

# Assessment of Prescription Pattern Associated with Anti-Hypertensive Treatment at Tertiary Care Teaching Hospital in Central Karnataka

Kasi Jagadeesh M<sup>1</sup>, Uday Kumar R.<sup>2</sup>

<sup>1,2</sup>Doctor of Pharmacy Practice, Basaveswara Medical College, India  
Hospital & Research Centre, Chitradurga, Karnataka-577502, India

**Abstract:** ***Introduction:** Hypertension is termed for an elevated systolic blood pressure 140 mmHg (also above than 140mmHg) and/or diastolic blood pressure 90 mmHg (also above than 90mmHg). It is often an asymptomatic chronic disease, which always needs persistent medication adherence to the medications prescribed in order to reduce the risks of stroke and cardiovascular diseases, also renal disease. Prevalence rate of hypertension and its complications are day by day increasing in the recent world population. Objectives: The objectives of the study were to evaluate the Drug Utilization in diabetic patients and to assessment of the Prescription pattern. Methodology: A prospective observational study was conducted in Basaveswara Medical College Hospital and Research Centre, Chitradurga. The study was conducted for a period of six months from January 2014 to June 2014. Drug therapy was monitored from the patient got admitted to the hospital and till discharged. Results: A total of 176 patients aged  $\geq 30$  years data were collected in general medicine department. Commonly prescribed antihypertensive drug of choice was the Amlodipine. fixed dose combinations are occupied second drugs of choice. Conclusion: Hypertension is a chronic disease now a days commonly noticed in population worldwide especially in adults and geriatric population. We conclude this study that the physicians need to maintain the rationality of the antihypertensive therapy and to maintain a vital successful therapy for comorbid conditions like diabetes mellitus and cardiovascular diseases. A successful treatment will come true when a clinical pharmacist maintain a successful harmonious relationship with the physician.*

**Keywords:** hypertension, prescription pattern, drug utilization.

## 1. Introduction

Hypertension is a significant and often asymptomatic chronic disease, which requires persistent adherence to prescribed medication to reduce the risks of stroke, cardiovascular disease and renal disease<sup>1</sup>. Hypertension is termed for an elevated systolic blood pressure 140 mmHg (also above than 140mmHg) and/or diastolic blood pressure 90 mmHg (also above than 90mmHg). Effective medical therapy and evidence-based treatment guidelines for hypertension are readily available yet; hypertension management at the population level is not optimal<sup>2</sup>. The World Health Organization (WHO) has estimated that globally about 62% of cerebrovascular diseases and 49% of ischemic heart diseases are attributable to suboptimal blood pressure (systolic  $> 115$  mmHg), with little variation by sex<sup>3</sup>. Improper treatment of hypertension could lead to increased risk of morbidity and mortality due to cardiovascular, cerebrovascular, or renal diseases<sup>4</sup>. Hence sufficient scientific evidence exists to suggest that such adverse outcomes can be prevented by lowering blood pressure effectively<sup>5</sup>. The prevalence of hypertension is significantly higher in the urban peoples of India compared to the rural population<sup>6</sup>. A sample size of 176 participants was selected to provide adequate statistical power to detect clinically important and meaningful differences between Monotherapy as well as combinational therapy to their antihypertensive medication. By keeping all the facts in mind, the present study was designed to analyse the prescribing pattern of anti-hypertensive drugs for hypertensive patients to establish safe and effective medication.

## 2. Methodology

### 2.1 Study Site

The study was conducted in Basaveswara Medical College Hospital & Research Centre, Chitradurga. It is 650 bedded multi-speciality tertiary care teaching hospital. It consists of various departments like General Medicine, OBG, Paediatrics, Orthopaedics, Surgery, Psychiatry, ENT, Dermatology, Casualty and Pharmacy. Approximately 200-250 patients are being treated in general medicine department per month. The patients who visit this hospital are usually from in and around district of Chitradurga.

### 2.2 Study Design

The study was a cross sectional observational study, which assessed the drug utilization in hypertensive patients.

### 2.3 Study duration:

The study was conducted for a period of six months from January 2014 to June 2014.

### 2.4 Study Criteria

#### 2.4.1 Inclusion Criteria

1. Newly diagnosed and known cases of hypertension with comorbidities who were receiving anti-hypertensives and patients who were hospitalized included.
2. Inpatients of either sex or patients aged 30 years and above were included.

