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## Comparing Drug Prescribing Pattern in Hypertension to Improve Adherence: A Study Rural and Urban Area

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### ABSTRACT:

Hypertension is a symptom which is directly correlated with the risk of cardiovascular morbidity and mortality in general population. Essential hypertension is usually an asymptomatic condition. The prime goal of managing hypertension is to reduce hypertension-associated morbidity & mortality. The proper selection of specific drug therapy is based on evidence which demonstrates the risk reduction. Managing lower blood pressure values has not been proven to provide additional risk reduction except in diabetes or chronic kidney disease patients have a goal blood pressure of less than 130/80 mm Hg. The current study was performed to compare awareness on hypertension and its medication adherence and importance of non pharmacological management in rural and urban area of Valsad. 50 patients each from rural an urban area is voluntarily given their consent to participate in answering the awareness questionnaire. Total 66% were above age of 50 years. 52% were receiving single drug where 46% from urban and 29% from rural. Atenolol and amlodipine were commonly prescribed with 22% in rural and losartan 16% in urban area. 40% were receiving two drug combinations where 23% from urban and 17% from rural. 74% were following non-pharmacological measure like exercise to control blood pressure. 27% were having habits like smoking and drinking which is a risk factor for hypertension. The awareness on importance of hypertension and pharmacological and non-pharmacological management on regular interval can reduce complications of heart.

**KEYWORDS:** Hypertension, Awareness, Blood pressure, Atenolol, Amlodipine.

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### INTRODUCTION:

Hypertension is a symptom which is directly correlated with the risk of cardiovascular morbidity and mortality in general population. Essential hypertension is usually an asymptomatic condition. Where diagnosis cannot be made based on one elevated blood pressure measurement. An elevated reading from the average of two or more measurements on two or more clinical encounters is needed to diagnose hypertension.<sup>1</sup> The overall goal of treating hypertension is to reduce hypertension-associated morbidity and mortality. Proper selection of specific drug therapy is based on evidence that demonstrates risk reduction. Treatment goal for blood pressure to restrict less than 140/90mmHg is appropriate for most patients. To achieve lower blood pressure value has not been proven to provide additional risk reduction excluding in patients with diabetes or chronic kidney disease.<sup>1</sup>

These patients have a goal blood pressure of less than 130/80 mm Hg. Because of ageing phenomenon blood pressure rises as rise in peripheral resistance. That's why hypertension is common clinical condition in elderly. The risk of development of hypertension in normal individual above 55 years of age is more than 90 percentage.<sup>1</sup> Mainly two types of hypertension one where cause is unknown and

second where there are certain kidney disease or drugs causes rise in blood pressure. Almost 90 percent of patients are sufferer of primary type of hypertension where only 10 percent are secondary type sufferer.

**Pathogenesis:** As it is clear that hypertension is a clinical condition so any disturbance in working of cardiac output or disturb peripheral resistance can lead to rise in blood pressure. So, cardiac output and peripheral resistance are the two determining factors to study hypertension.<sup>2,3</sup>

i) Increased cardiac output: Increased cardiac preload because of increased fluid volume from excess sodium intake or renal sodium retention seen in case of decrease number of nephrons or decreased Glomerular filtration) or Venous constriction because of excess stimulation of the RAS or over-activity of sympathetic nervous system.<sup>2,3</sup>

ii) Increased peripheral resistance: Functional vascular constriction because of over activity of sympathetic system, release of endothelial-derived factors, and Hyper-insulinemia resulting from obesity or the metabolic syndrome can lead to increased peripheral resistance.<sup>2,3</sup>

**Diagnosis of Hypertension:** Generally it is said that once you do pressure measurement you start having hypertension because stress and anxiety also release catecholamines which increase pressure. Hypertension is generally known as silent killer because patients remain asymptomatic until diagnosis. So, average of three reading should be considered for any final conclusion.<sup>4</sup>

**Management of Hypertension:**

I) Non-Pharmacological hypertension: few life style modifications are suggested initially to control and maintain the elevated pressure before shifting to any pharmacological management. Suggestions like avoid smoking and alcohol consumption. Restrict salt intake, regular exercise for half an hour, drink plenty of water and meditation and deep breathing exercise are better options.<sup>5-7</sup>

II) Pharmacological management: There are nine classes of different antihypertensive drugs like

- Diuretics
- Angiotensin converting enzyme inhibitors
- Beta-blockers
- Angiotensin-II receptor blockers
- Calcium channel blockers are considered primary agents in hypertension. These agents are either alone or in combination should be used to treat the

majority of hypertensive patients. Evidence-based medicine is a careful, sensible and precise use of current best evidence to make decisions about the care of individual patients.<sup>8</sup>

**METHODOLOGY:** A questionnaire is designed to assess the information on pharmacological and non-pharmacological management information. Other information like genetic information, risk factors assessment and age and adherence parameters are also included. To compare patients randomly sample from urban and rural area of Valsad district. Overall 50 patients each from rural and urban area were agreed and given consent to participate in the questionnaire based study. A percentage analysis method is used to analyze the given data.

