CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2604302

Available online at: http://www.iajps.com *Research Article*

STUDY TO KNOW PRESCRIBING PATTERN OF DRUGS USED FOR CONTROL OF HYPERTENSION IN A TERTIARY CARE TEACHING HOSPITAL IN PAKISTAN

[1]Dr.Samra Asif, [2]Dr.Mevish Altaf, [3]Dr.Tayyaba Asma

[1]Services Institute of Medical Sciences Lahore, [2]Faislabad Medical University, Faislabad, [3]Fatima Jinnah Medical University.

Article Received: January 2019 **Accepted:** February 2019 **Published:** March 2019

Abstract:

Background: *Hypertension has been the most common diseases that are chronic in nature and lead to high morbidity. To improve the patient survival, the early and efficient management of essential hypertension is needed, also to prevent complications and the established anti-hypertensives have paramount importance. Objective of the study is to prescribe anti-hypertensive drugs and know about patterns in a tertiay care hospital of lahore****Methods:*** *A cross-sectional observational study was undertaken and 205 patients suffering from primary hypertension were handed out prescriptions in the Medicine Department Of Jinnah Hospital Lahore. All patients visited OPD and treated with at least one hypertensive drugs were included in the study irrespective of age and sex. Data was obtained from the patients by scrutinizing the out patients regarding the demographic profile and details pertaining to the prescribing pattern of antihypertensive drugs used for the treatment of hypertension.****Results:*** *In total 205 prescriptions were analysed within the study period. 131 (63.9%) of the patients were male and 74 (36.1%) female patients were included in the study. Most patients went in the age group of 50-59 years, which were 60 (29.3%) and 145 (70.7%) patients had a precious family history, (61.5%) of the patients were affected with stage-I hypertension, (56.1%) had a normal BMI. The results revealed that, 86 (41.9%) patients had dual therapy followed by monotherapy in the 59 (28.7%) of patients.****Conclusions:*** *The present study concludes that calcium channel blockers are the most frequently prescribed class of drugs for hypertension alone and diuretics are the most commonly used class of drugs in combination. However, further studies are necessary to set up a rationale or pattern for the choice of medication; taking into consideration the demographic factors involved in the prevalence of hypertension.*

Corresponding author:

Dr. Samra Asif,

Services Institute Of Medical Sciences Lahore.

QR code

Please cite this article in press Samra Asif et al., ***Study to Know Prescribing Pattern of Drugs Used for Control of Hypertension in a Tertiary Care Teaching Hospital in Pakistan.,*** *Indo Am. J. P. Sci, 2019; 06(03).*

INTRODUCTION:

Hypertension is one of the most common chronic diseases leading to high mortality and morbidity. [1,2] According to WHO health statistics 2012, the prevalence of hypertension was 23.1% in men and 22.6% in women in equal or more than 25 years of age. [3] Hypertension is a major risk factor for stroke, myocardial infarction, coronary heart disease and end-stage renal disease. Hypertension is common in diabetic chronic renal failure generally. Hypertension is defined as elevated systolic blood pressure ≥140mmHg or diastolic blood pressure ≥90mmHg. [4]

Hypertension is classified based on etiology into primary (essential) and secondary hypertension. In 95% of cases the specific underlying cause of hypertension cannot be found and referred to have essential hypertension. However, it tends to be familial and the prevalence of essential hypertension increases with age and individuals with relatively high blood pressure at young ages are at increased risk for the subsequent development of hypertension. Lowering of systolic blood pressure by 5-6mmHg confers relative risk reduction of 35-40% for stroke and 12-16% for coronary heart disease within five years of initiating treatment. Therefore, it is important to control the elevated blood pressure. [5]

High blood pressure (BP) can be treated medically by the use of anti-hypertensives as well as by changing lifestyle factors which include losing weight, quitting smoking, eating a healthy diet, reducing sodium intake, exercising regularly and limiting alcohol consumption or both. [6,7] Thus, in order to prevent complications and to improve the patient survival, the early and efficient management of essential hypertension is very much needed. [8] In this context, the use of established antihypertensive assumes paramount importance. The choice of drug depends upon patient and other related factors. Recommendations of a variety of guidelines are available for treatment of hypertension, such as WHO, ISH guidelines and recently the recommendations given by Joint National Committee (JNC-VIII) of USA on prevention, detection, evaluation and treatment of high blood pressure which suggests the rationale administration of drugs by providing algorithms for the treatment as per the stages of hypertension. [9]

