

## A Study on Prescribing Patterns of Antihypertensive Drugs in a Tertiary Care Hospital

SarathPNamboodry, ThamburuS, FarhanK, Sharath K N, Dr. Manikanta B D

Students pharmd, Assistant professor, Department of pharmacy practice, Mallige college of pharmacy, Bangalore, Karnataka -560090

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### ABSTRACT

#### BACKGROUND:

This study assessed the prescription pattern of antihypertensive medications among hypertensive inpatients at Mallige Hospital, Bangalore, Karnataka in accordance with guidelines for pharmacotherapy of hypertension.

#### OBJECTIVES:

Primary objective: To evaluate the prescribing patterns of antihypertensive drugs in hypertension. Secondary objectives: Association of hypertension with age, Body mass index, Type 2 diabetes and gender.

#### METHODOLOGY:

This study was conducted at Mallige Hospital which is a multispeciality tertiary care Hospital with over 126 beds located in Bengaluru, the capital of Karnataka state of India. The study involved was Retrospective study and was conducted for 6 months. patients having the age 18 years and above, patient prescribed antihypertensive drugs and patient having known case of hypertension was taken for study. Statistical analysis was performed using Microsoft-excel.

#### RESULT:

More than 60% of the cases collected are having comorbidity diabetes mellitus and ischemic heart disease with hypertension. In antihypertensive therapy, 61% of drugs prescribed are diuretics and Calcium channel blocker. Average number of days of stay in Hospital was found to be 5 to 6 days and 50% of patients only stayed 1 to 5 days.

#### CONCLUSION:

The prescribing pattern of antihypertensive drug moderately followed standard treatment guidelines for drugs prescribing for hypertension. In general monotherapy is the most frequently used followed by dual therapy and three drug combination. In monotherapy Calcium channel blocker is the most commonly prescribed drugs followed by diuretics

and beta blockers. Angiotensin receptor blocker + DIURETICS and Calcium channel blocker + BETA BLOCKERS are most prescribed drugs for treatment of hypertension.

### I. INTRODUCTION

Hypertension is a non-contagious epidemic that affects millions of people and is a common risk factor of death throughout the world. Normal blood pressure of the person is 120/80 mm of Hg and the person whose reading is above 140/90 mm of Hg is considered as hypertensive. Hypertension is defined as the persistent elevation in the arterial blood pressure or condition that arises when the BP is abnormally high. It occurs when the body's small vessels narrows which cause the blood to exert excess pressure against the vessel walls forcing heart to work harder to maintain BP. This can lead to loss of elasticity or wear and tear of blood vessels and heart (hypertrophy) which will eventually lead to failure. Complications can be injury to kidneys, brain and eyes.<sup>1</sup>

There are many risk factors for high blood pressure such as Overweight, Age, Family history, excess alcohol intake, unhealthy diet, less physical activity, stress and many more. There is consistent increase in use of antihypertensive drugs worldwide. Mild to moderate Hypertension may be controlled by a single-drug regimen, although more severe cases often require a combination of drugs. The Joint National Committee (JNC-8) is considered the "gold standard" consensus guidelines for the management of hypertension. European guidelines suggest that unless a special indication exists, any of the five anti hypertensive classes can be used as first line treatment. Various lifestyle modifications include losing weight, quitting smoking, eating a healthy diet, exercising regularly, and limiting alcohol consumption.

## II. METHODOLOGY

This study is going to be conducted in malligehospital. Mallige Hospital is a multispecialty tertiary care Hospital with over 126 beds conveniently located in the heart of Bengaluru, the capital of Karnataka state of India. In this study, prescribing patterns of Antihypertensive drugs in accordance with age, gender, comorbidities, BMI, Stages of hypertension, diet, period of stay in Hospital and the therapy prescribed for them. The result will be statistically analyzed using appropriate statistical method.

