

# Prescription pattern of antihypertensive drugs in a tertiary care teaching hospital

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## ABSTRACT

**Background:** Hypertension is a major health problem all over the world. It is not a disease in itself, but it is an important risk factor for cardiovascular mortality and morbidity. **Objective:** To evaluate the prescribing pattern of antihypertensive drugs in a tertiary care teaching hospital in Lucknow region. **Materials and Methods:** A cross-sectional study was carried out at the Outpatient Department in a tertiary care teaching hospital in Lucknow to access the prescription pattern of antihypertensive drugs during October 2015 to July 2016. **Results:** In the present study, 65.2% patients received monotherapy while 34.8% received combination therapy. In monotherapy, calcium channel blockers (CCBs) were most commonly prescribed, while angiotensin receptor blockers (ARBs) + diuretics were the most commonly prescribed combination therapy. **Conclusion:** In the present study, it was found that CCBs were the most commonly prescribed antihypertensive drug, followed by ARBs in monotherapy. Combination therapy was given according to associated risk factors and comorbid conditions.

**KEY WORDS:** Prescribing Pattern; Monotherapy; Calcium Channel Blockers; Angiotensin Receptor Blockers; Angiotensin-converting Enzyme Inhibitors


## INTRODUCTION

Hypertension is a major health problem all over the world. It is not a disease in itself, but it is an important risk factor for cardiovascular mortality and morbidity according to the seventh report of Joint National Committee (JNC) on prevention, detection, evaluation, and treatment of increased blood pressure (BP) (2003), and WHO-ISH guidelines (2003) have defined it to be 140 mm Hg systolic and 90 mm Hg diastolic though risk appears to increase even above 120/80 mmHg.<sup>[1]</sup> 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.<sup>[2]</sup> Scientific evidence exists to suggest that such adverse outcomes can be prevented by lowering BP effectively.<sup>[3,4]</sup> Recent studies in India show that hypertension is emerging as a major health problem. It is directly responsible for 57% of all death due to stroke and 24% of all death due to coronary heart disease. Although 69% of people with hypertension are aware that they have the disease, only 54% receive treatment and only 27.4% achieve adequate BP control.<sup>[5]</sup> Treatment of hypertension with monotherapy or combination therapy is updated time to time according to JNC I to VII guidelines.<sup>[6]</sup>

## MATERIALS AND METHODS

A cross-sectional study was carried out in the medicine OPD of a tertiary care teaching hospital, Lucknow region, from October 2015 to July 2016 to access the prescribing pattern of antihypertensives. The physician was not informed about the present study to decrease the physician bias. A total of 128 prescriptions of antihypertensive patients were selected

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randomly in the medicine OPD. These samples were used to study the prescribing pattern of antihypertensive drugs. Inclusion criterion for the selection of prescriptions was hypertensive patients according to the JNC-VII guidelines. Sixteen prescriptions having lifestyle modification and non-pharmacological measures were excluded from our study. The special cases such as pregnancy and the patients with other complications were excluded from the study.

The results are based on the data obtained from 112 participants. Data were analyzed using MS Excel 2007 and summarized as counts and percentages.

## RESULTS

In the present study, 128 prescriptions were evaluated, of which 74 were male and 38 were female hypertensive patients. Out of 74 male hypertensives, 48 were treated with monotherapy while 26 were on combination therapy. Similarly, out of 38 female hypertensives, 25 were on monotherapy while 13 were on combination therapy (Table 1). Calcium channel blockers (CCBs) (31.2%) were the most commonly prescribed antihypertensive agent as monotherapy, followed by angiotensin receptor blockers (ARBs) (22.3%) and angiotensin-converting enzyme inhibitors (ACEIs) (14.3%). 9.8% patients were treated with combination of ARBs with CCBs, while 5.3% received combination of diuretics with ARBs (Table 2).