### 2.4.2 Exclusion Criteria

1. Patients with gestational diabetes were excluded from the study.
2. The patients who are coming to out-patients department are also excluded from our study

### 2.5 Source of Data

The patient demographical data, clinical data, therapeutic data and various other relevant and necessary data collected from:

- Medical records of inpatients
- Personal interview of patients to determine the chief complaint, history of the present illness, past medical and medication history.
- Patient's prescriptions
- Interviews of patient care takers

### 2.6 Study Procedure

All the patients who admitted to the General Medicine department were reviewed daily to identify the patients diagnosed with hypertension or with other co morbidities. The patients who met the study criteria were enrolled in the study. Ethical clearance from Institutional Ethical Committee, by Basaveswara Medical College Hospital & Research Centre, Chitradurga was obtained prior to the study. A suitable data collection form designed (Annexure-III) to collect all the relevant and necessary data. The demographic details of the patient such as name, age, sex, IP number; clinical data such as diagnosis, clinical condition; therapeutic data such as name of the drug, dose, route, frequency, duration of therapy and other relevant details were collected by reviewing the case notes, treatment charts, lab data reports and by interviewing the patients and patient care takers. A personal visit was made to all the patients who were included in the study to collect any further information. Their medications were cross-checked with the treatment chart. All the patients were monitored from the day of admission to the day of discharge. During the treatment with anti-hypertensive drugs the enrolled patients were evaluated clinically every day to assess the clinical outcome. The patients were also monitored for possible Drug Interactions during the course of treatment with Anti-hypertensive drugs.

### 2.7 Data Analysis

All the data was analysed in order to assess the drug utilization in hypertensive patients, to evaluate the prescription pattern, and other illness associated with hypertension Analysis is also based on evaluating the potential drug utilizing pattern. The data was analysed and the percentage value was calculated for the use of different class of oral anti-hypertensives in medicine unit.

## 3. Results

### 3.1 Antihypertensive Drug therapy

Among hypertensive drug therapy we are differentiated as Monotherapy as well as combinational therapy. Combinational therapy includes two drug, three drug, four

drug combinations. In mono-therapy we observed Calcium channel blockers and beta-blockers are the most common prescribed category of drugs. In CCB'S Amlodipine (11) was the preferable drug. In case of  $\beta$ -blockers atenolol (9) is the most preferable one (57). After CCB's, and Beta Blockers other classes of drugs(ex: $\alpha$ -blockers, vasodilators etc) followed by ARB'S(7), ACE inhibitors(4) and diuretics (6).The combinations used by the physicians for a vital successful therapy of hypertension in the collected data are given below. Fixed dose combinations (62) upto 32.22% are mostly used in the treatment of patients. Fixed dose combinations are include ARB + Diuretics, CCB +  $\beta$ -Blocker, ACE I+ Diuretics, CCB+ ARB, Diuretics + Diuretics,  $\beta$ -Blocker + Diuretics, ARB + CCB + Diuretics. Two drug combinations are 41 and three drug combinations are only 12.

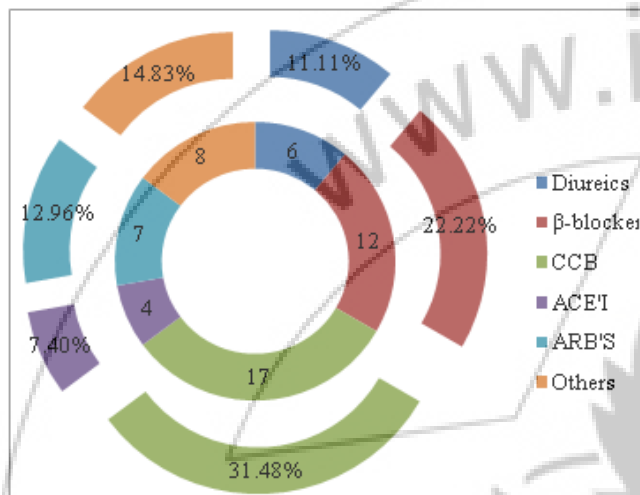
### 3.2 Frequency (%) of prescribing anti-hypertensives drugs among Monotherapy & combination therapy (N=54).

