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A study on drug prescription pattern of antihypertensives in a tertiary care hospital

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ABSTRACT

Background and Aim: Hypertension is an important public health challenge because of the associated morbidity and mortality caused by cardiovascular diseases and the cost to the society. Methods and Results: The study group consisted of four hundred patients who attended the outpatient department of Medicine at Medical College, Thiruvananthapuram. At base line, patient demographics, family history which includes previous history of hypertension and any other co-morbidity were assessed using the preform. The cost of antihypertensives has to be determined by using the information available from the Kerala Medical Services Corporation Limited (KMSCL), and National Pharmacy Pricing Authority (NPPA). The salient findings of the study are: 60.5% were females and 39.5% were males. Majority of the patients were under the age group of 60-69 (31.5%), 70- 79 (25%) and 50-59 (22.5%). 50.8% patients were treated with monotherapy and 49.3% patients were treated with combination therapy. During the cost analysis, the mean cost of antihypertensive was found to be Rs.0.30 in monotherapy and in combination therapy it was found to be Rs.1.2. Conclusion: The present study represents the current prescribing trend for antihypertensive agents and it highlights certain shortcomings in the existing prescribing practice.

Keywords: Hypertension, Antihypertensives, Monotherapy, Combination therapy.

INTRODUCTION

Cardiovascular diseases have emerged as an important health problem in India. In India cardiovascular diseases cause 1.5 million deaths annually [1]. According to Joint National Committee (JNC 7), hypertension is defined as a systolic blood pressure (SBP) higher than 140 mmHg or a diastolic blood pressure (DBP) higher than 90 mmHg; the diagnosis is based on the average of two or more readings taken at each of two or more visits after an initial screening [2]. Despite the prevalence of hypertension and its associated complications, only 29% of patients with hypertension are treated, and only 45% of those treated with antihypertensive medications have controlled disease. Now a day's hypertension remains poorly controlled. It is due to multiple factors including low antihypertensive efficacy of

single drug therapy [3], reluctance of primary care physicians to modify or titrate initially chosen therapy to obtain target blood pressure, and poor compliance with medication. Several guidelines for the treatment of high blood pressure now include combination therapy with low doses of two drugs as one of the strategies for the initial management of mild or moderate arterial hypertension [4]. Commonly used combination anti hypertensives include, diuretic and potassium sparing diuretics, beta blockers and diuretics, angiotensin-converting enzyme (ACE) inhibitors and diuretics, angiotensin- receptor II antagonists and diuretics [5], and calcium channel blockers and ACE inhibitors. The National Health and Nutrition Examination Survey (NHANES) report showed that blood pressure is controlled to a level below 140/90 mm Hg in only 27 percent of patients diagnosed with hypertension [6]. Because monotherapy is effective in achieving this target goal in only about 50 percent of patients, treatment with two or more agents from different pharmacologic classes is often necessary to achieve adequate blood pressure control [7]. It is therefore important to understand current antihypertensive medication utilization patterns and to study their impact on blood pressure control and hypertension-related clinical outcomes [8].

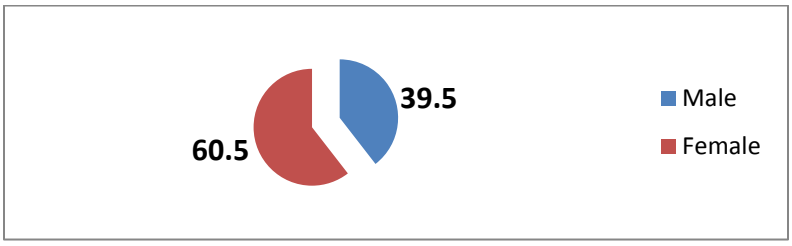
MATERIALS AND METHODS

It was a cross sectional study, The study was started after getting clearance from Human Ethics Committee, Medical College [9], Thiruvananthapuram, the study duration was four months. The out patients with hypertension, attending the department of medicine were enrolled in the study. The consent of the selected patients were taken in the prescribed format (Appendix II). At baseline, subjects demography (which includes age, gender, education, income), family history which includes previous history of hypertension [10], and any other co-morbidities were assessed using the proforma. The monotherapy and combination therapy of anti hypertensives used by the patients was noted from the patient case sheet [12]. A separate data entry format (Appendix I) was designed. The drug chart was also included in the data entry format. Data was collected from the patient case sheet and transferred to data entry format for evaluation [13]. Cost benefit analysis was conducted by taking direct cost of drug alone, for that cost was determined from Kerala Medical Services Corporation Limited (KMSCL), the authorized procuring agent for government institution in the state of Kerala [14]. And the drugs which are not supplied by KMSCL the cost was evaluated from National Pharmacy Pricing Authority (NPPA) [15]. The data were entered in Microsoft Excel format and the statistical analysis was done by using Statistical package for the Social Sciences (SPSS) for windows version 11.0. Chi-Square tests, Student t-test, ANOVA are the statistical technique used [16].

