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A PROSPECTIVE STUDY OF PRESCRIBING PATTERN OF ANTIHYPERTENSIVE DRUGS IN TERTIARY CARE HOSPITAL, BANGALORE

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ABSTRACT: BACKGROUND: Hypertension is the most common cardiovascular disease. Sustained arterial hypertension damages blood vessels in kidney, heart, brain and leads to an increased incidence of renal failure, coronary disease, heart failure and stroke. Effective pharmacologic lowering of blood pressure has been shown to prevent damage to blood vessel and so substantially reduce morbidity and mortality rates.**AIM**: This drug utilization study was intended to find out the preferred drug group prescribed either alone or in combinations and their adherence to the JNC7 guidelines. Furthermore the prescription variations as regards to the age and concomitant illness were also analyzed. **METHODS AND MATERIAL**: Drug utilization data were analyzed after getting the patient's particulars regarding age, sex, drugs, concomitant illness etc. in the proforma. **RESULTS**: After analysis, it was found that most frequently prescribed antihypertensive drugs were ARBs (58%), CCBs (50%), Beta blockers(15%), Diuretics (14%). 68% received monotherapy while remaining 32% received combination therapy. **CONCLUSION:** The prescription pattern was found to be partly in accordance with JNC VII guidelines.
KEY WORDS: Antihypertensives, Drug utilization, ARBs.

INTRODUCTION: Hypertension is a leading contributor to the global burden of diseases to the extent of 4.5%[1, 2]and it continues its upward growth trends.[3,4,5,6]Poor control of this highly prevalent disease can lead to the development of ischemic heart disease, heart failure, stroke and chronic renal insufficiency etc.[7,8,9,10]

Drug utilization has been defined as the marketing, distribution, prescription and use of drugs in patient population.[11]Therefore Drug utilization studies are necessary to analyze drugs prescribed, taking into account patient safety and treatment efficacy. Furthermore, as the treatment is life long, the prescription needs special emphasis.

Based on the clinical evidence and cost effectiveness. [12-14] guidelines developed by the joint National committee (JNC VII) in the United States[15] and the National institute for health and clinical excellence in the United Kingdom[16,] it is recommended that diuretics (particularly Thiazide type diuretic) should be the drugs of first choice for uncomplicated hypertension. However a plethora of new drugs are now available and the quality of life for these patients has altered for the better. A continuous supervision is therefore required through systematic audit that provides feedback from the physician and helps to promote rational use of drugs.

The study was also intended to find out the preferred drug group prescribed either alone or in combinations and their adherence to the JNC7 guidelines. Furthermore the prescription variations as regards to the age and concomitant illness were also analyzed.

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MATERIALS AND METHODS: After taking the institutional ethical committee approval, a cross sectional prospective, non-interventional and observational study involving 100 prescriptions for hypertensive patients was undertaken in the outpatient department of General Medicine at Rajarajeswari Teaching Hospital, Bangalore.

The aim of the present study was to reveal the current trend of drug prescribing of anti-hypertensive drugs. This study was also intended to find out the preferred drug group prescribed either alone or in combination, their effectiveness, preference in particular age group or to the concomitant illness if any, the rationale and lacunae involved so as to improve the patient health care.

The inclusion criteria were hypertensive patients of18 years and above of both sexes with or without other physical illnesses, while the exclusion criteria were subjects with pregnancy and lactation.

All the hypertensive patients who visited the medicine outpatient department were reviewed daily. The patients who met the inclusion criteria were enrolled into the study. The blood pressure (BP) measurement of the patients at the time of enrolment was recorded in a proforma designed for the study along with patients' demographics and the drug details. Further, other drugs prescribed if any for comorbid conditions were also entered in the proforma. The results were analyzed thereafter and compared with the accepted standard JNC-VII treatment guidelines.

Data obtained from the study were analyzed and expressed in percentage.

RESULTS: In our study involving 100 patients in total, 59 patients were male and 41 were female [table 1].

GENDER	NUMBER	PERCENTAGE
MALES	59	59
FEMALES	41	41
Table 1: DEMOGRAPHIC PROFILE OF PATIENTS		

Most of male hypertensive patients were in the age group of40 -60 years and above, constituting 95.8% of total male hypertensives. But all the female hypertensives belonged to 40-60 years and above category only [Table -2].

