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Evaluation of Drug Information Service provided by Clinical Pharmacy Department based on Provider and Enquirers' Perspective

Kuchake V.G[1], Maheshwari O.D[2], Surana S.J[3], Patil P.H[4], Dighore P.N[5].

1,2,3,4. Department of Clinical Pharmacy, R.C.Patel Institute of Pharmaceutical Education & Research, Shirpur, Dist: Dhule (M.S.), India – 425405

5. M.D.(Medicine), Department of Clinical pharmacy, Indira Gandhi Memorial Hospital, Shirpur, Dhule, Maharashra-425405

**Address for correspondence: msvragavrajan@yahoo.com*

Abstract

Hypertension is not a disease but an important risk factor for cardiovascular complication. This type of medical audit and appropriate feedback on usage of antihypertensive medications may greatly assist the health care providers in rational use of medications.The objective of this study was to evaluate the prescribing pattern and drug utilisation of antihypertensive medications in uncomplicated hypertension. Observational and Prospective study was performed at Indira Gandhi Memorial Hospital, Shirpur, Maharashtra in India. Total 5025 patients visited the medicine ward of Indira Gandhi Memorial Hospital. Among them 244 patients had uncomplicated hypertension. From 1st July, 2008 to 31st December, 2008 Hypertensive medications were divided into 2 main categories; Monotherapy and Combination therapy was defined and discussed separately. During 6 months study period, 510 prescriptions were collected, among them 244 including (132) female & (112) male patients were as per inclusion criteria. Among them, 150 patients were on mono therapy which included 78 female & 72 male patients, comprising 54%(81) on Calcium Channel Blockers, 24.67%(37) on β-Blockers, 11.33%(17) on Angiotensin Receptor Blockers, 6%(9) on Angiotensin Converting Enzyme Inhibitors, 4%(6) on Diuretics respectively, and 38.52% (94) patients on combination therapy. In the view of drug utilisation, it was observed that, the diuretics are less prescribed and calcium channel blockers are frequently prescribed medications in management of hypertension. So, it requires further improvement of prescription pattern of antihypertensive medication for better patient health care.

Key Words: *Anti-hypertensive drugs, drug utilisation, hypertension, prescribing pattern*

INTRODUCTION

Hypertension, a major risk factor for cardiovascular (CV) disease and stroke and one-quarter of the adult population of Western societies suffer from hypertension.[1] Increasing awareness and diagnosis of hypertension, and improving control of blood pressure with appropriate treatment, are considered critical public health initiatives to reduce cardiovascular morbidity and mortality.[2] The Seventh Report of the Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) is the most prominent evidence-based clinical guideline for the management of hypertension.[3] Poor control on hypertension can lead to the development of ischemic heart disease, heart failure, stroke & chronic renal insufficiency.

Indian Journal of Pharmacy Practice
Received on 06/01/2009 Modified on 13/02//2009
Accepted on 17/02/2009

Socio-economic, behavioral, nutritional and public health issues can lead to increase in CV disease throughout the world. A plethora of new drugs are now available, and the quality of life of such people can be improved considerably. A number of drugs in various combinations[4-5] are generally used for effective long-term management. Therefore, drug utilisation studies, which evaluate, analyze the medical, social and economic outcomes of the drug therapy, are more meaningful and observe the prescribing attitude of physicians with the aim to provide drugs rationally[6,7]. The present prescribing study for antihypertensive drugs was undertaken in the outpatient department (OPD) at Indira Gandhi Memorial (IGM) hospital, Shirpur (rural area) Maharashtra for the purpose of assessing the current trend of prescribing pattern of anti-hypertensive drugs. This kind of medical audit can help to make the prescribing practice of physicians more rational and

prudent and thereby help in improving the patient health care.

MATERIALS AND METHOD

The observational and prospective study was carried out at IGM hospital to collect the information of the patients. The Protocol was prepared as per World Health Organization (WHO) guidelines [8] and study was approved by Institutional Human Ethical Committee (IHEC) of R.C.Patel Institute of Pharmaceutical Education & Research, Shirpur.

Study design: This study was observational and prospective conducted over the 6 months periods from 1st July 2008 to 31st December 2008 for assessing prescribing pattern and drug utilisation of antihypertensive drugs in the management of uncomplicated hypertension

Study site: The study was carried out at the Medicine ward of IGM hospital of Shirpur for collection of data.

Study setting: The study was carried out on out patients of medicine ward, who were currently following the treatment of uncomplicated hypertension in IGM hospital, Shirpur.

Source of data: All necccesary & relevant information were collected from out patient department cards, laboratory data report, treatment chart and verbal communication with patients.

