



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1244666>Available online at: <http://www.iajps.com>

Research Article

**PRESCRIBING PATTERN OF ANTIHYPERTENSIVE  
INVOLVED IN HYPERTENSIVE PATIENTS IN ATERTIARY  
CARE TEACHING HOSPITAL**Sriram A\*<sup>1</sup>, Dhanapal C.K<sup>2</sup> and Junior Sundresh. N<sup>2</sup><sup>1</sup>Department of Pharmacy Practice, Annamalai University, AnnamalaiNagar, India.<sup>2</sup>Department of Surgery, Rajah Muthaih Medical College Hospital, Annamalai University,  
Annamalai Nagar India.**Abstract:**

Hypertension is one of the major global risk factor among the cardiovascular diseases leads to increase in morbidity, mortality rate as well as health burdens<sup>1</sup>. In 2020 it has been estimated that 1.32 billion world populations will suffer from hypertension. As per current prevalence rate on hypertension in India is 18.52 and ranks at 67 among worldwide. WHO statistics reported that death rate among hypertensive patients in India was 1.79%. To determine the prescribing trends of antihypertensives involved in patients with hypertension. Out of 73 encounters, 43 (59%) males and 32(41%) females were observed and documented. Most patients with hypertension between the age group of 41 to 60 were 49(67.1%). The drug prescribing pattern involved with hypertension in this study was mostly single therapy (56.1%) when compared with combination therapy (43.9%). The most commonly used drug were amlodipine (4.1%) followed by clopidrogrel (8.2%), telmisartan (6.9%). The combination therapy was used frequently with Atorvastatin and fenofibrate (15%), Atenolol and amlodipine (11%), Telmisartan and hydrochlorothiazide (6.9%). The present study shows that ACE inhibitors and ARB blockers were frequently used in most of the prescriptions. Atorvastatin consumed more in all prescriptions followed by amlodipine and diuretics (furosemide).

**Key words:** Hypertension, ACE inhibitors, ARB blockers.**Corresponding author:**

**Sriram A,**  
Department of PharmacyPractice,  
Annamalai University,  
AnnamalaiNagar,  
India

QR code



Please cite this article in press *Sriram A et al., Prescribing Pattern of Antihypertensive Involved In Hypertensive Patients in Atertiary Care Teaching Hospital, Indo Am. J. P. Sci, 2018; 05(05).*

**INTRODUCTION:**

Hypertension is one of the major global risk factor among the cardiovascular diseases leads to increase in morbidity, mortality rate as well as health burdens [1]. In 2020 it has been estimated that 1.32 billion world populations will suffer from hypertension [2]. There are two underlying options in treating hypertension. The first is to reduce blood pressure (BP) of the patients to below the hypertensive range. The Second is to choose antihypertensive drugs through their effects based on their possible benefits that go beyond BP reduction. Significantly there is strong relationship between BP and the probability of cardiovascular events. Several Clinical trials have confirmed that successful treatment outcomes involved in hypertension will based on combination therapy for the majority of patients [3,4]. As per current prevalence rate on hypertension in India is 18.52 and ranks at 67 among worldwide. WHO statistics reported that death rate among hypertensive patients in India was 1.79%. To reduce the elevated blood pressure anti-hypertensive drugs are used with a 35–40% reduction observed in the incidence of stroke, 20–25% decrease in myocardial infarction, and more than 50% reduction in heart failure [5]. Approximately 1–2% of all the hypertensive patients meets with hypertensive emergency at least once in their lifetime [6]. In adults, HTN is a major risk factor for cardiovascular disease (coronary heart disease, ischemic heart disease, stroke) caused by smoking and excessive alcohol consumption [7]. Negative perspectives among the patients towards hypertensive managements such as dietary modifications, exercise, and antihypertensive medications are common and ultimately can lead to hypertensive complications. The overall principles shown that guidelines are to implement life style modifications in addition to control Blood Pressure in patients with hypertension [8]. The AHA and JNC Guidelines reported that Standards of medical care is intended for prescribers, patients, researchers, payers, and other professionals. It helps to achieve the blood pressure in control, achieve treatment goals and to evaluate the quality of care to the hypertensive patients [9]. Drug prescribing pattern study may help to improve the non-compliance, not only cost reduction but also reduces other complications. A wide number of drugs in various combinations are preferred for long –term treatment of hypertension. Drug prescribing study needs the support from prescribers unless this effort will fail to reach its goal of improving the rational drug use. Cardiovascular risk factors may lead to major complication of

coronary artery disease and it is more common in hypertensive patients.

