

Prescribing Pattern of Antihypertensive Drugs in a Tertiary Care Teaching Hospital in Lucknow Region

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ABSTRACT

Aims and objectives: To evaluate the prescribing pattern of antihypertensive drugs in a tertiary care teaching hospital in Lucknow region. **Material and methods:** A cross-sectional study was carried out at Outpatient Department in a tertiary care teaching hospital in Barabanki to evaluate the prescribing pattern of antihypertensive drugs during August 2013 to July 2015. **Results:** In the present study, 68.5% patients received monotherapy while 31.5% received combination therapy. In monotherapy, angiotensin-converting enzyme inhibitor (ACEI) (25.7%) was the most commonly prescribed while angiotensin receptor blockers (ARBs) + diuretics (11.9%) were most commonly prescribed combination therapy. **Conclusion:** In the present study, it was found that ACEIs were the most commonly prescribed antihypertensive drug followed by ARBs and calcium channel blockers (CCBs) in monotherapy. Combination therapy was given according to associated risk factors and comorbid conditions.

Keywords: Prescribing pattern, monotherapy, ARB, ACEI, CCB

Hypertension is a major health problem in our country. There are several factors which are responsible for hypertension like age, ethnic background, family history of hypertension, obesity, sedentary lifestyle, food habits, smoking, alcoholism, stress and some chronic pathological conditions like diabetes, renal disease, etc. The estimated total number of adults with hypertension in 2000 was 972 million; 333 million in economically developed countries and 639 million in economically developing countries. The number of adults with hypertension in 2025 was predicted to increase by about 60% to a total of 1.56 billion (1.54-1.58 billion). Worldwide data for the global burden of hypertension reveal that 20.6% of Indian men and 20.9% of Indian women were suffering from hypertension in 2005.¹ It has been estimated that by the year 2030, 23 million cardiovascular deaths are projected to be due to hypertension, of which about 85% cases will be from low-resource settings and developing

nations.² Recent studies from India have shown the prevalence of hypertension to be 25% in urban and 10% in rural people in India.³⁻⁴ The poor control of hypertension leads to further progressive cardiovascular complications like ischemic heart disease, heart failure, stroke and chronic renal insufficiency.⁵ Awareness and adequate control of hypertension in India is poor, only 69% people suffering with hypertension are aware that they have the disease, among them only 54% receive treatment and only 27.4% achieve adequate blood pressure control.⁶

Treatment of hypertension with monotherapy or combination therapy is updated time to time according to the Joint National Committee (JNC) I-VIII guidelines.

The blood pressure stages in the JNC-VIII definition/classification are:

Categories of hypertension	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)
Normal	<120	<80
Prehypertension	120-139	80-89
Stage I hypertension	140-159	90-99
Stage II hypertension	>160	>100

MATERIAL AND METHODS

A cross-sectional study was carried out at Outpatient Department of Medicine in Mayo Institute of Medical Sciences (MIMS), Barabanki, Uttar Pradesh during August 2013 to July 2015. Samples of 453 prescriptions

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were screened and written consent was taken. Inclusion criterion for the selection of prescriptions was hypertensive patients according to the JNC-VIII guidelines. Fifty-three prescriptions having lifestyle modification and non-pharmacological measures were excluded from our study. The results are based upon the data obtained from 400 participants. Data were analyzed using MS Excel 2007 and summarized as counts and percentages.

Inclusion Criteria

- Patients with age groups more than 18 years.
- Hypertensive patients with and without comorbid conditions i.e., cardiovascular disease, diabetes mellitus and chronic kidney disease.
- Patients on monotherapy and combination therapy.
- Patients with addiction or non-addiction to alcohol or nicotine.

Exclusion Criteria

- Patients with age group less than 18 years.
- Prescriptions having lifestyle modifications and non-pharmacological measures.

RESULTS AND OBSERVATION

In the present study, 55.7% hypertensives were male while 44.2% were female. Out of 400 prescriptions, 68.5% patients received monotherapy and 31.5% received combination therapy. Most of the hypertensives patients were in the age group of 50-59 years (28.2%) followed by 60-69 years (26.7%) (Table 1). Out of 274 monotherapy,

Table 1. Demographic Characteristics of Hypertensive Patients (n = 400)

Variables	Male (n = 223) No. (%)	Female (n = 177) No. (%)
Antihypertensive prescriptions	223 (55.7)	177 (44.2)
Monotherapy	144 (36)	130 (32.5)
Combination therapy	76 (19)	50 (12.5)
Age (in years)		
20-29	4 (1.8)	2 (1.1)
30-39	30 (13.4)	23 (13.0)
40-49	43 (19.3)	36 (20.3)
50-59	51 (22.9)	62 (35.0)
60-69	67 (30.0)	40 (22.6)
70-79	14 (5.3)	9 (5.1)
80-89	8 (3.6)	5 (2.8)

angiotensin-converting enzyme inhibitors (ACEIs) (25.7%) were the most commonly prescribed, followed by angiotensin receptor blockers (ARBs) (22.7%) and calcium channel blockers (CCBs) (15%) (Table 2).

