

# Management of diabetes induced hypertension in Pakistan.

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**Abstract: Objective:** The aim of the study was to find out the passive management of hypertension induced by type-2 diabetes and its pharmacologic management.

**Materials and Methods:** Seventy pre-designed questionnaires were filled by patients with diabetes induced hypertension and practitioners. The patients and professionals was selected in convenient way. The questionnaire contained the content to determine the passive treatment/management and pharmacologic management of hypertensive patients induced from diabetes. Then the Performa's were evaluated on the basis of percentages and then results were displayed in graphical form.

**Results:** According the study 86% of the observed population of health care professionals agree with the statement that efforts should be redouble to improve diabetes induced HTN. 94% of health care professionals agree with the statement 30min/day is necessary time to exercise daily. Most of the observed patients were using both medicines and controlled diet to maintain their HTN and Diabetes. It was observed that ACE Inhibitors are considered first line treatment by 46% of prescribers while 8.5% prescribe ARBs and almost 31.5% prescribers prefer any of two. 83% of the health care professionals suggested that all of the options must be followed i.e life style modifications, proper medication should be followed and new researches and symposiums should be conducted.

**Conclusion:** In diabetic hypertensives, Angiotensin converting enzymes inhibitors are the first line in management of hypertension, and can be replaced by ARBs if patients are intolerant of them. Followed by diuretic or Calcium channel blockers for additional therapy. People are not aware of the proper passive management. Counseling is not enough pharmacologically. Achieving the target BP of <130/80 is the priority in diabetic hypertensives.

**Keywords:** DASH Diet, Hypertension, Diabetes, Pharmacologic treatment

## INTRODUCTION

Hypertension, high blood pressure is a common condition in which the long-term force of the blood against artery walls is high, more the blood heart pumps, narrower the arteries, the higher blood pressure. Even without symptoms, damage to blood vessels and heart continues and can be detected. Uncontrolled high blood pressure increases risk of serious health problems, including heart attack and stroke.

Diabetes (diabetes mellitus) - a chronic disease, describes a group of metabolic diseases in which the person has high blood glucose, either because insulin production is inadequate, or because the body's cells do not respond properly to insulin, or both.

Hypertension (defined as a blood pressure  $\geq 140/90$  mmHg) is an extremely common co morbid condition in diabetes. Most people suffering from diabetes come across HTN during their life. Having diabetes makes HTN and other CVS problems more likely, because diabetes damages arteries and makes them targets for hardening, Atherosclerosis, which can lead to high blood pressure. When it comes to preventing diabetic complications, normal blood pressure is as important as good control of blood glucose levels.

Control of hypertension and maintenance of ideal blood pressure is the moot point that would benefit the diabetic patient most. Hypertension and diabetes are becoming increasingly common. Clinical trials have demonstrated the importance of tight blood pressure control among patients with diabetes. Detecting and managing hypertension in people with diabetes is one of the most effective measures to prevent adverse events, and pharmacotherapy is one of the most effective ways to maintain target BP levels in primary care. Increased blood pressure (BP) is a leading risk factor for death and disability, particularly in people with diabetes.

Patients with a systolic blood pressure of 130–139 mmHg or a diastolic blood pressure of 80–89 mmHg should be given lifestyle/behavioral therapy alone for a maximum of 3 months and then, if targets are not achieved, should also be treated pharmacologically. Healthcare provider may suggest following the DASH Eating Plan. The plan is low in sodium, unhealthy fats, and total fat. It is high in potassium, calcium, and fiber to get these nutrients by eating more fruits, vegetables, and whole grains. Do not add salt to food. Limit foods that are high in sodium, such as canned foods, potato chips, and cold cuts.

ACE inhibitors and ARBs are kinds of medications that are often used to treat high blood pressure for people with diabetes, and also prevent or slow kidney disease in people with diabetes. Prescribers use ACE inhibitors or ARBs first line, then add other anti-hypertension drugs if needed.

