



ADVERSE DRUG REACTIONS IN THE MANAGEMENT OF HYPERTENSION

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ABSTRACT

The observatory research is carried out on substance usage, with data gathering 180 people, over a duration of 6 months in the indoor hypertension divisions of the tertiary hospital over prescribing and alcohol usage tests. During the research, all antihypertensive pharmaceutical drugs were administered in all divisions.

KEYWORDS: drug utilisation, rational, semi-rational, irrational, Monotherapy, combination therapy, prescribed.

INTRODUCTION

The prescribed drugs (antihypertensive drugs) have been important to the diagnosis and control of hypertension and have significantly increased opioid usage over the past decade. The most quickly increasing portion of overall health care spending is prescription prices, and this pattern does not display any indication of a decline (Mullins 2001). In addition to these the prices, insurance providers have dramatically decreased their treatment facilitations, raising patients' out of pocket expenses for medications and rendering the patients' compromise between their payment and their wellbeing impossible to predict. This trade-off might not be drastic for certain individuals, but when treatment is the normal drug for hypertension control, disruption or the lack of medications may also have real health consequences. The patient may therefore be particularly sensitive to shifts in usage caused by maladministration of antihypertensive drugs.

Hypertension is a long chronic disease which affects the root cause of heart and diabetes mellitus. It is a cardiovascular disease contributing factor. Hypertension, which tends to rise even with a blood pressure greater than 120/80 mm hg in compliance with JNC 8 and WHO / ISH guidance, is characterized as the systemic bleeding pressure of = 1,400 mm Hg and diastolic blood pressure of = 90 mm Hg.

AIMS AND OBJECTIVES

The Present aim is to assess the for drug utilisation in the management of hypertension at a local Hospital (Hyderabad)

- Prescribing drugs with brand names or generic products

- Rationality of antihypertensive prescriptions administered
- The ADR trend on antihypertension drugs administered
- Antihypertensive medicines approved for antihypertensive medicines;

METHODOLOGY

Since October 2019 to March 2020, the Hospital is a private teaching hospital and the Hyderabad state referral centre with a room size of 1,500 seats, and is in reality at the height of private healthcare hierarchy in Hyderabad, to accommodate patients since various sections of the world. Hyderabad is the largest city of Telangana in southern India and Andhra Pradesh, the largest of de jure. It is the 4th most populated city and sixth most populated urban agglomeration of the world and has around 6,7 million residents and a regional area of 7,75 million.

Study design

This was a prospective cross section hospital based study conducted for 6 months from October 2019 to March 2020.

Study population

The study included all patients prescribed with antihypertensive drugs across all departments during the study period.

Sample size

Sample design has been useful to sample all antihypertensive medications given patients in both divisions. The research contained 180 cumulative prescriptions.

Sampling Technique

Comfortable enrollment was used to track patients from October 2019 to March 2020 in all units that had been diagnosed with antihypertensive drugs in a nearby hospital.

Study procedure

The hospital administration visited the purpose of the analysis before collecting the results. The principal investigator performed a pre-test and the data collection was carried out. An evaluation was conducted by collecting knowledge about elective medications. For the gathering of details a formal questionnaire was used.

Monitoring

Information on work was gathered and followed every day and services were checked on a regular basis, including the quality / quantity of activities. This helps recognize shortcomings and problems that could be resolved early and avoided impacts on work.

Data processing and analysis

Data collected for data collection tools has been analyzed and checked with the SPSS version 16 software for completeness and accuracy, and data cleaning and coding accompanied by data processing using frequency tables and inter-table checking. The study was prepared and submitted after review of the data accompanied by interpretation.

Limitation of the study

The research was done in a single classroom. There are no other public / private facilities participating in the study.

RESULTS

The latest cross-sectional research in the Hospital (Hyderabad), over eight months, on the trends of substance consumption and the adverse medication response profile of anti-hypertensive products. The compilation and review contained a minimum of 180 medications and 118 ADRs. In this review, dietary improvements have been advised for all medications for all hypertension patients independent of antihypertensive drug treatment. The route of administration of antihypertensive medication was oral in all reported prescriptions.

Age distribution of patients studied

67 patients (35.55 per cent) were age 61-75 years in the latest sample out of 180 patients. In 51-60 year age groups there were 75 patients (34.44%), 8 patients (3.88%) in the 76-80 year age category, 26 patients (13.33%) in the 41-50 year age group and 4 patients (1.66%) in the 81-90 years age group.

Gender distribution of patients studied

117 (65%) were male in the present sample and 63 (41%) were female out of 180 patients.