**RESULT:** Basic demographic information for the assessment of basic age and risk factor correlation are mention below.

**Table 1: Basic demographic information of the participants involved in the study**

Parameter	Urban area (N=50)	Results in%	Rural area ( N=50)	Results in%
Male	23	46	20	40
Female	27	54	30	60
Veg- Diet	35	70	20	40
Non-Veg Diet	15	30	30	60
Age > 50 yr	25	50	41	82
Alcoholic	4	8	10	20
Smokers	1	2	12	24

Non-vegetarians are more in rural area as compare to urban area. Alcoholic and smokers are also comparatively more in rural area as compare to urban area. The results on getting information of number of drug which can play a role on adherence of the patients are as given below.

**Table 2 Result of pattern of drug prescribed in the patients of hypertension.**

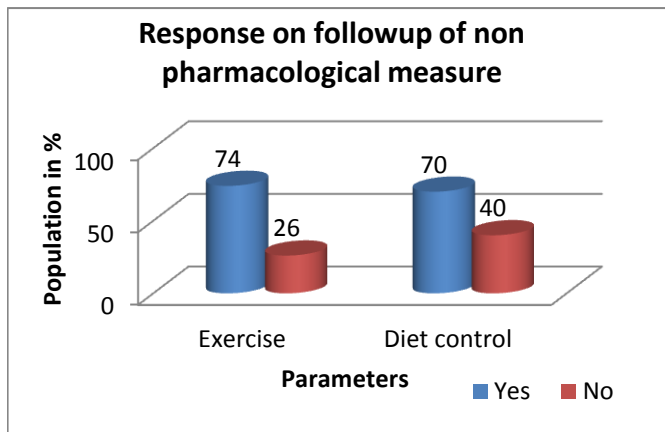
Treatment	Urban area (n=50)	Result in %	Rural area(n=50)	Result in %
Single drug	23	46	29	58
Two drug	23	46	17	34
Three drug	3	6	3	6
Four drug	1	2	1	2

The result suggests that in rural areas major emphasize is on single drug management to improve adherence in rural areas which is a main factor to consider. The list of drug mostly prescribed in single and combinations are given below.

**Table 3 list of Single drugs commonly prescribed in controlling hypertension.**

Name of Drug	Urban Area (n=50)	Result in %	Rural area(n=50)	Result in%
Atenolol	0	0	11	22
Amlodipine	3	6	9	18
Nifedipine	0	0	3	6
Losartan	8	16	2	4
Telmisartan	4	8	0	0
Nebivolol	3	6	1	2
Enalapril	1	2	1	2

Losartan with 16% is most commonly prescribed drug in urban area where as Atenolol (22%) and Amlodipine (18%) are mostly prescribed in rural patients. There are many combinations used to control the hypertension. The result suggest amongst two drug combinations Amlodipine-a calcium channel blocker is one of the drug in 20% out of 46% in urban area and 24% out of 34% prescribed drug in rural area. The response on the follow up of non pharmacological modifications following result is obtained.



**Figure1: response of participants on Non-pharmacological measures.**

**CONCLUSION:**

Single drug were commonly prescribed with 52% and two drugs with 40% to improve the adherence in patients of urban and rural areas of valsad. Amlodipine was the commonly prescribed drugs in combination drug management of hypertension in observe patients. Even 74% were responding and following up the non pharmacological measures to control their blood pressure. The importance on medication taking behavior and adherence in hypertension by regular awareness program can add on the feather in controlling heart complications occurs because of hypertension. The proper counseling on non pharmacological management can also be beneficial in controlling the hypertension which needs proper counseling.

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**REFERENCE:**

1. Chobanian AV, Bakris GL, Black HR, et al, 7<sup>th</sup> report of the joint national committee on Prevention, Detection, Evaluation & treatment of high blood pressure. Hypertension (2003). 42; pages: 1206–1252.
2. Staessen JA, Wang J, Bianchi G, Birkenhager WH. Essential hypertension. Lancet (2003); 361; pages: 1629–1641.
3. Kaplan NM. Kaplan’s clinical hypertension; 8<sup>th</sup> edition Philadelphia; Lippincott Williams & Wilkins (2002): pages: 1–550.

4. American heart association. Human blood pressure determination by Sphygmomanometry (1994), Dallas.

5. Appel LJ, Champagne CM, Harsha DW, et al. Effects of comprehensive lifestyle modification on blood pressure control: Main results of the PREMIER clinical trial. JAMA (2003); 289; pages: 2083–2093.

6. Whelton PK, Appel LJ, Espeland MA, et al. Sodium reduction and weight loss in the treatment of hypertension in older persons: A Randomized-Controlled trial of non-pharmacologic interventions in the Elderly, JAMA (1998); 279; pages: 839–846.

7. Kostis JB, Wilson AC, Shindler DM, et al. Persistence of normotension after discontinuation of lifestyle intervention in the trial of TONE. Trial of Non-pharmacologic interventions in the Elderly; Am J Hypertension (2002); 15; pages: 732–734.

8. Sackett DL, Rosenberg WM, Gray JA, et al. Evidence-based medicine: What it is and what it isn't. Br Med J (1996); 312; pages: 71–72.