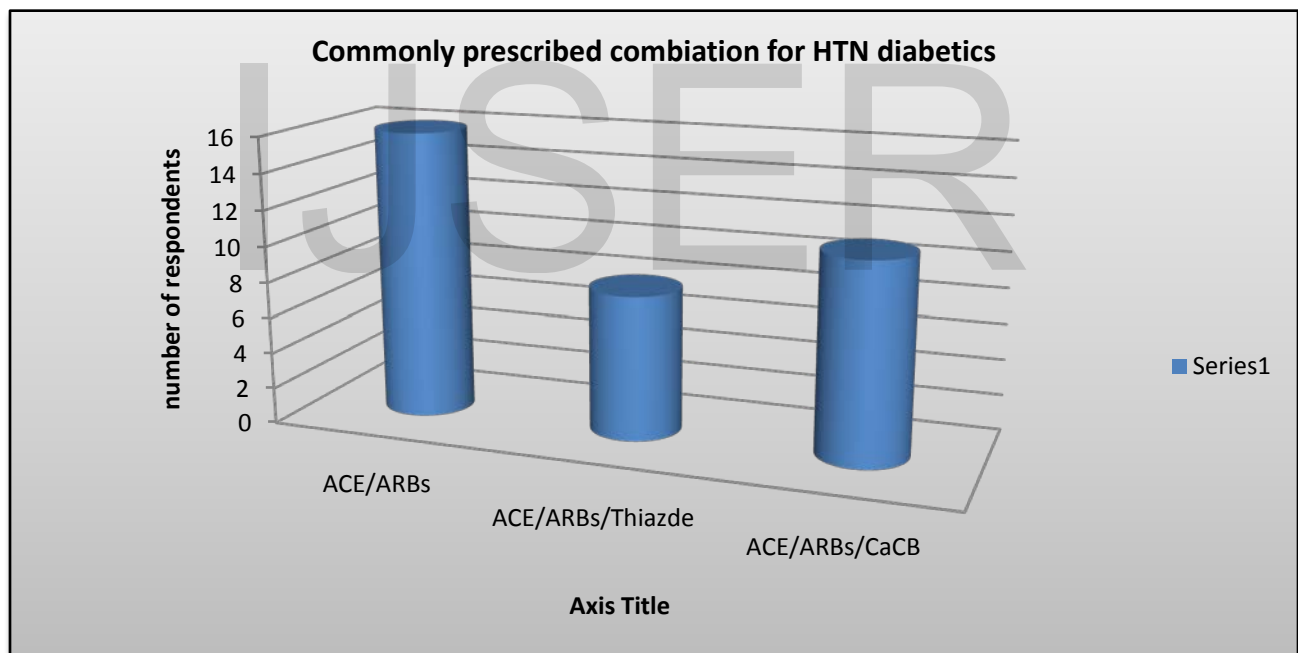
To treat and help prevent high blood pressure, following life-style modifications are necessary: control your blood sugar, stop smoking, eat healthy but according to diet chart, maintain a healthy body weight, limit alcohol consumption, exercise, limit salt intake, limit sugar intake, visit doctor regularly.