Body mass index of patients studied

Body mass index measurement showed that 52 (28.87%) of 180 patients were average, 108 (60%) were overweight and 20 (11.12%) were underweight.

Table 1: Age, Gender and Body mass index distribution of patients studied.

Sl.no.	Demographics		Number of patients
1.	Age in years		
	i.	41 - 50	27
	ii.	51 - 60	74
	iii.	61 - 75	66
	iv.	76- 80	7
	v.	81 - 90	6
2.	Sex		
	i.	Male	118
	ii.	Female	62
3.	Body mass index in Kg/m2		
	i.	Underweight (<18.5)	108
	ii.	Normal weight (18.5 – 24.9)	52
	iii.	Overweight (25 – 29.9)	20

Concomitant conditions

Of the 180 cases, 147 were ultimately impacted in our research. Diabetes mellitus was recorded to have 64 (43.53 percent). COPD was also found in 25 patients (17%), diabetes mellitus + persistent obstructive lung disease in 26 patients (17.68%), 15 patients (10.20%) with coronary arterial disease, 4 patients with

dyslipidaemia (2,70%), 3 patients with brain-vascular dysfunction (2,0%), 5 patients with mitral stenosis in 3,41%, and hypothyroidism in 5 patients. Certain related disorders is COPD.

Table 2: Concomitant conditions of the patients studied.

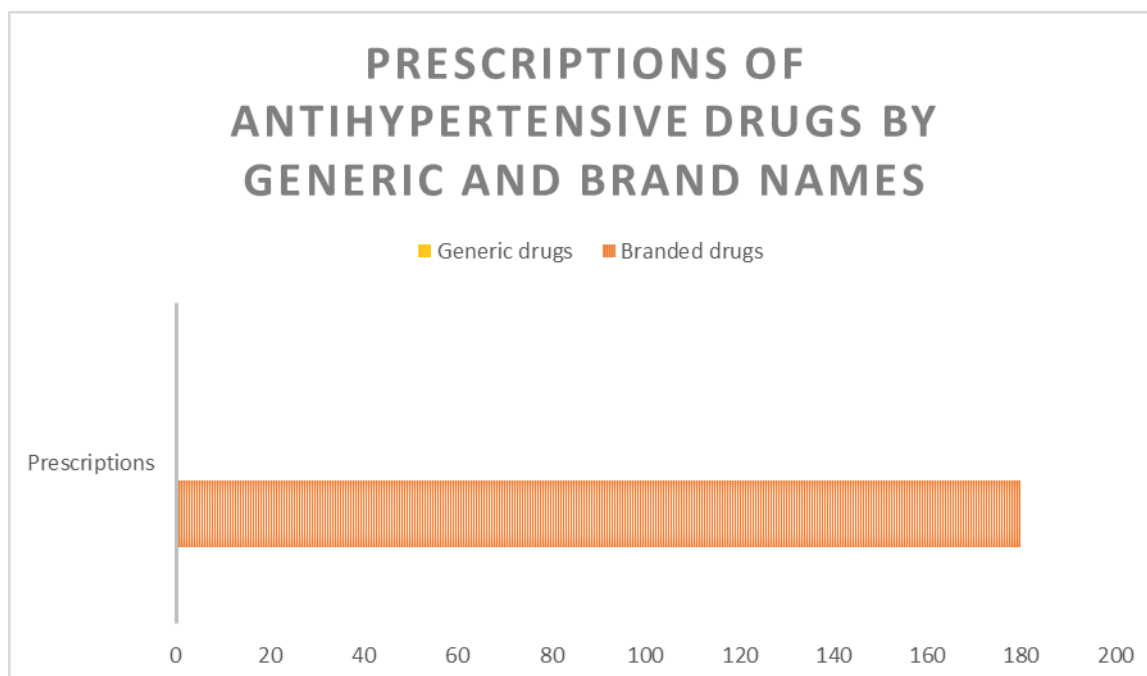
Concomitant conditions of the patients studied		Number of patients
i.	Diabetes Mellitus	64
ii.	Chronic Obstructive Pulmonary Disease	25
iii.	Diabetes Mellitus + Chronic Obstructive Pulmonary Disease	26
iv.	Coronary Artery Disease	15
v.	Dyslipidaemia	4
vi.	Cerebral Vascular Accident	3
vii.	Hypothyroidism	5
viii.	Mitral stenosis	5

Drugs prescribed by generic and brand name

Both antihypertensive medications were brand called in this analysis in all 180 prescriptions.

Table 3: Prescriptions of antihypertensive drugs by generic and brand names.

