

## Study of Prescription Pattern of Antihypertensive Drugs in Medical OPD in SGT Medical College and Hospital, Gurugram

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### ABSTRACT

**Objectives:** Present study was conducted to find out current trend of drug prescribing of antihypertensive drugs prescribed either as monotherapy or in combinations. As well as variations were seen in prescribing drugs with regards to the age, sex.

**Materials & Methods:** An observational, prospective, cross-sectional study involving 120 prescriptions for patients of essential hypertension was conducted in the outpatient department of Medicine SGT Medical Hospital, Faculty of Medicine and Health Sciences, Gurugram. The blood pressure (BP) measurement was done at the time of enrolment and other patient information like demographics and the drug details were recorded in Performa sheet. Data obtained were analyzed and expressed in percentage.

**Results:** 71 males and 49 female of essential hypertension patients were included in study. Most of patients were in the age group of 40 -49 years constituting 72.5 % of total 120 patients. 52 patients were on mono therapy 64 (53%) of patents were put on Dual therapy and few patients 4 (3.33%) were on Triple therapy. Out of 52 patients those were on mono therapy maximum patients were put on angiotensin receptor blocker (38.46%) and 11.54% of patients were taking Angiotensin converting enzyme inhibitor. 64 patients were prescribed with Dual therapy. Out of these 46.9% of patients were prescribed with ARB + Diuretics and nearly 2% patients were on ARB +  $\beta$  blocker combination therapy. Only four patients were taking Triple therapy, 50% of patients were on CCB + ARB + Diuretics and 50% were on CCB + ACEI + Diuretics.

**Conclusions:** Hypertension is more prevalent in male patients than female patients. ARBs (38.46%) were the most common single drugs used for most of the uncomplicated essential

hypertension followed by CCBs (36.54%) ARB prescription as monotherapy may be increases because of few or minimal side effects caused by them. Most common mode of treatment of hypertension was Dual therapy or triple therapy combination therapy fixed dose combinations (56%). In the FDCs ARB + Diuretics (48%) were most preferred combination for treatment of hypertension then CCB +  $\beta$  blocker (30%) and only 9% of patients were treated on ACEI based FDCs. Only 44% of patients were prescribed with drugs mentioned in the national list of essential medicine (NLEM). Prescribing drug from NLEM should be encouraged to reduce the burden of treatment cost on the patients. ARB were the most preferred drug for the treatment of hypertension may be because of low toxicity and fewer side effect, easily available in the market.

**Keywords:** Antihypertensive Drugs, Hypertension, Prescription Pattern.

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### INTRODUCTION

Hypertension, a leading contributor to the global burden of causes of disease, continues its upward growth trend. It is the most common modifiable risk factor for cardiovascular diseases (CVD), stroke and renal failure.<sup>1</sup> It is estimated that more than one billion adults are hypertensive worldwide and this figure is projected to increase to 1.56 billion by the year 2025, which is an increase of 60 % from year 2000.<sup>2</sup> A total of 1.2 million deaths were due to

coronary heart disease and 0.5 million due to stroke.<sup>3</sup> It has been predicted that by 2020, there would be a 111% increase in cardiovascular deaths in India. This increase is much more than 77% for China, 106% for other Asian countries and 15% for economically developed countries. Most or all BP related risk appears to be reversible within a few years with inexpensive interventions.<sup>4</sup> Clinical evidence suggests that lowering blood

pressure (BP) with antihypertensive drugs reduces the risk of myocardial infarction, stroke, heart failure, revascularization procedures and end-stage renal diseases in hypertensive patients.<sup>5</sup> It is therefore important that once hypertension is diagnosed, a rational anti-hypertensive therapy on a long term basis along with regular follow up is instituted.<sup>6</sup> As a result of various clinical trials and studies, a range of clinical guidelines on antihypertensive treatment have been published over the past decade.<sup>7</sup>