Among combination therapy, 27% patients received two drugs combination therapy and the most commonly prescribed combination was ARB + diuretics (11.9%), followed by CCB + β -blockers (4%). Three drug combinations were received by 3% patients. Among three drug combinations, ARB + β -blocker + diuretics and ACEI + β -blocker + diuretics were used in 1.7% and 1.2% patients, respectively. Four drug combinations were received by only 1.5% patients. Equal number of patients (0.7%) received ARB + β -blocker + diuretic + CCB and ACEI + β -blocker + diuretic + CCB combinations (Table 3).

Table 2. Prescribing Pattern of Monotherapy Antihypertensive Drugs

Antihypertensive drugs	No. of prescriptions (274)	
	Male (n = 144) No. (%)	Female (n = 130) No. (%)
ACEIs	52 (13)	51(12.7)
ARBs	41 (10.2)	50 (12.5)
β -blockers	4 (1)	4 (1)
CCBs	36 (9)	24 (6)
Diuretics	11 (2.7)	1 (0.2)

Table 3. Prescribing Pattern of Combination Therapy Antihypertensive Drugs

Antihypertensive drugs	No. of prescriptions (126)	
	Male (n = 76) No. (%)	Female (n = 50) No. (%)
ARB + Diuretics	27 (6.7)	21 (5.2)
CCB + β -blockers	12 (3)	4 (1)
ARB + CCBs	10 (2.5)	6 (1.5%)
ACEI + Diuretics	5 (1.2)	3 (0.7)
ARB + β -blockers	6 (1.5)	2 (0.5)
ACEI + β -blockers	4 (1)	4 (1)
ARB+ β -blocker + Diuretics	4 (1)	3 (0.7)
ACEI + β -blocker + Diuretics	3 (0.7)	2 (0.5)
α -blocker + CCBs	1 (0.2)	3 (0.7)
ARB+ β -blocker + Diuretics + CCBs	2 (0.5)	1 (0.2)
ACEI + β -blocker + Diuretics + CCBs	2 (0.5)	1 (0.2)

DISCUSSION

Reduction of systolic as well as diastolic blood pressure reduces the cardiovascular events. At ages 40-69 years, each difference of 20 mmHg systolic or 10 mmHg diastolic blood pressure was associated with more than a two-fold difference in the stroke death rate, and with two-fold differences in the death rates from coronary heart disease and other vascular causes.⁷ In the present study, it was found that the prevalence of hypertension was more in male patients (55.7%) as compared to females (44.2%), so male are affected more than female, which correlates with the previous study done by Farang et al.⁸ The maximum number of patients (74.7%) fall in the age group of 40-69 years. This indicates that risk of hypertension increases as the age advances. A previous study revealed that increasing age, body mass index, smoking, diabetes and extra salt intake are common risk factors for hypertension.⁹ Present study shows monotherapy (68.5%) is more common than combination therapy (31.5%). These results were in accordance with previous study done by Kuchake et al.¹⁰ The combination therapy is given to those patients who are not controlled by monotherapy. In the present study, ACEIs (25.7%) were the most commonly prescribed drug in monotherapy followed by ARBs. These results were in accordance with the work of Pandey et al.¹¹ Combination therapy in hypertensives, adequately controlled the blood pressure.¹² Combination therapy also reduces the cardiovascular complications thus reduces mortality.¹³ In our study, CCBs were preferred in elderly patients which is in accordance to the guidelines of National Institute for Health and Care Excellence (NICE).¹⁴ ARBs were preferred in the patients of age less than 50 years of age. Diuretics were most preferred drugs in combination therapy with ARB, ACEI and CCB which was in accordance with the study done by Johnson et al.¹⁵ It is essential to combine diuretics with these drugs for reduction of blood volume, peripheral vascular resistance. Use of ACEI/ARB was higher in patients with nephropathy.

CONCLUSION

In the present study, it was found that ACEIs were the most commonly prescribed drug followed by ARBs and CCBs in monotherapy. In ACEIs, ramipril was the most commonly prescribed drug while telmisartan was the most common in ARBs. Amlodipine was most commonly prescribed drug in CCBs. Combination therapy was given according to associated risk factors and comorbid conditions. We feel that there is need of further studies from time to time to evaluate and improve the prescribing pattern of hypertension.

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