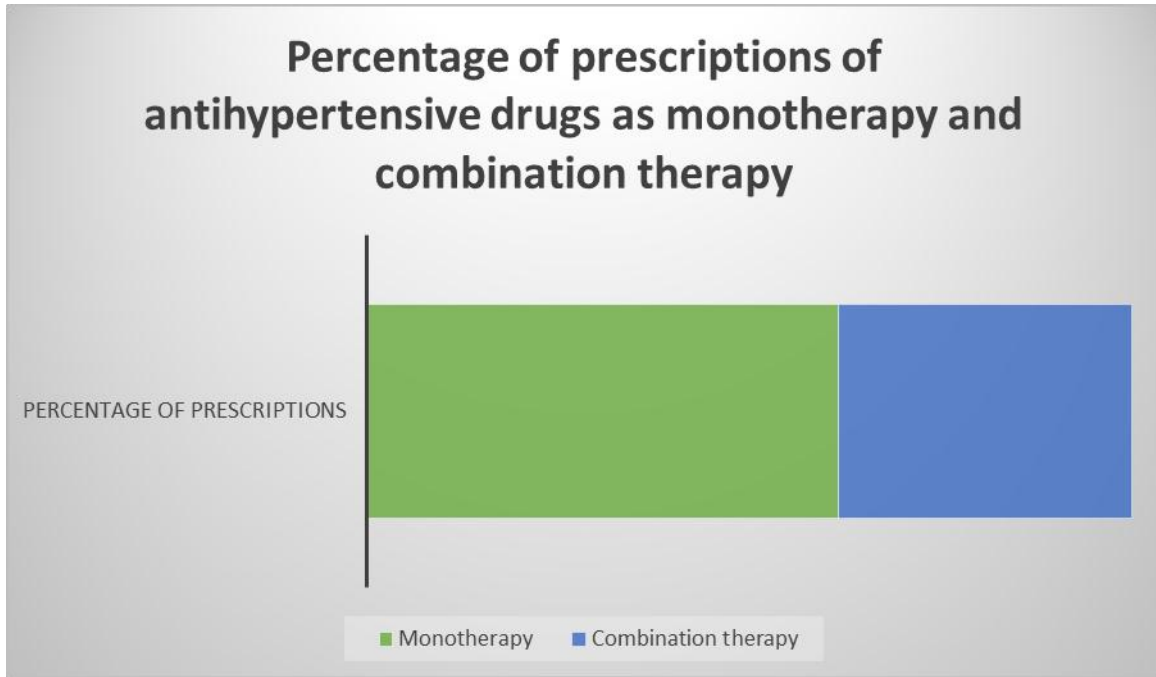
Prescriptions	Branded drugs	Generic drugs
	180	0

**Figure 1: Number of patients receiving monotherapy or combination drug therapy of antihypertensive drugs.**

There were 180 antihypertensive medications prescriptions in our sample. Monotherapy was 111 (62%) of 180 prescriptions and combined therapy was 69 (38%). Combination products 41 (22.77%), 20 (11.12%) and 8 (4.44%) were two, three and four drugs respectively, within the prescriptions of antihypertensive narcotics.

Table 4: Percentage of prescriptions of antihypertensive drugs as monotherapy and combination therapy.

Percentage of Prescriptions	Monotherapy	Combination therapy
	62%	38%



Number of patients receiving monotherapy of antihypertensive drugs

111 patients (62 percent) were provided with single hypertension medicinal products in this review. Amlodipine was the most commonly used drug for 89 patients (49.44%). In addition to the medications for monotherapy, the following medicines were recommended as monotherapy: ramipril (5 (2.77%); nifedipine (1.66%); telmisartan (3) (1.66%), metoprolol (5.77%), losartan (2.11%), nebivolol (2.11%) and furosemide (2.11%).

Table 5: Antihypertensive drugs prescribed as monotherapy.

Monotherapy Drug Prescribed	Number of prescriptions
Amlodipine	88
Nifedipine	3
Ramipril	5
Telmisartan	3
Losartan	2
Metoprolol	5
Nebivolol	2
Furosemide	2