In recent JNC-VIII guidelines it doesn't consider diuretic as the first choice rather considers first line and later-line treatments to be limited to four classes of medications: thiazide-type diuretics, calcium channel blockers (CCBs), Angiotensin converting enzyme inhibitors (ACE inhibitors) and Angiotensin Receptor Blockers (ARBs) followed by second and third-line alternatives included higher doses or combinations of ACE inhibitors, ARBs, thiazide-type diuretics and CCBs. [10] The choice of an antihypertensive drug is based on efficacy, side-effects, effects on other systems and cost. Accordingly, there is a need to survey the pattern of usage of antihypertensive drugs, to see if the current usage is rational and in concordance with current guidelines for treatment of hypertension. [11]

Prescribing patterns is a component of medical audit which seeks monitoring, evaluation and necessary modifications in the prescribing practices of prescribers to achieve rational and cost-effective medical care. [12] Hence, the present study was done to study the current trend of prescribing of antihypertensive drugs in a tertiary care hospital.

METHODS:

It was a cross-sectional observational study involving 205 prescriptions for patients suffering from primary essential hypertension in the Medicine Department Of Jinnah Hospital Lahore. The study was of six months duration from feb 2017 to July 2018 The purpose of the study was explained and written informed consent was obtained from the patients prior to the commencement of the study. All hypertensive patients irrespective of age and sex visiting OPD and treated with at least one hypertensive drugs were included in the study. Exclusion criteria included patients below the age of 18 years, pregnant and lactating women, those attending the OPD but were unwilling to participate in the study and patients with secondary hypertension.

Data was obtained from the patients by scrutinizing the out patients regarding the demographic profile that includes age, gender, educational status of the patients, BMI, family history of hypertension and details pertaining to the prescribing pattern of antihypertensive drugs used for the treatment of hypertension. Data collected was analysed and expressed in percentage.

RESULTS:

A total of 205 prescriptions were analysed during the study period. Out of which 131 (63.9%) were males and 74 (36.1%) were females. Maximum numbers of patients were in the age group of 50-59 years 60 (29.3%) patients. 82 (40%) of the patients were belonged to educational status of Grade 2 (Upto 12th class), 145 (70.7%) of the patients had a family history of hypertension, (61.5%) of the patients were in stage-I hypertension and (56.1%) were of normal BMI. Out of 205 prescriptions, 96 (46.9%) of the patients had single comorbidity, 47 (22.9%) multiple comorbidities

whereas 62 (30.2%) had no comorbidities. The results of demographics were summarized in Table 1.

The results revealed that, the maximum number of 86 (41.9%) patients underwent dual therapy (the most commonly prescribed dual therapy were diuretics + angiotensin II receptor antagonists (ARBs) in 58 (67.4%) followed by diuretics + ACEIs in 15 (17.4%) and others) as shown in Figure 1 followed by 59 (28.7%) monotherapy (the most commonly prescribed monotherapy were calcium channel blockers (CCBs) in 23 (39%) followed by angiotensin II receptor antagonists (ARBs) in 15 (25.4%) and others) as shown in Figure 2. A 29 (14.1%) of patients were prescribed with triple drug therapy (the most commonly prescribed triple drug therapy were diuretics+ ARBs+β-blockers in 7 (24.1 %) followed by diuretics+ARBs+ACEI in 6 (20.7%) and others) and 31 (15.1%) of the patients treated with more than three drugs. The results of detailed pharmacotherapy were summarized in Table 2.

Table 1: Demographic details of the patients.

Demographics	No. (%)
Age	3 (1.5)
20-29	13 (6.3)
30-39	36 (17.6)
50-59	60 (29.3)
60-69	58 (28.3)
70-79	31 (15.1)
80-89	4 (1.9)
Sex	
Male	131 (63.9)
Female	74 (36.1)
Educational status	
Grade 0 (uneducated)	12 (5.9)
Grade 1 (upto 8th class)	46 (22.4)
Grade 2 (upto 12th class)	82 (40)
Grade 3 (Graduate/Postgraduate)	65 (31.7)
Family history of hypertension	
Father	56 (27.3)
Mother	44 (21.5)
Both	18 (8.8)
Others	27(13.2)
No history	60 (29.2)

