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DRUG UTILIZATION PATTERN OF ANTIHYPERTENSIVES IN GERIATRIC AND NON GERIATRIC POPULATION IN A TERTIARY CARE GOVERNMENT HOSPITAL SRIKAKULUM, A. P.

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ABSTRACT: BACKGROUND: Drug utilization studies conducted at regular intervals help to guide the physician in prescribing drugs rationally. **OBJECTIVE:** The objective of the present study was to assess the drug utilization patterns of antihypertensive in geriatric and non-geriatric patients in a tertiary care government teaching hospital. **METHODS:** A prospective cross sectional study was conducted in a tertiary care government teaching hospital. Data was collected from patients who have been diagnosed with hypertension as per JNC-7 guidelines and patients receiving or prescribed with antihypertensive medications were included. Frequency and proportions of utilization of antihypertensive medications in geriatric and Non-geriatric patients were charted and figured. **RESULTS:** A total of 226 prescriptions were analyzed during the three month study period. The most common medication prescribed for hypertension in the study was ARBs 27.77%, 34.37% in Geriatric and Non-geriatric patients respectively. The ARBs prescribed pattern was followed by ACEIs and CCBs. The most frequently prescribed anti-hypertensive fixed dose combination therapy was ARB+D, ACEI+D followed by CCB+BB in both Geriatric and Non-geriatric groups. **CONCLUSION:** The present study showed that the prescription pattern of antihypertensive was based upon the duration, severity of illness and the associated co-morbidities, it does not depend on the age of the patients. **KEYWORDS:** Antihypertensive, Drug utilization, Angiotensin receptor blockers-ARB, Angiotensin converting enzyme inhibitors-ACEI, Calcium Channel Blockers, Beta Blockers, Diuretics.

INTRODUCTION: Hypertension is an extremely common condition and quantitatively the most important risk factor for cardiovascular disease and mortality. Cardiovascular risk factors other than hypertension occur more frequently in hypertensive subjects and contribute to the elevated cardiovascular risk. It is reported to be the fourth contributor to premature death in developed countries and the seventh in developing countries. In India this condition is an important public health problem and leads annually to 1.1 million deaths.⁽¹⁾ It is estimated to account for 10.8 % of all deaths. Globally it is responsible for 9.4 million deaths.⁽²⁾ Hypertension occurs in 25-30 % of middle aged individuals in urban and 15-20 % in rural areas of the country.⁽³⁾

Pharmacotherapy in geriatric hypertensive patients has been recommended with a greater degree of caution due to the patho-physiological alterations associated with ageing process.⁽⁴⁾ Non-compliance to antihypertensive therapy is also a reason for uncontrolled hypertension.⁽⁵⁾ Polypharmacy, inappropriate use of medicines and irrational prescription pattern in the geriatric population leads to higher prevalence of adverse drug reactions.⁽⁶⁾ knowledge on prescription pattern and rationale drug utilization pattern will definitely overcome the adverse drug events associated with antihypertensive agents. In this scenario drug utilization pattern need to be assessed regularly from time to time so as to increase the therapeutic outcome and reduce the adverse drug

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effects. So in this aspect an attempt was made to assess the prescribing patterns of antihypertensives in tertiary care government teaching hospital.

MATERIALS AND METHODS: This is a prospective cross sectional drug utilization study, conducted between 01.10.2014 to 31.12.2014 at outpatient department of General Medicine, RIMS Srikakulam, A. P. After Institute Ethical Committee approval, prescriptions of 226 patients of either sex and age >18 years who have been diagnosed with hypertension as per JNC-7 guidelines and patients receiving or prescribed with antihypertensive medications were included. Patients in emergency, life threatening medical or surgical conditions, pregnant and lactating women and patients with incomplete data were excluded. The patient's sociodemographic profile, receiving or current prescribing patterns of antihypertensive medications were recorded in a predesigned data collection record form. Those receiving or with prescription of a one active principle medication was considered as monotherapy and those receiving or prescription of a more than one active principle medications were defined as a polytherapy. Informed written consent was obtained from the patients before their participation in the study and all the data collected was kept confidential.

STATISTICAL ANALYSIS: The prescription pattern was analyzed and data analysis was done by SPSS (Statistical program for the social sciences) software 16. Continuous data was presented in mean $\pm$ standard deviation, while categorical data presented in percentages. Proportions were compared using chi-square test. For all statistical analysis $p < 0.05$ was considered statistically significant.