Category	<40 years Number Percentage	40-60 years Number Percentage	>60 years Number Percentage
Male	2	22	24
Female	0	17	35
Table 2: AGE GROUP DISTRIBUTION OF PATIENTS			

Table 3 depicts that the prevalence of stage II hypertensives over Stage I hypertensives (58%vs.42%).

Stage	Number of patients (%)
Stage – I	42 (42%)
Stage – II	58 (58%)
TABLE 3: STAGE-WISE HYPERTENSIVE PATIENTS ACCORDING TO JNC VII GUIDELINES	

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Out of 100 patients, comorbidity was found in 64 subjects, the most common one being Diabetes mellitus (75%), followed by COPD and others as shown in table number 4 below.

COMORBIDITY (64)	Number of patients(100)	PERCENTAGE
Diabetes mellitus	48	75
COPD	09	14
Anemia	03	4.7
Bronchial asthma	02	3.1
Pulmonary TB	01	1.6
Benign Hypertrophy of Prostate	01	1.6
Table 4: COMORBIDITIES OF THE PATIENTS		

The pattern of number of drugs prescribed is as shown in the Table no 5:

Number of antihypertensives	Total Number of prescriptions (100)	Percentage
One drug	68	68
Two drug	26	26
Three drug	05	05
Four drug	01	01
Table 5: NUMBER OF DRUGS PRESCRIBED		

Table 6 shows the ARBs were the most commonly prescribed drug group (58%), Telmisartan, Losartan and Olmesartan in order of physicians' preference. The next common group in the order was CCBs (50%), Amlodipine topping the group. However beta blockers viz. Metoprolol and Atenolol were prescribed with almost equal frequency (15%). Furthermore Diuretics too were prescribed similarly (14%).

ANTIHYPERTENSIVE GROUP	NAME OF DRUG	NUMER OF PRESCRIPTIONS
Angiotensin Receptor Blockers (58%)	Telmisartan	26
	Losartan	23
	Olmesartan	9
Calcium Channel Blockers(50%)	Amlodipine	45
	Famlodipine	5
Beta Blockers (15%)	Metoprolol	8
	Atenolol	7
Diuretics (14%)	Hydrochlorothiazide	7
	Furosemide	7
Table 6: FREQUENCY OF ADMINISTRATION OF INDIVIDUAL ANTI-HYPERTENSIVES		

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DISCUSSION: The results of our study suggest that hypertension is more prevalent in male patients (59%) than female patients (41%). The above trend is not in conformity to previous Indian study who reported about 61% female as against 39% male hypertensive patients. [17], While in one of the Indian studies, the results are similar to our study.[18]In this study, most of male hypertensive patients were40 – 60years and above, and only two male were under 40 years, while all the female oneswere40 – 60 years and above category only. However in both the genders the prevalence further increased markedly after 60 years.

Guidelines given by Joint National Committee VIIth report on prevalence, detection, evaluation and treatment of high blood pressure suggest that treatment of choice for early stage, uncomplicated, essential hypertension should be Thiazide diuretics.[19]

Presence of high risk conditions and blood pressure greater than 20/10 mm of Hg above normal is indication for starting therapy with drugs from other classes like ACE inhibitors, ARB's, beta blockers or calcium channel blockers alone or in combination with thiazides. Adherence to treatment guidelines can be monitored by several methods. Drug utilization studies are one such important method. Accordingly however, our data shows ARBs (62%) and CCBs (34.5%) were the most common single drugs used for most of the uncomplicated essential hypertensives.

There was a distinct notable point in this study that none of the patients received ACE inhibitors which are more time tested, effective and well-tolerated. In another Indian study it was found that monotherapy with ACE-inhibitors (38.25%) were the most commonly prescribed antihypertensive followed by calcium channel blockers (19.25%) and diuretics (13.25%).[20]

The patients with comorbidity mainly were prescribe done or two antihypertensives along with other drugs to treat their associated diseases such as diabetes mellitus, COPD, Anemia, Bronchial asthma and Benign Hypertrophy of Prostate. However a solitary case of hypertension with pulmonary Tuberculosis was put on Amlodipine (CCB) and appropriate anti tubercular drugs.

A severe case of hypertension with COPD was treated with Atenolol, Amlodipine, Telmisartan and Furosemide.

CONCLUSION: The results of the current study concord partly to the JNC VII guidelines. However the limitations of this study are single centered and of small sample size. Hence larger extended studies are required to draw discernible inferences as regards to the suited drug group options in the local population.

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