

Original Article

DRUG UTILISATION EVALUATION OF ANTIHYPERTENSIVES IN GERIATRIC PATIENTS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: Hypertension is a leading contributor to the global burden of cardiovascular morbidity and mortality. The main objective of the present study was to assess the drug utilization patterns of antihypertensives in geriatric patients in a teaching hospital.

Methods: A Single centre Prospective Observational study was carried out for a period of three months in an out-patient department of Owaisi Hospital & Research Centre. Elderly patients who have been diagnosed with hypertension as per JNC-7 guidelines and patients receiving or prescribed with antihypertensive drugs were included.

Results: A total of 100 prescriptions were analyzed during the three month study period. 72% of the patients were in the age group of 65-67 years and this was found to be higher in men 68%. During the study period 80% of the patients were Pre-Hypertensive systolic (80-89 mmHg) and Diastolic (120-139 mmHg) followed by Stage-I Hypertension and Stage-II Hypertension. The most common drug classes involved in the study was Calcium Channel Blockers 37% followed by Angiotensin II receptor antagonists 21% and the most commonly prescribed drugs in the study population were Amlodipine 37%, Losartan 11% and Telmisartan 10%. The most common anti-hypertensive fixed dose combination therapy involved in the study was Telmisartan + Hydrochlorothiazide 15% and most common two drug combination therapy involved in the study was Amlodipine + Atenolol 7% followed by Metoprolol + Amlodipine 1%.

Conclusion: Our study shows that the most commonly prescribed drug classes involved were Calcium Channel Blockers followed by Angiotensin II receptor antagonists and the anti-hypertensive drug combinations among hypertensive patients were considerable and this practice positively impacted on the overall blood pressure control.

Keywords: Anti-hypertensives, Blood pressure, Geriatrics, Hypertension, JNC-7 guidelines.

INTRODUCTION

Hypertension is a leading contributor to the global burden of cardiovascular morbidity and mortality. Prevalence of hypertension in India in 2000 was 60.4 million males and 57.8 million females and projected to increase to 107.3 million and 106.2 million respectively in 2025. Hypertension varies from 4-15% in urban and 2-8% in rural population.^[1] Apart from unhealthy lifestyles, lack of awareness about hypertension, distorted public health systems, physicians treating hypertension also lag behind in treating hypertension according to standard treatment guidelines. Non compliance to antihypertensive therapy is also a reason for uncontrolled hypertension.^[2] Elderly patients commonly have multiple pathologies leading to poly pharmacy, and altered pharmacokinetics and pharmacodynamics, are prone to adverse drug reactions from inappropriate medication.^[3,4] At least high normal blood pressure (below 140/90 mmHg) in elderly patients as mentioned in the Indian Hypertension Guidelines II.^[5] The main objective of the present study is to assess the prescribing patterns for anti-hypertensives in geriatric patients in a teaching hospital.

MATERIALS AND METHODS

A Single centre Prospective observational study was carried out for a period of three months (August 2013- October 2013) in an out-patient department of Owaisi Hospital and Research Centre, a Teaching Hospital in South India. It is a 1000-bedded Teaching Hospital situated in the heart of city at Hyderabad, Telangana, India. Ethical approval was obtained from the institutional and hospital committee prior to study initiation. Elderly patients of age >65 years who have been diagnosed with hypertension as per JNC-7 guidelines and patients receiving or prescribed with antihypertensive drugs were included.^[6] Details necessary for evaluation regarding chief complaints of the patients, previous allergies, co-morbidities, and others were collected from the patient's clinical records. Certain

demographic characteristics were studied and the factors studied were: (a) patient characteristics [gender, age (>65 years), and comorbidities], (b) drug characteristics [list of antihypertensive and number of drugs prescribed] and Blood Pressure. The Sociodemographic status such as educational qualification, occupation, monthly income, and social habits of the patients were collected. All data were collected from data collection form, and to review the current prescribing patterns of Anti-hypertensive drugs in hypertension patients with co-morbidities and without co-morbidities, use of Anti-Hypertensive Drug monotherapy and combination therapy in patient with hypertension.