Many studies have demonstrated that lifestyle modifications and adherence to appropriate drug treatments are sufficient to maintain blood pressure at optimal levels. Various drug classes are used in the management of hypertension and they include diuretics (D),  $\beta$ -blockers (BB), calcium channel blockers (CCB), angiotensin converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARB).<sup>8</sup> Co-morbid illnesses are important because they may delay diagnosis, may influence treatment decisions, are related to complications, alter survival, and confound analysis.<sup>9</sup> The widespread use of antihypertensive agents, the public health relevance of hypertension as a risk factor and the costs involved have made this drug class a topic in drug utilization research and 'evidence-based medicine' from early on. Moreover, many national medical associations and international organizations aim to promote certain prescribing behaviour by publishing and implementing 'evidence based' guidelines.<sup>10</sup>

Drug utilization research provides an insight into the drug use pattern and rational use of a drug. It also provides information about cost effectiveness, drug effectiveness and safety. It can also help in comparison of the trend in drug use with the standard guidelines. The information on patterns of drug utilization can be useful for designing a drug policy and reviewing the health care budget.

It is also important to consider the recommendations of international bodies on hypertension that help to improve prescribing practice of the physicians and ultimately, the clinical standards.<sup>11</sup> A prescription based survey is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of the physicians and dispensing practice of pharmacists.<sup>12</sup>

To our knowledge, there are no major drug utilization studies conducted that directly link the patient's diagnoses to actual treatment patterns in Indian population. Therefore present study was conducted to find out current trend of drug prescribing of antihypertensive drugs prescribed either as monotherapy or in combinations. As well as variations were seen in prescribing drugs with regards to the age, sex.

### MATERIALS & METHODS

An observational, prospective, cross-sectional study involving 120 prescriptions for patients of essential hypertension was conducted in the outpatient department of Medicine SGT Medical Hospital, Faculty of Medicine and Health Sciences, Gurugram. Hypertensive patients of 18 Years and above of both sexes without any comorbid condition were included while subjects with pregnancy and lactation were excluded. All hypertensive patients visiting the medicine outpatient department were reviewed daily and subjects were selected according to inclusion criteria. The blood pressure (BP) measurement was done at the time of enrolment and other patient information like demographics and the

drug details were recorded in Performa sheet. Data obtained were analyzed and expressed in percentage.

**Table 1: Gender wise distribution of patients**

Gender	No. of Pts.
Male	71
Female	49

**Table 2: Age Wise distribution of Patients**

Age group (Yrs)	No.	Male	Female
30-39	9	6	3
40-49	87	52	35
50-59	24	13	11
Total	120	71	49

**Table 3: Antihypertensive drugs prescribed for patients**

Mono therapy	52
Dual therapy	64
Triple therapy	4

**Table 4: Antihypertensive drugs prescribed for patients on Mono therapy**

Drugs	No. of Pts
ARB	20
CCB	19
$\beta$ blocker	7
ACEI	6
Total	52

**Table 5: Antihypertensive drugs prescribed for patients on Dual therapy**

Drugs	No. of Pts
ARB + Diuretics	30
CCB + $\beta$ blocker	19
ACEI + Diuretics	5
CCB + ARB	5
ARB + ACEI	2
CCB + ACEI	1
ARB + $\beta$ blocker	1
CCB+DIURETICS	1
Total	64

**Table 6: Antihypertensive drugs prescribed for patients on Triple therapy**

Drugs	No. of Pts
CCB + ARB + Diuretics	2
CCB + ACEI + Diuretics	2

## RESULTS

71 males and 49 female (table 1) of essential hypertension patients were included in study. Most of patients were in the age group of 40 -49 years constituting 72.5 % of total 120 patients (table 2). 52 patients were on mono therapy 64 (53%) of patents were put on Dual therapy and few patients 4 (3.33%) were on Triple therapy (Table 3). out of 52 patients those were on mono therapy maximum patients were put on angiotensin receptor blocker (38.46%) and 11.54% of patients were taking Angiotensin converting enzyme inhibitor (Table 4). 64 patients were prescribed with Dual therapy (Table 5). Out of these 46.9% of patients were prescribed with ARB + Diuretics and nearly 2% patients were on ARB +  $\beta$  blocker combination therapy. Only four patients were taking Triple therapy, 50% of patients were on CCB + ARB + Diuretics and 50% were on CCB + ACEI + Diuretics (Table 6).