**Objective:**

- To determine the prescribing trends of antihypertensives involved in patients with hypertension.

**MATERIALS AND METHODS:****Study design:**

A cross sectional study was undertaken for 3 months at rajah muthaih medical college hospital, Annamalai nagar, Tamilnadu, India.. Most of the cases were collected from inpatients wards from medicine department and remaining cases were collected from medical records department. The study period of the concern study was three months.

**Data collection:**

A data collection format was designed to aid collection of data

**Case notes:**

The information collected from each case sheet included with patient name, age, sex, values of blood pressure (both systolic and diastolic), groups of medicines prescribed with their name (generic as well as brand ), dosage, frequency, type of therapy (monotherapy, polytherapy).

**Sample size determination:**

Assuming a prevalence of hypertension to be 60%, confidence interval (CI) of 95% and precision of 0.04, the sample size was calculated to be 73 cases were collected over a period of 3 months and were screened for drug use pattern.

**Inclusion criteria:**

- Patients with the age group of above 35 to 70 of both genders.
- Patients diagnosed with hypertension; a systolic blood pressure reading  $\geq 140$  mm Hg and a diastolic blood pressure reading  $\geq 90$  mm Hg.
- Patients who are all willing to cooperate.

**Exclusion criteria:**

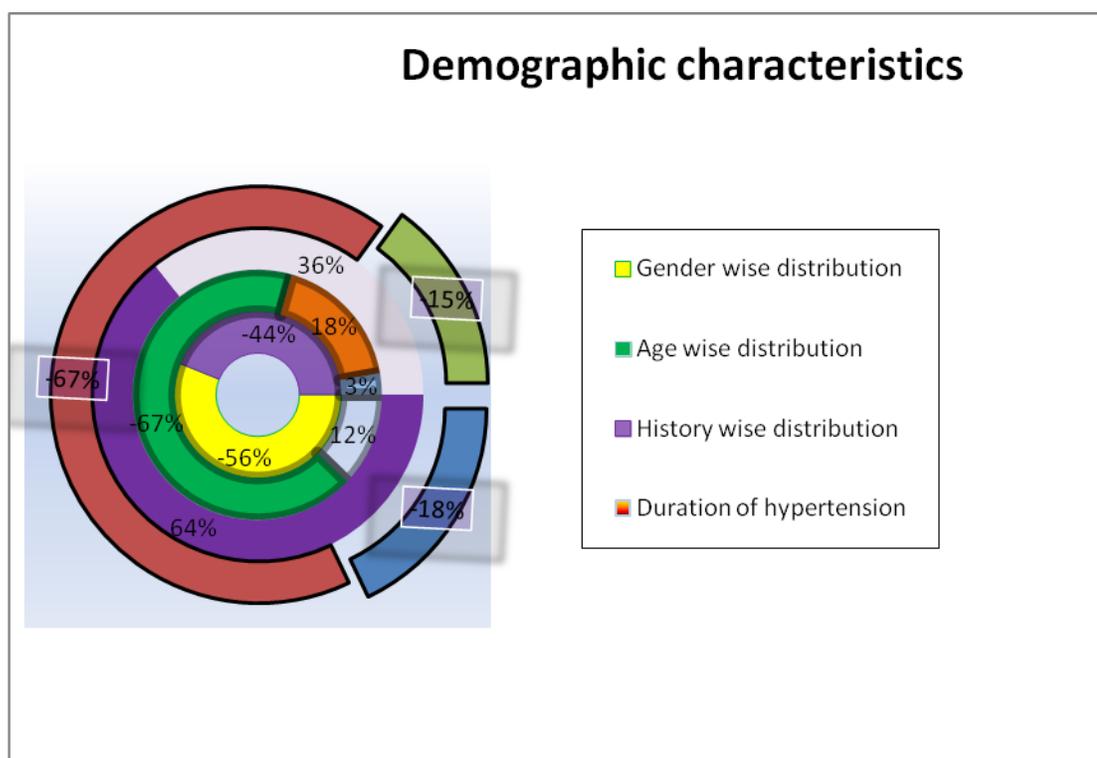
- Patients with pregnancy or lactating women.
- Patients with mentally ill.

**Statistical analysis:**

Patient's data were collected from prescriptions and transferred to data collection form for evaluation. Categorical values were expressed as percentage.