RESULTS

A total of 100 patients were consulted during the three month study period, in an out-patient department of Owaisi Hospital and Research Centre. Of these 100 prescriptions, 72% of the patients were in the age group of 65-67 years, followed by 26% in 68-70 years and 2% who were >70 years, and this was found to be higher in men 68% than in women 32%.

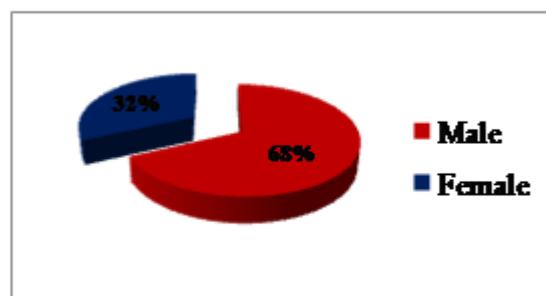


Fig. 1: Gender distribution of patients in the study population (n=100)

Table 1: Sociodemographic status of the patients

Sociodemographics	Number and Percentage (%)
Educational Qualifications	
Literate	76 (76%)
Illiterate	24 (24%)
Occupation	
Employed	57 (57%)
Unemployed	43 (43%)
Monthly Income	
<2000	23 (23%)
2000-5000	16 (16%)
5000-10000	31 (31%)
10000-15000	17 (17%)
>15000	13 (13%)
Social Habits	
Alcoholic	15 (15%)
Smoker	20 (20%)
Both	8 (8%)

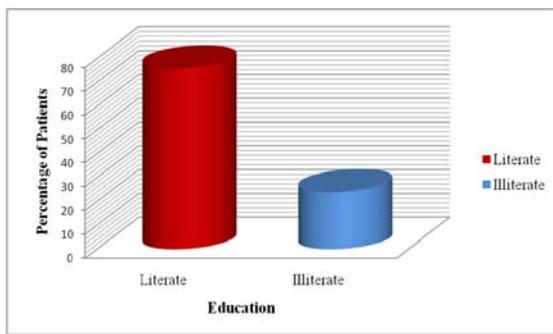


Fig. 2: Educational Distribution of Patients

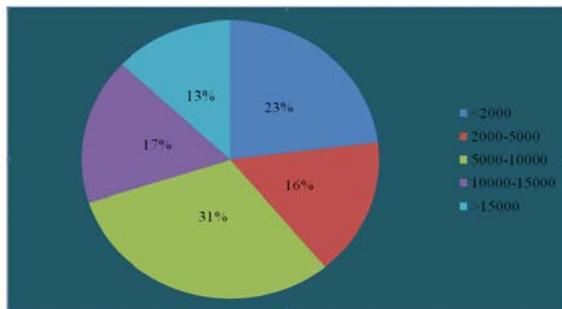


Fig. 3: Monthly Income of Patients (n=100) in Rupees

The numbers of drugs prescribed were in the range of 4-6 per prescription. The Sociodemographic status such as Educational qualification, Occupation, Monthly Income, and Social habits of the patients were summarized in Table 1. Hypertensive patients are classified on the basis of Joint National Committee (JNC-7) were summarized in Table 2. The most common drug classes involved in the study were Calcium Channel Blockers 37% followed by Angiotensin II receptor antagonists 21%, and other prescribing patterns of Anti-Hypertensive Drug Monotherapy were summarized in Table 3. The most common anti- hypertensive fixed dose combination therapies involved in the study were Telmisartan+

Hydrochlorothiazide 15% followed by Olmesartan+ Hydrochlorothiazide 3%, Losartan+ Hydrochlorothiazide 1% and Ramipril+Hydrochlorothiazide 1%.