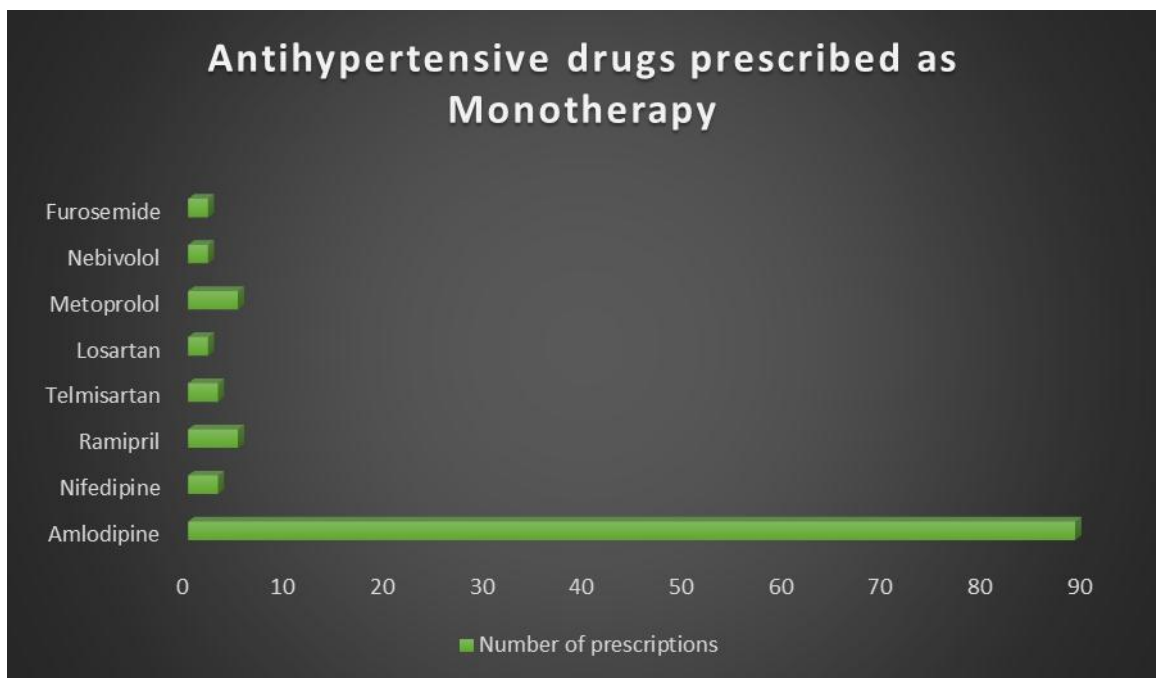


Figure 2: The number of prescriptions of antihypertensive drugs as monotherapy.

Number of patients receiving two drug combination therapy of antihypertensive drugs

Of 180 cases, 36 (20 percent) cases had two medications approved. Two medication combination recommended for seven patients (3.88 percent) was most widely used amlodipine + atenolol. Certain medication combinations were amlodipine + furosemide in 6 patients (3.33%),

telmisartane + hydrochlorothiazide in 4 patients (2.22%), amlodipine + ramipril in 2 patients (1.11%), amlodipine + losartan in 2 patients (1.11%), telmisartan+amlodipine in 4 patients (2.22%), losartan+hydrochlorothiazide in 5 patients (2.77%), carvedilol in 2 patients). The following medication combinations were.

Table 6: Antihypertensive drugs prescribed as Two drug combination.

Two drug combination Prescribed	Number of prescriptions
Amlodipine + Atenolol	7
Amlodipine + Furosemide	6
Telmisartan + Hydrochlorothiazide	4
Amlodipine + Ramipril	2
Amlodipine + Nebivolol	4
Carvedilol + Ramipril	2
Losartan + Hydrochlorothiazide	5
Telmisartan + Amlodipine	4
Amlodipine + Losartan	2

