



Original Article

SURVEY OF PHARMACOTHERAPY OF HYPERTENSION IN RURAL AREA

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ABSTRACT

As India is turning out to be one of the fastest growing Economy, the life style diseases like hyperlipidemia, atherosclerosis, Hypertension, Diabetes; these are mentioned to be few which is spreading rapidly throughout the country. As Economic growth is not untouched in rural India, the people of rural India is also suffering from such Lifestyle diseases. The basic Idea of this is survey is to give the statistical data on the Pharmacotherapy used by physician in rural India. The Factors like Age, Sex, and Nature of the Job, Blood Pressure and Modification in Lifestyle etc. that are taken into consideration.

Keywords: Blood Pressure, Medication.

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1.0 INTRODUCTION:

Hypertension, being a one of the most common lifestyle cardiovascular disease found not only in Urban India but now it has started gaining roots in the rural India too. According to the statistics the cases of Hypertension has increased 10 times in last 4 decades in Rural India and almost 30 times in urban India in last 4 decades [1]. The main Objective of this Survey is to find out Pharmacotherapy of Hypertension that is been given in Rural India. This Survey was conducted

in a small town called Nandurbar, Maharashtra, India. There were 52 patients randomly chosen who suffering from Hypertension from last 6 months to several years (From the date). The survey includes male and female both who have been diagnosed as Hypertensive patients.

Hypertension:

Definition: According to the WHO the Hypertension is defined as Blood Pressure $\geq 140/90$ mmHg [1].

Table 1. Classification and management of blood pressure for adults*

| BP CLASSIFICATION | SBP* MMHG | DBP* MMHG | LIFESTYLE MODIFICATION | INITIAL DRUG THERAPY | |
|----------------------|------------|---------------|------------------------|---|---|
| | | | | WITHOUT COMPELLING INDICATION | WITH COMPELLING INDICATIONS (SEE TABLE 8) |
| NORMAL | <120 | and <80 | Encourage | | |
| PREHYPERTENSION | 120–139 | or 80–89 | Yes | No antihypertensive drug indicated. | Drug(s) for compelling indications.‡ |
| STAGE 1 HYPERTENSION | 140–159 | or 90–99 | Yes | Thiazide-type diuretics for most. May consider ACEI, ARB, BB, CCB, or combination. | Drug(s) for the compelling indications.‡ Other antihypertensive drugs (diuretics, ACEI, ARB, BB, CCB) as needed. |
| STAGE 2 HYPERTENSION | ≥ 160 | or ≥ 100 | Yes | Two-drug combination for most† (usually thiazide-type diuretic and ACEI or ARB or BB or CCB). | |

DBP, diastolic blood pressure; SBP, systolic blood pressure.

Drug abbreviations: ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; BB, beta-blocker; CCB, calcium channel blocker.

* Treatment determined by highest BP category.

† Initial combined therapy should be used cautiously in those at risk for orthostatic hypotension.

‡ Treat patients with chronic kidney disease or diabetes to BP goal of <130/80 mmHg.

Table 1 provides a classification of BP for adults ages 18 and older. The classification is based on the average of two or more properly measured seated BP readings on each of two or more office visits. A new category designated prehypertension

has been added, and stages 2 and 3 hypertension have been combined. Patients with prehypertension are at increased risk for progression to hypertension; those in the 130–139/80–89 mmHg BP range are at twice the risk



to develop hypertension as those with lower values.³

The possible causes of hypertension are:

1. Obesity and the metabolic syndrome:

Obesity (BMI >30 kg/m²) is an increasingly prevalent risk factor for the development of hypertension and CVD. The Adult Treatment Panel III guideline for cholesterol management defines the metabolic syndrome as the presence of three or more of the following conditions: abdominal obesity (waist circumference >40 inches in men or >35 inches in women), glucose intolerance (fasting glucose >110 mg/dL), BP >130/85 mmHg, high triglycerides (>150 mg/dL), or low HDL (<40 mg/dL in men or <50 mg/dL in women).⁴ Intensive lifestyle modification should be pursued in all individuals with the metabolic syndrome, and appropriate drug therapy should be instituted for each of its components as indicated.

2. Left ventricular hypertrophy: Left ventricular hypertrophy (LVH) is an independent risk factor that increases the risk of subsequent CVD. Regression of LVH occurs with aggressive BP management, including weight loss, sodium restriction, and treatment with all classes of antihypertensive agents except the direct vasodilators hydralazine, and minoxidil.^{5,6}

3. Peripheral arterial disease: Peripheral arterial disease (PAD) is equivalent in risk to IHD. Any class of antihypertensive drugs can be used in most PAD patients. Other risk factors should be managed aggressively, and aspirin should be used.

