

# Prescription pattern of antihypertensive drugs in a tertiary care centre

Rovin C Vincent<sup>1\*</sup>, Padmaja Udaykumar<sup>2</sup>, Thomas Paul<sup>3</sup>, Manju Prasad MS<sup>4</sup>

<sup>1,3,4</sup>Post Graduate, <sup>2</sup>Professor and Head, Department of Pharmacology, Father Muller Medical College, Mangalore, 575002, INDIA.

Email: [rovinvims@gmail.com](mailto:rovinvims@gmail.com)

## Abstract

**Objective:** Hypertension is one of the most common disorders seen in daily practice. Adequate control of blood pressure is necessary to prevent the complications due to Hypertension. The objective of the study is to study the pattern of use of antihypertensive drugs in a tertiary care centre. **Method:** A retrospective, Hospital based study was done which incorporated 271 Hypertensive patients admitted in a tertiary care hospital. Patients above 18 years of age of either sex were included in the study. Medical records of these patients were reviewed and data was collected in a case record form. Demographic data and data regarding antihypertensive drugs prescribed were noted. **Results:** 273 patients were included in the study of which 185(67.77%) were male patients and 88(32.23%) were female patients. Most of the patients 31.13% belonged to the age group of 50-59years followed by 60-69years (25.64%). A total of 157(57.50%) of the patients were on monotherapy, followed by 86(31.50%) patients on two drugs, 25(9.15%) patients on 3 drugs and 5(1.83%) patients on more than 3 drugs. Calcium channel blocker was the most commonly prescribed drug for patients on monotherapy. A combination of a Calcium channel blocker and a Beta blocker was the most frequently used combination in patients on two drugs. **Conclusion:** Calcium channel blockers were the most commonly prescribed group of antihypertensive drugs. The prescription pattern confirmed with the outcome of recent trials that highlight the importance of Calcium Channel Blockers.

**Key Words:** Calcium Channel Blockers, Hypertension, Prescription pattern.

## \*Address for Correspondence:

Dr. Rovin C Vincent, Post Graduate, Department of Pharmacology, Father Muller Medical College, Mangalore, 575002, INDIA.

Email: [rovinvims@gmail.com](mailto:rovinvims@gmail.com)

Received Date: 10/02/2015 Revised Date: 16/02/2015 Accepted Date: 19/02/2015

## Access this article online

Quick Response Code:



Website:

[www.statperson.com](http://www.statperson.com)

DOI: 20 February 2015

## INTRODUCTION

Hypertension is one of the leading causes of mortality and morbidity worldwide. The WHO estimated that by 2025 a massive 1.5 billion people would be suffering from Hypertension.<sup>1</sup> Hypertension is a life style disorder. This is evident from the fact that the prevalence of hypertension is more in the urban population(4-15%) as compared to the rural population(2-8%).<sup>2</sup> It is one of the prominent preventable disorders. It is a risk factor for many cardiovascular disorders like myocardial infarction,

angina pectoris, arrhythmias and cardiac failure. It can cause renal complications. It is also a risk factor for stroke and peripheral arterial disease[3]. Thus the control of hypertension by using appropriate antihypertensives is of utmost importance. The choice of an antihypertensive agent is determined by its efficacy, side effect profile and cost to the patients. Cost comes into picture because antihypertensive medicines are usually taken for prolonged periods of time.

A number of new drugs have been approved for the treatment of Hypertension. In the changing scenario of the management of Hypertension with the flurry of new drugs as against established and conventional drugs, this study was undertaken to study the pattern of use of antihypertensive drugs in a tertiary care centre.

## MATERIALS AND METHODS

This study was a retrospective, hospital based study. Ethical clearance was taken from the institutional ethical committee prior to the start of the study. A total of 271 hypertensive patients were included in the study. Patients admitted in the wards of Father Muller Medical College

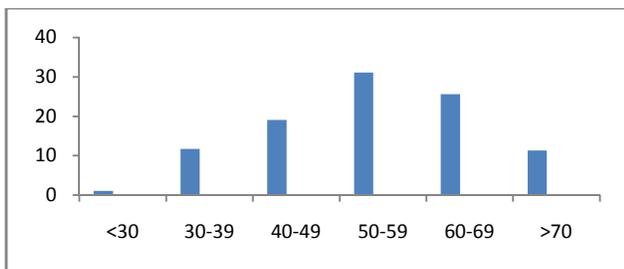
from January 2012 to June 2012 were included in the study. Hypertension was defined as systolic blood pressure of  $\geq 140$  &/or diastolic pressure of  $\geq 90$ . Patients above 18 years of age of either sex were included in the study. Data was obtained from the medical records department of Father Muller Medical College. It was entered in a case record form that was prepared beforehand. Demographic data, age, gender & hospital record numbers were recorded. Data regarding antihypertensive drugs prescribed and co prescribed drugs were noted. Data was analysed using mean, frequency and percentage.

