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DRUG UTILIZATION PATTERN OF ANTI-HYPERTENSIVE DRUGS IN HYPERTENSIVE OUTPATIENT DEPARTMENT OF A TERTIARY CARE HOSPITAL

S. BRIGIDA^{1*} AND R. POORNIMA²

1: Assistant Professor, Department of Pharmacology, Sree Balaji Medical College and Hospital, CLC works road, Chrompet, Chennai – 600044, Tamil Nadu, India

2: Post Graduate, Department of Pharmacology, Sree Balaji Medical College and Hospital, CLC works road, Chrompet, Chennai – 600044, Tamil Nadu, India

*Corresponding Author: Dr. S. Brigida: E Mail: 1506dr.brigida@gmail.com

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ABSTRACT

Background: Hypertension is one of the leading causes of morbidity, mortality as well as cost incurring treatment among cardiovascular diseases. Most antihypertensive drugs target different pathological and physiological response through different mechanism of action in order to keep the blood pressure within normal limit. **Objective:** The Objective of the study is to analyze the prescriptive pattern of antihypertensive drugs according to World Health Organization (WHO) drug use indicators in hypertensive outpatient clinic of a Tertiary care teaching hospital. A prospective cross-sectional study was conducted for 6 months in Hypertensive clinic, Sree Balaji Medical College Hospital. Patients of either sex ranging from 18-75 years who visit the OPD of hypertensive clinic were included in the study. **Materials and Methods:** (WHO) World Health Organization drug use indicators (core indicators and complementary indicators) were evaluated and defined daily dosage (DDD) were calculated in this study using the formula. **Results:** A total of 573 prescriptions were collected and the average number of drugs per prescription was 1.75. 60.02% of generics and 96.62% of essential drugs have been prescribed. Amlodipine is most prescribed among new hypertensive cases and Telmisartan and hydrochlorothiazide diuretics among chronic cases.

The average consulting times were 9.78 min and dispensing time were 45.17 sec. The DDD/1000/day for ARB (Angiotensin receptor blocker) was the highest (312.86) and Propranolol was the lowest (25.32). **Conclusion:** It was concluded that the generic and essential drug prescription is high.

Keywords: Antihypertensive prescription pattern, WHO indicators, DDD

INTRODUCTION

World health organization rates hypertension as one of the most important cause of premature death worldwide [1-2]. In an analysis of worldwide data, the global burden of hypertension, in the year 2005, the rates are projected to go up to 22.9% from 20.6% for Indian men and 23.6% from 20.9 % for Indian women in the year 2025 irrespective of urban and rural crowd [3-7]. Hence it is very important to reduce the prevalence and incidence by regular proper measures. There are many classes of antihypertensive drugs with different mode of action. Among them most widely used drugs are Thiazide diuretics, calcium channel blockers, ACE inhibitors, Angiotensin II receptor antagonists (ARBs) and beta blockers. To achieve optimal outcome in hypertensive cases medication adherence, persistence in treatment also plays a vital role. These depend on the effective prescription of anti-hypertensive drugs by physician [8-9]. This study is to evaluate the prescriptive pattern of antihypertensive drugs according to (WHO) World Health Organization drug use

indicators in hypertensive outpatient clinic of a Tertiary care teaching hospital.

Experimental section:

This study was a prospective, observational study conducted by Department of Pharmacology in association with Department of Medicine in Sree Balaji Medical College and Hospital for a period of 6 months from December 2016- May 2017 after approval from Institutional Ethics Committee. (Ref No: 002/SBMC/IHEC/2016/866) The diagnosis and line of treatment given was decided by the physician in charge of the Department of Medicine. No additional drugs or investigations were advised by us during the study period. Data of patients matching inclusion criteria was recorded after getting verbal informed consent (no identity or any of their personal history except related to drug was taken and that too was kept confidential).

Inclusion Criteria

1. Patients with hypertension, of both sex and all age groups, who will be prescribed an antihypertensive drug in medicine OPD.

2. Patients referred from another department who reported on OPD basis.

Exclusion Criteria

1. Patients who reported in OPD and will be subsequently admitted.
2. Patients with hypertensive emergency & hypertensive urgency.
3. Patient with any concurrent acute medical condition. e.g., acute myocardial infarction, acute left ventricular failure etc.