BMI (Kg/m$^{2)}$	
Underweight (<20)	9 (4.4)
Normal weight (20-27.5)	115 (56.1)
Overweight (>27.5)	81 (39.5)
Stages of Hypertension	
Pre-hypertension (80-89 mmHg)	12 (5.9)
Stage I (90-99/140-159 mmHg)	126 (61.5)
Stage II (≥100/≥160 mmHg)	67 (32.6)
Comorbidities	
Single	96 (46.9)
Multiple	47 (22.9)
No comorbidities	62 (30.2)

DISCUSSION:

Our study was a prescription-based survey which is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of physicians and their adherence to the recommendations by the international bodies. [13] The results of our study suggest that hypertension is more prevalent in male patients (63.9%) than female patients (36.1%).

This finding is in conformity with the studies done by Jhaj et al and Anand etal. [14,15] In the present study, maximum number of patients were in the age group of 50-59 years and above constituting 74.6% of total patients. These results are consistent with the previous studies done by Tasneem S. [16] In our study, 70.8% of the patients had a family history of hypertension re enforces the fact that there is a strong genetic predisposition in hypertension. This is consistent with the study done by Jackson JH. [17]

Table 2: Pharmacotherapy of the patients.

Pharmacotherapy	No. (%)
Monotherapy	
CCBs	23(39)
ARBs	15(25.4)
ACIs	11(18.6)
Diuretics	7(11.9)
β-Blockers	3(5.1)
Total	59(28.8)
Dual Therapy	

Diuretics + ARBs	58(67.4)
Diuretics + ACEIs	15(17.4)
Diuretics + β-Blockers	4(4.7)
ACEIs + CCBs	3(3.5)
ACEIs + β-Blockers	2(2.3)
ARBs + CCBs	1(1.2)
ARBs + β-Blockers	2(2.3)
β-Blockers + CCBs	1(1.2)
Total	86(41.9)
Triple Therapy	
Diuretics + ARBs +ACEIs	6(20.7)
Diuretics + ARBs + β-Blockers	7(24.1)
Diuretics + ARBs + Diuretics	4(13.8)
Diuretics + ARBs + CCBs	4(13.8)
Diuretics + ARBs + α-Blockers	2(6.9)
Diuretics + ACEIs + CCBs	2(6.9)
Diuretics + ACEIs + β-Blockers	3(10.3)
Diuretics + β-Blockers + α-Blockers	1 (3.4)
Total	29(14.2)
More than 3 drug therapy	31(15.1)

The results of the present study showed that higher rates of 71.2% combination therapy of antihypertensive were prescribed than 28.8% monotherapy. These results supported the work of Hansson et al, and Kulkarni et al, that showed blood pressure could be adequately controlled with the help of combination therapy. [2,18] Furthermore, combination therapy seems to be a rational approach to reduce the cardiovascular mortality. [19] The present study revealed that CCBs were the most commonly prescribed as a single therapy followed by ARBs and ACEIs. This may be because CCBs seem to be preferred in age group more than 55 years and also because of their good response and less incidence of adverse effects. This is consistent with the study done by Konwar et al. [20]

In the present study, it was also observed that in combination therapy, two-drug combinations were mostly prescribed (%), followed by three-drug combinations (14.2%) and more than three drug combinations in (15.1%). Among the dual combination therapy, a combination of diuretics and angiotensin receptor blockers were the leading drug combination to be most commonly prescribed indicating that diuretics were used more often as component of multidrug therapy. The use of diuretics in multidrug regimens is recognized as essential for reduction of blood volume, vascular resistance and hence the efficacy of the combined regimen. This is consistent with study done by Thomas M. [21]

Figure 1: Percentage distribution of patients receiving various two-drug combinations.

