

Antihypertensive Medication Use Pattern in A Tertiary Care Hospital in New Delhi, India for Opd Visiting Patients

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ABSTRACT

40% of people aged 25 and older are thought to have systemic hypertension, according to estimates from the World Health Organisation (WHO). Surprisingly, only 55.6% of patients from high-income countries and 29.6% from low-income countries were able to obtain treatment. Finding out how frequently patients take antihypertensive drugs was the aim of this investigation. 500 people had antihypertensive medications given to them for the research. In a tertiary care hospital in New Delhi, India, a prospective cross-sectional study was conducted over the course of six months. Patients with hypertension took part in the study that was conducted at the hospital's Out Patients Door (OPD). Patients who are 80 years of age or older are not permitted to take part in the study. Data that was appropriate was gathered, and the pattern of antihypertensive medicine use was evaluated. 63% of patients were under 60 and 37% were over 60, making up the majority. The survey found that angiotensin-converting enzyme (ACE) inhibitors (384), either alone or in combination, were the most frequently given type of drug. Double therapy was the most often used type of combination therapy, using 31.6% of the time, followed by triple therapy (4.0%) and four drugs (0.2%). Our investigation came to the conclusion that since the majority of patients had comorbid illnesses, combined therapy was preferred. When drug use patterns were analysed in our study, telmisartan was the first-line antihypertensive medicine that was most commonly prescribed. 1..

Keywords: Antihypertensive drugs, Telmisartan, Angiotensin-converting enzyme (ACE) inhibitors, Out Patients Door, Combination therapy..

1. INTRODUCTION

According to estimates from the World Health Organisation (WHO), systemic hypertension affects 40% of persons aged 25 and older [1]. Surprisingly, only 29.6% of patients from low-income nations and 55.6 percent from high-income nations were able to receive care [2]. The WHO estimates that high blood pressure is responsible for 7.5 million fatalities, or an estimated 12.8% of all deaths globally, and 57 million adjusted for disability years (DALYs), or 3.7% of all DALYs [3]. While anti-hypertensive medications are used to treat hypertension (HTN), the incidence of stroke, myocardial infarction, and heart failure has decreased by 35–40%, 20–25%, and more than 50%, respectively [4]. Throughout one billion people throughout the world suffer from hypertension, with 234 million adult sufferers in India by 2019 [5, 6]. Often, it is a chronic, asymptomatic problem that requires ongoing care. You have hypertension (HTN) if your systolic blood pressure is nearly 140 mm Hg or if it consistently exceeds 90 mm Hg [7]. Hypertension (HTN) is still not well regulated in modern times. Some of the explanations include low antihypertensive action of monotherapy, primary care doctors' aversion to modifying or adjusting initially selected therapy to attain target blood pressure, and poor medication compliance [8, 9]. Drug prescribing practises differ from nation to nation and within different regions of each nation [10]. It is crucial to comprehend the current antihypertensive drug trends and how they affect blood pressure monitoring.

Even though many drug use studies have been conducted on certain groups in various settings in India [4], only a small number of them have been done in outpatient settings [5, 6]. Safety utilisation studies were the main focus of the authors' earlier research in several hospital outpatient departments [11, 12]. The outpatient department offers a crucial location for

conducting drug safety research since patients appear with such a wide range of diseases in an urgent scenario and because drug consumption is relatively large. Therefore, by examining prescription prescribing behaviour and the number of visits to the medical outpatient department, it is possible to evaluate the logic of medication therapy being provided in the specific area to a larger or lesser extent.

We can better understand how medicines are utilised in the two phases by doing research on drug use. It can reveal a person's drug usage history and how frequently alternative medicines are utilised to treat severe conditions [13]. It may be used to assess suggested guidelines or guidelines that take into account observed patterns of medication usage for the treatment of a particular illness [14]. The goal of this study was to determine how often people take antihypertensive medications.

2. METHODS

Research plan cross-sectional study that is prospective.

Hospital for tertiary care, study location.

Six months of study (from August 2021 to January 2022).

Study participants

Patients from the Maharaja Agrasen Hospital in New Delhi who have a prescription for an antihypertensive medication.