### **Materials and methods:**

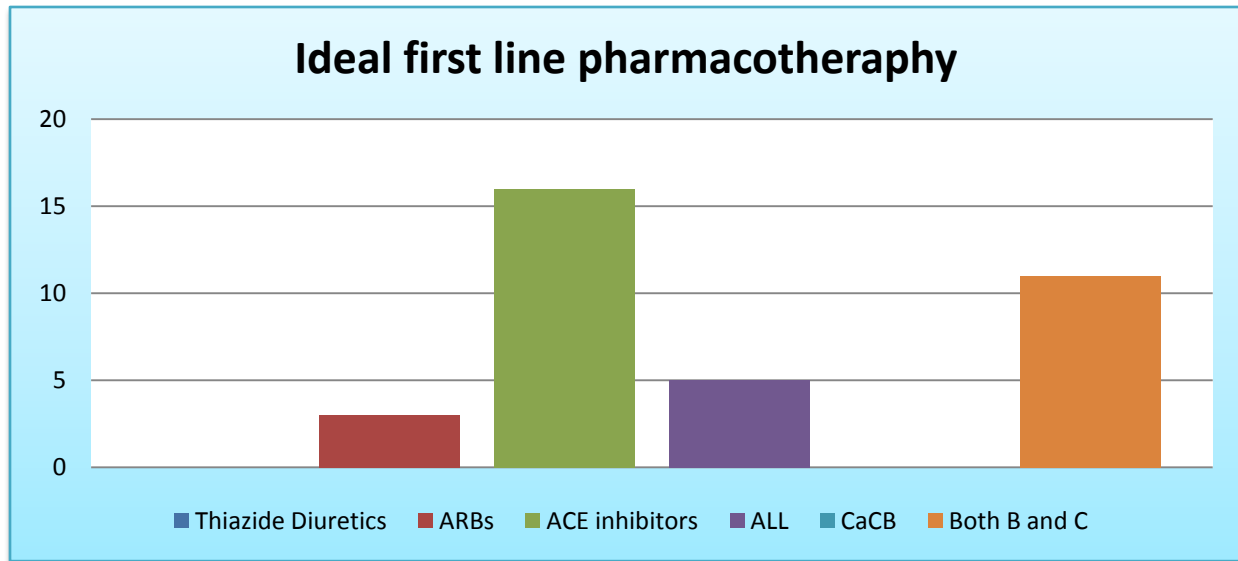
Seventy pre-designed questionnaire were filled by hand in the face to face interaction with patients and practitioners in general and diabetic departments of certain selected hospitals and it was observational and questionnaire based study. Sample size of 70 was selected on the basis of random sampling and questionnaires were filled with detail questioning and in calm environment. Seventy accurately filled questionnaires were then evaluated for study. Questionnaires were designed to observe management of diabetes induced hypertension including both, pharmacological and passive management. Data was analyzed using descriptive statistics and results are shown in various forms of graphs to show the results

### **Results:**

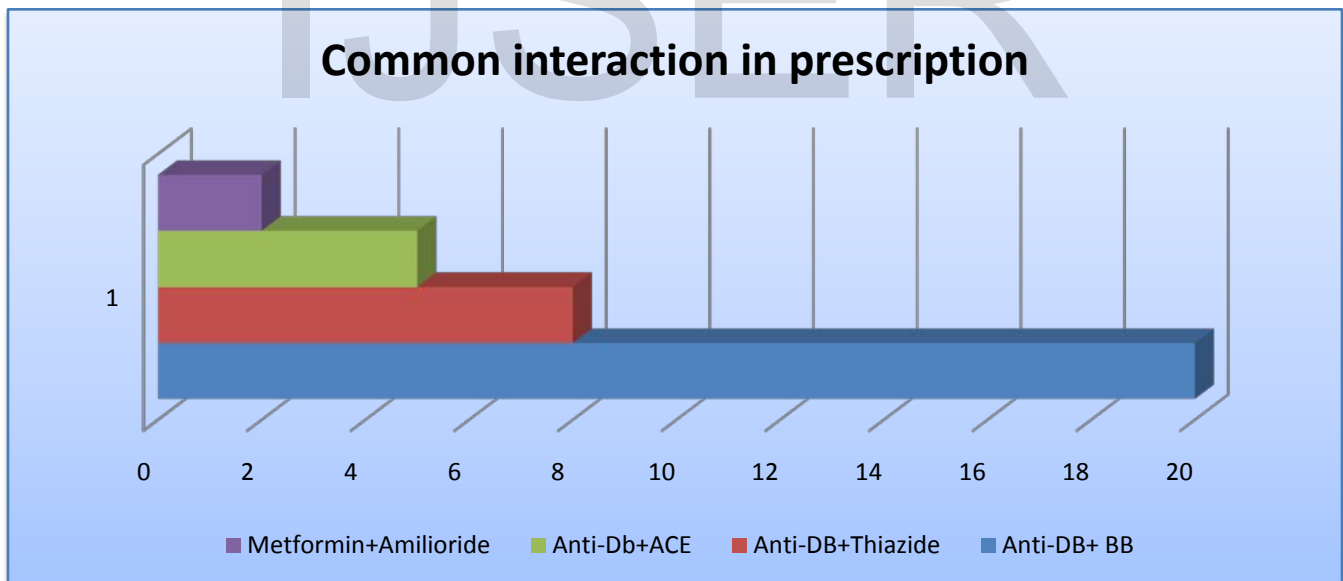
In the study it was observed statistically that ACE Inhibitors are considered first line treatment by 46% of prescribers while 8.5% prescribe ARBs and almost 31.5% prescribers prefer any of two. ACE inhibitors and ARBs are the most commonly prescribed combinations for Hypertensive patients with diabetes. 94% of health care professionals agree with the statement 30min/day is necessary time to exercise daily. Most of the observed patients were using both medicines and controlled diet to maintain their HTN and Diabetes. 83% of the observed patient know that their blood pressure should be below 130/80 mmHg. 71.4 % of the total observed population has done all the specified modifications to reduce hypertension. Most common interactions observed in patients of HTN with Diabetes is, anti diabetic with beta-blockers.