Collection of data: The format for the collection of the data is prepared as per WHO based guidelines and the Institutional Human Ethical Committee of R.C.Patel Institute of Pharmaceutical Education & Research, Shirpur which involved patient as well as medication information.

***Inclusion criteria*:** Patients either male or female with age more than 18 years, with History of hypertension or currently diagnosed with hypertension and prescribed with antihypertensive medication.

***Exclusion criteria*:** Patients with other comorbidities like diabetes, other cardiovascular disorders, stroke, asthma, Chronic Obstructive Pulmonary Disease (COPD), arthritis, and other infectious disease.

Statatical Data Analysis

The t- tests (Unpaired, Two tailed) were used for evaluation of mean S.E.M. (Standard Error Mean) of age and blood pressure of patients. A value of P0.05 (two-tailed test) was declared as statistically significant.

RESULTS

During 6 months study from 1st July 2008 to 31st December 2008, total 5025 out patients visited the medicine ward of hospital, among them, 510 patients were diagnosed with hypertension of which 244 had uncomplicated hypertension. The demographic characteristic of all 244 uncomplicated hypertensive patients is seen in Table No. 1.

Figure No. 1 and 2 shows the social history of patients like their occupation and education. The data suggested that elderly patients having more hypertension among more patients were rest. Illiterates are more prevalence than literates.

Overall, 150 (61.48%) patients were treated with a single anti-hypertensive drug and 94 (38.52%) patients were treated with anti-hypertensive drug combinations suggesting that mono-therapies to be dominant in this type of rural area.

Table No 2 shows the details of patients, who were treated with monotherapy. Among them, 81 (54.0%) patients were treated with Calcium Channel Blockers (CCBs), 37 (24.67%) were treated with β-blockers, 17 (11.33%) with Angiotensin receptor blockers(ARBs), 9(6.0%) were treated with Angiotensin Converting Enzyme Inhibitors(ACEIs), and 6(4.0.%) treated with diuretic. Calcium channel blockers were the most frequently prescribed antihypertensive drugs as monotherapy.

Figure No.3 show details of patients treated with combination therapy. Among them 59, (62.78%) were treated with two drugs, 31(32.98%) with three drugs and 4 (4.25%) were treated with 4 drugs.

It was observed that eight different two-drug anti-hypertensive combinations, were prescribed to hypertensive patients (Table no.3), namely:, β –blocker with CCB 23 (32.98%), ARB with diuretic 18(30.51%), CCB with diuretic 6(10.17%), β-blocker with diuretic 4(6.78%), ARB with CCB 4(6.78%), ACEI with CCB 2(3.38%), ACEI with diuretics 1 (1.69%) and ARB with β-blocker1 (1.69%).

The CCB with β-blocker was the most frequently-prescribed two-drug combination in overall population followed by ARB with Diuretic. The CCB with β-blocker were less prescribed in male than female patients due to side effect of β-blockers in male patients. [9]

DISCUSSION

A Prescription-based survey is considered to be one of the most effective methods to assess and evaluate drug utilization of medication. It is also important to consider the recommendations of international bodies on hypertension that help to improve prescribing practice of the physicians and ultimately, the clinical standards. A continuous supervision is therefore required through such kinds of systematic audit that provide feedback from the physician and help to promote rational use of drugs.

Table No.1: Demographic characteristics of 244 uncomplicated hypertensive patients visited at Medicine ward of Hospital during 6 months study

Age (in years)	Male (n =112)	Female (n=132)	All patients (n=244)
18-30	3	2	5 (2.05%)
31-40	9	17	26 (10.66%)
41-50	23	39	62 (25.41%)
51-60	37	30	67 (27.46%)
61-70	24	33	57 (23.36%)
71-80	16	11	27 (11.06%)
Age (year) Mean± S.E.M.	56.57± 1.18 (P< 0.0001)	54.92±1.07 (P< 0.0011)	55.68 ± 0.79 (P< 0.0001)
Blood Pressure Systolic (mmHg) Mean ± S.E.M.	151.2 ± 2.56 (P<0.0001) 90.98±0.97	153.3 ± 1.58 (P<0.0001) 89.24±0.82	152.3±1.342 (P<0.0001) 90.04±0.63
Diastolic (mmHg) Mean ± S.E.M.	(P<0.0001)	(P<0.0001)	(P<0.0001)
Monotherapy	72	78	150 (61.48%)
Combination therapy	40	54	94 (38.52%)

n = number of patients, S.E.M. =Standard Error Mean P=Significant

Table No.2: The Pattern of use of antihypertensive drugs in patients treated with Monotherapy.