## DISCUSSION

The result of our study suggest that hypertension is more prevalent in male patients (59%) than female patients (41%). This finding was in conformity with some of the previous studies by Etuk et al and Rachana et al<sup>13,14</sup> while some studies gives conflicting results and stated incidence of 61% in females as against 39% in males.<sup>10</sup> Most of patients were in the age group of 40 -59 years, constituting 92.5 % of total 120 patients .A study done by Tiwari et al also found that only 4.4% of patients belongs to age group 30-40 yrs and maximally patients were more than 40 yrs of age group. Patients with essential hypertension treated with drug classes like ACE inhibitors, ARB's, beta blockers or calcium channel blockers alone or in combination with diuretics. Drug utilization studies are conducted to monitor adherence to treatment guidelines. Our data shows out Of 120 patients studied, 52 (41.67%) were on monotherapy, while 68 (58.33%) were on combination therapy. In Monotherapy ARBs (38.46%) were the most common single drugs used for most of the uncomplicated essential hypertension followed by CCBs (36.54%) and ACE inhibitors (11.54%). In combination therapy 64(53.33%) patients were on dual therapy and 4(3.33%) were on Triple therapy. Dual Therapy appear to be the most frequent prescribing pattern, which corresponds to the findings of Tiwari et al<sup>11</sup> and Rachana et al.<sup>14</sup> In Dual therapy, a ARB and diuretics were most often prescribed (46.9%), followed by a calcium channel blocker and  $\beta$  blocker (29.7%) then CCB and ARB (7.81%). The more likely reason for lesser use of  $\beta$  blocker in comparison of ARB may be related to the adverse effect of  $\beta$ -blockers on sexual function in men.<sup>15</sup> Dual Therapy regimen, i.e. Telmisartan and hydrochlorthiazide combination, was most often prescribed. In our study 53% on Dual therapy and 3% patients on triple therapy, it indicates that 56% of patients suffering from essential hypertension were treated with fixed dose combinations. FDC therapy offers an appealing solution by allowing more intensive treatment with a simpler regimen. Gupta and colleagues performed a systematic review and metaanalysis of randomized controlled trials and cohort studies of FDC compared with multipill therapy<sup>16</sup> suggest that In Initiating antihypertensive therapy, FDC treatment was associated with a significantly lower risk of composite clinical outcomes compared with multipill treatment, which may be related to better medication adherence. Recently, several large clinical trials demonstrated that in most patients ; lowering BP levels can be achieved and sustained by the use of multiple antihypertensive

drugs.<sup>11,12</sup> Initiating drug therapy with a diuretic, either alone or in combination with an agent from another drug class, apparently provides the best outcomes for BP control, and these guidelines have been incorporated into the current JNC VII report.<sup>4</sup> While in present study it was found that ARBs (38.46%) and CCB(36.54%) were the most common drugs used for initiating therapy. In this study, we also observed that overall ARB were most commonly used drug, it was used in 59 patients out of 120 cases either in the form of Mono therapy, Dual therapy or Triple therapy and it is followed by calcium channel blockers which were used in 49 patients.

Our study also shows that only 44% of patients were treated for hypertension as per drug available in the essential list of medicine of India 2015. Certain limitations have to be taken into account during present study like involvement of small sample size because of limited time span and not be able to conduct pharmacoconomics due to wide fluctuations in cost of drugs. As well as study population was single centered.

## CONCLUSIONS

Hypertension is more prevalent in male patients than female patients. Most of patients were in the age group of 40 -59 years, constituting 92.5% of total patients. ARBs (38.46%) were the most common single drugs used for most of the uncomplicated essential hypertension followed by CCBs (36.54%) ARB prescription as monotherapy may be increases because of few or minimal side effects caused by them. Most common mode of treatment of hypertension was Dual therapy or triple therapy combination therapy fixed dose combinations (56%). In the FDCs ARB + Diuretics (48%) were most preferred combination for treatment of hypertension then CCB +  $\beta$  blocker (30%) and only 9% of patients were treated on ACEI based FDCs . Only 44% of patients were prescribed with drugs mentioned in the national list of essential medicine (NLEM). Prescribing drug from NLEM should be encouraged to reduce the burden of treatment cost on the patients. Overall, 49.17 % of patients were on ARB in different form of treatment i.e on mono therapy, Dual therapy or triple therapy and nearly 12% patients were treated with ACEI based prescriptions. ARB were the most preferred drug for the treatment of hypertension may be because of low toxicity and fewer side effect, easily available in the market.

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