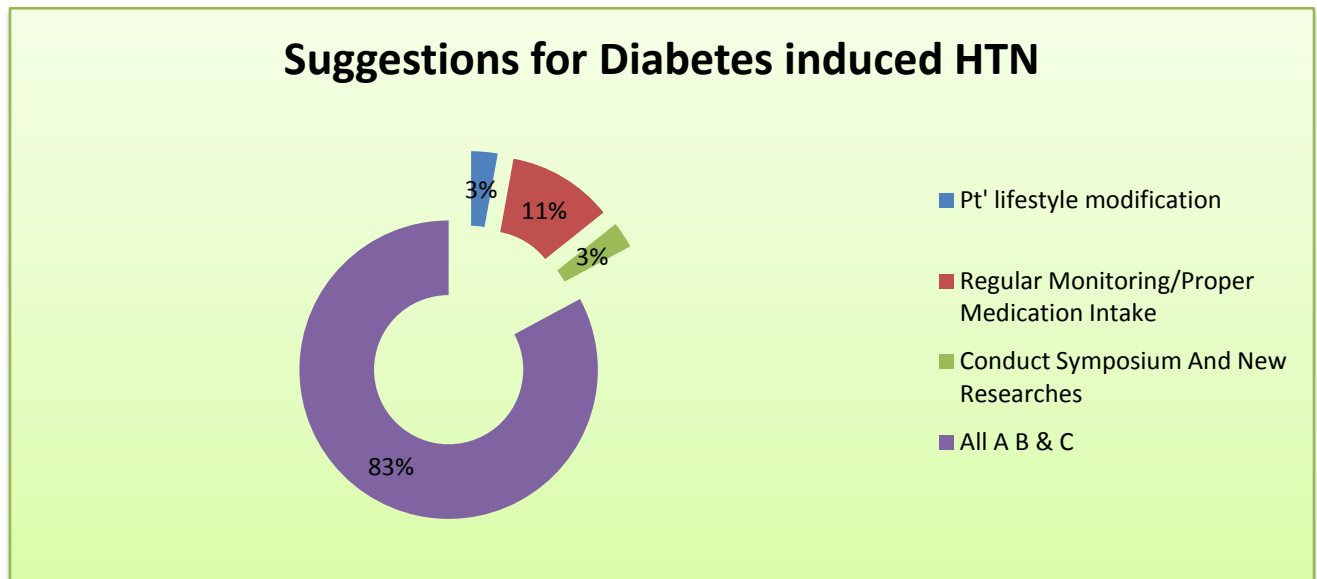
**Common Prescribed Combinations**



### Ideal First Line Therap



### Common Interactions In Prescriptions



#### Suggestions for Patients With Diabetes induced HTN

#### Discussion:

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#### Patient Response:

Hypertension and diabetes are becoming increasingly common. Hypertension occurs more commonly in diabetics than in comparable non-diabetics. Hypertension occurs twice as commonly in diabetics than in comparable non-diabetics. The presence of hypertension causes a 7.2-fold increase and a 37-fold increase in mortality in diabetic patients. There is a great need of management of hypertension induced by diabetes.