Drug classes	Male n=72	Female n=78	Total n=150	% Utilisation
CCB	36	45	81	54.00 %
β-blocker	22	12	37	24.67 %
ARB	6	11	17	11.33 %
ACEI	6	3	9	6.00 %
Diuretic	2	4	6	4.00 %

n = number of patients ACEI: Angiotensin Converting Enzyme Inhibitor, ARB: Angiotensin Receptor Blocker, CCB: Calcium Channel Blocker

Table No.3: The Pattern of use of antihypertensive drugs in patients treated with two drugs combination therapy with different classes.

Two drugs combination	Male n=23	Female n=36	Total n=59	% Utilisation
B + C	6	17	23	38.98
D + E	10	8	18	30.51
C + D	2	4	6	10.17
B + D	2	2	4	6.78
C + E	2	2	4	6.78
A + C	1	1	2	3.38
A + D	0	1	1	1.69
B + E	0	1	1	1.69

n = number of patients A: Angiotensin Converting Enzyme Inhibitors, B: β-blockers, C: Calcium Channel Blockers, D: Diuretics, E: Angiotensin Receptor Blockers

Figure no. 1: Education of Patients.

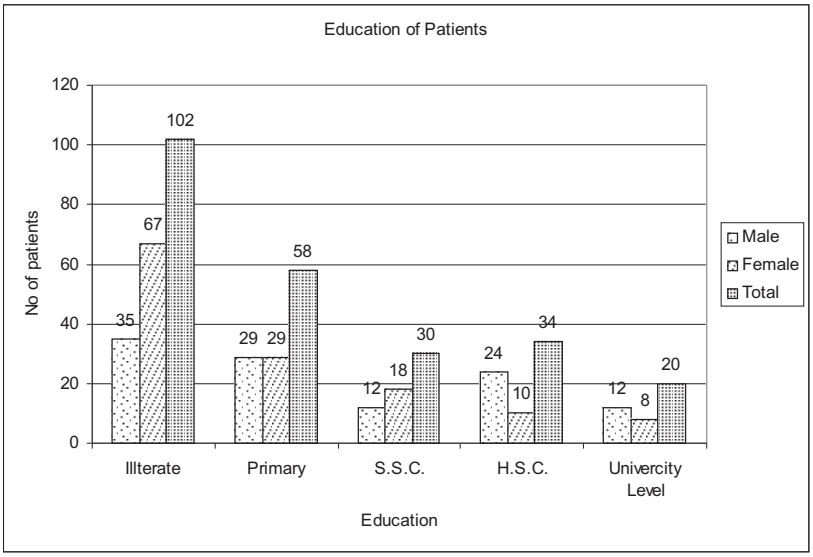


Figure no.2: Occupation of Patients.

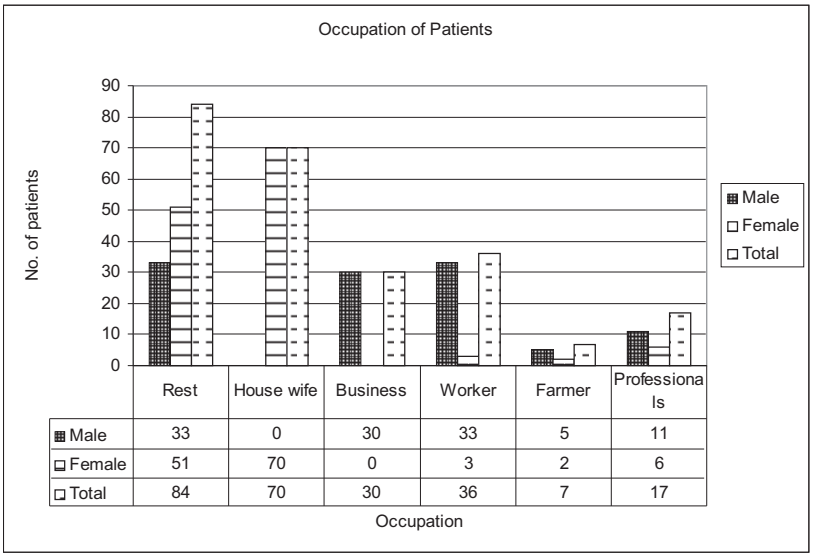
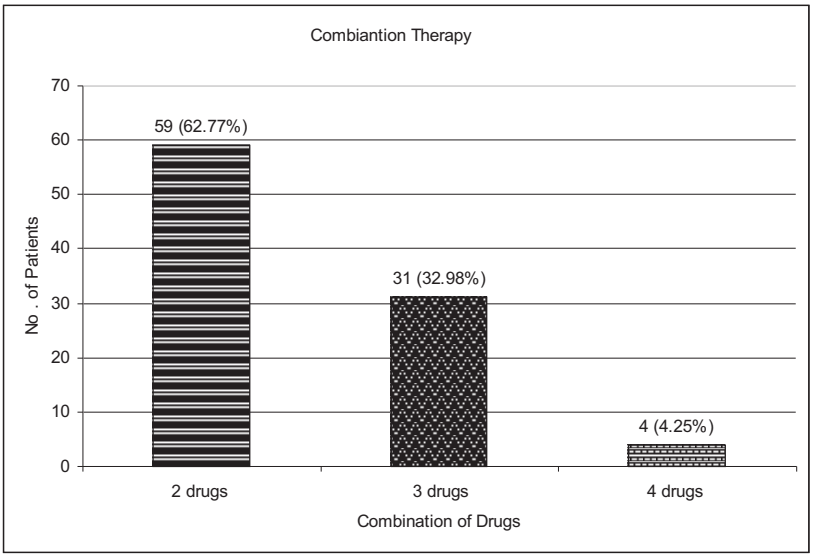