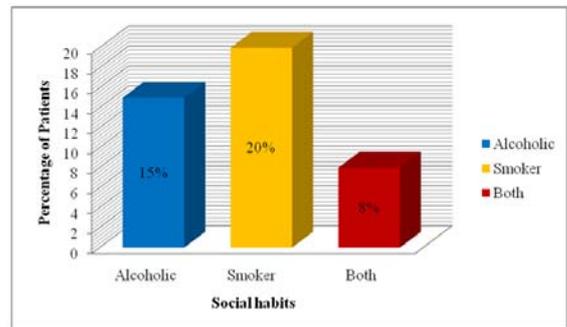


Fig. 4: Social History of Patients in the Study Population (n=100)

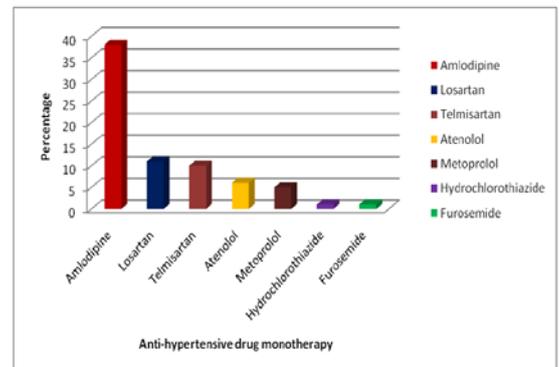


Fig. 5: Prescription pattern of Anti-hypertensive drug monotherapy

The most common two drug combination therapies involved in the study were Amlodipine+ Atenolol 7% followed by Metoprolol+ Amlodipine 1%.

Table 2: Classification of hypertensive patients on the basis of JNC-7

Systolic (B. P)	No. and percentage (%)	Diastolic (B. P)	No. and percentage (%)
Pre-Hypertension (80-89 mmHg)	84 (84%)	Pre-Hypertension (120-139 mmHg)	79 (79%)
Stage-I Hypertension (90-99 mmHg)	8 (8%)	Stage-I Hypertension (140-159 mmHg)	13 (13%)
Stage-II Hypertension (≥100 mmHg)	8 (8%)	Stage-II Hypertension (≥160 mmHg)	8 (8%)

Table 3: Prescription pattern of Anti-hypertensive drug monotherapy

Anti-hypertensive monotherapy drugs	Number and percentage (%)
Calcium channel blockers	
Amlodipine	38 (38%)
Angiotensin II receptor antagonists	
Losartan	11 (11%)
Telmisartan	10 (10%)
β-blockers	
Atenolol	6 (6%)
Metoprolol	5 (5%)
Diuretics	
Hydrochlorothiazide	1 (1%)
Furosemide	1 (1%)

Table 4: Use of anti-hypertensive drugs in hypertension patients with co-morbidities

Co-morbidities	Drugs	No. and percentage (%)
Diabetes Mellitus	Losartan	3 (3%)
	Telmisartan	4 (4%)
	Amlodipine	5 (5%)
	Telmisartan+Hydrochlorothiazide	1 (1%)
DM+Hemiplegia	Metoprolol+Amlodipine	1 (1%)
	Amlodipine	1 (1%)
	Amlodipine+Atenolol	1 (1%)
	Telmisartan+Hydrochlorothiazide	1 (1%)
CVA+Hemiplegia	Furosemide	1 (1%)
	Telmisartan+Hydrochlorothiazide	1 (1%)
	Losartan	2 (2%)
	Amlodipine+Atenolol	3 (3%)
	Metoprolol+Nifedipine	1 (1%)
	Amlodipine+Enalapril+Hydrochlorothiazide	1 (1%)
	Amlodipine	12 (12%)

Prescribing patterns of antihypertensive were classified into two types like with co-morbidities 38%, and without co-morbidities 62%. Among these co-morbidities Cerebrovascular Accident+Hemiplegia 21%, Diabetic Mellitus 13%, Diabetic Mellitus + Hemiplegia 4% and the detailed drugs prescribed with co-morbid conditions were summarized in Table 4. Among these without co-morbidities were divided into two types of drugs prescribed with single drug 39% and combination drug therapy 23%, these results were summarized in Table 5.