## III. RESULTS

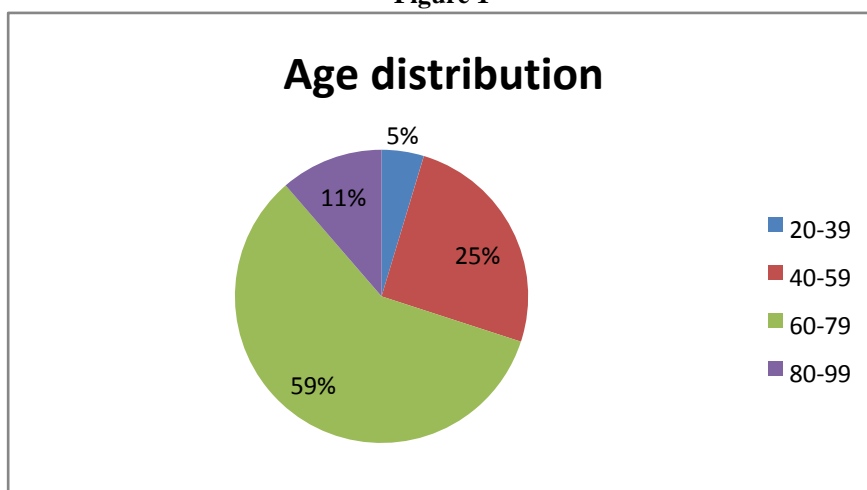
### GENDER

- ❖ More than half of the patients included in the study were males.
- ❖ Males:77&females:73.

### AGE

- ❖ More than 50% of the cases were in between the age group 60-79.

Figure 1



### BMI

- ❖ Surprisingly normal BMI cases were the most among the cases collected.

| BMI RANGE | NO.of patients | Classification  |
|-----------|----------------|-----------------|
| <18.5     | 5              | underweight     |
| 18.5-24.9 | 50             | normal          |
| 25-29.9   | 41             | overweight      |
| 30-34.9   | 16             | obesity         |
| >35       | 1              | extremely obese |
| Bedridden | 37             |                 |

Table 1

**STAGES OF HYPERTENSION**

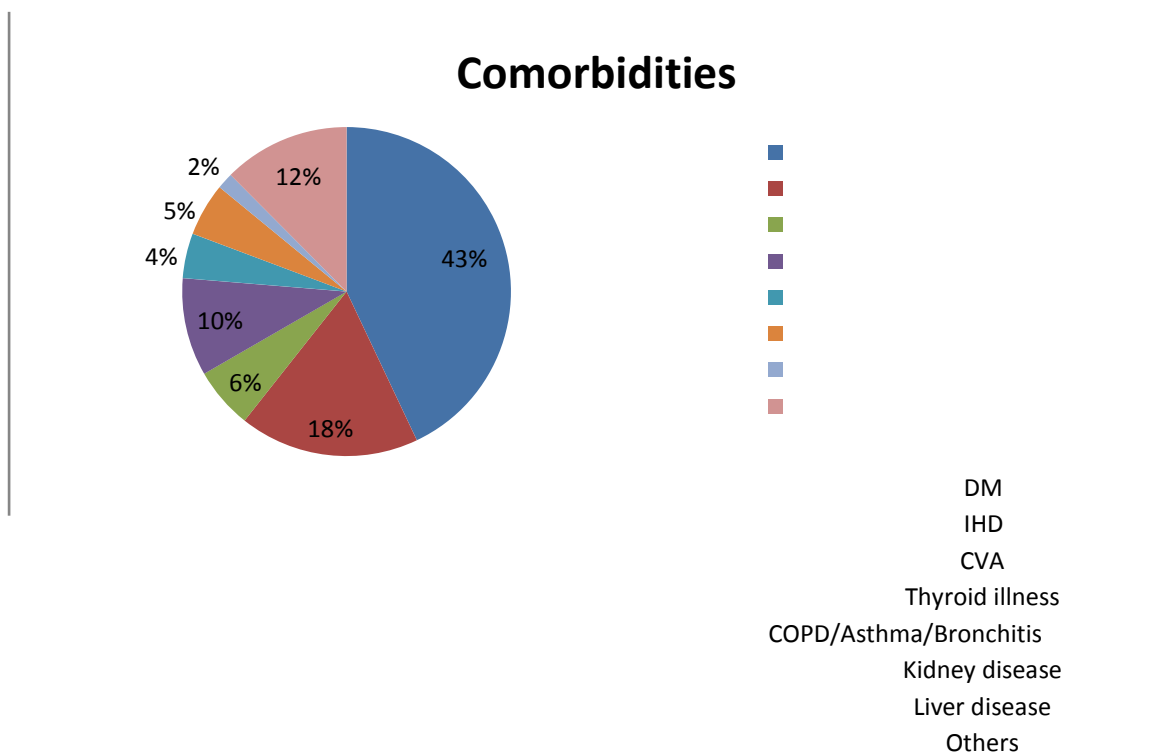
❖ According to JNC8 guidelines of hypertension is classified into 4 and among then prehypertension cases were the most among the included cases