### RESULTS

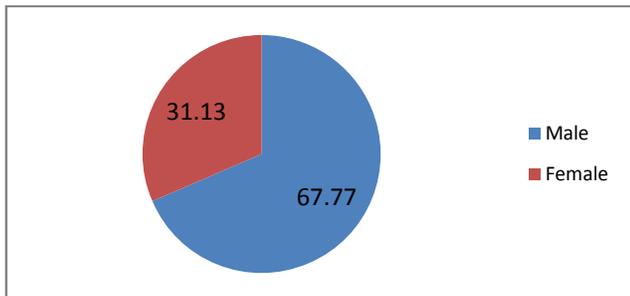
A total of 273 patients were included in the study. This study showed a male preponderance. There were 185(67.77%) male patients as against 88(32.23%) female patients. 85 patients (31.13%) belonged to the age group of 50-59 followed by 70 patients (25.64%) in the age group of 60-69. A detailed age distribution is given in Table 1 and Figure 1. Figure 2 shows the sex distribution.

**Table 1: Percentage Distribution based on age group**

| Age distribution(Years) | No. of patients | Percentage |
|-------------------------|-----------------|------------|
| <30                     | 3               | 1.09       |
| 30-39                   | 32              | 11.72      |
| 40-49                   | 52              | 19.04      |
| 50-59                   | 85              | 31.13      |
| 60-69                   | 70              | 25.64      |
| >70                     | 31              | 11.35      |



**Figure 1: Percentage Distribution based on age group**



**Figure 2: Graph showing the Sex Distribution**

A total of 157(57.50%) of the patients were on a single drug (Monotherapy), followed by 86(31.50%) patients on two drugs, 25(9.15%) patients on 3 drugs and 5(1.83%) patients on more than 3 drugs. Calcium channel blocker was the most commonly prescribed drug for patients on monotherapy. A detailed list of drugs used in hypertension as a monotherapy is given in table 2.

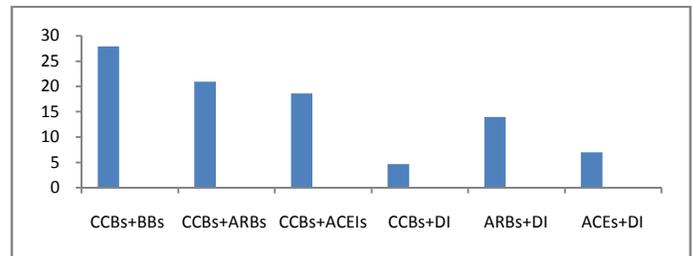
**Table 2: List of drugs used in monotherapy**

| Sr. No. | Group            | No | %      | Drugs       | No | %      |
|---------|------------------|----|--------|-------------|----|--------|
| 1       | CCBs             | 82 | 52.29% | Amlodipine  | 67 | 81.70% |
|         |                  |    |        | Nifedipine  | 11 | 13.41% |
|         |                  |    |        | Clinidipine | 4  | 4.87%  |
| 2       | ATs              | 33 | 21.01% | Losartan    | 20 | 60.60% |
|         |                  |    |        | Telmisartan | 13 | 39.39% |
|         |                  |    |        | Enalapril   | 10 | 45.45% |
| 3       | ACE Inhibitors   | 22 | 14.01% | Ramipril    | 11 | 50%    |
|         |                  |    |        | Perindopril | 1  | 4.45%  |
|         |                  |    |        | Propranolol | 6  | 66.66% |
| 4       | $\beta$ Blockers | 9  | 5.73%  | Metoprolol  | 3  | 33.33% |
|         |                  |    |        | Furosemide  | 8  | 100%   |
| 5       | Diuretics        | 8  | 5.09%  | Furosemide  | 8  | 100%   |
| 6       | Miscellaneous    | 3  | 1.91%  |             |    |        |

Among patients receiving 2 drugs for the treatment of Hypertension, a combination of a Calcium channel blocker and a Beta blocker was the most frequently used combination. Table 3 gives a detailed split up of the combinations used as 2 drug combination in the treatment of hypertension.

**Table 3: Combinations used as 2drug Combination**

| Sl. | Drug Combination | No | %     |
|-----|------------------|----|-------|
| 1   | CCBs+BBs         | 24 | 27.90 |
| 2   | CCBs+ARBs        | 18 | 20.93 |
| 3   | CCBs+ACEIs       | 16 | 18.60 |
| 4   | CCBs+DI          | 4  | 4.63  |
| 5   | ARBs+DI          | 12 | 13.95 |
| 6   | ACEs+DI          | 6  | 6.97  |
| 7   | Misc             | 6  | 6.97  |



**Graph 3: Combinations used as 2drug Combination**

Only 9.15% of the patients were on a combination of three drugs for the treatment of Hypertension. The combination of a Calcium Channel Blocker, Angiotensin receptor blocker and a diuretic was the most frequently

prescribed combination (36%) in this group. A detailed distribution is given in table 4.

