

ANTIHYPERTENSIVE DRUGS PRESCRIPTIONS PATTERN AT A TEACHING  
HOSPITALDr. Ammara Muzaffar<sup>\*1</sup>, Dr. Khuzaima Shakir<sup>2</sup> and Dr. Labika Zulfiqar<sup>3</sup>

Pakistan.

**\*Corresponding Author: Dr. Ammara Muzaffar**

Pakistan.

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## ABSTRACT

**Background:** Hypertension has been managed according to several guidelines, which serve as reference standards. Conversely, countless physicians apply their own knowledge and do not follow the usual guidelines. **Objective:** To assess the pattern of antihypertensive drugs prescribed at Surayya Azeem Teaching Hospital, Lahore. **Methodology:** This cross study was conducted from January to August 2018 on 200 outdoor hypertensive patients with and without, diabetes mellitus and asthma. Information obtained from patients included age, sex, economical status, history of diabetes mellitus, asthma and number and classes of antihypertensive medications used. The data collected was analyzed statistically, by using SPSS version 20. **Results:** It was observed that 38% of hypertensive patients on mono-therapy were controlled by CCB while 28% by ARB, 20% by ACEI and 14% by beta blockers and 78% of Hypertensive patients on polytherapy were prescribed combination of CCB+ARB while 18% ARB+D and 4% CCB+ARB+D. In diabetes group, 32% of hypertensive patients with diabetes mellitus were prescribed CCB while 30% CCB+ARB, and 6% beta blockers. In asthma Group 56% of hypertensive with asthma was treated with CCB, 22% with ARB, 9% with CCB+ARB, 9% with ARB+D and 4% with ACE inhibitors. The most commonly prescribed drugs were amlodipine, lisinopril, losartan, valsartan, and hydrochlorothiazide. **Conclusion:** The prescribing pattern for treatment of hypertension alone and with diabetes mellitus or asthma, in Surayya Azeem Teaching Hospital, Lahore, was found as per JNC8 and NICE guide lines. Primary care physicians can control their hypertensive patients with drugs mentioned above alone or in combinations with confidence.

**KEYWORDS:** Hypertension, Antihypertensive, guidelines, Diabetes, Asthma.

## INTRODUCTION

Hypertension is the commonest cardiovascular illness and its proper management substantially reduces morbidity and mortality rates.<sup>[1]</sup> It is of course an important public health concern. Scientific and clinical evidence clearly shows that controlling blood pressure (BP) with suitable drugs lowers the risk of heart attacks, strokes, heart and renal failure in patients with hypertension.<sup>[2]</sup> By 2025, an estimated 1.56 billion persons will suffer from hypertension. The consistently rising trend in the frequency of hypertension and the huge amount of money involved in treatment leads to manipulation in prescribing patterns of much doctors.<sup>[3]</sup> Controlling blood pressure greatly improves the prognosis of patients with hypertension.<sup>[4]</sup> Moreover, Hypertension has been managed according to several guidelines which serve as reference standards It is a well-known fact that treatment strategies of hypertension have wide variations in many countries. The initial drug of choice for hypertension has changed from diuretic to ACEI/ ARB/ CCB. Most of the doctors today prefer low dose combination single pill therapy instead of monotherapy.<sup>[5]</sup> According to the recent guidelines by the

Joint National Commission (JNC8 guidelines) both calcium channel blockers as well as Angiotensin-converting enzyme inhibitors are recommend as first-line agents, along with diuretics.<sup>[6]</sup> Most of the clinicians now keep a record of their own prescribing pattern in treating patients with hypertension according to socioeconomic conditions of patients and their clinical experience. A critical review of such records of prescribing practices of physicians and their adherence to the standard guideline such as JNC 8 may yield very useful results. The objective of this was to study the prescribing pattern of drugs used in the management of patients suffering from hypertension alone and hypertension with diabetes mellitus or asthma in Surayya Azeem Teaching Hospital, Lahore.

## METHODOLOGY

An observational, cross sectional study was conducted from January to August 2018, among outdoor patients in Surayya Azeem Teaching Hospital, Lahore. The patients of ages (20-80 yrs.) and of both sexes were selected from medical outdoor clinics and indoor wards of Surayya Azeem Teaching Hospital, Lahore.

Comprehensive questionnaire was developed to find out socio-demographic data and prescribed drugs alone or in combinations, for hypertensive patients of following groups;

Group A- 50 patients of hypertension (receiving monotherapy).

Group B- 50 patient of hypertension (receiving polytherapy)

Group C-50 hypertensive patients with diabetes mellitus

Group D- 50 hypertensive patients with asthma, However hypertensive patients of complications like acute stroke, recent MI, advanced heart and kidney failure were excluded. Formal consent was taken from patients for interview and collection of data. The study was approved by IRB of Surayya Azeem Teaching Hospital, Lahore. The data was entered and analyzed by using SPSS version 20.