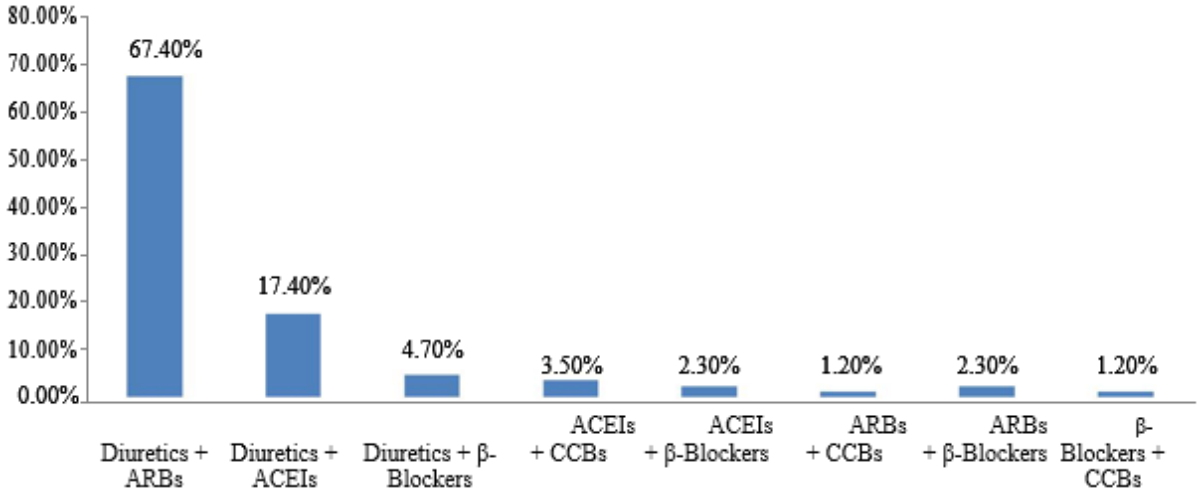
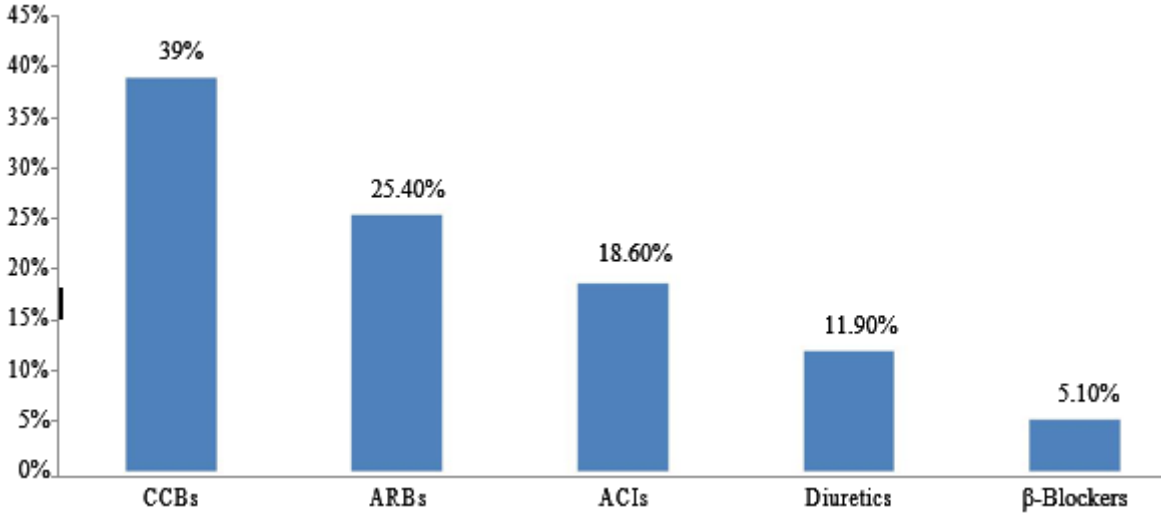


Figure 2: Percentage distribution of patients receiving various groups of drugs in monotherapy.



However, the present study has few limitations being of shorter duration, single-centered and also because of cross-sectional design of the study, there was no assessment whether the present therapy was the initial one or whether it switch or add-on to the original one. Therefore, no information about the treatment strategies over time can be provided.

CONCLUSION:

From the present study, it can be concluded that hypertension is more common in males than in females and its prevalence seems to follow an increasing trend with increasing age. Calcium channel blockers are frequently prescribed drugs and diuretics are the most commonly used class as a combination. The incidence of hypertension is dependent upon several factors like ethnicity, genetic, environmental and physiological factors, hence further studies are necessary to set up a rationale or pattern for the choice of medication; taking into consideration the demographic factors involved in the prevalence of hypertension.