RESULTS: In this study the mean age of participants was 54.95 ± 6.80 years. Out of 226 patients studied, 56.63% and 43.37% were males and females, respectively. In this study we found that 29.20% were Geriatric age group and 70.79% were Non geriatric age group. The Sociodemographic profile of the patients is summarized in table 1. The patterns of antihypertensive prescriptions is summarized in Fig1 & table 2. Out of 226 prescriptions studied, 82 (36.28%) were on monotherapy, while 144 (63.71%) were on combination therapy. The frequency of combination therapy pattern was more in geriatric age group. In both the study groups under monotherapy ARBs and ACEIs were the frequently utilized antihypertensive followed by calcium channel blockers and other medications as shown in fig 2. Among combination therapy most often two drug combinations were prescribed in both the groups, the most frequently utilized combinations were ARBS, ACEIs with diuretics and others as shown in fig 3. The distribution of patients according to co-morbidity related to hypertension was shown in table 3. Out of 226 patients, co-morbidity was found in 66 patients, the most common one being Diabetes mellitus (26.74%) followed by Ischemic heart disease (17.44%) and others as shown in table 3.

Variable	Frequency (%)
Age (yrs)	
>60 yrs	66 (29.20)
<60 yrs	160 (70.79)
Gender	
Male	128 (56.63)
Female	98 (43.37)

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Duration of Illness	
>5yrs	94 (41.59)
<5yrs	132 (58.40)
Alcohol consumption	78 (34.51)
History of smoking	82 (36.28)
Comorbidities	86 (38.05)

Table 1: Demographic profile of the study subjects

Category	Non Geriatric Patients n (%)	Geriatric Patients n (%)	P Value
Monotherapy	64 (40)	18 (27.27)	P= 0.07
Combination therapy	96 (60)	48 (72.73)	

Table 2: Comparison of patients on monotherapy and combination therapy

Co-morbidity	N= 86 (%)
DM	23 (26.74)
IHD	15 (17.44)
Bronchial asthma	9 (10.46)
COPD	3 (3.48)
Chronic kidney disease	12 (13.95)
Cerebrovascular disorders	11 (12.79)
DM with hemiplegia	13 (15.11)

Table 3: Patients with co-morbidities

Fig. 1: Comparison of patients on Monotherapy and Combination therapy.

Fig. 1

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Fig. 2: Frequency of Monotherapy prescription pattern in Geriatric and Non-Geriatric groups.

Fig. 2

(ARBs - Angiotensin Receptor Blockers, ACEIs -Angiotensin Converting Enzyme Inhibitors, CCBs - Calcium Channel Blockers, BBs - Beta Blockers)

Fig. 3: Frequency of Combination therapy prescription pattern in Geriatric and Non-Geriatric groups.

Fig. 3

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(ARB - Angiotensin Receptor Blocker, ACEIs -Angiotensin Converting Enzyme Inhibitor, CCB - Calcium Channel Blocker, BB - Beta Blocker, D - Diuretic)

DISCUSSION: In this present study it was observed that there was a significant change in antihypertensive prescribing pattern with a considerable increase in the frequency of intake of ARBs, ACEIs and CCBs. These observations line with other study.⁽⁷⁾ On the other hand it was observed that there was a considerable decrease in the prescription pattern with beta blockers, these findings correlated with other study.⁽⁸⁾ ARBs and ACE-Inhibitors constitute the most frequently prescribed antihypertensive drug class. Increased prescription of ARBs and ACEIs probably suggest that clinicians are more aware of the long term cardiovascular and renovascular benefits. The prescriptions were also in accordance with the evidence and the guidelines, as these medications will reduce the chance of occurrence of diabetic nephropathy, retinopathy and other related complications in diabetes patients. When calcium channel blockers were concerned the most commonly prescribed drugs were the dihydropyridine type of calcium channel blockers (ie., Amlodipine, Felodipine), whereas the prescription of non-dihydropyridine type of calcium channel blockers was very less. Observations on combination therapy reflect that the most commonly prescribed drugs in combination were diuretics (i.e., Thiazide and potassium sparing diuretic groups). The joint national committee on prevention, detection, evaluation and treatment of High blood pressure (JNC-VI and JNC-VII) report notes that volume overload due to inadequate diuretic therapy is one of the commonest reason for resistance observed in HTN treatments.⁽⁹⁾ So there is a paradigm shift towards increased prescribing of combination therapy. The present observational study depicts that the patients with co-morbidity were prescribed one or two antihypertensive along with other medications to treat their associated diseases such as diabetes mellitus, IHD, CVA and Bronchial asthma.

CONCLUSION: The drugs prescribed under monotherapy were ARBs, ACEIs, CCBs while ARB+D, ACEI+D, CCB+BB were frequently prescribed agents for combination therapy. Diuretics and BBs alone were under prescribed. The present study concludes that there was a paradigm shift in the choice of medications for hypertension from monotherapy to combination therapy. Standard doses and multiple drugs are needed in majority of geriatric age group for appropriate control of blood Pressure. The present study showed that the prescription pattern of antihypertensives was based upon the duration, severity of illness and the associated co-morbidities, it does not depend on the age of the patients.

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