RESULTS AND DISCUSSION

Gender distribution of patients

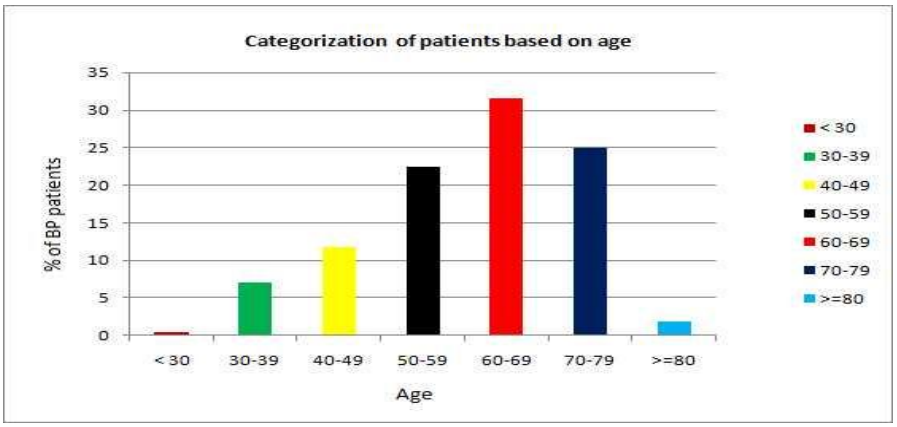
The study group consisted of 242 females (60%) and 158 males (39.5%). The literate women are more in Kerala; hence women were more aware about their health compared to men. Framingham Heart study investigators recently reported the life time risks of hypertension were 86 to 90% in women and 81 to 83% in men.



Age distribution of patients

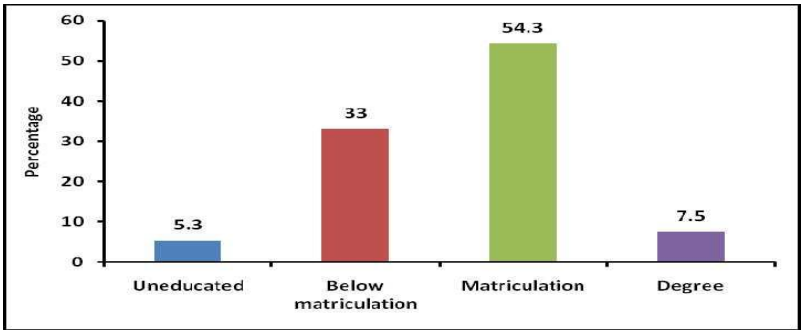
According to age, total population was divided in to seven groups. Result shows that 60-69 age groups occupy higher percentage of 31.5% and lowest 0.5% in below 30 age group. 25% were between 70-79 years, 22.5% were between 50-59 years, 11.8% were between 40-49 years, 7% were

between 30-39 years, 1.8% was between above 80 age group.



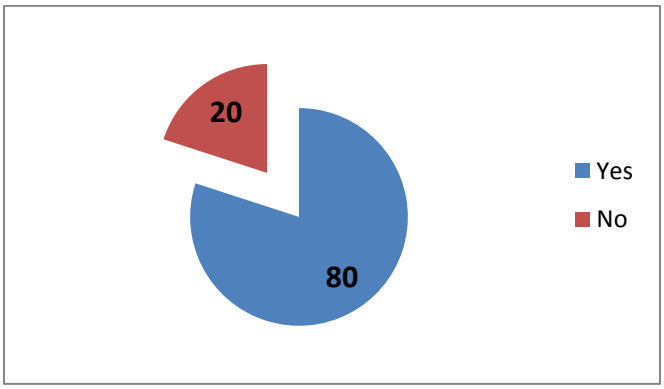
Education

Out of the total population included for the study, 5.3% were uneducated, 33% were below matriculation, 54.3% were matriculation, and 7.5% were graduated**.**