Table 5: Use of single and combined anti-hypertensive drugs in hypertension patients with co-morbidities

Monotherapy Drugs	Number and Percentage (%)	Combination therapy drugs	Number and Percentage (%)
Calcium channel blockers		Metoprolol+	1 (1%)
Amlodipine	20 (20%)	Amlodipine	
Angiotensin II receptor antagonists		Olmisartan+	2 (2%)
Losartan	6 (6%)	Hydrochlorothiazide	
Telmisartan	6 (6%)	Losartan+	2 (2%)
β-blockers		Hydrochlorothiazide	
Atenolol	6 (6%)	Ramipril+	1 (1%)
Diuretics		Hydrochlorothiazide	
Hydrochlorothiazide	1 (1%)	Atenolol+	3 (3%)
		Amlodipine	
		Telmisartan+	14 (14%)
		Hydrochlorothiazide	

DISCUSSION

With increasing economic growth rate, India is not only facing the epidemic of Coronary Artery Disease but also of obesity, diabetes mellitus, and hypertension. Prevalence of hypertension has remained stable or has decreased in developed countries during the past decade; it has dramatically increased in developing countries like India.^[6,7] Our finding shows that the prescribing patterns of anti-hypertensive drugs in geriatrics out-patient department during the study period was found to be higher in men 68% than in women 32%. High blood pressure is more common in men than women. The women's were more likely to develop high blood pressure after menopause.^[6] The risk of high blood pressure increases with age and in the early middle age.^[4,6,8] In the present study 76% of the patients

were Literate, 57% were employed, 31% of the patients having the monthly income of 5000-10000 and 20% were smokers and 15% were alcoholic patients. During the study period 80% of the patients were Pre-Hypertensive systolic (80-89 mmHg) and Diastolic (120-139 mmHg) followed by Stage-I Hypertension and Stage-II Hypertension. The most commonly prescribed drug classes involved in the study was Calcium Channel Blockers 37% followed by Angiotensin II receptor antagonists 21% and the most commonly prescribed drugs in the study population were Amlodipine 37%, Losartan 11% and Telmisartan 10%. These results were compared with Datta S *et al.*, and Almas A *et al.*, conducted at tertiary care hospital shown that Calcium Channel Blocker- Amlodipine is the most commonly used antihypertensive monotherapy and Neal B *et al.*, study results shown that the strong evidence of benefits of

calcium antagonists is provided by the overviews of placebo-controlled trials.^[9-12] The most common anti-hypertensive fixed dose combination therapy involved in the study was Telmisartan+ Hydrochlorothiazide 15% and most common two drug combination therapy involved in the study was Amlodipine+ Atenolol 7% followed by Metoprolol+Amlodipine 1% and these findings were not comparable with the studies conducted at tertiary care hospital in which beta blockers is used as the most common combination therapy.^[9,10] Prescribing patterns of antihypertensive were classified into two types like with co-morbidities 38%, and without co-morbidities 62%. Among these co-morbidities Cerebrovascular Accident (CVA)+Hemiplegia 21%, Diabetic Mellitus (DM) 13%, Diabetic Mellitus + Hemiplegia 4%.

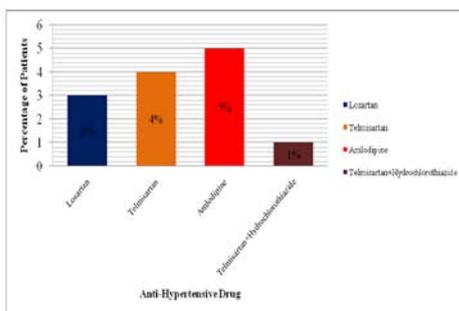


Fig. 6: Anti-Hypertensive Drug therapy in Co-morbid condition (HTN+DM)

CONCLUSION

Our study shows that the most commonly prescribed drug classes involved were Calcium Channel Blockers followed by Angiotensin II receptor antagonists and the anti-hypertensive drug combinations among hypertensive patients were considerable and this practice positively impacted on the overall blood pressure control. In order to promote the rational prescribing drugs and hospital formularies in special committees are useful in reducing the misuse of drugs especially in poly-pharmacy and in the treatment of hypertension.

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SOURCE OF SUPPORT

Nil

CONFLICT OF INTEREST

None

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