International Journal of Current Science Research
www.drbgrpublications.in

Drug Utilization Study of Antihypertensives in a Tertiary Care Hospital

Hajera T. Syeda[1*], Ilyaseen Razeenah[1], Mehwish Aroosa[1], Unissa Shareefa[1]

[1]Student, Pharm D., St. Pauls College of Pharmacy, Hyderabad, India

[*]*Corresponding Author Email id: hajera1301@gmail.com*

Abstract

Drug utilization studies are prerequisite for drug policy formulations, they offer methods which are useful in training and teaching of drug therapies. It's well-known, inappropriate drug use results in side effects such as drug interactions, ecological disturbance and effects the diagnosis. As many as 1billion people worldwide may have a hypertensive disorder making it the most frequently seen disorder. These studies are used in society to ascertain the role of drugs and to create a sound basis for health-economic and socio-medical studies for healthcare decision making. Hypertension is an important public health concern because of its associated morbidity, mortality and economic impact on society. It is a key contributing factor in the development of cardiovascular disease and major cause of stroke, MI, heart failure and kidney disease among others.

Keywords: *Drug utilization study, Hypertension*

Introduction

Drug utilization study is an essential part of pharmaco-epidemiology as it deals with the nature, determinants and extent to exposure of drugs. Use of drugs is a complex process, in any country huge no. of socio-cultural factors contribute to the drug use, in India it includes illiteracy, poverty, National drug policy, advertisements, dispensing of drugs without prescription, competition in pharmaceutical and medical market place, and limited information of drugs. The difficulty in drug use is caused due to misuse, overuse and underuse of drugs failing to achieve the optimal drug therapy. Inappropriate use of drugs leads to increased medical expenses, adverse effects, patient mortality and antimicrobial resistance, hence DUS became a potential tool in evaluating health systems (Sachdeva *et al.*, 2010).

Volume: 7; Issue: 7; July 2021; pp 2188-2193; ISSN: 2454-5422

Hypertension is a leading contributor to the global burden of cardiovascular morbidity and mortality (Lawes *et al.,* 2001; Lancet 2008). Hypertension is defined as persistent elevation of atrial blood pressure. Any drug that is indicated for decreasing or normalizing the elevated blood pressure is considered as an antihypertensive drug (Eslampanah 2016). Hypertension is an important public health concern because of its associated morbidity, mortality and economic impact on society (Sapkota *et al.,* 2019). Prevalence of hypertension in India in 2000 was 60.4 million males and 57.8 million females and projected to increase to 107.3 million and 106.2 million respectively in 2025. Hypertension varies from 4-15% in urban and 2-8% in rural population (Lawes *et al.,* 2001; Lancet 2008).

Apart from unhealthy lifestyles, lack of awareness about hypertension, distorted public health systems, physicians treating hypertension also lag behind in treating hypertension according to standard treatment guidelines. Noncompliance to antihypertensive therapy is also a reason for uncontrolled hypertension. Elderly patients commonly have multiple pathologies leading to poly pharmacy, and altered pharmacokinetics and pharmacodynamics, are prone to adverse drug reactions from inappropriate medication (Lawes *et al.,* 2001; Lancet 2008).

Aims and Objects

- To determine the most common age group with hypertension.
- To determine the frequency of hypertension in different sex.
- To determine the common comorbidities in hypertensive patients and frequently used antihypertensive to treat the hypertension comorbidity.
- And to determine whether the past medication was changed or not during the hospital discharge, along with commonly prescribed antihypertensive during discharge.
- In view of the other factors, the following study was considered to analyse the prescribing patterns according to JNC VII and JNC VIII guidelines.

Materials and Methods

It's a prospective observational study conducted over a period of six months from October 2019 to March 2020 in a tertiary care hospital.

Designing of data collection form:

A suitable data collection form was designed to collect, document and analyse the data. The data collection form included the provision for collection of information related to demographic details of patients like patient's age, gender, weight, date of admission, date of discharge, reasons for

admission and diagnosis, medications used like: generic name of the drug, dose, route of administration and frequency.

Computerization of collected data:

All the collected data was entered into the Microsoft Excel 2010 for easy accessibility, retrieval and analysis of data. The Microsoft Excel format is enclosed as an appendix.

Study procedure:

The title of the study was selected and the articles related to the study were reviewed. The suitable data collection form was designed. The data was collected on a daily basis from the inpatient case sheets followed by reviewing the cases from medical records department regularly. The data was even collected from the outpatient prescriptions. The drug utilization of antihypertensives in the following data was observed in accordance to the JNC VII and JNC VIII guidelines.

Data analysis: The data was analysed by using Microsoft Excel 2010.

Results

Table 1: Patients are distributed according to Age group

Age Group	No. of Patients	Percentage
31-40	4	5.33
41-50	12	16
51-60	19	25.33
61-70	27	36
71-80	12	16
81-90	1	1.33
Total	75	100

Table 2: Patients are distributed based on age groups

	No. of Patients	Percentage
Young Adults	11	14.66
Older Adults	22	29.33
Geriatrics	42	56
Total	75	100

Table 3: Patients are distributed according to Sex

Sex	No. of Patients	Percentage	M:F
Male	43	57.33	**1.3:1**
Female	32	42.66	
Total	75	100	

Volume: 7; Issue: 7; July 2021; pp 2188-2193; ISSN: 2454-5422

Table 4: Patients distributed according the comorbidities

Comorbid Condition	No. of Patients	Percentage
HTN	60	81
HTN+DM	9	12.1
DM	3	4
CKD	1	1.4
Polyarthralgia	1	1.4
Total	74	100

