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## **Prescribing Pattern of Antihypertensive Drugs in Hypertensive Patients in Tertiary Care Hospital**

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**Abstract : Objectives :** To Evaluate the Prescribing Pattern of antihypertensive drugs in hypertensive patients in tertiary Care Hospital

**Setting :** It was a prospective drug utilization study. About 70 patients using antihypertensive drugs were included. Patients were interviewed after obtaining informed consent.

**Method :** It was a duly approved, prospective study, in patients on antihypertensive therapy, conducted by competent professionals. The data was obtained from physicians' prescribing records and patients by individual interviews using the structured proformas as per World Health Organisation guidelines.

**Key findings:** 70 patients, suffering from hypertension were evaluated. Among 70 hypertensive patients by regularly visiting the hospital 21(30%) were males and 49(70%) were females indicating that hypertension is slightly more prevalent in females in comparison to males. The maximum number of hypertensive patients fell under the age group of 51-60, followed by the age group of 61-70, 41-50, and 31-40 years. It was observed that 43.4% of the patients were non-vegetarian and 56.6% of the patients were vegetarians, 64.2% were non-alcoholic and 35.5% were alcoholic. Our study finds that amlodipine (calcium channel blocker) (30.6%) and Atenolol (beta blocker) (24.0%) were the most frequently prescribed drugs followed by angiotensin II receptor antagonist, diuretics & ACE inhibitors.

**Conclusion:** The prospective study demonstrated that the incidence Hypertension were more prevalence in female. Beta Blockers were most frequently prescribed drug in addition to Calcium Channel Blockers. .

**Keyword:** Prospective, Hypertension, Prevalence, Therapy

### **Introduction**

The World Health Organization (WHO) 2015 has estimated that high blood pressure (BP) is a major public health issue and causes one in every eight deaths, hypertension being the third leading silent killer in the world. Globally, cardiovascular diseases accounts for approximately 17 billion deaths a year complications of hypertension account for 9.4 million deaths worldwide every year. Hypertension is responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke.<sup>1</sup>

In India, the situation is more alarming as hypertension attributes for nearly 10% of all deaths. Prevalence of hypertension in India is reported to vary from 10 to 30.9%. The average prevalence of hypertension in India is 25% in urban and 10% in rural inhabitants<sup>2</sup>.

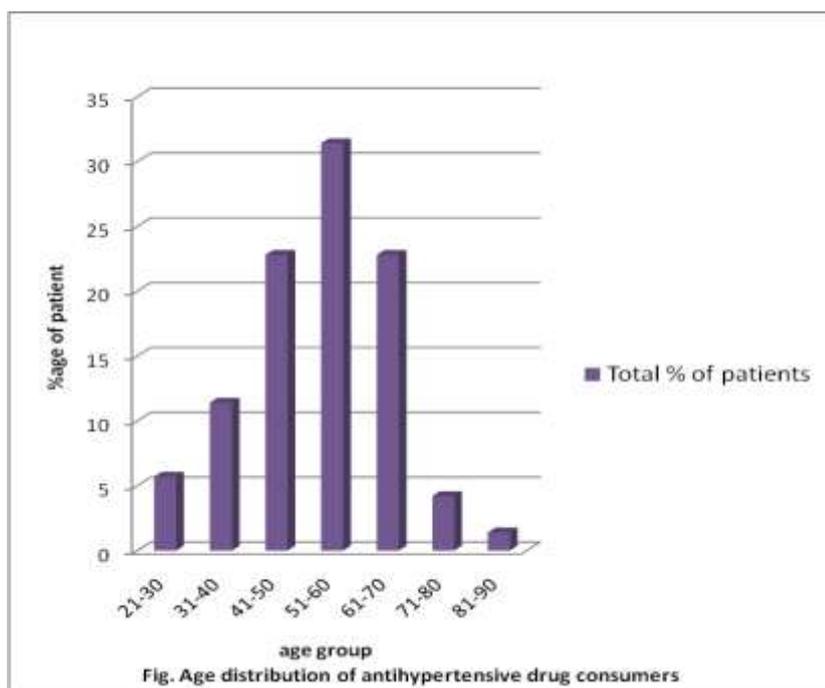
Essential hypertension is one of the most important major modifiable risk factors for cardiovascular disease even though there is a considerable advancement in understanding the pathophysiology and availability of effective treatment strategies<sup>3</sup>. Increase in the blood pressure which is termed as hypertension, is one of the leading health problems in the present trends<sup>4</sup>. Joint national committee 8 defines hypertension as a clinical state where the systolic blood pressure is above 139 mmHg and the diastolic blood pressure is above 89 mmHg persistently<sup>5</sup>. It is generally of two types-Primary hypertension and secondary hypertension. Primary hypertension is of idiopathic meaning (Unknown origin) cause. If the hypertension is due to the underlying

