

## A CROSS SECTIONAL DRUG UTILIZATION STUDY AMONGST HYPERTENSIVE PATIENTS IN A TERTIARY CARE TEACHING HOSPITAL AT JAIPUR

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### INTRODUCTION

Drug Utilization research defined by WHO in 1977 as “marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences”.<sup>[1]</sup> The principal aim of drug utilization study is to facilitate rational use of drugs in population. Without the knowledge of how drugs are being prescribed and used, it is difficult to evaluate rational use of drugs and to suggest measures to change prescribing habits for the better. In India, the elderly population is expected to increase by 3.5 times from 57 million in 1991, to 198 million in 2030 and by 6 times to 326 million in 2050. (1) Projections made by the

United Nation indicate that 21% of The Indian population will be above 60 years by 2050. (2) The elderly population will assume greater importance by sheer numbers and utilization of both preventive and curative health care services. This was echoed by the world health organization (WHO) theme for the ‘World Health Day -2012; Ageing and Health.

Drug utilization (DU) studies can identify the most frequent prescribing errors and their causes, providing numbers that can be analyzed. Drug utilization studies are a potential tool in the evaluation of health system.

Irrational use of drugs has laid down the concept of “Rational use drugs” which is defined by WHO as “Patients receive medication according to their clinical needs, in dose that meet their own individual requirements, for an adequate period of time, and lowest cost to them and their community (WHO-1985). WHO estimate that more than half medicines are prescribed,

dispensed or sold inappropriately, and that half of all patients fail to take them correctly. A major step towards use of medicine was taken in 1977, when WHO established 1<sup>st</sup> Model list of Essential Medicine to assist countries in formulating studies in this field.

## **OBJECTIVE**

The purpose of this study is to investigate the current trend and pattern of prescribing antihypertensive drugs and to identify, whether such pattern of prescription is appropriate and in accordance to international guidelines for pharmacotherapy of hypertension.

- (1) To describe and analyze the observed patterns of antihypertensive drug use in geriatric population.
- (2) Compare the observed pattern to the current recommendations.
- (3) Conduct a drug utilization analysis as per the DUS metrics and drug indicators.

## **MATERIAL AND METHOD**

It is a retrospective cross sectional study. Data was collected from patient's medical record . Study of 1257 prescriptions of hypertensive patients (as per JNC 7) of either sex and  $\geq 66$  years was taken as per WHO. The study site was conduct in NIMS MEDICAL COLLEGE, JAIPUR. During the period from 1<sup>st</sup> December 2014 to March 2015. Patients who had been on hypertensive drugs for last one month were included. The prescription pattern was analyzed as per WHO- INRUD (International Network for Rational use of drugs)

## **STUDY POPULATION**

### **Inclusion criteria**

Hypertensive patients.