**Table 1: (Demographic characteristics)**

S.No.	Characteristics	No.of. Patients (n=73)
1.	<b>Gender wise distribution</b>	
	a. Males	41(56.1%)
	b. Females	32(43.9%)
2.	<b>Age wise distribution</b>	
	Less than 40	9(12.3%)
	Between 41 to 60	49(67.1%)
	61 to 70	13(17.8%)
	Above 70	2(2.8%)
3.	<b>History wise distribution</b>	
	Known case	47(64.3%)
	Newly diagnosed case	26(35.6%)
4.	<b>Duration of hypertension</b>	
	1-5 years	13(17.9%)
	6-10 years	49(67.1%)
	11-20 years	11(15%)

**Fig. 2: Demographic characteristics****Table 2: complications of hypertension:**

S.No.	Complications	No's (%)
1.	Congestive heart failure	16 (22.0%)
2.	Myocardial infarction	11 (15.1%)
3.	Stroke	15 (20.4%)
4.	Coronary artery disease	13 (18.0%)
5.	Cerebro vascular disease	18 (24.5%)

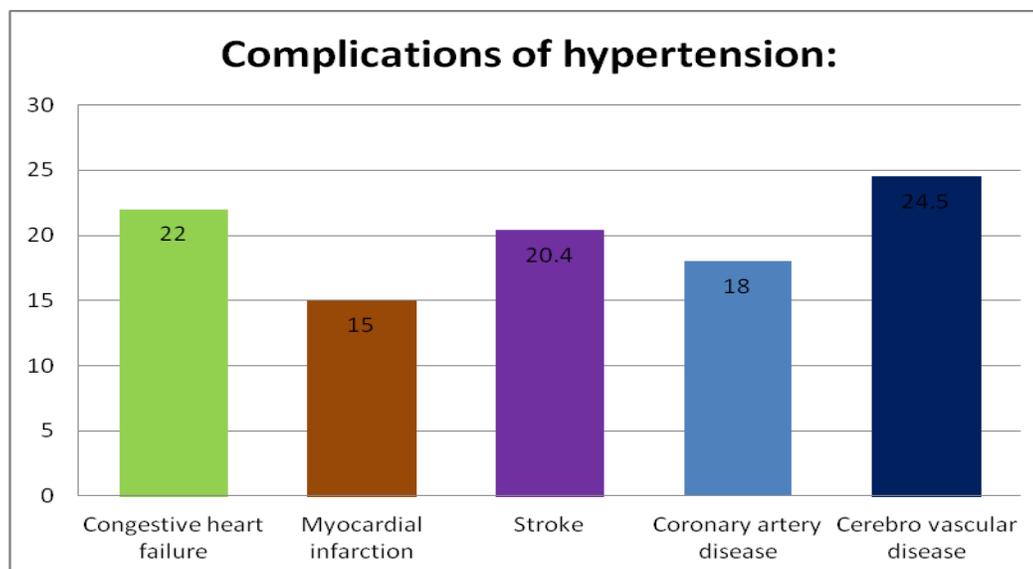


Fig 2: Complications of hypertension

Table.3 Drug prescribing pattern involved with antihypertensives:

Category	Therapy	Drugs	No's	%	Total No's (%)
Antihypertensives	Single therapy	Telmisartan	4	5.5%	41(56.1%)
		Valsartan	1	1.3%	
		Furosemide	4	5.5%	
		Nifedipine	2	2.8%	
		Enalapril	5	6.8%	
		Carvideiolol	1	1.3%	
		Metoprolol	3	4.1%	
		Amlodipine	5	6.8%	
		Clopidogrel	7	9.6%	
		Atorvastatin	6	8.2%	
		Heparin	2	2.8%	
	Citicholine	1	1.3%		
	Doublet therapy	Metoprolol+ Amlodipine	3	4.1%	32(43.9%)
		Telmisartan+Hydrochloro thiazide	5	6.8%	
		Losartan + Hydrochlorothiazide	1	1.3%	
		Atenolol+ Amlodipine	8	11%	
		Glyceryltrinitrate+ Nitroglycerin	4	5.5%	
		Atorvastatin + Fenofibrate	11	15%	

**RESULTS:**

The data expressed as 73 patients with hypertension were included in the study. Total number of 375 drugs prescribed in 73 prescriptions. The patients were grouped according to their age, gender, history wise, duration and complications wise. Out of 73 encounters, 43 (59%) males and 32(41%) females were observed and documented. Most patients with hypertension between the age group of 41 to 60 were