**Table 2**

| Stages          | BP range      | No.of patients |
|-----------------|---------------|----------------|
| Normal          | <120/80       | 18             |
| Prehypertension | 120-139/80-89 | 49             |
| Stage 1         | 140-159/90-99 | 44             |
| Stage 2         | ≥160/100      | 37             |
| Hypotension     | <90/60        | 2              |

**COMORBIDITIES**

- ❖ Diabetes mellitus was the most common comorbidity among the cases collected
- ❖ 43% of the cases had Diabetes along with hypertension



**Figure 2**

**DRUGS PRESCRIBED**

❖ Antihypertensive medications used in monotherapy, dual therapy or multiple drug combinations Table 3

| MONOTHERAPY |    |
|-------------|----|
| CCB         | 35 |
| D           | 22 |
| BB          | 12 |
| ARB         | 7  |
| AB          | 1  |

Table 4

| DUAL THERAPY |    |
|--------------|----|
| CCB+D        | 13 |
| ARB+D        | 8  |
| BB+D         | 7  |
| CCB+BB       | 6  |
| CCB+CAA      | 4  |
| ARB+CCB      | 4  |
| ACEI+D       | 3  |
| ACEI+CCB     | 3  |
| ACEI+BB      | 1  |
| CCB+AB       | 1  |

Table 5

| MULTIPLE DRUG COMBINATIONS |   |
|----------------------------|---|
| CCB+BB+D                   | 5 |
| ARB+CCB+D                  | 3 |
| AB+CCB+BB                  | 2 |
| D+CAA+BB                   | 1 |
| ARB+BB+AB                  | 1 |
| ABB+BB+D                   | 1 |
| AB+BB+CAA                  | 1 |
| ARB+CCB+BB                 | 1 |
| ARB+D+BB                   | 1 |
| CCB+CAA+D                  | 1 |
| D+CAA+BB                   | 1 |
| ARB+CCB+CAA+D              | 2 |
| CCB+ARB+D+AB               | 1 |
| D+CCB+BB+AB                | 1 |

|            |   |
|------------|---|
| VD+D+AB+BB | 1 |
|------------|---|

❖ **Therapy pattern**

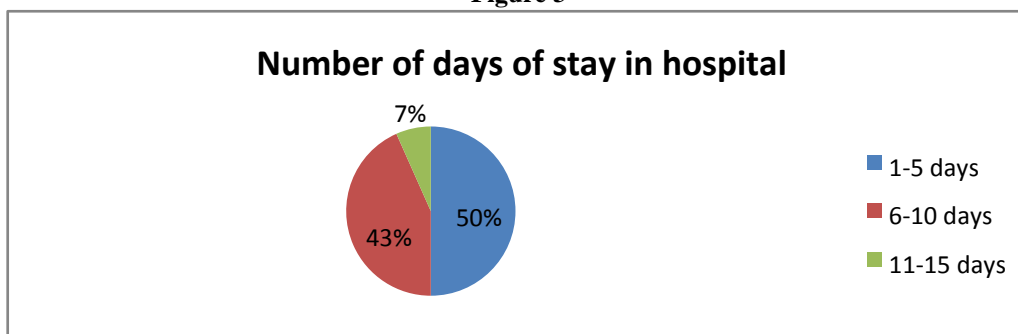
**Table 6**

|                     |                         |    |
|---------------------|-------------------------|----|
| <b>MONOTHERAPY</b>  |                         | 77 |
| <b>COMBINATIONS</b> | <b>dual therapy</b>     | 50 |
|                     | <b>three drug combo</b> | 18 |
|                     | <b>four drug combo</b>  | 5  |