REFERENCES:

1. Collins R, Peto R, Mac MS, Hebert P, Fiebach NH, Eberlein KA, et al. Blood pressure, stroke and coronary heart disease. Part 2. Short-term reductions in blood pressure: overview of

randomized drug trial in their epidemiological context. Lancet. 1990; 335:827-38.
2. Hansson L. The benefits of lowering elevated blood pressure: a critical review of studies of cardiovascular morbidity and mortality in hypertension. J Hypertens. 1996; 14:537-44.
3. WHO. Health statistics 2015. Available from http://www.who.int/gho/publications/world_health_ statistics /2015.
4. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo Jr JL, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. JAMA. 2003 May 21; 289(19):2560-71.
5. Kotcher TA, Hypertensive Vascular Disease: Introduction; In: Longo DL, Kasper DL, Jameson JL, Fauci AS, Hauser SL, Loscalzo J, editors. Harrison's principles of Internal Medicine. 18th edition. New Delhi: Mc Graw Hill; Medical Publishing Division. 2012:2042-59
6. Sepehri G, Talebizadeh N, Mirzazadeh A, Mohsenbeigi M. The patterns of antihypertensive drug prescription by cardiologists in Kerman province of Iran, 2006. Pharmacoepidemiol Drug Saf. 2008; 17:180-5.
7. Chiang CW, Chen CY, Chiu HF, Wu HL, Yang CY. Trends in the use of antihypertensive drugs by outpatients with diabetes in Taiwan, 1997-2003. Pharmacoepidemiol Drug Saf. 2007; 16:412-21.
8. Kale A, Maniyar YA. Prescribing patterns of antihypertensive drugs in a tertiary care hospital. Sch Acad J Pharm. 2013; 2 (5):416-8.
9. Sikidar P, Chakravarty P, Purkayasyha A, Tigga R. A study on prescribing pattern of antihypertensives in adult patients attending in a tertiary care hospital of Assam, India. Int J Basic Clin Pharmacol. 2016; 5:975-8.
10. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA. 2014; 311(5):507-20.
11. Pai PG, Shenoy J, Sanji N. Prescribing patterns of antihypertensive drugs in a tertiary care hospital. Drug Invent Today. 2011; 3(4):38-40.
12. Gupta N, Sharma D, Garg SK, Bhargava VK. Auditing of prescriptions to study utilization of antimicrobials in tertiary hospital. Indian J Pharmacol. 1997; 29:411-5.
13. Yuen YH, Chang S, Chong CK, Lee SC, Critchlev JA, Chan JC. Drug utilization in a hospital general medical outpatient clinic with particular reference to antihypertensive and antidiabetic drugs. J Clin Pharm Ther. 1998; 23:287-94.
14. Jhaj R, Goel NK, Gautam CS, Hota D, Sangeeta B. Prescribing patterns and cost of antihypertensive drugs in an internal medicine clinic. Ind Heart J. 2001; 53:323-27.
15. Anand MP, Epidemiology of Hypertension, In. Anand MP, Nadkar MY editors, Hypertension: An International Monograph 2007, New Delhi, IJCP group of publications. 2007:7-19
16. Tasneem S, Vamsi Krishna E. Survey of prescription pattern of anti-hypertensive drugs in hypertensives and hypertension associated diabetics. Int J Pharma Bio Sci. 2010; 1(4):23-6.
17. Jackson JH, Sobolski J, Krienke R, Wong KS, FrechTamas F, Nightengale B. Blood pressure control and pharmacotherapy patterns in the United States before and after the release of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) guidelines. J Am Board Fam Med. 2008; 21(6):512-21.
18. Kulkarni SK, Tiwari H, Kumar A. Prescription monitoring of antihypertensive drug utilisation at the Punjab University Health Centre in India. Singapore Med J. 2004; 45 (3):117-20.
19. Mancia G, Grassi G; Antihypertensive treatment: past, present and future. J Hypertens. 1998; 16:S1-S7.
20. Konwar M, Paul PK, Das SW. Prescribing pattern of antihypertensive drugs in essential hypertension in medicine out patients department in a tertiary care hospital. Asian J Pharm Clin Res. 2014; 7(Suppl 2):142-44.
21. Thomas M, Brian BH. Treatment of Myocardial Ischaemia and Hypertension. In: Brunton BL, Chabner BA, Knollman BC, editors. Goodman and Gilman's, The Pharmaceutical Basis of Therapeutics 12th edition, Mc Graw Hill; 2011:745-88.