During surveys in various government and private hospitals of Lahore different data has been collected and analyzed which shows various aspects of management of diabetes induced hypertension. Majority of the patients know to keep their blood pressure level should be below

130/80 which are target goals of this management. But still there is a need to spread awareness regarding proper level maintenance of HTN. The statement is a fact that HTN ratio is double in diabetics. But more than half patients observed were not familiar with this basic information. Only 37% of the total observed patients were familiar with it.

Mostly oral anti-diabetics have been prescribed to the outpatients and insulin to the inpatients but when the glucose level raised insulin has also been prescribed to outpatient. Study showed that in most patients' hypertension has been developed almost 5-7 years after diagnosis of diabetes.

### **Health Care Professionals Response:**

From the population of health care professionals interviewed almost 86% agree with the statement that these efforts should be redoubled while 14% said that current efforts are sufficient for the management of HTN in diabetics. ACEI are the first line in management of diabetic hypertensives. ACEIs may be used alone for BP lowering but are much more effective when combined with a thiazide-type diuretic or other antihypertensive drug. While the data collected from the observed population showed that 97% of the prescribers do not prescribe CaCB and B.B as the safe first line therapy. While 3% said that there is no issue in prescribing these drugs as first line therapy.

From the population observed, majority of the prescribers preferred to use ACEI, ARBs, CaCB and Thiazides diuretics to manage hypertension in diabetics, keeping in view the renal profile of the patients. Most common observed combinations prescribed were 46% ACEI/ARBs with anti-diabetics, 23% preferred addition of Thiazide diuretics with ACEI/ARBs and 31% preferred Addition of CaCB to ACEI/ARBs with antidiabetics. Most common suggestions prescribed or counseled by health care professionals includes life style modifications ( exercise, weight

reduction, DASH diet, healthy physical activities), regular monitoring of b.p and glucose level, proper medication and conduction of seminar and symposiums for health care professionals for the sharing of information and new researches.

Out of the total population of the prescribers interviewed, 46% of the prescribers prescribed ACEI to be used as first line pharmacotherapy for reduction of HTN and 8.5% recommend alone ARBs as a first line therapy while 31.5% told that both ACEI and ARBs can be use as first line therapy either single or in combination. While 14% of the observed prescribers also preferred CaCB and Thiazide Diuretics as the first line therapy. Data statistics showed that majority of the health care professionals includes 30min walk per day in primary care data and as passive management of diabetes induced hypertension to reduced blood pressure and maintain targeted goals. Most of the professionals recommended beta blockers as last line treatment but they preferred selective beta blockers to be useful in prescription. Beta blockers can aggravate the type 2 diabetes as they mask the hypoglycemic effect of anti-diabetics. 84% agreed that BB can aggravate diabetes.

### **Conclusion:**

It was concluded from the study that diabetes usually induces hypertension. And once hypertension is induced it leads to many other problems like kidney problems and heart problems. And ratio of hypertension to occur in patients with diabetes is double as compare to non-diabetics. Efforts are still less to control hypertension below 130/80 in such patients. Most of the people still have no idea how to maintain their bp. Pharmacological and behavioral management is still less than required. People are not aware of the proper passive management. Counseling is not enough pharmacologically. DASH diet knowledge is very low among



hypertensive diabetics. Health care professionals are not providing diet chart in mostly cases especially to outpatients. Drug interactions are still prevailing to a higher extent. Extreme lack of patient care was observed in OPDs.

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