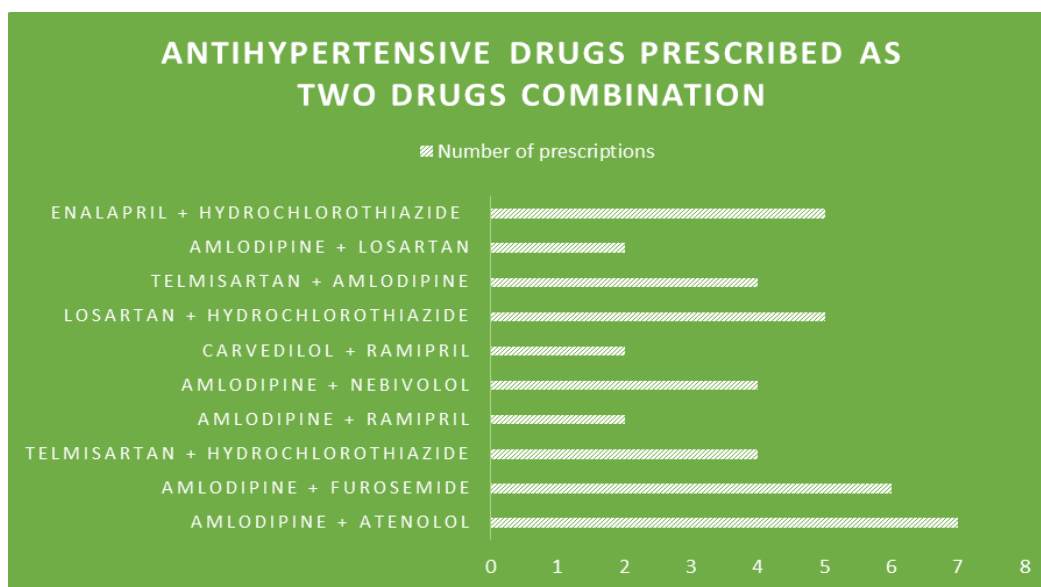


Figure 3: Antihypertensive drugs prescribed as Two drug combination.

Number of patients receiving three drug therapy of antihypertensive drugs

For 20 (11,11 percent) of 180 treated cases, three medications had been administered. The three most popular medication formulations prescribed for 5 patients, respectively, were Losartan + hydrochlorothiazide + amlodipine and Hydrochlorothiazide + Amlodipine (2,77 percent).

Ramipril + amlodipine + atenolol was also provided for two patients (1.11%), for three patients (1.66%), for amlodipine + atenolol + furosemide), for two patients (1.11%), for two patients (1.11%), and in three (1.660%) for telmisartane + amlodipine + hydrochlorothiazide.

Table 7: Antihypertensive drugs prescribed as Three drug combination.

Three drug combination Prescribed	Number of prescriptions
Ramipril + Amlodipine + Atenolol	2
Furosemide + Amlodipine + Atenolol	3
Bisoprolol + Ramipril + Furosemide	2
Telmisartan + Hydrochlorothiazide + Amlodipine	3
Losartan + Hydrochlorothiazide + Amlodipine	5
Enalapril + Hydrochlorothiazide + Amlodipine	5

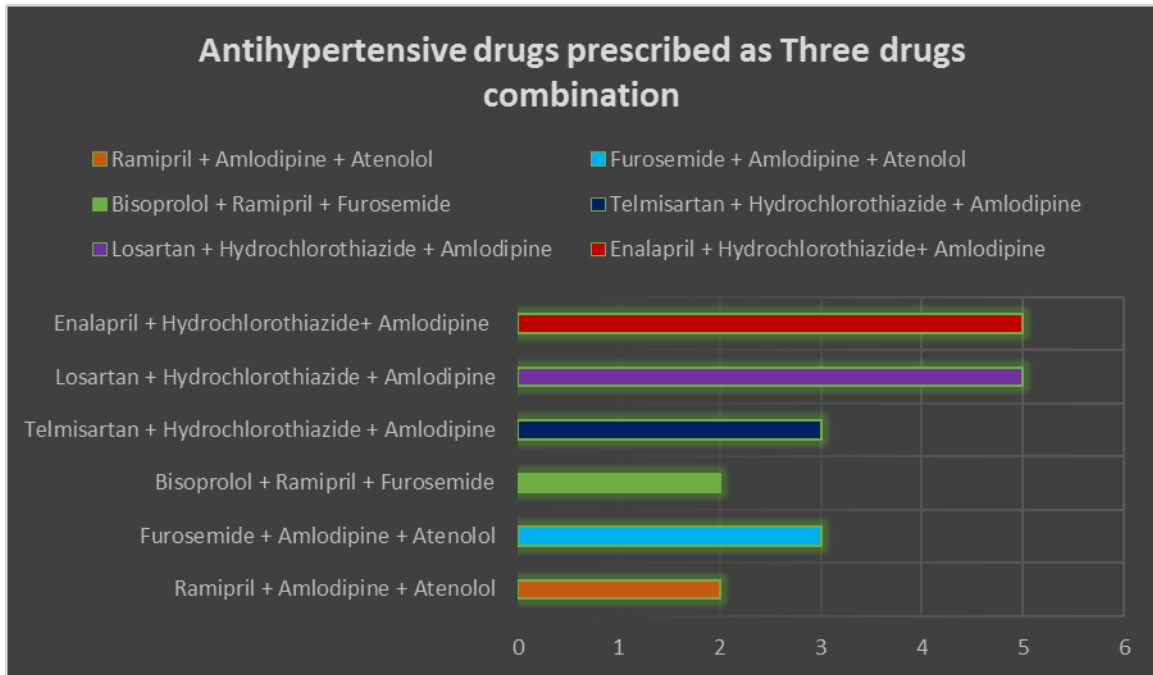


Figure 4: Antihypertensive drugs prescribed as Three drugs combination.