## RESULTS

### Group A. (hypertensive patients receiving monotherapy)

It was found that 64% patients were females and 36% were males while 58% of patients were between 41-60 years of age, 30% were between 61-75% years, 6% were between 25-40 years and 6% were above 76 years. Most of the patients were belonging to middle class (64%) economically 20% were rich and 16% were belonging to low financial status, 32% reported of cases were fresh while 68% of cases were old (already taking medicine). Majority of patients (38%) were prescribed CCB (amlodipine, diltiazim), 28% were prescribed ARBs (losartan, valsartan etc.), 20% were given ACEI (lisinopril, captopril) and 14% of patients were prescribed beta blockers (atenolol, bisoprolol, nebivolol, and propranolol). (Figure I)

### Group B (hypertensive patients receiving polytherapy)

It was found that 64% patients were females and 36% were males while 58% of patients were between 41-60 years of age and 30% were between 61-75 years 8% were between 25-40 years and 4% were above 76 years. Most of the patients were belonging to middle class (64%) economically, 16% were rich and 20% were belonging to low financial status and 24% of reported cases were fresh while 76% of cases were old (already taking medicine). Majority of patients (78%) were prescribed combination of calcium channel blockers and angiotensin receptor blockers (CCB+ARB) Amlodipine+losartan/valsartan, 18% of patients were given combination of ARB+D (losartan+hydrochlorothiazide). Combination of CCB+ARB+D (amlodipine+valsartan+hydrochlorothiazide) was prescribed to 4% and CCB+BB (amlodipine +labetalol or bisoprolol) to 4% of patients and diuretics to 2% of patients. (Figure II) 64% of patients were satisfied with drug treatment while 36% patients were not satisfied.

### Group C (hypertensive patients with diabetes mellitus)

It was found that 56% of patients were female and 44% were males. 64% patients were 41-60 years old while 32% were between 61-75 years and 4% were above 76 years. 68% of patients were belonging to middle class economically, 20% were rich and 12% were belonging to low financial status. 90% of reported cases were old while only 10% of cases were registered first time. On analysis of prescription it was found that 32% patients were prescribed CCB (amlodipine), 30% of patients were given CCB+ARB (amlodipine + valsartan), while 12% of patients were controlled by ARBs (losartan) and 10% by ACEI (lisinopril). 6% of patients were prescribed beta blockers (metoprolol, atenolol, bisoprolol) 6% of patients were given combination of ARB+D (losartan + hydrochlorothiazide) and 4% patients required combination of three drugs CCB + ARB + D (amlodipine / losartan / hydrochlorothiazide). (Figure III)

**Group D (hypertensive patients with Asthma)** It was observed that 55% of patients in this group were female and 45% were male. 60% of patients were between age of 41-60 years, while 31% were between 61-75 years old and 9% were above 75 years. Majority of patients (98%) were belonging to middle class economically and 2% were belonging to low economic status. It was observed that 56% of patients were controlled only with CCB (amlodipine), 22% of patients were controlled by ARB (losartan), and 9% with combination CCB+ARB (amlodipine valsartan), 9% with ARB+D (losartan+hydrochlorothiazide) and 4% with ACE inhibitor (lisinopril) only. 98% of patients observed were old while only 2% of patients came for first time.

### Monotherapy and polytherapy

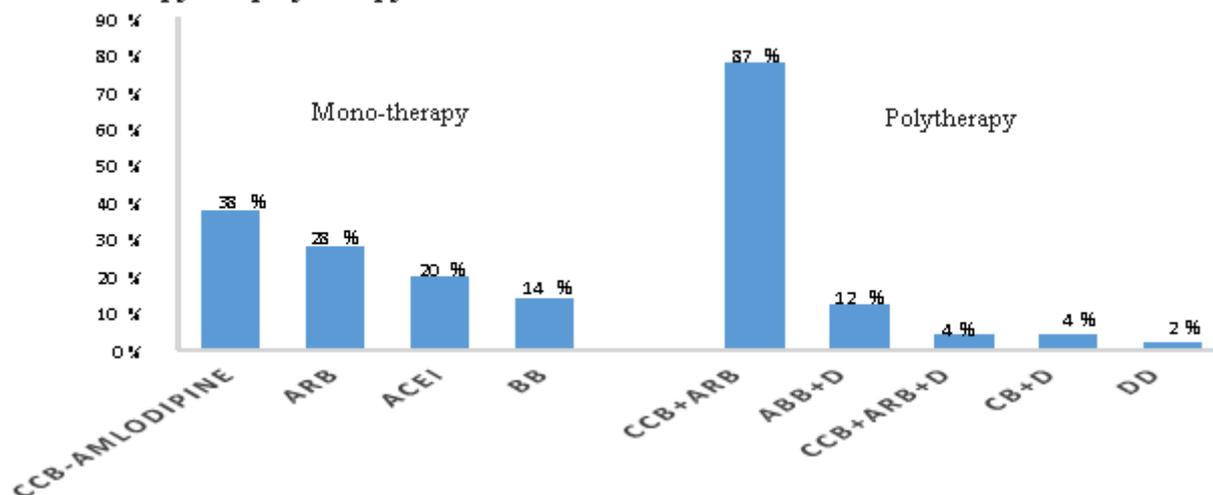


Figure I: Drugs prescribed for patients on.