HTN-Hypertension; DM-Diabetes mellitus; CKD-Chronic kidney disorder

Table 5: Patients are distributed according to their past medication history

Drug Category	No. of Patients	Percentage
ARBs	26	44.82
CCBs	21	36.20
Beta blockers	7	12.06
ACE Inhibitors	2	3.44
Alpha-Beta blocker	1	1.72
Alpha blockers	1	1.72
Total	58	100

ARBs-Angiotensin receptor blockers; CCBs-Calcium channel blockers; ACE Inhibitors-Angiotensin converting enzyme inhibitors

Table 6: Patients distributed according to most commonly prescribed drug for comorbidity

Prescribed drug	No. of Patients	Percentage
Telmisartan	20	36.36
Amlodipine	15	27.27
Metoprolol	7	12.72
Cilnidipine	5	9.09
Losartan	3	5.45
Ramipril	2	3.6
Nifedipine	1	1.81
Prazosin	1	1.81
Carvedilol	1	1.81
Total	55	100

Table: 7 Commonly prescribed anti-hypertensives during patient discharge:

Antihypertensives	No. of patients	Percentage
Telmisartan	21	30
Amlodipine	13	18.57
Cilnidipine	5	7.14
Metoprolol	4	5.71
Amlodipine+Metoprolol	3	4.28

Losartan	3	4.28
Telmisartan + Metoprolol	3	4.28
Amlodipine+Atenolol	2	2.85
Nebivolol	2	2.85
Nifedipine	2	2.85
Ramipril	2	2.85
HCTZ+Telmisartan	2	2.85
Amlodipine+Telmisartan	2	2.85
Bisoprolol+Losartan	1	1.42
Carvedilol	1	1.42
Clonidine	1	1.42
HCTZ+Amlodipine+Telmisartan	1	1.42
Olmesartan	1	1.42
Prazosin	1	1.42
Telmisartan + Chlorthalidone	1	1.42
Total	70	100

HCTZ- Hydrochlorothiazide

Table: 8 Antihypertensives continued and changed from past medication to discharge:

Antihypertensives		**Percentage**
No. of drugs continued	29	53.7
No. of drugs changed	25	46.29
Total	54	100

Discussion

The most commonly prescribed antihypertensive class as a past medication were ARBs (44.82%), followed by CCBs (36.20%). The least prescribed anti-hypertensive class was alpha-beta blockers and alpha blockers. The study of Sang Hyuck Kim *et al* 2019, also found that ARBs (51.61%) were the highest prescribed drug followed by CCBs (45.03%) (Sang Hyuck Kim *et al*., 2019)**.** The highly prescribed drug in hypertension as a co-morbidity is found to be an ARB, Telmisartan (36.36), second highest being a CCB, Amlodipine (27.27%). Even the most commonly prescribed anti-hypertensive during the patient discharge was found to be Telmisartan (30%), followed by amlodipine (13%). As per Anna J Battershill *et al* 2006, extensive evidence indicates that telmisartan either monotherapy or in combination provides long term anti-hypertensive efficacy and is well tolerated in a broad spectrum of anti-hypertensive patients (Bettershill *et al*., 2006)**.**

We found that 53.7% of antihypertensives were continued from the past medication till the discharge of the patient and 46.29% of antihypertensives were changed during discharge. When compared to JNC VII and JNC VIII guidelines, our study showed the compliance of the prescribing pattern of antihypertensives were according to the JNC VIII guidelines which states that, “The first

line treatment confines to only these 4 category of drugs: CCBs, Thiazides, ACEIs and ARBs" (Deepika *et al*., 2019).

Acknowledgement

The authors are thankful to Dr. Shehver Banu (Assistant professor, Dept. of Pharmacy Practice, St. pauls college of pharmacy) for continuous encouragement in accomplishing this work.

References

Sachdeva P.D, Dr. Patel B.G. Drug Utilization Studies- Scope and Future Perspectives. Int. J. on Pharmaceutical and Biological Res. 2010; 1(1):11-17.

Lawes CM, Vander HS, Rodgers A, *et al*. Global burden of blood pressure related disease 2001. Lancet 2008; 371(9623):1513-1518.

Eslampanah Zahra. Drug Utilization Evaluation of Antihypertensive Agents in a Medical Care Hospital", department of pharmacy practice, the oxford college of pharmacy, Rajiv Gandhi university of Health Sciences, Bangalore, Karnataka, India. Int. J. of Pharmaceutical Sciences and Res. 2016. 7(2): 862-867.

Sapkota Biswah, Heamant, Shrestha, Khatri N. and Shrestha K., "Prescribing Pattern of Antihypertensive Drugs and Adherence to JNC VII guidelines, Bengaluru, India. 2019, 6(0):11-11.

Sang Hyuck Kim, Dong Wook Shi, Shinhye Kim, Kyungdo Han, Sang-hyun Park, Yul-Hee Kim, Shin-Ae Jeon, and Yong-Chol Kwon. Prescribing Patterns of Antihypertensives for Treatment-Na¨ıve Patients in South Korea: From Korean NHISS Claim Data. Int. J. of Hypertension 2019; 0(0):1-10.

Battershill Anna J, Scott Lesley J. Telmisartan: a review of its use in the management of hypertension. PubMed 2006; 66(1):51-83.

Deepika, Sandeep Arora, Kaur Rupinder, Singh Thakur Gurjeet, Singh Manjinder, Satija Saurabh and Singh Rajinder. Prescribing Pattern of Anti-Hypertensive Drugs in a Tertiary Care Hospital: A Review. Plant Archives 2019; 19(0): 1312-1316.