Number of patients receiving four drug therapy of antihypertensive drugs

The least used is the four medication types. Just eight (4.44%) patients got four medications. The two

medication formulations recommended for eight patients is Hydrochlorothiazide + Telmisartan + Amlodipine + Amlodipine + Hydrochlorothiazide + Metoprolol + Amlodipine.

Table 8: Antihypertensive drugs prescribed as Four drugs combination.

Four drugs combination Prescribed	Number of prescriptions
Telmisartan + Hydrochlorothiazide + Metoprolol + Amlodipine	4
Hydrochlorothiazide + Telmisartan + Amlodipine+Atenolol	4

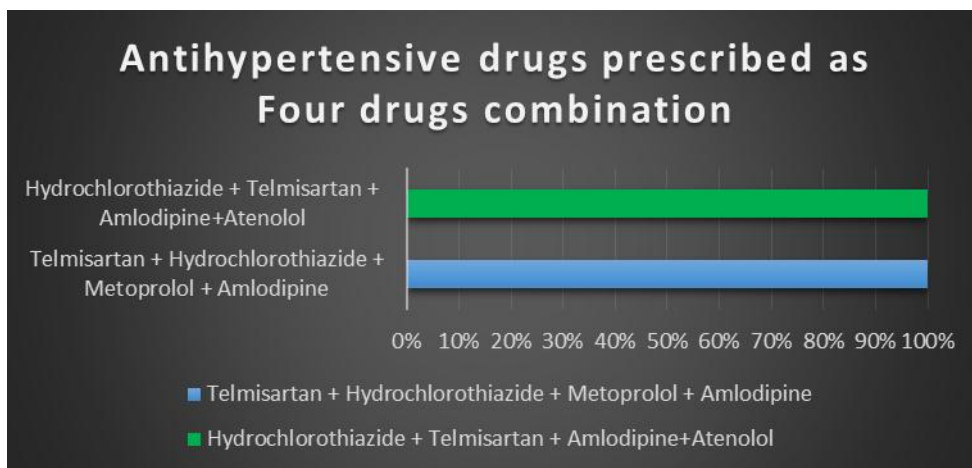


Figure 5: Antihypertensive drugs prescribed as Four drugs combination.

Adverse drug reactions recorded

In this analysis 18 ADRs were found to be formed over six months for different antihypertensive drug forms.

Gender distribution of patients developing ADRs to antihypertensive drugs

90 (76%) were female, and 28 (24%) were male, among 118 patients who displayed ADR in antihypertensive medicinal items.

Table 9: Percentage of males and females who experienced ADRs due to use of antihypertensive drugs.

ADRs Reported	Percentage (n=118)
Males	24% (28)
Females	76% (90)

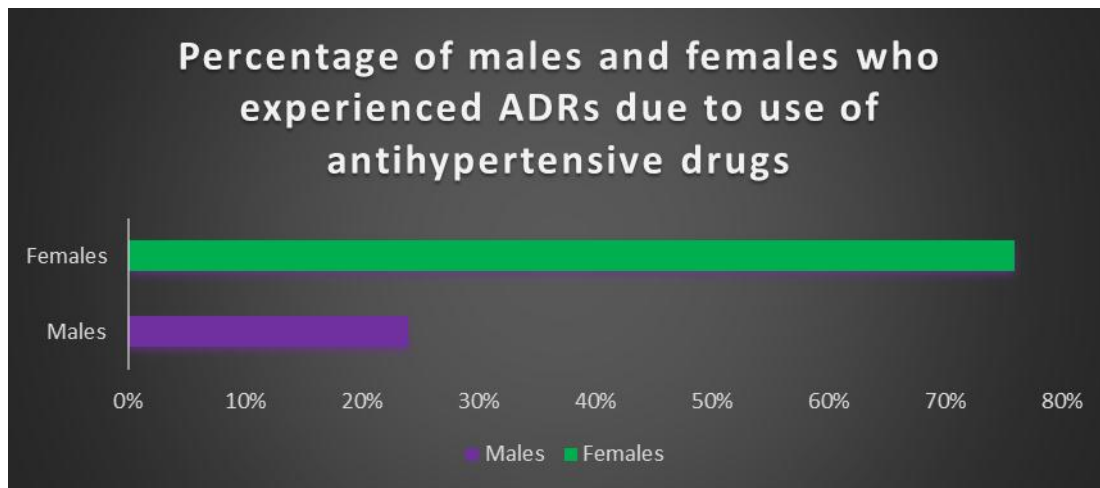


Figure 6: Percentage of males and females who experienced ADRs due to use of antihypertensive drugs.