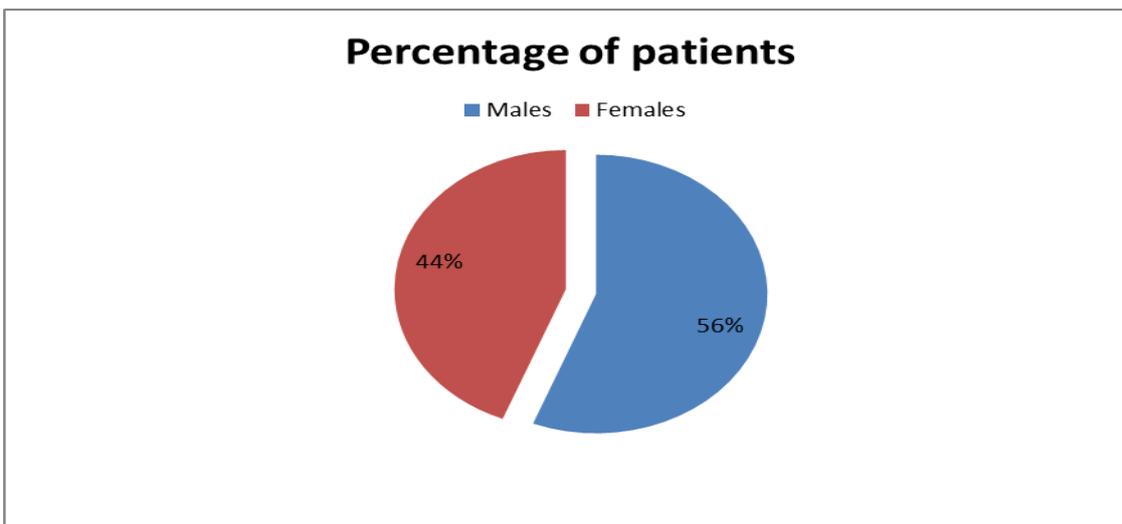
### **Exclusion criteria**

Patients having provisional diagnosis other than hypertension including pregnancy induced hypertension.

## **STATISTICAL ANALYSIS.**

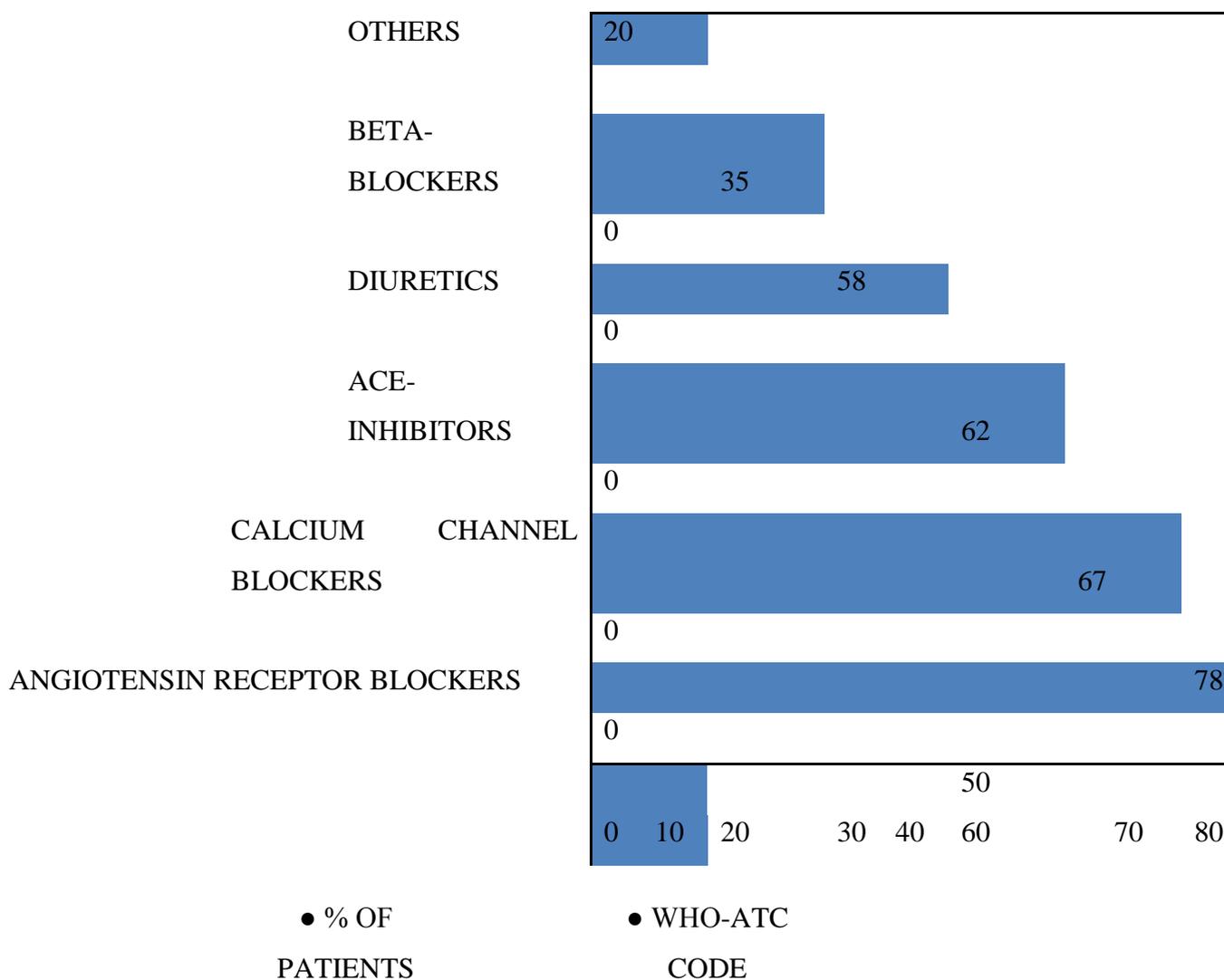
The data was subjected to descriptive analysis using Microsoft Excel.