49(67.1%). And case with known history of hypertension was 47 patients (64.3%) and for newly diagnosed cases with hypertension were 26(35.7%). In this study 49 (67.1%) cases were history of having hypertension with duration of 6 to 10 years. The major complication associated with hypertension in this study was said to be cerebro vascular disease (CVA) with 24.5% followed by congestive heart failure 22% and stroke 18%. The drug prescribing

pattern involved with hypertension in this study was mostly single therapy (56.1%) when compared with combination therapy (43.9%). The most commonly used drug were by clopidogrel (9.6%), followed by atorvastatin (8.2%) amlodipine (6.8%) and telmisartan (5.5%). The combination therapy was used frequently with Atorvastatin and fenofibrate (15%), Atenolol and amlodipine (11%), Telmisartan and hydrochlorothiazide (6.9%).

### DISCUSSION:

Hypertension is a leading disease and it cause major burden among the worldwide. It may leads to increase in cardiovascular morbidity and mortality. The Prevalence of hypertension has increased day by day especially in developing and developed countries during the past years. The data collected from the prescription helps to promote rational drug therapy .Our study shows that the prescribing patterns of anti-hypertensive drugs in hypertensive patients from the inpatients wards were found to be higher in men 69% than in women 31%. High blood pressure is mostly seen in men compared with women. The women's were more likely to develop high blood pressure after the age of 45. Most of the patients were at the age group of 41-60 years among both the gender. The patients with this age group were suffered lot with hypertension. Most of the patients with hypertension included in this study required two or more antihypertensive medications to control blood pressure in normal. The combination therapy however is used in patients who were not controlled with single drug therapy. Our study reported that most commonly prescribed antihypertensive agents were Angiotensin Receptor Blockers and Angiotensin Converting Enzyme Inhibitors (5.5+1.3+6.8=13.6%). Clopidogrel (9.6%) was considered as the first choice of the drug along with

that amlodipine and enalapril (6.8% each) followed by atorvastatin (8.2%).

### CONCLUSION:

The present study shows that ACE inhibitors and ARB blockers were frequently used in most of the prescriptions. Atorvastatin consumed more in all prescriptions followed by amlodipine and diuretics (furosemide). In this study, all prescriptions were mostly rational.

### REFERENCES:

1. Rachana Pr, Anuradha Hv, Mc Shivamurthy Anti-Hypertensive Prescribing Patterns and Cost Analysis for Primary Hypertension: A Retrospective Study, Journal of

Clinical and Diagnostic Research. 2014 Sep, Vol-8(9): HC19-HC22.

2. T. Janagan1, R. Kavitha1, S. A. Sridevi2, V. Veerendra1 Prescription Pattern of Anti Hypertensive Drugs used in Hypertensive Patients with Associated Type2 Diabetes Mellitus in A Tertiary Care Hospital, International Journal of Pharma Research & Review, Jan 2014; 3(1):1-5.
3. Kenneth A. Jamerson et.al, Rationale and Design of the Avoiding Cardiovascular events through Combination therapy in Patients Living with Systolic Hypertension (accomplish) Trial, AJH-September 2004-VOL. 17, NO. 9.
4. Hansson L, Zanchetti et.al, Effects of intensive blood-pressure lowering and low dose Aspirin in patients with hypertension: principal results of the Hypertension Optimal Treatment (HOT) randomized trial. Lancet 1998; 351:1755-1762.
5. World Health Organization Global Health Observatory Data. Available at: [http://www.who.int/gho/ncd/risk\\_factors/blood\\_pressure\\_prevalence\\_text/en](http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en) (Accessed on 11 Oct 2016).
6. Jaya Mallidi, Srikanth Penumetsa and Amir Lotfi, Management of Hypertensive Emergencies, j Hypertens Volume 2 • Issue 2 • 1000117 ISSN: 2167-1095.
7. Uday Bhaskar Narra, Ravindrababu Pingili, Sri Varsha Reddy Chinnam, Prardhana Devi Datla, Sree Varsha Potluri, Naveen Babu Kilaru, Assessment of Medication Adherence to JNC-7 Guidelines and Risk Factors for Hypertension in a South Indian Tertiary Care Hospital,
8. Dr. Zakia Hussain, Dr. Amtul Sana, Salahuddin Mohammed, Mohammed Abdul Razzaq, Patterns of Drug Therapy among Diabetic Hypertensive Patients with Other Complications, Int J Pharm PharmSci, Vol 6, Issue 6, 270-277.
9. AHA Guidelines, National Heart Foundation Australia 2016.