**PERIOD OF STAY IN HOSPITAL**

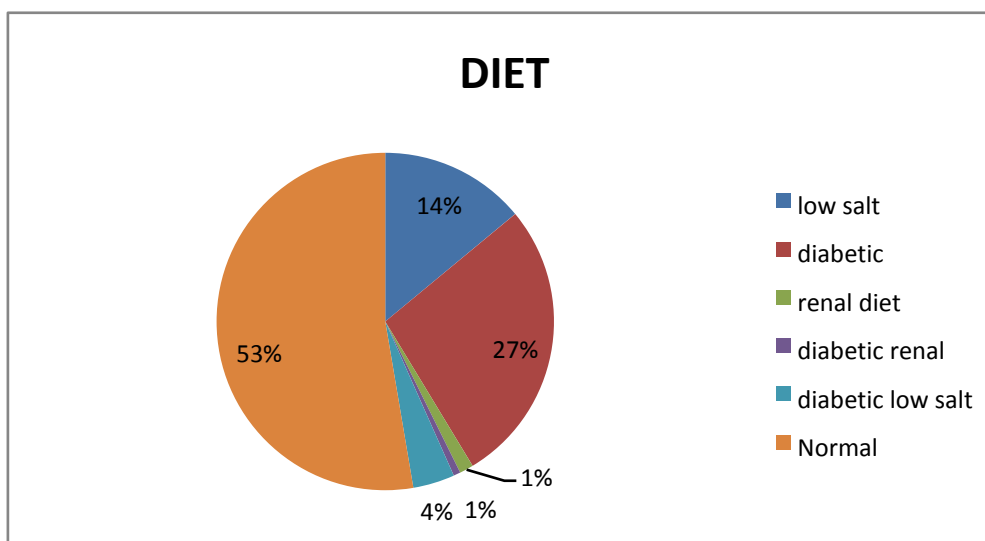
❖ The average number of days of stay in Hospital was found to be 5-6days ❖  
 And 50% of patients only stayed 1-5 days

**Figure 3**



**DIET**

❖ Most of the cases had normal diet



**Figure 4**

**IV. DISCUSSION**

Our result reveals that the highest number of hypertensive patients, that is about 59% of the

cases were in between the age group 60 to 79 years. The 25% of the patients belongs to age of 40 to 59 years. The 45% of the collected cases were having blood pressure less than 150/90 mm of Hg and 25% of patients were having blood pressure more than 160/100 mm of Hg. Among the cases collected more than 60% of the cases is having comorbidity diabetes mellitus and ischemic heart disease with hypertension. In that diabetes mellitus was the most common comorbidity among the cases collected. 43% of the cases had diabetes mellitus along with hypertension. In antihypertensive therapy, 61% of drugs prescribed were diuretics and CCB. And in that most prescribed drugs were CCB. The average number of days of stay in Hospital was found to be 5 to 6 days and 50% of the patients only stayed 1 to 5 days. Out of 150 cases collected, most of the cases had normal diet, that is about 53% of the cases.

## V. CONCLUSIONS

In general monotherapy is the most frequently used followed by dual therapy and three drug combination respectively. In monotherapy CCB is the most commonly prescribed drugs followed by diuretics and beta blockers respectively. In dual therapy CCB and diuretics is the most prescribed drug combination followed by ARB + DIURETICS and CCB + BETA BLOCKERS respectively. In three drug combination, CCB + BETA BLOCKER + DIURETIC is most prescribed drugs followed by ARB + CCB + DIURETICS. The prescribing

pattern of antihypertensive drug moderately followed standard treatment guidelines for drugs prescribing for hypertension.

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