cause, it is termed as the secondary hypertension. Its complications are the major predictor for the prognosis of the disorder. Morbidity and mortality tends to increase gradually with hypertension. By 2025, the epidemiological data estimates to an increase to 29.2% worldwide<sup>6</sup>. There are growing numbers of treatment options for the patient diagnosed with hypertension. The choice of the drug depends on the patient age, underlying etiology and comorbid conditions<sup>7</sup>. Several anti-hypertensive drugs have been published in the health care system to promote the rational usage of the drugs globally. Drug utilization pattern provides us insight in the rationality of prescribing. Irrationality in the prescription is the primary reason for the complications of the disorder. To promote rationality-methods for adherence improvement, minimising the errors, complete history taking, assessing the comorbid conditions are the important tools<sup>8</sup>.

Therefore our present prospective study aims in developing the significance and rationality of drug utilization in preventing the complications and promoting the public health.

## Methodology

Present Prospective study was a duly approved by Institutional Review Board, dated 08<sup>th</sup> December 2014. It was an open, non-comparative, 4-month study, January to April 2014, conducted at a Multispecialty Teaching Hospital in G. Noida. Suitably qualified and competent professionals were involved in conducting the study. Inclusion criteria - all patients with chronic Headache, irrespective of age and sex; and Exclusion criteria - patients mentally retarded, unable to comply, refusing the consent; was observed for selection of the 63 patients. Informed Consent was signed by the selected patients. The data was obtained from physicians' prescribing records and patients by individual interviews using the proformas for; informed Consent, Structured Questionnaire, as per World Health Organisation guidelines<sup>10</sup>.



**Figure1: Age Distribution of Hypertensive Patients**

## Observations And Result

During the period of four months (January 2014 to April 2014) of the study, We enrolled 70 patients who were prescribed with antihypertensive drugs during the study period. The study on 70 hypertensive patients by regularly visiting the hospital, 21(30%) were males and 49(70%) were females, indicating that hypertension is slightly more prevalent in females in comparison to males. The mean age of the patients included in the study were found to be  $48.5 \pm 14.5$  years. The maximum number of hypertensive patients fell under the age group of 51-60, followed by the age group of 61-70, 41-50, and 31-40 years (Figure 1). During this period it was observed that 43.4% of the patients were non-vegetarian and 56.6% of the patients were vegetarians & 64.2%