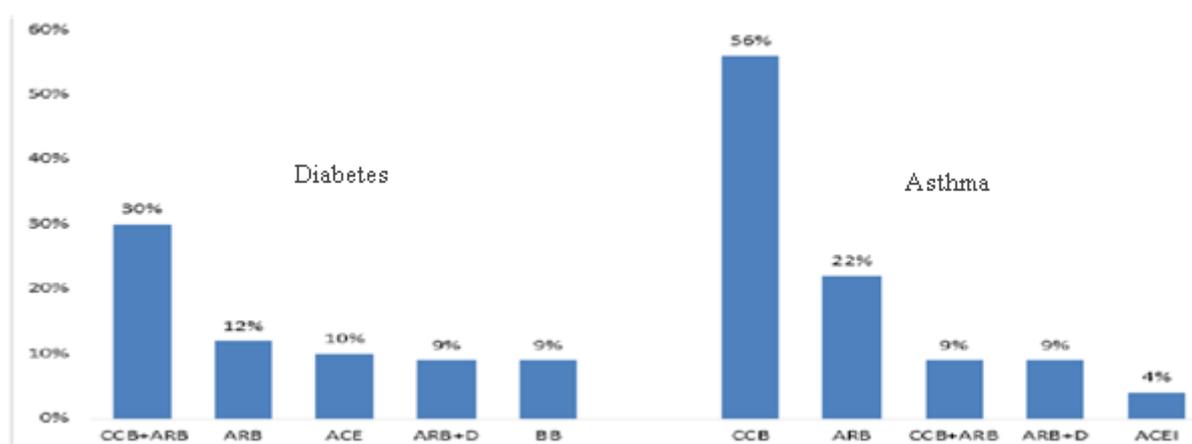


Figure II: Hypertensive treatment versus diabetes mellitus and asthma.

### DISCUSSION

Overall the prescribing pattern for treatment of hypertension alone and with diabetes mellitus or asthma, in Surayya Azeem Teaching Hospital, Lahore, was found as per JNC guide lines and NICE guide lines. The most commonly prescribed antihypertensive medications in this study were CCBs and ACEIs/ARBs. This prescribing pattern is also in accordance with a study conducted in China in by Xu H et al in 2015.<sup>[7]</sup> Most commonly prescribed combination was CCB+ARB (amlodipine+ losartan/valsartan) i.e. 30% of total patients. It is in accordance with NICE guidelines 2016.<sup>[8]</sup> Hypertensive patients with diabetes were prescribed CCB and CCB+ARB most commonly. Feldman Ross D reported that the evidence to date supports the recommendation of both ARB/diuretic and ACE inhibitor/calcium channel blocker as the preferred single-pill combinations for initiating antihypertensive therapy.<sup>[9]</sup>

Similarly hypertensive patients with asthma were prescribed CCB (Amlodipine) alone or with Losartan. As far as incidence of individual drug prescription is

concerned it was observed that Amlodipine was prescribed to 41%, losartan to 19% and lisinopril to 9.3% of patients. This is in accordance with a study published in Open heart journal in 2016.<sup>[10]</sup> but is in contrary to NICE guide lines which state that treatment should be initiated with ACEI/ARB to patients below 55years and CCB are first line drugs for patients above 55 years, but Hicks et al in 2018 reported that the use of ACEIs was associated with an increased risk of lung cancer. This association was particularly elevated among people using ACEIs for more than 5 years.<sup>[11]</sup> While in study by Aliyo et al., it was reported that Lisinopril either alone or in combination with other antihypertensive drugs was found to be the most frequently prescribed anti-hypertensive (45.2%), followed by amlodipine (15.8%). Angiotensin converting enzymes inhibitors plus calcium channel blockers (ACEIs+CCBs) was found to be the two-drug combination most frequently prescribed (60.0%).<sup>[12]</sup> it is in consistent with our prescribing pattern. Shirley M and Paul L.M, demonstrated in short-term randomized controlled trials, that perindopril/amlodipine fixed dose combination was significantly more effective in reducing blood pressure

(BP) than monotherapy with either of the component drugs.<sup>[13]</sup>

In this study thiazide diuretics were not prescribed as first line in contrary to JNC8 guide lines. But it is in accordance with NICE guide lines which report that thiazides should be started if patient is not controlled by CCB or ACEI/ARBs. Palmer et al also suggest that the combination of a RAAS inhibitor and a dihydropyridine calcium channel blocker may provide more cardiovascular benefit than the generally recommended combination of a RAAS inhibitor and a diuretic in patients at high risk for cardiovascular events.<sup>[14]</sup> This is in consistent with our study. Moreover it is reported that First-line high dose thiazides and beta blockers are inferior to first line low-dose thiazides.<sup>[15]</sup>

## CONCLUSION

The prescribing pattern for treatment of hypertension alone and with diabetes mellitus or asthma, in Surayya Azeem Teaching Hospital, Lahore, was found as per JNC8 and NICE guide lines. Primary care physicians can prescribe their hypertensive patients with drugs mentioned above alone or in combinations with confidence.

**Conflict of Interest:** None.

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