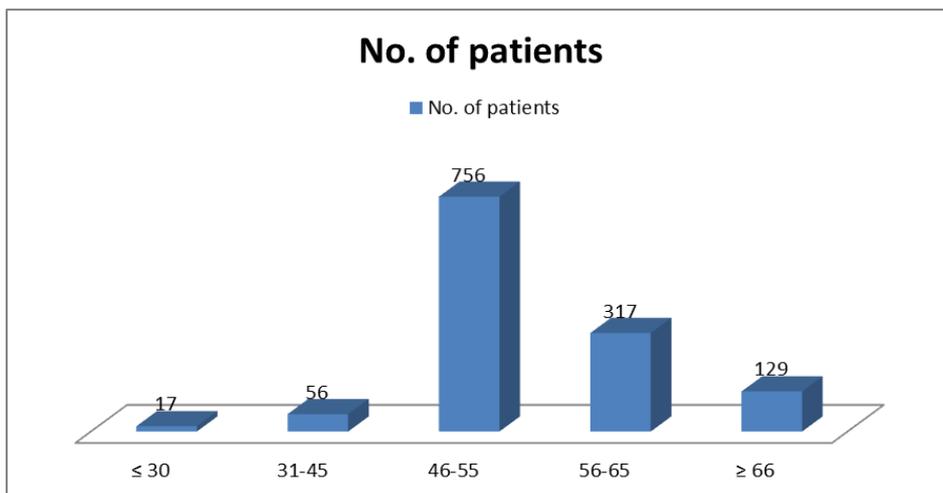
### **Sex Distribution.**



Most of the patient were the age group of 40 to 60 years.

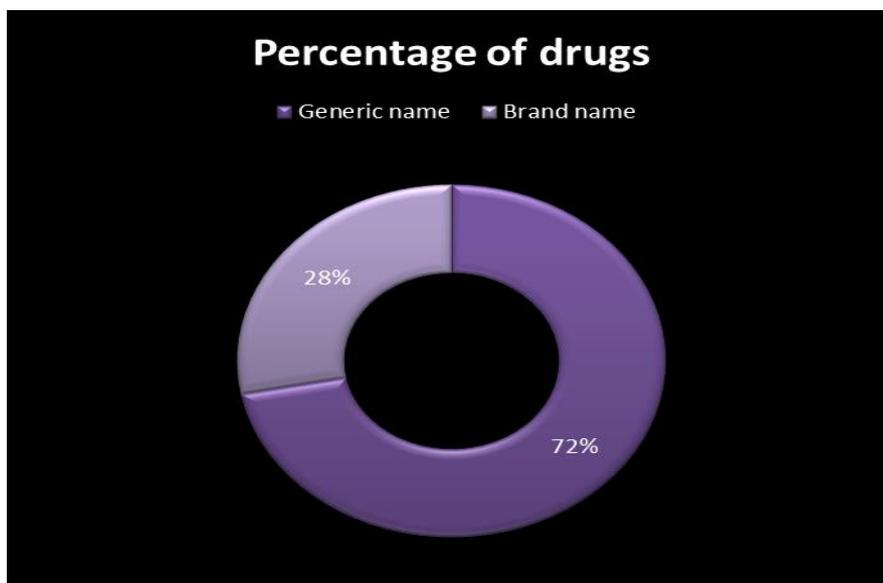
### DRUGS UTILIZED IN THE PRESENT STUDY WITH THERE ATC-CODE





Diabetes was the most common comorbid condition found.

Drugs utilized generic v/s Brand Name



Angiotensin receptor blockers(ARBs) with ATC-Code C09CA was the most commonly prescribed antihypertensive drugs.