were non-alcoholic and 35.5% were alcoholic. The patients were categorized depending on the stages of the hypertension that they met. 3 (4.3%) patients belonged to pre-hypertension stage, 48 patients (68.1%) belonged to stage 1 hypertension and 19 (27.6%) patients belonged to stage 2 hypertension. (Table 1). We categorized the patients on gender basics to study the type of drug therapy they received. Of the total 21 male patients, 76.1% received monotherapy and 23.8% received combination therapy. Similarly out of 49 female patients 73.4% received monotherapy and 26.5% received combination therapy. (Table 2) During the study period, the most frequently prescribed drug as monotherapy was Calcium Channel Blockers (CCBs) 23.07%, Angiotension Receptor Blockers (ARBs) 19.23%, Beta blockers (17.3%), ACE Inhibitors (15.38%), Diuretics (11.53%), Alpha Adrenergic Blocker (AABs) 9.6% and Centrally Acting Agents (CAAs) 3.8%. (Table 3) We also observed few combination drugs in the prescription. Drug combinations were categorized depending on their class. The most frequently prescribed drugs combinations were ARB+Diuretic (33.3%), CCB+betablocker (22.2%), Diuretic+Diuretic (16.6%), ARB+CCB (11.1%), ACEI+Diuretic (11.1%) and CCB+Diuretic (0.5%). (Table 4).

**Table 1: Distribution of patients in different stages of Hypertension**

Stage of hypertension	Number of patients N=70	%
Pre-hypertension	3	4.3
Stage-1	48	68.1
Stage-2	19	27.6

**Table 2: Distribution of drug therapy usage pattern**

Drug therapy	Male (N=21)		Female (N=92) 49		Total (N=210) 70	
	N	%	N	%	N	%
Monotherapy	16	76.1	36	73.4	52	74.2
Combination therapy	5	23.8	13	26.5	18	25.7

**Table 3: Classes of antihypertensive drugs prescribed as monotherapy**

Class	Frequency of Prescribing	%
CCBs	12	23.07
ARBs	10	19.23
β Blockers	9	17.30
ACEIs	8	15.38
Diuretics	6	11.53
AABs	5	9.6
CAAs	2	3.8

**Table 4: Classes of antihypertensive drugs prescribed as combination therapy**

Class	Frequency of Prescribing	%
ARB+DIURETIC	6	33.3
CCB+ β BLOCKER	4	22.2
DIURETIC+DIURETIC	3	16.6
ARB+CCB	2	11.1
ACEI+DIURETIC	2	11.1
CCB+DIURETIC	1	0.5

## Discussion

A prescription based assessment is considered to be one of the most effective methods to measure and estimate drug utilization and dispensing practice of pharmacist. It is also important to assess the rational usage of drugs.

Male patients were predominant in the present study. They were noticed to have the habits of either smoking or alcoholism or both, which is one of the most contributing factors for hypertension. The mean age of the patients was  $48.5 \pm 14.5$  years with a range between 21 and 90 years. It was almost similar to the study reports of Jeschke E that shows the mean age of 50.2 years<sup>9</sup>.

The present study shows that 74.8% of patients were stable with monotherapy and the rest of the patients with two drug combined therapies. The same observation was noticed in the study conducted by Jeschke E 3. Among monotherapy, calcium channel blockers (23.07%) and angiotensin receptor blockers (19.23%) were the most prescribed. The results are similar to a study conducted by Hong Cheng, where calcium channel blockers (24.7%) followed by angiotensin receptor blockers (21.2%) are highly utilized<sup>10</sup>.

Among combination drug therapy, diuretic with angiotensin receptor blocker (33.3%) and calcium channel blocker with beta blocker (22.2%) were the most commonly prescribed drug. The results are in conformity to study conducted by Anand Kale where diuretic with angiotensin receptor blocker (29.5%) and beta blocker with calcium channel blocker (22.1%) were the most commonly prescribed combinations<sup>11</sup>.

## Conclusion

Calcium channel blockers are the highest among the drugs that are used as monotherapy. In combination therapy, diuretic with angiotensin receptor blocker and calcium channel blocker with beta blocker are the frequently prescribed drugs. According to recommendations made by the JNC 8 guidelines, first line drugs for the management of hypertension can be any one of the four drug classes like calcium channel blockers, angiotensin receptor blockers, angiotensin converting enzyme inhibitors and diuretics. The increased prescription of calcium channel blockers than diuretics shows that the prescribing pattern is in line with the recommendations. In our study, Amlodipine consumption in the medical wards was found to be high when compared with other drugs.

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