4. Postural hypotension: A decrease in standing SBP >10 mmHg, when associated with dizziness or fainting, is more frequent in older patients with systolic hypertension, diabetes, and those taking diuretics, venodilators (e.g., nitrates, alpha-blockers, and sildenafil like drugs), and some psychotropic drugs. BP in these individuals should also be monitored in the upright position. Caution should be used to avoid volume depletion and excessively rapid dose titration of antihypertensive drugs.

5. Dementia: Dementia and cognitive impairment occur more commonly in people with hypertension. Reduced progression of cognitive impairment may occur with effective antihypertensive therapy.^{7,8}

Goals of Hypertension Management: In the hypertension Management the physicians mainly try to Bring down the Common Symptoms Tachycardia, Headache, Dizziness which are the mainly because of hypertension. The hypertension is mainly controlled by Different ways:

1. Change in the Lifestyle.
2. Physical Exercise.
3. Medication.
4. Lower the Sodium Intake.

The Above Factor mainly helps both the Physician and Patient to control the Hypertension.

Therapy: The Patient is given Different type of therapy depending upon the Severity of the Hypertension. Some of the cases the



Hypertension is controlled Single Drug Therapy while for some requires multiple drug therapy. The different classes of the drug that helps to control the hypertension are:

1. Diuretics
2. ACE-inhibitors.
3. B-Blockers
4. Calcium Channel Blockers.

2.0 EXPERIMENTAL METHODS:

The Present study was conducted on the patient that was randomly selected with the background of Hypertension from last 6 Months to 1 year. The Experimentation was done so as to know Pharmacotherapy of Hypertension in the Rural and one of the Most Backward district of Maharashtra. However the patients were taken only from the Nandurbar town. Nandurbar District has Approx. Total-13,09,135 - Male-6,62,764 - Female-6,46,371. Spread in 5035 sq. kms. In the study 52 Patients were taken and were continuously monitored for 7 days. The Study Team (Authors of this Research) has personally met every patient and conducted a round of questionnaire with each and every patient. The entire patient was selected above the age of 18. The Document consists of following parameters:

1. Age
2. Diet
3. Nature of Job
4. Blood Pressure
5. Risk Factors
6. Alternative that are either used by patient or suggested by the physician.

7. Medication given to them in Order to Control the Hypertension.

Clinical Survey: In this Clinical Survey 52 patients were selected who were coming to the one hospital. The selection from only one hospital was done due to the lack of the availability of healthcare Infrastructure in the town.

Factors Considered:

1. Age: The age is one of the Biggest factor that needs to be considered in the case of the hypertension. Out of 52 patients, 40.38 % patients age was in the range of 45-60 yrs. And 26 patients are above the age of 60. However there were 5 patients whose age was below 45 yrs.(Figure 1)

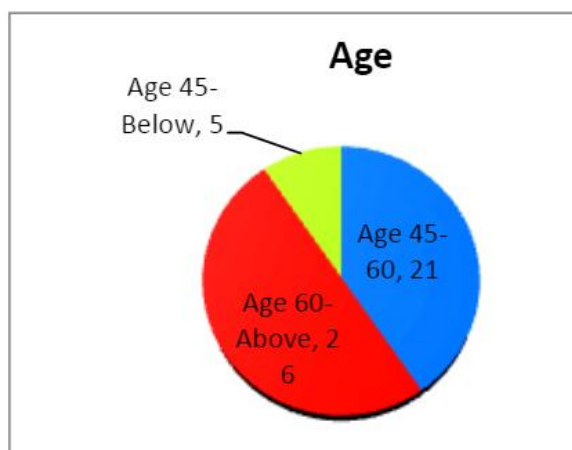


Figure: 1 Age

2. Diet: When the subjects were asked about their daily diet 48% of the subject has mentioned that they are Vegetarian while 40% said that they were Non-Vegetarian with chicken, Fish or Mutton in their regular diet. However there was interesting case of the subjects who were having



Non-Vegetarian food only once or twice in a month whose strength was 12%. (Figure 2)



Figure 2 Diet

3. Nature of the Job: The nature of the job plays a very important role in the condition of the health. Being one of very Backward District in Maharashtra almost 62% were Daily Laborers either working in Farm or on the Construction Site. Laborers with the shift timings of 12Hrs. 25% of the people were the one who were having job profile very less laborious work but the nature of the job was creating a lot of mental stress.

Figure 3.