Figure no. 3: The Pattern of use of antihypertensive drugs in patient treated with combination therapy (i.e. 2 drugs, 3 drugs and 4 drugs) with different classes.



*** In this study we collected all details of patients such as his/her name, age, sex, address, phone number, occupation, education, social history, family history, date of check up, present details and also medication details which are medicine name, dose, frequency, route and duration. complaints, blood pressure, disease diagnosed, associated diseases, medical, past history & past medication

The present prospective study observed that hypertension was more prevalent in females than in males. Monotherapy and combination therapy were both more used in females at rates of 59.1% and 40.9% respectively. Further more, combination therapy seems to be a rational approach to reduce the cardiovascular mortality[10]. The present study revealed that calcium channel blockers were the drugs of choice for hypertensive patients as a single drug therapy and overall utilization, followed by β blocker which was less prescribed as a monotherapy. Diuretics are generally recommended as first-line therapy for treatment of hypertension as per Joint National committee VII. Utilization of diuretics in the present study was 4.0% as monotherapy. Lesser use of diuretics in the present study may be due to adverse effect of diuretics on glucose homeostasis and lipid profile [11].

The efficacy of ACE inhibitors and ARB on blood pressure was reported to be marked in patients with an activated renin-angiotensin-aldosterone system [12]. This study showed that overall drug utilization of and Angiotensin receptor blockers and ACE inhibitors was 11.33% and 6.0% respectively, as monotherapy, which was lesser in number as compared to other drugs such as calcium channel blockers and β-blockers (Table no.2) but increasing prescription rate of angiotensin receptor blockers now days than earlier studies.

Tiwari et al. suggested that an ideal combination must include anti-hypertensive drugs possessing complementary modes of action that provide a synergistic anti-hypertensive effect without any significant adverse effects, at low doses. Furthermore, the anti-hypertensive drug combination therapy should be able to minimise or counteract the reflex compensatory mechanisms that often limit the fall in blood pressure [13]. In the present study, two-drug combinations were mostly prescribed (62.78%), followed by three-drug combinations (32.98%) and four drug combination (4.25%) (Figure no.3).

In two-drug combinations, a β-blocker with a calcium channel blocker (Tablet Amlopin AT combination of Atenolol 50 mg and Amlodipine 5 mg) were most often prescribed (38.98%), Table no.3), followed by a ARB with diuretics (Tablet LoasrH50 combination of losartan 50 mg and hydrochlorothiazide 12.5 mg) (30.51 %). A β-blocker with a calcium channel blocker was prescribed more in females than males. The more likely reason for this gender difference may be related to the adverse effect of β-blockers on sexual function in men [14].In this form of combination and in addition to its favorable complementary synergistic effects, β-blockers tend to blunt the troublesome complementary reflex tachycardia induced by the short-acting dihydropyridine (DHP) class of calcium channel blockers. The latter may additionally counteract any peripheral vasoconstriction caused by the former. Their combined efficacy has been confirmed without causing adverse drug interaction or poor tolerability. The fixed combination of β-blocker and calcium channel blocker provides efficiency and tolerability in the treatment of arterial hypertension.

Pharmacists play an important role in educating the patient about the drugs and dosage schedule. It was noticed that pharmacists who distribute the medicines did not give adequate written or oral instructions.

CONCLUSION

Prescription pattern varies with age, gender and other complications associated with hypertension. In view of often costly drugs for long term treatment, it is necessary that monitoring of their use, its co-relationship with clinical out comes and quality of life is essential to ensure the optimal use of health care resources. It is found from the study that the prescription of diuretics in hypertension is comparatively low whereas the calcium channel blockers are widely prescribed. The overall findings of the study show that there is need for further improvement in the prescription pattern of anti-hypertensives

ACKNOWLEDGEMENT

The authors appreciate the co-operation of all the health care providers of Indira Gandhi Memorial Hospital and patients who participated in this study.

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