**Table 4:** Combinations used as 3drug Combination

| Sl | Drug combination | No | %  |
|----|------------------|----|----|
| 1  | CCBs+ACEIs+BB    | 3  | 12 |
| 2  | CCBs+ARBs+BB     | 3  | 12 |
| 3  | CCBs+ACEIs+DI    | 5  | 20 |
| 4  | CCBs+ARBs+DI     | 9  | 36 |
| 5  | ARBs+BB+DI       | 2  | 8  |
| 6  | ACEIs+BB         | 3  | 12 |

## DISCUSSION

Hypertension is assuming epidemic proportions especially in developing countries.<sup>4</sup> India from being agrarian economy is getting transformed to an industrialized economy. Increasing number of people are living a sedentary life and this has led to an increase in lifestyle disorders and Hypertension is an important one among them. Hypertension is a male predominant disorder and the present study confirmed this finding with 67.77% of the patients in the study being male patients. Majority of the patients were on monotherapy. Calcium Channel Blocker was the most commonly prescribed group of antihypertensive agents. This is consistent with the study done by Mohammed AH *et al*<sup>5</sup> and Tiwari H *et al*.<sup>6</sup> A similar study done in Nigeria where 509 hypertensive patients were included in the study confirmed that Calcium Channel Blockers were the most commonly prescribed drugs.<sup>7</sup> However in that study majority of the patients were on polytherapy. A metaanalysis of RCTs showed that Calcium channel Blockers were more effective in reducing the incidence of stroke and myocardial infarction in hypertensive patients as compared to angiotensin II receptor blocker.<sup>8</sup> Adherence to treatment is one of the important factor in the adequate control of Blood Pressure.<sup>9</sup> Patients on monotherapy are known to be more adherent to medications. However a study done in Trinidad by Clement YN *et al* showed that ACE inhibitors were the most commonly used antihypertensive agent.<sup>10</sup> In this study the most commonly used two drug combination was a Calcium Channel Blocker and a Beta Blocker. This was consistent with a study done by Mohammed AH *et al*.<sup>5</sup>

## CONCLUSION

This study showed that the most commonly used group of drug for Hypertension was Calcium Channel Blockers followed by Angiotensin receptor antagonist. The prescription pattern confirmed with the outcome of recent trials that highlights the importance of Calcium Channel Blockers.

## REFERENCES

1. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. *Lancet*. 2005 Jan 15-21;365(9455):217-23.
2. Lawes CM, Vander HS, Rodgers A. Global burden of blood-pressure related disease, 2001. *Lancet*. 2008;371:1513-8.
3. Longo DL, Kasper DL, Jameson JL, Fauci AS, Hauser SL, Loscalzo J, editors. *Harrison's Principles of Internal Medicine*. 18th ed. New York: McGraw-Hill; 2012.
4. Chaturvedi M, Jindal S, Kumar R. Lifestyle modification in hypertension in the Indian context. *J Indian Acad Commun Med*. 2009;10:46-51.
5. Mohd AH, Mateti UV, Konuru V, Parmar MY, Kunduru BR. A study on prescribing patterns of antihypertensives in geriatric patients. *Perspect Clin Res*. 2012 Oct;3(4):139-42.
6. Tiwari H, Kumar A, Kulkarni SK. Prescription monitoring of anti-hypertensive drug utilisation at the Panjab University Health Centre in India. *Singapore Med J*. 2004 Mar;45(3):117-20.
7. Ojji DB, Ajayi SO, Mamven MH, Alfa J, Albertino D. Pattern of prescription of anti-hypertensive medications in a tertiary health care facility in Abuja, Nigeria. *Ethn Dis*. 2013 Autumn;23(4):480-3.
8. Wu L, Deng SB, She Q. Calcium Channel Blocker Compared With Angiotensin Receptor Blocker for Patients With Hypertension: A Meta-Analysis of Randomized Controlled Trials. *J Clin Hypertens (Greenwich)*. 2014 Aug 7.
9. Yiannakopoulou ECh, Papadopulos JS, Cokkinos DV, Mountokalakis TD. Adherence to antihypertensive treatment: a critical factor for blood pressure control. *Eur J Cardiovasc Prev Rehabil*. 2005 Jun;12(3):243-9.
10. Clement YN, Ali S, Harripaulsingh S, Lacaille K, Mohammed O, Mohammed S, Ragbir T, Ramirez E, Tshiamo K. Drug prescribing for hypertension at primary healthcare facilities in Trinidad. *West Indian Med J*. 2012 Jan;61(1):43-8.

Source of Support: None Declared  
Conflict of Interest: None Declared