



Evaluation of Prescribing Pattern and Adverse Drug Reactions of Antihypertensive Drugs in a Tertiary Care Teaching Hospital: A Prospective Observational Study

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Abstract: Background: Hypertension is one of the most common chronic disorders worldwide and a major risk factor for cardiovascular morbidity and mortality. Rational use of antihypertensive drugs is essential for effective blood pressure control and prevention of complications. Drug utilization studies help assess prescribing trends and identify irrational practices. **Aim:** To evaluate the prescribing pattern of antihypertensive drugs and associated adverse drug reactions (ADRs) in patients attending a tertiary care teaching hospital. **Materials and Methods:** A prospective observational study was conducted over 12 months in the Department of Pharmacology in collaboration with the Department of General Medicine. A total of 350 hypertensive patients receiving antihypertensive therapy were enrolled. Demographic details, drug prescription patterns, monotherapy/polytherapy, class of drugs prescribed, and ADRs were recorded using a structured proforma. ADR causality was assessed using WHO-UMC criteria. Data were analyzed using descriptive statistics. **Results:** Among 350 patients, 204 (58.3%) were males and 146 (41.7%) females. Mean age was 54.6 ± 12.8 years. Calcium channel blockers were the most commonly prescribed class (32.6%), followed by angiotensin receptor blockers (27.4%), beta blockers (16.9%), ACE inhibitors (11.1%), and diuretics (12.0%). Monotherapy was prescribed in 162 (46.3%) patients, while combination therapy was used in 188 (53.7%) patients. ADRs were reported in 61 patients (17.4%), with pedal edema, dizziness, dry cough, fatigue, and bradycardia being common. Most ADRs were mild to moderate. **Conclusion:** Calcium channel blockers were the most commonly prescribed antihypertensive drugs. Combination therapy was frequently used. ADRs were mostly mild and manageable. Periodic prescription audits and pharmacovigilance can improve rational use of antihypertensives.

Keywords: Hypertension, antihypertensive drugs, prescription pattern, adverse drug reactions, pharmacology, drug utilization study

INTRODUCTION

Hypertension is a major public health challenge affecting millions worldwide. It significantly contributes to ischemic heart disease, stroke, heart failure, chronic kidney disease, and premature mortality. Effective blood pressure control

substantially reduces cardiovascular complications. Several classes of antihypertensive drugs are available, including calcium channel blockers (CCBs), angiotensin converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), beta blockers, diuretics, alpha blockers, and centrally acting agents.

Selection of therapy depends on age, comorbidities, severity of hypertension, tolerability, and evidence-based guidelines.

Irrational prescribing, underuse of combination therapy when needed, poor adherence, and inadequate monitoring may compromise treatment outcomes. In addition, antihypertensive drugs may produce ADRs such as cough, dizziness, edema, fatigue, electrolyte disturbances, and bradycardia.

Drug utilization studies are important tools to evaluate current prescribing practices and promote rational therapy. Therefore, the present study was conducted to assess the prescription pattern of antihypertensive drugs and associated ADRs in a tertiary care teaching hospital.

Materials and Methods

Study Design

Prospective observational study.

Study Setting

Department of Pharmacology in collaboration with Department of General Medicine of a tertiary care teaching hospital.

Study Duration

12 months.

Study Population

Patients diagnosed with hypertension and receiving antihypertensive medications.

Sample Size

350 patients.

Inclusion Criteria

- Patients aged ≥ 18 years.

- Diagnosed hypertension patients on treatment.
- Willing to provide informed consent.

Exclusion Criteria

- Pregnant women with gestational hypertension.
- Critically ill patients.
- Incomplete prescription records.

Data Collection

The following details were recorded:

- Age and gender
- Duration of hypertension
- Blood pressure status
- Drug class prescribed
- Monotherapy or combination therapy
- Dose and frequency
- Concomitant diseases
- Reported ADRs

ADR Assessment

Causality assessment was done using WHO-UMC scale.

Statistical Analysis

Data were analyzed using Microsoft Excel and SPSS. Results expressed as mean $\pm$ SD, frequencies, and percentages.

Ethical Approval

Approved by Institutional Ethics Committee.

Results

Demographic Profile

A total of 350 patients were included. Males were 204 (58.3%) and females were 146 (41.7%). Mean age was 54.6 ± 12.8 years.

Variable	Number (%)
Male	204 (58.3)
Female	146 (41.7)
Total	350

Mean age = 54.6 ± 12.8 years

Pattern of Antihypertensive Drug Use

Calcium channel blockers were the most commonly prescribed class.

Drug Class	Number (%)
Calcium channel blockers	114 (32.6)
ARBs	96 (27.4)
Beta blockers	59 (16.9)
ACE inhibitors	39 (11.1)
Diuretics	42 (12.0)

Therapy Pattern

Combination therapy was more common than monotherapy.

Therapy Type	Number (%)
Monotherapy	162 (46.3)
Combination therapy	188 (53.7)

Commonly Used Combinations

Combination	Number (%)
ARB + Diuretic	68 (36.2)
CCB + ARB	54 (28.7)
Beta blocker + CCB	32 (17.0)
ACEI + Diuretic	21 (11.2)
Others	13 (6.9)

Adverse Drug Reactions

ADRs were observed in 61 patients (17.4%).

ADR	Number (%)
Pedal edema	18 (29.5)
Dizziness	14 (23.0)
Dry cough	11 (18.0)
Fatigue	9 (14.8)
Bradycardia	6 (9.8)
Others	3 (4.9)

Severity of ADRs

Severity	Number (%)
Mild	39 (63.9)
Moderate	18 (29.5)
Severe	4 (6.6)

DISCUSSION

The present study found that calcium channel blockers were the most commonly prescribed antihypertensive agents, followed by ARBs. This pattern may be due to better tolerability, once-daily dosing, and suitability in elderly patients.

Combination therapy was prescribed in more than half of the patients, indicating the need for multiple agents for adequate blood pressure control. ARB + diuretic was the most common combination, consistent with guideline recommendations.

ADRs were reported in 17.4% patients. Pedal edema was the most common ADR, likely associated with calcium channel blockers. Dry cough was commonly seen with ACE inhibitors. Most ADRs were mild to moderate and manageable with dose adjustment or substitution.

These findings emphasize the importance of individualized treatment and regular monitoring.

Limitations

1. Single-center study.
2. Moderate sample size.
3. Long-term adherence not assessed.
4. BP outcome analysis not included.

CONCLUSION

Calcium channel blockers and ARBs were the most commonly prescribed antihypertensive drugs. Combination therapy was frequently used for better BP control. ADRs were mostly mild and manageable. Rational prescribing and active pharmacovigilance are essential for optimal hypertension management.

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