Samples taken

500 individuals had antihypertensive drugs administered to them.

Patient must have a clinically confirmed diagnosis of hypertension, regardless of concomitant conditions. Both sexes are eligible. Patients who agree to participate in the study are given a chance to do so.

Patients above the age of 80 are not allowed to participate in the research.

Data gathering method

Information gathered from patients through structured questionnaires and direct interviews; Analysis of drug use patterns from each patient's prescription.

The Institutional Research/Human Ethics Committee of the Maharaja Agrasen Hospital in New Delhi gave its approval. The patient and their carer gave their informed permission before the experiment began. The patient case papers might be reviewed with authorization from the hospital administration. All data were utilised solely for the investigation and will remain confidential.

Statistical analysis

The Statistical Package for the Social Sciences trial version 18.0 was used to examine the data after it had been entered into a Microsoft Excel sheet. Percentages will be used to express qualitative characteristics. The mean, standard deviation (SD), and confidence interval for quantitative variables will be used to express the data.

3. RESULTS

A total of 500 patients were included in this prospective trial; of them, 279 (55.7%) were men and 221 (44.2%) were women. According to **Table 1**, the study population's mean age was 55.07 (11.01) years. According to the table's findings, out of 500 patients, 37% and 63% of them were under 60 years old, respectively. This study also revealed that 31% of patients do not have a family history of hypertension whereas 69% of patients have. Regarding social behaviours, 141 patients smoked, 117 patients drank alcohol, 316 patients were non-drinkers, and 359 patients did not smoke (**Table 1**).

Table 1: Baseline characteristics of all hypertensive patients.

Gender	Frequency(n)	Percentage
Male	279	55.8
Female	221	44.2
Age group		
≤ 60 yrs	315	63
≥ 60 yrs	185	37
Family history		
Yes	345	69
No	155	31
Social habits		
Alcoholic	117	23.4
Non alcoholic	316	63.2
Occasional	67	13.4
Smoking		
Non-Smoking	359	71.8
Smoking	141	28.2

According to JNC-8, the recruited patients were divided into groups depending on their blood pressure levels. Out of 500 individuals, the majority (10.6% have systolic blood pressure and 10.2% have diastolic blood pressure) had stage 1 hypertension. Systolic blood pressure in stage 2 hypertension is present in 2% and diastolic blood pressure in 1.4% of cases (Table 2).

Table 2: Distribution of patients according to blood pressure

Blood Pressure	SBP (mm Hg) DSP (mm Hg)	SBP (mm Hg)		DSP (mm Hg)	
		Frequency	Percentage	Frequency	Percentage
Normal	≤ 120 ≤ 80	257	51.4	239	47.8
Pre-hypertension	120-139 80-89	180	36	203	40.6
Stage 1 hypertension	140-159 90-99	53	10.6	51	10.2
Stage 2 hypertension	≥160 ≥100	10	2	7	1.4

Co-morbid conditions like renal failure, diabetes, stroke, and heart disease are frequently found alongside hypertension.

About 452 patients (84.6%) out of 500 patients had comorbidity. Coronary artery disease (CAD) was present in 40.8% of patients, followed by diabetes (33.4%), dyslipidemia (40%), hypothyroidism (17.6%), chronic kidney disease (CKD) (28.6%), and stroke (9%), according to (**Table 3**).

Table 3: Distribution of patients according to comorbidities

Comorbidities	Frequency	Percentage
CAD*	204	40.8
Diabetes mellitus	167	33.4
Dyslipidemia	200	40
Hypothyroid disease	88	17.6
CKD*	143	28.6
Stroke	45	9
Heart failure	67	13.4
Post MI	55	11
co-morbidities	423	84.6
No co-morbidities	77	15.4

*CKD: Chronic kidney disease, *CAD: Coronary artery disease

179 patients (35.8%) were getting combination therapy, whereas only 133 patients (26.6%) were undergoing monotherapy, according to (**Figure 1**).