Drugs combination	No. Of prescriptions	Percentage(%)
<b>Monotherapy</b>	<b>54</b>	<b>30.68%</b>
Diuretics	6	
CCB	17	
BB	12	
ACEI	4	
ARB'S	7	
Others	8	
<b>Two drugs combination</b>	<b>41</b>	<b>23.29%</b>
CCB+ACE I	6	
CCB+Diuretic	3	
CCB+ARB	5	
CCB+ $\beta$ -Blocker	14	
ACE I+ARB	2	
ACE I+ $\beta$ -Blocker	4	
ARB+ $\beta$ -Blocker	2	
ARB+Diuretics	5	
<b>Three drugs combination</b>	<b>12</b>	<b>6.81%</b>
CCB+ACE I+ $\beta$ -Blocker	6	
CCB+ARB+ $\beta$ -Blocker	2	
CCB+ARB+Diuretics	4	
<b>Four drugs combination</b>	<b>7</b>	<b>0.39%</b>
CCB+BB+ARB+Diuretic	5	
CCB+BB+ACE+Diuretic	2	
<b>Fixed Dose combination</b>	<b>62</b>	<b>35.22%</b>
ARB+Diuretics	23	
CCB+ $\beta$ -Blocker	19	
ACEI+Diuretics	7	
CCB+ARB	9	
$\beta$ -Blocker+Diuretics	3	
ARB+CCB+Diuretics	1	

### 3.3 Individual prescribing of anti-hypertensive drugs (category wise) among Monotherapy (N=54).

Anti-hypertensive Drugs	No. Of Prescription	Percentage (%)
<b>Diuretics</b>	<b>6</b>	<b>11.11%</b>
➤ Furosemide	4	
➤ Spironolactone	2	
<b>Beta Blocker</b>	<b>12</b>	<b>22.22%</b>
➤ Metoprolol	2	
➤ Atenolol	9	
➤ Propranolol	1	

CCBs	17	31.48 %
➤ Amlodipine	11	
➤ Nefidipine	5	
➤ Verapamil	1	
ACE Inhibitors	4	7.40%
➤ Ramipril	2	
➤ Enalapril	2	
ARBs	7	12.96%
➤ Losartan	4	
➤ Telmisartan	2	
➤ Olmesartan	1	
Others	8	14.83%



Individual prescribing anti-hypertensive drugs (category wise) among Monotherapy (N=54).

#### 4. Conclusion

Hypertension is a chronic incurable condition. Maintain the controlling of blood pressure is very important in this condition. Now a days it is commonly noticed in population worldwide especially in adults and geriatric people. Prescription pattern of the present study concluded amlodipine was the most commonly prescribed antihypertensive drug in the monotherapy followed by atenolol. In combinational therapy two drugs combinations and fixed dose combinations were most commonly prescribed drugs in this hospital. Physicians need to maintain a vital therapy for the successful treatment of hypertensive patients. Many cases are co-morbid condition, In case of comorbidity like Diabetes Mellitus or other conditions it makes a stage for the physician to select the suitable antihypertensive treatment for the individual. A pharmacist job is to monitor all the interventions like Prescription Analysis, Drug Interactions etc. Finally the prescription pattern of our study shown more no of hypertensive patients were undergone for combinational therapy including fixed dose combinations.

#### References

- [1] Jelena Lalić, Radmila Medication Adherence in Out patients with Arterial Hypertension Scientific Journal of the Faculty of Medicine in Niš 30(4):209-218: 2013.
- [2] Kevin C, Farmer et al methods for measuring and monitoring medication regimen adherence in clinical trials and clinical practice. Clinical therapeutics/vol.21

no 6, 1999.

- [3] World Health Report-2002. Reducing Risks, Promoting Healthy Life. Chapter 4, p-12. URL: [http://www.who.int/whr/2002/en/whr02\\_ch4.pdf](http://www.who.int/whr/2002/en/whr02_ch4.pdf) (accessed April 24, 2013).
- [4] Rampal L, Rampal S, Azhar M Z, Rahman A R. Prevalence, awareness, treatment and control of hypertension in Malaysia: a national study of 16,440 subjects. Public Health. 122(1):11-8:2008.
- [5] Bajaj J K, Sood M, Singh S J and Jerath P. Prescription patterns of antihypertensive drugs and adherence to JNC VII guidelines in a tertiary care hospital in North India. International Journal of Medical and Clinical Research. 3(2);118-20:2012.
- [6] Tanu M, Bhola N, Ranjeeta K, Yashwant K R, Umeshwar P. Prevalence of hypertension in India: A meta-analysis. World J Meta-Anal. 1(2):83-9: 2013.
- [7] Osterberg L, Blaschke T. Adherence to medication. N Engl J Med 353;487-497:2005.
- [8] MAKrousel-Wood, et al Barrierstoand Determinants of Medication Adherence in Hypertension Management: Perspective of the Cohort Study of Medication Adherence among Older Adults Med Clin North Am. 93(3);753-769:2009
- [9] Dusing R. Overcoming barriers to effective blood pressure control in patients with hypertension. Curr Med Res Opin 22(8);1545-1553:2006. [PubMed: 16870079]
- [10] Borzecki AM, Oliveria SA, Berlowitz DR. Barriers to hypertension control. Am Heart J 149;785-794:2005.