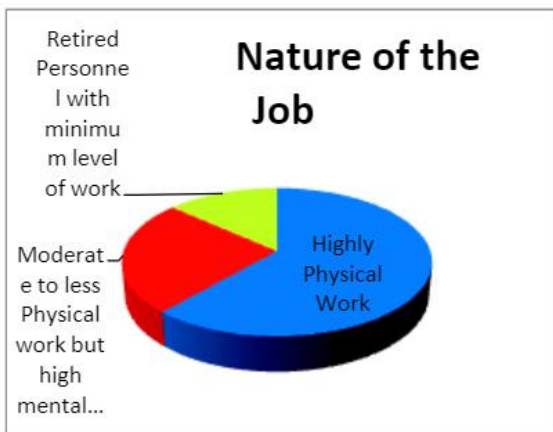


Figure 3 Nature of the job

4. Blood Pressure: Generally 120/80 mm Hg is considered as normal blood pressure. For this Survey I have classified in to 3 categories, 150/100-180/120, 180/120-210/140 and 210/140 and above. The blood pressure was measured by using sphygmomanometer by resting the patients for 5 min. after entering the clinic. Figure 4.

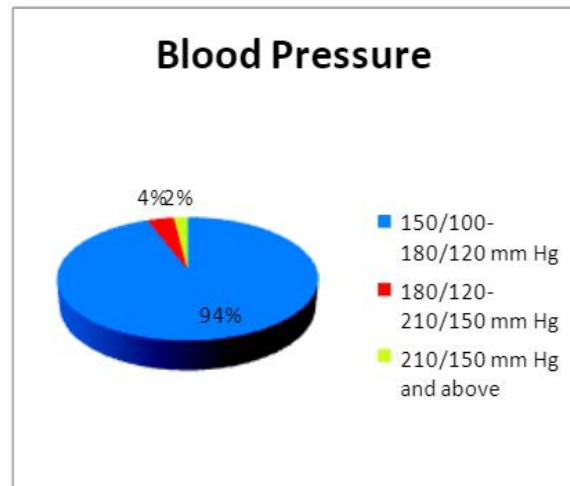


Figure 4 Blood pressure

5. Risk factors: The causes of the Hypertension may be unknown but there are significant factors like heredity, Obesity, high salt intake and smoking had a major impact in raising the blood pressure. Nearly 67 % of the total subjects selected were having a history of the hypertension in their family either from maternal or from paternal side. 40.38% of the subjects were smoking tobacco. Whooping 74% of the subjects have more than 2.0 gms/day of Common while eating pickle or in their daily meal. 11.5% of subjects used to have alcohol regularly. Figure 5

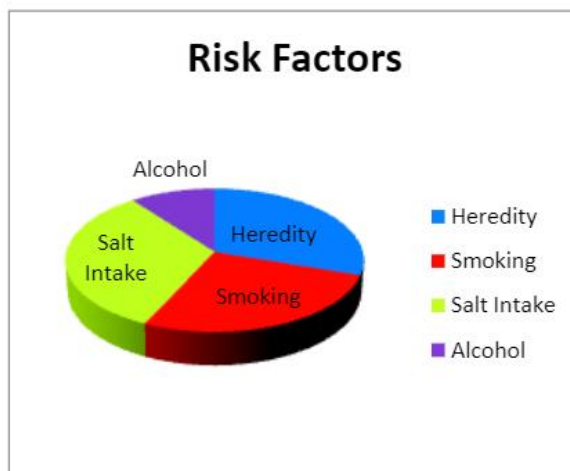


Figure 5 Risk factors

6. **Alternative Methods:** Since most of the subjects were daily wage workers their physical activity was so high that they didn't used to do the exercises. However miniscule number of the subject was exposed to yoga. The physicians used to give instructions to refrain the salt, alcohol and tobacco intake was strictly followed.

7. **Modification in Lifestyle:** Adoption of healthy lifestyles by all persons is critical for the prevention of high BP and is an indispensable part of the management of those with hypertension. Major lifestyle modifications shown to lower BP include weight reduction in those individuals who are overweight or obese,^{9, 10} adoption of the Dietary Approaches to Stop Hypertension (DASH) eating plan¹² which is rich in potassium

and calcium,¹¹ dietary sodium reduction,¹¹⁻¹³ physical activity,^{14, 15} and moderation of alcohol consumption. (See table 2.)¹⁶ Lifestyle modifications reduce BP, enhance antihypertensive drug efficacy, and decrease cardiovascular risk. For example, a 1,600 mg sodium DASH eating plan has effects similar to single drug therapy.¹² Combinations of two (or more) lifestyle modifications can achieve even better results. The Table was majorly followed by most of the physician as a prototype so as to increase the effect and control the Blood Pressure more effectively.