In the present study, total numbers of 74 hypertensive patients were male. Among which, 48 (42.8%) were on monotherapy and 26 (23.2%) were on combination therapy. In monotherapy, 24 (21.4%) were on CCBs, while 17 (15.2%) with ARBs and 10 (8.9%) were on ACEIs. 7 (6.2%) patients were treated with combination of ARBs + CCBs while 5 (4.5%) patients were on combination diuretics + ARBs (Table 2). In the present study, total numbers of 38 hypertensive patients were female. Of which, 25 (22.3%) hypertensive patients were on monotherapy, while 13 (11.6%) was on combination therapy. Among which, 11 (9.8%) female hypertensive patients were on CCBs, 9 (8.0%) patients were treated with ARBs, and 6 (5.3%) patients were on ACEIs, while 4 (3.6%) patients

**Table 1:** Demographic characteristics of hypertensive patients ( $n=112$ )

Variables	Male $n=74$ (%)	Female $n=38$ (%)
Antihypertensive prescriptions	74 (66.1)	38 (33.9)
Monotherapy	48 (42.8)	25 (22.3)
Combination therapy	26 (23.2)	13 (11.6)
Age (in years)		
20-39	08 (10.8)	03 (7.9)
40-59	22 (29.7)	14 (36.8)
>60	44 (59.5)	21 (55.3)

were treated with two-drug combination, ARBs with CCBs (Table 2).

In the present study, it was found that monotherapy was mostly prescribed in the beginning or mild to moderate hypertensive patients while combination therapy was mostly prescribed in patients who have not controlled with single drug therapy on in the case of moderate to severe hypertensive patients.

## DISCUSSION

In the present study, it was found that the prevalence of hypertension was more in male patients (66.1%) as compared to females (33.9%), so males are affected more than females, which correlates with the previous study done by Farag *et al.*<sup>[7]</sup> Previous studies revealed that hypertension is better controlled by combination therapy and is most commonly prescribed.<sup>[8-12]</sup> However, in contrast to these studies, it was observed in the present study that the monotherapy (81.7%) is more common than combination therapy (34.8%). This was in accordance with the previous study done by Kuchake *et al.*<sup>[13]</sup> The combination therapy however is seen commonly in those patients who were not controlled with monotherapy. Combination therapy adequately controlled the BP in hypertensive patients.<sup>[14]</sup> In the present study, it was found that CCBs (31.2%) are most commonly prescribed antihypertensive agent as monotherapy. This was in accordance with the previous study done by Konwar *et al.*<sup>[15]</sup> We observed in this study that CCBs were preferred in elderly patients which is in accordance to the guidelines of National Institute for Health and Care Excellence (NICE).<sup>[16]</sup> The NICE guidelines 2011 also specify that age as a selection of initiating drug therapy; with age <55 years to be started with ACEI and with >55 years to be started with CCB. ARBs and ACEIs were preferred antihypertensive drugs in

**Table 2:** Prescribing pattern of antihypertensive drugs

Group of drugs	Number of male $n=74$ (%)	Number of female $n=38$ (%)
CCB	24 (21.4)	11 (9.8)
ARB's	17 (15.2)	9 (8.0)
ACEIs	10 (8.9)	6 (5.3)
ARBs+CCB	07 (6.2)	04 (3.6)
ARBs+diuretic	05 (4.5)	01 (0.9)
$\beta$ -adrenergic blockers	0	02 (1.8)
Diuretics	03 (2.7)	0
$\alpha$ -adrenergic blockers+CCB	0	01 (0.9)
Diuretics+CCB	03 (2.7)	01 (0.9)
ARBs+ $\beta$ blockers	01 (0.9)	01 (0.9)
$\beta$ blockers+CCB	03 (2.7)	01 (0.9)
ACEI+ $\beta$ blockers	01 (0.9)	01 (0.9)

CCB: Calcium channel blocker, ARBs: Angiotensin receptor blockers, ACEI: Angiotensin-converting enzyme inhibitor

those patients who have associated nephropathy. Diuretics were most preferred drugs in combination therapy with ARBs, CCBs, and ACEIs. This correlates the previous study done by Johnson and Singh.<sup>[17]</sup> A prescription-based survey is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of physician.<sup>[18]</sup> Continuous supervision of systematic audit is necessary which provides feedback from the physician and helps promote rational use of drugs.<sup>[19]</sup>

## CONCLUSION

In the present study, CCBs were the most frequently prescribed drugs, followed by ARBs and ACEIs in monotherapy. In CCBs, most commonly prescribed was amlodipine. Telmisartan was most commonly prescribed in ARBs. In associated risk factors and comorbid conditions, combination therapy was prescribed. Criteria for the selection of drugs according to the NICE guidelines should be kept in mind during prescription of antihypertensive drugs. Most international guidelines are western world oriented, but we Indians are genetically and ethnically different from these people. There is need of further studies at regular interval to improve the prescribing pattern of antihypertensive drugs so that a more effective guidelines for hypertension can be produced which may be beneficial to the Indian population.

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