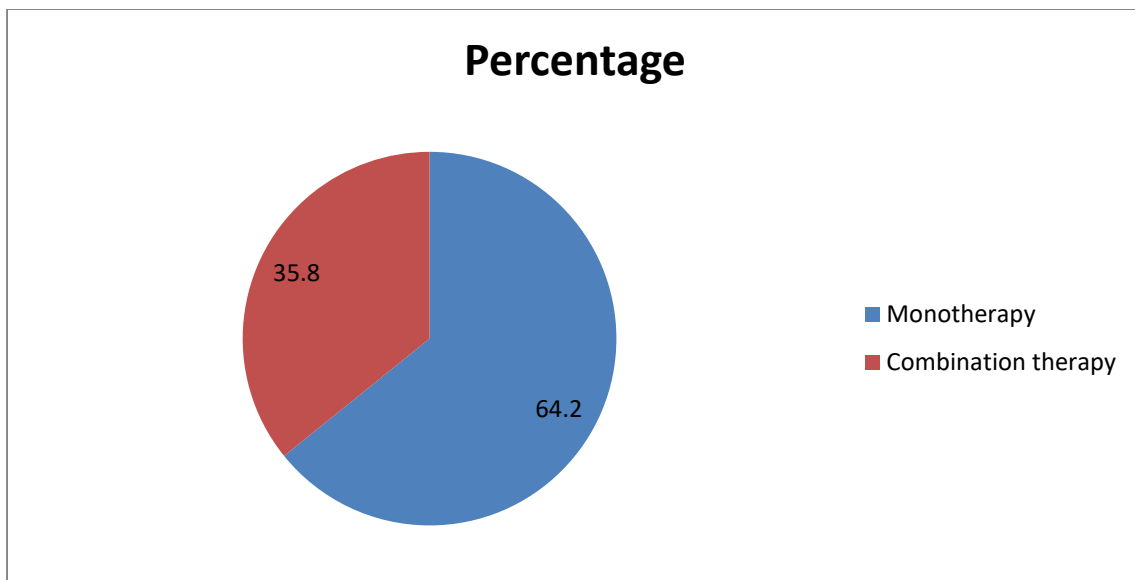


Figure 1: Distribution of patients according to monotherapy and combination drug therapy.

In this trial, 321 patients received monotherapy in which telmisartan was administered to 64.2% of patients, followed by hydrochlorothiazide (16.18%) and metoprolol (10.17%). Less commonly was ramipril used (**Table 4**).

Table 4: Patients on Monotherapy

S.No	Monotherapy drug	No of Patients	Percentage
1	Amlodipine	22	6.853582555
2	Losartan	10	3.115264798
3	Telmisartan	202	62.92834891
4	Metoprolol	26	8.099688474
5	Clindipine	0	0
6	Olmesartan	5	1.557632399
7	Ramipril	2	0.62305296
8	Bisoprolol	50	15.57632399
9	Propanalol	2	0.62305296
10	Carvedilol	1	0.31152648
11	Spironolactone	1	0.31152648
	Total	321	

The most popular form of combination therapy was double therapy, which was utilised 31.60% of the time, followed by triple therapy (4%), four-drug therapy (0.2%), and five-drug therapy (0%), as shown in (Table 5).

Table 5: Distribution of patients according to combination drug therapy

Combination	therapy Frequency	Percentage
Mono-therapy	321	64.2
Double-therapy	158	31.6
Triple-therapy	20	4
Four drug therapy	1	0.2
Five drug therapy	0	0

Angiotensin converting enzyme inhibitors (384) were the most often prescribed class of antihypertensive medications, according to (Table 6).

Table 6: Distribution of prescription according to various class of antihypertensive drug prescribed

Antihypertensive class	Name of the drug	Frequency	Percentage
Calcium channel blocker	Amlodipine	11	1.695
	Clindipine	19	2.928
Angiotensin receptor blocker	Ramipril	2	0.308
Angiotensin converting enzyme inhibitor	Telmisartan	384	59.17
	Olmesartan	8	1.233
Diuretics	Spironolactone	1	0.154

	Hydrochlorthiazide	105	16.18
Alpha blocker	Parazosin	0	0
Beta blocker	Metoprolol	66	10.17
	Bisoprolol	50	7.704
	Propanalol	2	0.308
	Carvedilol	1	0.154
Centrally acting drugs	Clonidine	0	0
Vasodilators	Hydralazine	0	0

Telmisartan (59.17%) was the most frequently prescribed medicine in this class, followed by hydrochlorothiazide (16.18%) and metoprolol (10.17%). Hydrochlorothiazide (16.18%) is the diuretic that is most frequently administered. Among the Beta-blockers metoprolol is now considered as first-line drug when having compelling indications like coronary disease risk and myocardial infraction.