Age distribution of patients developing ADRs to antihypertensive drugs

The most common findings in the age group 61–75 (43.22 percent), were ADRs of the antihypertensive medications. Certain impacted age ranges were between 51 and 60 years (36.44%), between 76 and 80 years (3.38%) and between 41 and 50 years (16.94%).

Number of patients on monotherapy and combination therapy developing ADRs shown with antihypertensive drugs

Of the 118 patients who sought antihypertensive care with RDA, 76 (64.41%) underwent monotherapy and 42 (35.59%) sought combined therapy.

Table 10: Age distribution of patients developing ADRs.

Sl.no.	Demography for ADRs		Number of patients
1.	Age in years		n=118
	i.	41 - 50	20
	ii.	51 - 60	43
	iii.	61 - 75	51
	iv.	76- 80	4
2.	Sex		
	i.	Male	28
	ii.	Female	90
3.	Therapy		
	i.	Monotherapy	76
	ii.	Combination therapy	42

ADRs shown on treatment with different classes of antihypertensive drugs

The most popular therapeutic class of ADR-associated antihypertensive medicines (61,01 percent) has been shown to be calcial channel blockers. Angotensin receptor antagonists (15.25%), β -blockers (12.71%), angiotensin conversion inhibitors (3.38%), and the diuretics (7.62%) were all correlated with ADR classes. Amlodipine was the most popular medication correlated with ADRs among individual drugs.

Table 11: ADRs experienced with different classes of antihypertensive drugs.

ADRs experienced	Number of patients
Calcium channel blocker	72
β - blockers	15
Diuretics	9
Angiotensin receptor blocker	18
Angiotensin converting enzyme inhibitors	4

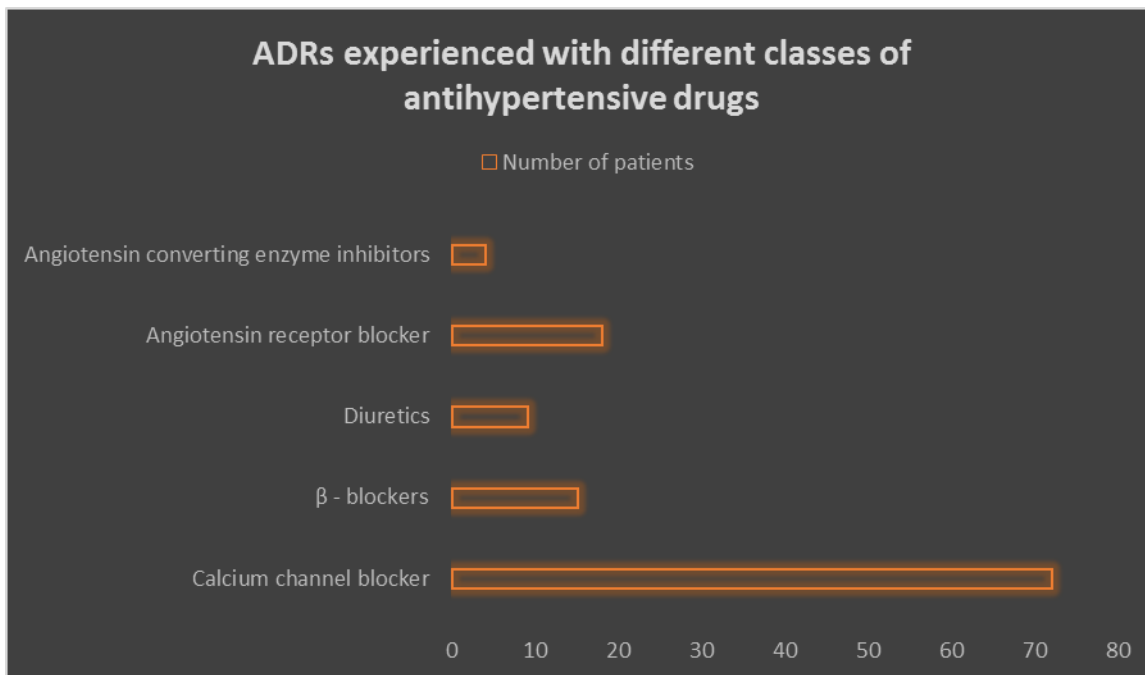


Figure 7: ADRs experienced with different classes of antihypertensive drugs.