Family history of hypertension

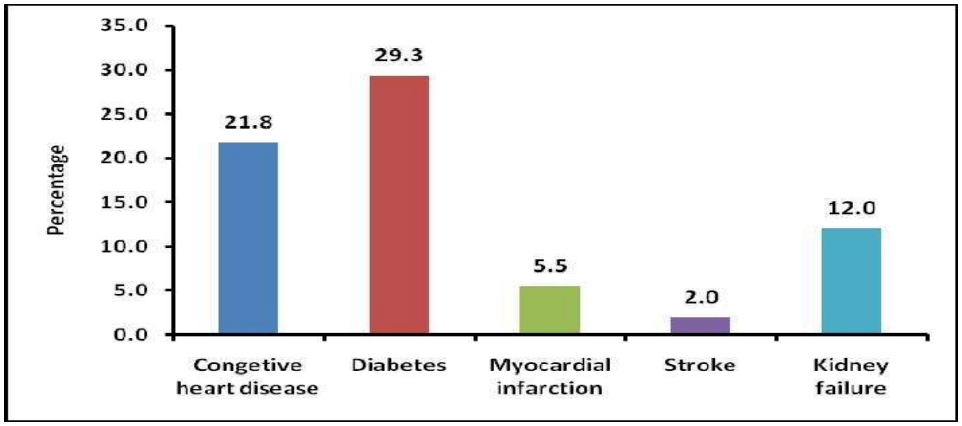
A total of four hundred patients, 320 patients having family history of hypertension and 80 patients having no family history of hypertension.



Co-morbidities

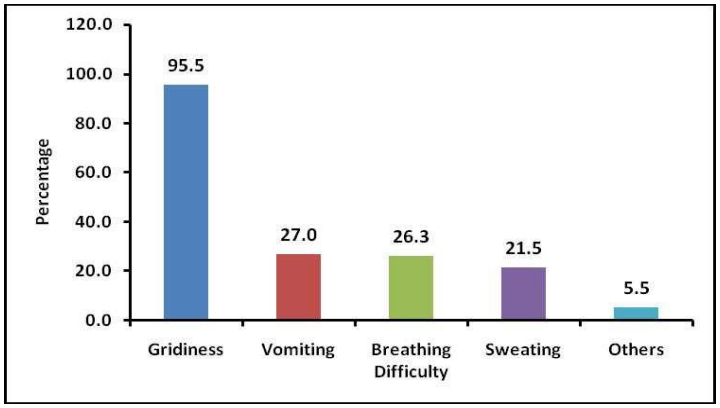
Hypertension usually associated with co-morbidities such as congestive heart failure, diabetes, myocardial infarction, stroke, kidney failure, etc. The analysis of this study population shows that 29.3% had diabetes, 21.8% had congestive heart failure, 12% had kidney failure, 5.5% had myocardial infarction, and 2% had stroke. Hence hypertension is an important risk factor for these disorders. The relationship between

BP and risk of CVD events is continuous, consistent, and independent of other risk factors. The higher the blood pressure, the greater is the chance of heart attack, heart failure, stroke, and kidney diseases. Numerous studies shown that blood pressure is directly associated with the risks of several types of cardiovascular diseases and the associations of blood pressure with the disease risk are continuous with large proportions of most populations having non-optimal blood pressure values.



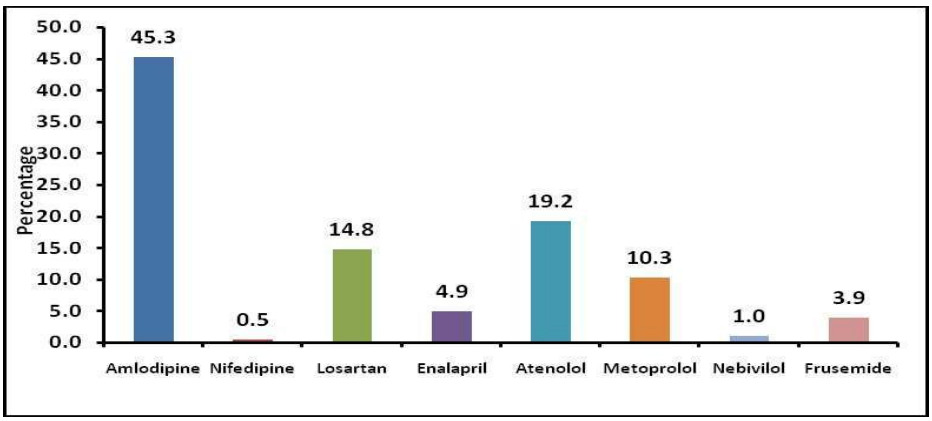
Common symptoms

The common symptoms of the study population were found to be, 95.5% had giddiness, 27% had vomiting, 26.3% had breathing difficulty, 21.5% had sweating, and various other symptoms like nausea, general tiredness, loss of consciousness, headache were found in 5.5% populations.