WHO core Indicators as in 1275 Prescriptions

Sr. No	Core Indicators	Percentage
1	Average no of drugs per prescription	4.6 (5865/1275)
2	Average no of drugs prescribed by generic name	82%
3	Average no drugs prescribed by brand name	18%
4	No. of drugs prescribed by hospital pharmacy	82%
5	No. of drugs prescribed as fixed dose combinations	26%
6	No. prescriptions having poly pharmacy	1189%
7	No. of drugs mentioned in WHO EML	59%
8	No. of drugs mentioned in NLEM 2011	74%

Drugs prescribed as fixed dose combination.

## RESULTS

Table summarize selected sociodemographic and clinical baseline characteristics of the total hypertensive patients and in order to display variability of characteristics of an important subgroup of hypertensive patients. Average number of drugs per prescription is 4.6. 1275 prescription records were assessed, out of which, 561 were females and 714 were males. Most of the patients were in the age group of 50 - 65 years. Average number of drugs per prescription was 4.6. Drugs mentioned in WHO-EML (Essential Medicine List) were 59% and drugs mentioned in NLEM (National List of Essential Medicine) 2011 were 74%. Drugs prescribed as fixed dose combinations were 26%. Drugs prescribed by generic names were 82% while drugs prescribed by brand names were 18%. The highest number of patient is in the age group of 46 to 55 years (No of patient – 756) and then 56 to 65 years (317) Prescription pattern- The WHO-INRUD Drugs indicators are of which 26% drugs prescribed by fixed dose combination were 26%, Drugs prescribed by generic names were 82% while drugs prescribed by brand names were 18%. All the drugs the prescription were complete in the terms of describing in dosage form, dose route of administration, frequency and duration of treatment.

ATC-DDD Classification- Anatomical therapeutic chemical (ATC) – Daily Defined Dose (DDD) classification of the various antihypertensive drugs prescribed, along with the calculated prescribed Daily Dose (PDD) values and the PDD/DDD ratio are mentioned on above table.

## DISCUSSION

Majority of our participants were in the age range of 33-66 years. This can be explained by the fact the fact in the hospital consultations. A significant number of our participants (20%) had addiction in the form of smoking, alcohol, tobacco chewing. We found that individuals with addictions may be 3.5 times more likely have their BP values beyond the normal values (as per JNC 7), despite being on treatment.

Besides pharmacotherapy, modification of these lifestyle factors needs to be emphasized as a major strategy for reducing incidence of hypertension via education and awareness. Another very important lifestyle modification for managing high BP is moderate intensity physical activity in the elderly population which will also help to improve the over all quality of life.

Diagnosis and BP values – According to the JNC 7, the treatment goal for individuals with hypertension is <140/90 mm of Hg. If we had applied the JNC 8 criteria in our study, our result would have remained the same, except one individual with a BP of 144/80mm of Hg (classified as isolated systolic HTN), Who would have been classified as having WNL BP values. Also, a point to note is that unlike JNC-7, JNC-8 doesn't specify categories as per BP values like pre HTN, stage 1, 2, and isolated systolic HTN.

### SUMMARY AND RECOMMENDATION

- Participants with addictions were 3.5 times more likely to have out of control BP values.
- No statistically significant relation was found between the BP control and age, gender, socio-economic class or the number of drugs prescribed to participants.
- Majority of our participants (60%) had their BP values under control on treatment.
- Overall, all principles of rational prescribing were followed in geriatric hypertensive patients as per the WHO/INRUD drug use indicators.
- When prescribing from the hospital pharmacy, generic names should be used to avoid generic substitution, when prescribing from the outside chemist, it is better to prescribe brand names of generic drugs with good quality and low cost.
- ARBs were prescribed much more than ACE
- The most commonly prescribed two drugs combination was CCB with ARB as per current recommendation.

### CONCLUSION

Creating awareness regarding the role of addiction in BP control and advocating life style changes is paramount in HTN.

This study will give us an overall pattern of prescribing prescription amongst hypertensive patients and also a broad idea about rational use of drugs in these patients. The prescription pattern observed was as per current recommendation.

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