ADRs to antihypertensive drugs affecting various systems

In our study, ADRs is found to be the most popular headache, dizziness, sedation and giddiness for antihypertensive pharmaceutical products correlated with the central nervous system (36.44%). Some ADR-related processes included edema, exhaustion and joints, dry toux and breathlessness in the respiratory system, abdominal discomfort and diarrhea in the stomach (29.66 percent), cardiovascular function (4.23 percent) in the gastrointestinal system.

Table 12: Organic System-wise distribution of ADRs by antihypertensive drugs

Organic System ADRs experienced	Number of patients
Central nervous system	43
Musculoskeletal system	35
Respiratory system	16
Gastrointestinal system	19
Cardiovascular system	5

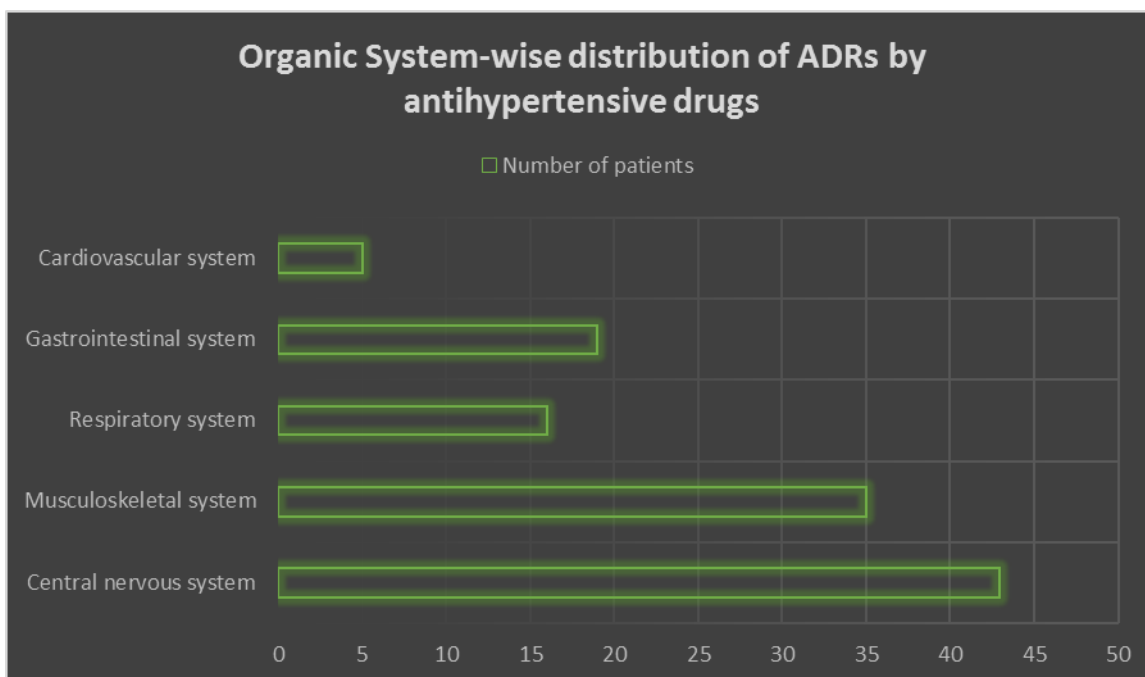


Figure 8: Organic System-wise distribution of ADRs by antihypertensive drugs.

CONCLUSION

Our cross-sectional analysis has been carried out to investigate and assess the history of opioid usage in patients with elevated blood pressure. The research was carried out over a six-month duration. The data were gathered with the aid of a case report. Patients of all ages were included in the report.

180 prescriptions were obtained from Hospital (Hyderabad) for patients taking antihypertensive medications. The patients were 65-75 years of average age. 117 (65 percent) had male and 63 (35 percent) had female prevalence of hypertension. The brand name was issued to all anti-hypertensive products. The choice was for monotherapy (62%) over combined treatment (38%). Throughout the study time, a minimum of 118 ADRs were also obtained with antihypertensive medications. Most ADRs is 76% (90) of females, accompanied by 24% of females (28).

We completed our research by reviewing and testing medications including high-end generic anti-hypertensive medicines and other alternative treatments focused on the recommendations for hypertension care in many agencies, including JNC 8, ADA 2013, ISHIB, KDIGO, CHEP 2013. The research further contrasts the use of different forms of antihypertensive therapy in certain comorbid disorders. In this survey population of participants, hypertension management was measured and hypertension sensitivity in the clinical study participant category was also evaluated.

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