| MODIFICATION | RECOMMENDATION | APPROXIMATE SBP REDUCTION (RANGE) |
|-----------------------------------|---|--|
| Weight reduction | Maintain normal body weight (body mass index 18.5–24.9 kg/m ²). | 5–20 mmHg/10 kg weight loss ^{23,24} |
| Adopt DASH eating plan | Consume a diet rich in fruits, vegetables, and lowfat dairy products with a reduced content of saturated and total fat. | 8–14 mmHg ^{25,26} |
| Dietary sodium reduction | Reduce dietary sodium intake to no more than 100 mmol per day (2.4 g sodium or 6 g sodium chloride). | 2–8 mmHg ^{25,27} |
| Physical activity | Engage in regular aerobic physical activity such as brisk walking (at least 30 min per day, most days of the week). | 4–9 mmHg ^{28,29} |
| Moderation of alcohol consumption | Limit consumption to no more than 2 drinks (1 oz or 30 mL ethanol; e.g., 24 oz beer, 10 oz wine, or 3 oz 80-proof whiskey) per day in most men and to no more than 1 drink per day in women and lighter weight persons. | 2–4 mmHg ³⁰ |

DASH, Dietary Approaches to Stop Hypertension.

* For overall cardiovascular risk reduction, stop smoking.

† The effects of implementing these modifications are dose and time dependent, and could be greater for some individuals.

8. Medications: There are number of medications that act on different points in order to control. Primarily Diuretics, ACE Inhibitors and B-Blockers are majorly used in order to control the patient's Blood Pressure. In some cases Calcium Channel Blockers like Captopril is also used. However the economic condition of the patients is not very strong hence cheap drugs like B-Blocker like propranolol is prescribed. But in certain unavoidable conditions expensive drugs like Candesartan or Celexetil is also prescribed

which are expensive. 35% patients have been given combination therapy of B-Blockers (Propranolol, Atenolol and Timolol) and ACE inhibitors (Captopril and enalapril). 41% patients were treated with only B-Blockers. While 20 patients were treated with another combination of B-Blockers and Calcium Channel Blockers and 2 patients were treated with Diuretics and very cautiously with B-Blockers since the patient was suffering from Cardiac Arrhythmia. Figure 6.

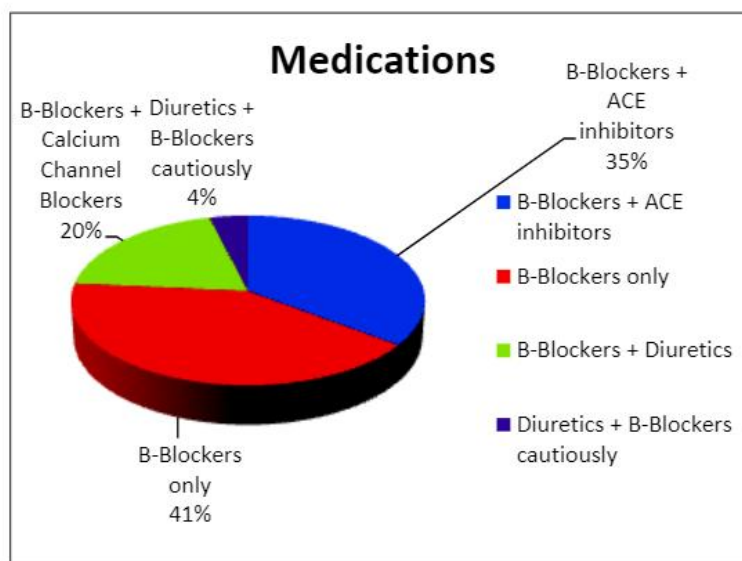


Figure 6 Medications

Common Goal of the Physician: The ultimate public health goal of antihypertensive therapy is the reduction of cardiovascular and renal morbidity and mortality. Since most persons with hypertension, especially those age >50 years, will reach the DBP goal once SBP is at goal, the primary focus should be on achieving the SBP goal. Treating SBP and DBP to targets that are <140/90 mmHg is associated with a decrease in CVD complications. In patients with hypertension and diabetes or renal disease, the BP goal is <130/80 mmHg.

Conclusion: The Clinical survey was very significant, atleast in the rural areas ; this is not the lifestyle disease yet. Majority of the patients suffer due to psychological conditions, Economic Depressions, poor standards of living. There may be chances of sudden increase Adrenaline or

increase in secretion of enzymes like renin or even certain genetic mutations.

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