4. DISCUSSION

A total of 500 patients were included in this trial, which was carried out at the outpatient dispensary of the Maharaja Agrasen Hospital in New Delhi. The investigation lasted for six months. 279 patients (55.8%) of the study's participants were men, and 221 (44.2%) were women. This was comparable to another study carried out by Amit Sharma et al., in which 55.3% of men and 44.7% of women participated [8]. The majority of patients (63% were under 60 years old and 37% were over 60 years old). In the study population, the mean age was 59.69 years. In the Chandigarh research, Dhanaraj et al. likewise showed that the mean SD age was 56.510.1 [9]. 69% (345) of the individuals in our research have a family history of hypertension. Adult blood pressure levels according to JNC-8 were used to categorise the enrolled individuals [11]. This research by Cidda [12] found that out of 500 patients, the majority of them had stage 1 hypertension. Typically, high blood pressure is linked to According to the analysis of the current study, monotherapy was used to treat 64.2% of patients, while combination treatment was used to treat 35.8% of patients. Another set of investigations [14–16] established a similar report. Patients who got monotherapy were treated with Telmisartan 59.17% of the time, Hydrochlorthiazide 16.18% of the time, Metoprolol 10.17% of the time, Bisoprolol 7.70% of the time, Amlodipine, Olmesartan, and Ramipril 2% to 3% of the time. More than two thirds of people with hypertension can normalise their blood pressure with monotherapy. This finding was comparable to that of studies by Varakantham et al. and Jarari et al., in which amlodipine was the most often used medication [17, 18]. The most popular form of combination therapy was double therapy, which was utilised 31.6% of the time, followed by triple therapy (4.0%) and four medications (0.2%). According to Rakesh et al., the most popular combination therapy was a double medication therapy [19]. According to the study, the most frequently prescribed class of medication was calcium angiotensin-converting enzyme (ACE) inhibitors (384), either alone or in combination. The majority of patients received Telmisartan as their first-line ACE inhibitor (59.17%), followed by Olmesartan (1.23%). Angiotensin-converting enzyme (ACE) inhibitors were the most often utilised pharmacological class, according to the study by Varakantham et al. and Sandeep et al. [17, 20]. When there are strong indicators, such as a risk of coronary disease or myocardial infarction, beta-blockers are currently thought to be the first-line treatment. Metoprolol was used to treat 82.18% of patients, nebivolol to treat 12.55% of patients, atenolol to treat 4.04 patients, and bisoprolol and propranolol to treat the least number of patients. This was in line with a research by Abdulameer et al. and Metha et al. in which Telmisartan was a significant ACE inhibitor and Metoprolol was the most often prescribed Beta blocker to patients [15,21]. Most people with hypertension respond well to diuretics, ideally thiazides, especially when used in combination treatment. Spironolactone was the second most commonly prescribed diuretic, according to the results.

5. CONCLUSION

The majority of the time, hypertension causes a number of additional illnesses, such as kidney and cardiovascular problems. The two comorbidities that were most often found in our research sample were CAD and Diabetes Mellitus. 30% had a family history of hypertension, and the majority had stage 1 hypertension. Combination therapy was used to treat the majority of the patients, with double drug therapy being the most typical. Given that the majority of patients had comorbid conditions, combination treatment was favoured. Telmisartan was the antihypertensive medicine that was most frequently recommended when drug use patterns were examined. The majority of senior patients were receiving combination therapy, therefore minimising polypharmacy and encouraging wise medication use should be taken into account while prescribing. With the right supervision, fixed-dose combinations may be chosen for older patients. The study's limitations include its single-

centered design and brief follow-up period. More substantial results would have been attained if the study had been carried out with a bigger sample size over a longer period of time.

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