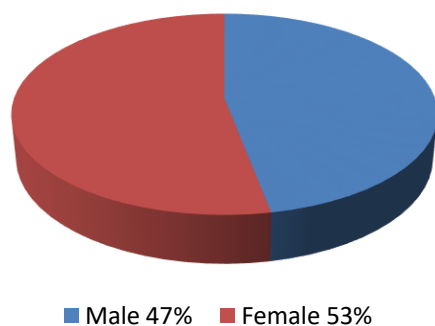

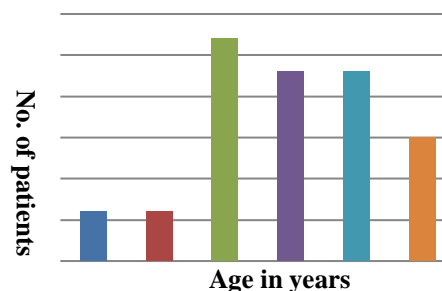**Figure 1:** Gender victimized by hypertension

Figure 2: Age distribution of patients

The physicians prescribing pattern revealed that among the anti-hypertensive classes the mostly used agents were Beta blockers (19%), HMG CoA Reductase inhibitors (13%), Calcium channel blockers (11%), Diuretics (10%), Angiotensin- II receptors blockers and ACE inhibitors (7%), Nitrates (5%), Sulfonyl ureas (3%), Selective serotonin reuptake inhibitors (2%) and benzodiazepines were (1%) (Table 1). As most of the hypertensive patients were suffering from heart diseases or are prone to have heart problems due to aging so they were either prescribed or given prophylactically the antiplatelet agents. Studies showed that the %age of antiplatelet agents prescribes was highest i.e. 22%. These were prescribed to prevent from future hypertensive crises along with heart diseases.

Table 1: Anti-hypertensive classes used in hypertension

Anti-hypertensive classes used in hypertension	Relative %age
Anti-platelets	22
Beta Blockers	19
HMG CoA Reductase Inhibitors	13
Calcium Channel Blockers	11
Diuretics	10
Angiotensin-II Receptor Blockers	7
ACE Inhibitors	7
Nitrates	5
Sulfonyl Ureas	3
Selective Serotonin Receptor Inhibitors	2
Benzodiazepines	1

Table 2: Relative %age of agents prescribed from each class

Drug class	Relative %age of Anti-hypertensive agent	Percentage
Beta Blockers	Bisprolol	45
	Metoprolol	24
	Nabivolol	16
	Carvidolol	8
	Atenolol	4
	Propranolol	2
	Labetalol	1
Calcium Channel Blockers	Amlodipine	88
	Nifedipine	10
	Verapamil	2
Diuretics	Furosemide	80
	Spironolactone	17
	Hydrochlorothiazide	3
Angiotensin receptor inhibitors	Losartan	47
	Valsartan	35
	Telmisartan	18
ACE inhibitors	Lisinopril	84
	Captopril	12
	Ramipril	4

Most of the people among population had simple lifestyle. The dietary habits of the patients were satisfactory; they were taking proteins, carbohydrates and vitamins properly. The prevailing condition of hypertension was due to aging factor and other medical conditions (Figure 3).
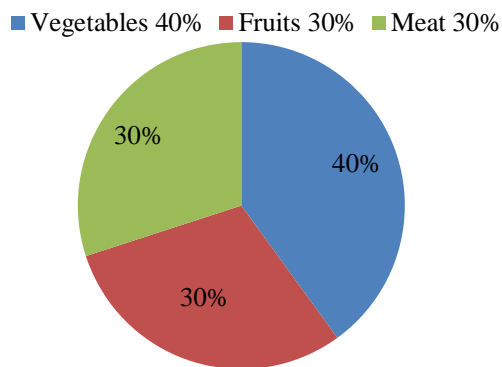

■ Vegetables 40% ■ Fruits 30% ■ Meat 30%

Figure 3: Dietary habits of patients

DISCUSSION

Different classes of anti-hypertensive drugs give a different outcome in patient's belonging to different races, ages and in the presence of comorbid diseases. Most classes of the anti-hypertensive drugs used as monotherapy to lower blood pressure by similar amounts, however the individual response may vary or are unpredictable. An estimated 50-70% of patients will not achieve blood pressure target so in these situations combinations are required **[11]**.

The initial drug choice should consider the patient age, presence of associated clinical condition or end organ damage, potential interaction with other drugs, implications for adherence, cost and the patient choice. So proper choice of drug class and appropriate combination with other groups of antihypertensive drugs if required shows marked benefit in reducing the other complications that are associated with hypertension such as cardiovascular events, coronary heart diseases, heart failure, retinopathy, nephropathy and diabetes.

Hypertension increases the risk of heart failure by 2-3 times so anti-hypertensive's use reduces the risk by 50%. ACE inhibitors and Angiotensin receptor blocker prescribed as first-line therapy against hypertension among patient

with or without heart failure but their combination should be avoided because it lead to renal dysfunction and hyperkalemia. Selective beta blockers alone or in combination with nitrates and hydralazine are also effective in prolonging the patient life. If needed among Diuretics the loop diuretics (furosemide, bumetanide, torsemide) are mostly prescribed followed by Thiazide diuretics (hydrochlorothiazide, indapamide) which are less effective and produces more side effects among the patients with heart failure. Their long term use is avoided.

If hypertension coexists with diabetes, therapy should be started with ACE inhibitors. If the patient didn't respond well to ACE inhibitors, ARB should be added to the regimen or substituted by thiazide or loop Diuretics. If still Blood pressure is beyond the goal limits, β-blockers in combination with ACE inhibitors should be used. The combination of diuretics and β-blockers increased glucose intolerance and may induce diabetes. Similarly calcium channel blockers together with β- blockers cause AV bundle block and heart failure. So these combinations should be avoided. If hypertension coexist with diabetes and heart diseases then Calcium channel blockers are recommended. Calcium channel blockers are also reserved for the patients who didn't respond well to a combination of two or more classes of antihypertensive agents. Hypertensive patient's comorbid with coronary heart diseases, β-blockers should be the first choice followed by calcium channel blockers. ACE inhibitors and ARBs are also well tolerated but diuretics should be avoided as it may promote coronary heart diseases due to metabolic alteration [12, 13]. Nonpharmacological intervention such as cessation of smoking, weight loss, minimum alcohol consumption, sodium restricted diet and daily exercise should be encouraged among all the patients. It's the responsibility of physicians and pharmacist to properly council the patient about hypertension properly so that he may able to manage the condition in case of any emergency [14].

CONCLUSION

The present study was carried out to assess the current trends in prescribing patterns of anti-hypertensive drugs in the treatment of hypertension in the outpatient department of Allied Hospital Faisalabad, DHQ Hospital Faisalabad, National Hospital Faisalabad and Institute of Cardiology Faisalabad along with prescribing pattern at some private clinics. Prevalence of hypertension was found to be high in female patients as compared to male patients i.e. female (53%) than male (47%). And major cause of hypertension in female patients was angina and depression. In conclusion, our data suggested that most of the outpatients with hypertension received monotherapy and most frequently used class of drugs were the CCBs and ARBs. Studies showed that hypertension mostly coexist with heart diseases and other co-morbidities like diabetes. Any how the incidence of hypertension is dependent upon several factors like age, ethnicity, diet, life style, environmental and physiological factors, hence further studies are necessary to setup a rational medication prescribing patterns; taking into consideration the demographic factors involved in the prevalence of hypertension. Different seminars, conferences, articles should be arranged regarding prevention, detection, evaluation and treatment of hypertension to increase awareness among public and to educate the community.

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