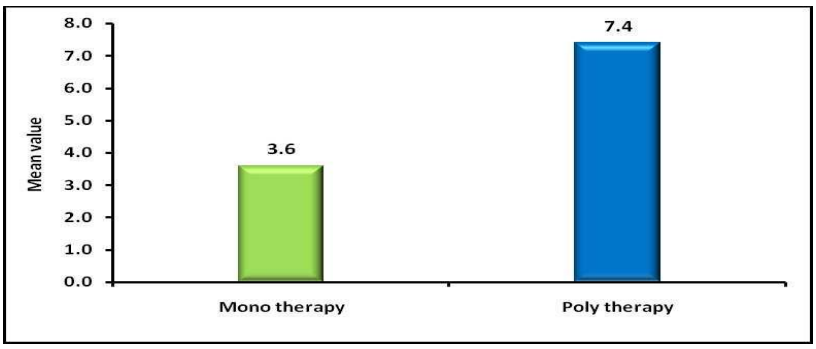
Monotherapy

Monotherapy is able to normalize blood pressure in less than a quarter of patients with hypertension. The result of this study shows that out of four hundred patients, 203 patients were treated with monotherapy. In that 45.3% patients were treated with Amlodipine, 19.2% patients were treated with atenolol, 14.8% patients were treated with losartan, 10.3% patients were treated with metoprolol, 4.9% patients were treated with enalapril and other patients were treated with frusemide, nebivilol, and nifedipine.



Monotherapy Vs polytherapy

The treatment of hypertension must fall within a strategy of the early and strict control of blood pressure levels. Only actual normalization of blood pressure can offer long term benefit regarding the incidence of cardiovascular morbidity and mortality. The statistical analysis of the present study indicates that 50.8% of the study populations were treated with monotherapy and 49.2% patients were treated with combination therapy. The present study does not show any significant difference in percentage of population treated with monotherapy and combination therapy. Monotherapy is able to normalize blood pressure in less than a quarter of patients with hypertension. However, for a disease of multifactorial pathogenesis like essential hypertension, a therapeutic strategy employing different principles of actions is most suitable. In addition, combination therapy has many advantages. Blood pressure reduction is improved by an additive effect and through neutralization of compensatory counter-regulatory reactions. The number and severity of adverse effects are reduced by lower dose requirements. Furthermore, combination therapy is expected to reduce costs and to improve therapeutic compliance. The initial low-dose combination therapy has been shown to be superior as compared to treatment by the stepped-care and the sequential monotherapy approach. Recently, therefore, low-dose combination therapy has been recommended for initial antihypertensive therapy instead of the stepped- care approach or of sequential monotherapy.



Cost of antihypertensive drugs

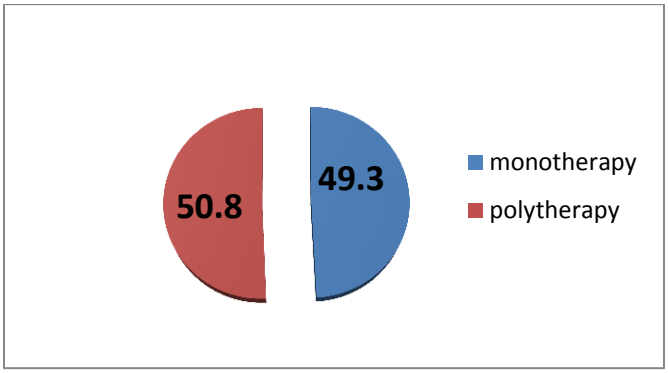
In addition to efficacy and safety, the cost of therapy has become an increasingly important factor to consider when selecting drugs to treat patients with mild to moderate hypertension. An attempt was made to calculate the cost required only by antihypertensive drugs. The study revealed that the cost of antihypertensives used by the patient in a Government tertiary care hospital ranges from Rs. 0.10 to Rs. 1.10 per day in the case of monotherapy**.**

Monotherapy drug	Mean	SD	N	F	P
Amlodip[ine	0.1	0.1	91	109.75**	0.000
Losartan	0.3	0.2	30		
Enalapril	0.4	0.6	10		
Atenolol	0.1	0.1	39		
Metoprolol	1.1	0.3	21		
Frusmide	0.1	0.0	8		

**Significant at 0.01 level

Comparison of cost based on monotherapy and poly therapy

On analysis the study shows that the cost of antihypertensives in polytherapy is higher than that of monotherapy. The mean cost of antihypertensive in monotherapy were found to be Rs.0.30 and cost of antihypertensive in polytherapy were found to be Rs.1.2.



CONCLUSION

Hypertension is one of the most important modifiable risk factor for cardiovascular diseases. A prescription based survey is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of physicians and dispensing practice of pharmacists. 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. The present study represents the current prescribing trend for antihypertensive agents and it highlights certain shortcomings in the existing prescribing practice. There is a considerable scope for improvement, particularly the under utilization of diuretics in the present prescribing pattern of antihypertensive drugs. Sincere and sustained efforts in a step-wise manner appear to be the only answer to make a start and gradually achieve this goal.

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