MATERIALS AND METHODS**Core indicators:****i. Prescribing indicators:**

- a) Average number of drugs per encounter was calculated by dividing the total number of different drug products prescribed by the number of encounters surveyed.
- b) Percentage of drugs prescribed by generic name was determined by dividing the number of drugs prescribed by generic name by the total number of drugs prescribed, multiplied by 100.
- c) Percentage of encounters with an antibiotic prescribed.
- d) Percentage of encounters with an injection prescribed was calculated by dividing the number of patient encounters during which an antibiotic or an injection prescribed by the total number of encounters surveyed, multiplied by 100.
- e) Percentage of drugs prescribed from essential drug list was determined by dividing the number of products prescribed

from Essential drug list of the hospital by the total number of drugs prescribed, multiplied by 100.

ii. Patient Care Indicators:

- a) Average consultation time was determined by dividing the total time for a series of consultations, by the actual number of consultations.
- b) Average dispensing time was calculated by dividing the total time for dispensing drugs to a series of patients, by the number of encounters.
- c) Percentage of drugs dispensed was worked out by dividing the number of drugs actually dispensed at the health facility by the total number of drugs prescribed, multiplied by 100.
- d) Patients' knowledge of correct dosage was found by dividing the number of patients who can adequately report the dosage schedule for all drugs, by the total number of patients interviewed, multiplied by 100.

iii. Facility indicators:

- a) Availability of copy of EDL: By stating yes (or) no.
- b) Availability of key drugs was calculated by dividing the number of specified products actually in stock by the total number of drugs on the check list of essential drugs multiplied by 100.

Complementary indicators:

a) Percentage of patients treated without drugs was calculated by dividing the number of consultations in which no drug is prescribed by the number of consultations surveyed.

b) Average drug cost per encounter was determined by dividing the total cost of all drugs prescribed by the number of encounters surveyed.

c) Percentage of drug costs spent on injection was determined by dividing the cost of injections prescribed by the total drug cost.

DDD/1000/day:

The DDD/1000/day was calculated as follows,

$$\text{DDD/1000/ Day} = \frac{\text{Total number of dosage X Strength of each units prescribed dosage unit}}{\text{DDD X Duration of study X Total sample size}} \times 1000$$

DDD was calculated as per guidelines for ATC classification and DDD assignment (2000) as given by WHO collaborating centre for drug statistics methodology, Oslo, Norway

RESULTS

A total of 573 prescriptions were collected. 45.2% were for females and 54.7% for males. The incidence of patients

with hypertension alone is 40.48% and patients with other ailments along with hypertension are 59.52%. The incidence of patients who received 2 drugs or less are 60.45%. For data stratification and analysis SPSS version 22.0 (Statistical Package for Social Sciences Inc., USA) software package was used (Table 1-3).

Details of drug use indicators:

Table 1: Core Indicators (original)

Prescribing Indicators	
Average drugs prescribed	1.65%
Generics	69.33%
Antibiotics	0.87%
Injections	0.001%
On essential drug list	95.32%
ii) Patient care indicators	
Average consulting time in minute	9.32
Average dispensing time in sec	70.44
Dugs dispensed	96.22%
Adequate knowledge	75.46%
iii) Facility indicators	
Availability of Essential drugs	Yes
Key drugs available	Yes

Table 2: Complementary indicators (original)

Without drugs	0.07%
Average drug cost (Rs) per prescription	3.15%
Drug cost injections	0.10%

Table 3: The DDD/1000/day and the percentage of drugs prescribed at the Hypertensive OPD. Drug Percentage of drugs prescribed DDD/1000/day(original)

ANTIHYPERTENSIVE DRUGS	PERCENTAGE OF DRUG PRESCRIBED	DDD/1000/day
Enalapril (ACE inhibitor)	4	32.44
Atenolol (Beta blocker)	4	29.10
Amlodipine (Calcium channel blocker)	9	58.66
Hydrochlorothiazide (Thiazide diuretics)	12	61.88
Propranolol (Beta blocker)	3	25.32
Metoprolol (Beta blocker)	4	38.12
Prazosin (Alpha blocker)	3	28.18
Telmisartan (Angiotensin receptor blocker)	61	312.86

DISCUSSION

Hypertension is a chronic disease which requires a long-term treatment along with lifestyle modification. During the past year's combination drugs (ARB+THIAZIDE DIURETICS) has become the prime choice in the management of hypertensive patient, because of its efficacy, patient compliance and safety. This is also confirmed by the high DDD of telmisartan and hydrochlorothiazide. The percentage of generics and drug use from essential drug list relatively higher. The other area in which interventional measures are needed is patient education and knowledge about the importance of life style modification ,even though patients have adequate knowledge of dosage schedule, regular intake of medications, they should be

trained either by physician or paramedic about the key role of salt restriction, regular sleep pattern, regular exercise [10-11]. The non-drug prescription with "LSM-life style modification" describes the prescriber's adherence to the current trend in non-pharmacological management in specific categories.

CONCLUSION

It may be concluded that the generic and essential drug prescription is high and Telmisartan is most prescribed among antihypertensive drugs. Improving awareness among the patients about knowledge on lifestyle modification would help to reduce the use of two or more anti-hypertensives.

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CONFLICTS OF INTEREST

Nil

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