

# A STUDY ON COMPARISON OF DIETARY APPROACHES AND MEDICATION COSTS FOR HYPERTENSION TREATMENT

Ankit Sharma <sup>1</sup>, Yogesh Joshi <sup>2\*</sup> and Saurabh Agarwal <sup>3</sup>

<sup>1</sup> Research Scholar, Department of Pharmacy Practice,  
School of Pharmaceutical Sciences, Shri Guru Ram Rai University,  
Patel Nagar, Dehradun, Uttarakhand, India.

<sup>1</sup> Assistant Professor, College of Pharmacy,  
Shivalik Campus, Dehradun, India.

<sup>2</sup> Professor, Department of Pharmacy Practice,  
School of Pharmaceutical Sciences, Shri Guru Ram Rai University,  
Patel Nagar, Dehradun, Uttarakhand, India.

<sup>3</sup> Professor, Department of Medicine,  
Shri Guru Ram Rai Institute of Medical and Health Sciences,  
Shri Guru Ram Rai University, Patel Nagar,  
Dehradun, Uttarakhand, India.

\*Corresponding Author Email: [yogeshjoshi1583@rediffmail.com](mailto:yogeshjoshi1583@rediffmail.com)

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## Abstract

Hypertension, often termed the silent killer, is a condition marked by elevated blood pressure that poses significant health risks. Studies have established that high serum sodium levels elevate blood pressure, while potassium, magnesium, and vitamins, found abundantly in fruits, vegetables, nuts, low-fat dairy products, fish, and poultry, lower blood pressure. The DASH (Dietary Approaches to Stop Hypertension) diet, which emphasizes these foods, has shown beneficial effects in reducing blood pressure in hypertensive patients. This study involves 50 hypertensive patients, assessing lifestyle risk factors, blood pressure levels before and after adopting the DASH diet, and comparing the costs of dietary versus medication approaches. Results indicate that adherence to the DASH diet significantly reduces blood pressure, presenting a viable, cost-effective alternative to medication therapy.

**Keywords:** Hypertension, DASH, Blood Pressure, Dietary Approaches, Medication Costs.

## INTRODUCTION

Hypertension, characterized by persistently high arterial blood pressure, increases the risk of heart disease, stroke, and other health issues.

Despite its asymptomatic nature, hypertension affects a significant portion of the population, with lifestyle factors such as diet playing a crucial role in its development and management.

The DASH diet, rich in fruits, vegetables, whole grains, and low-fat dairy, has been shown to reduce blood pressure effectively.

This study compares the efficacy and cost-effectiveness of the DASH diet with traditional antihypertensive medications <sup>[1-2]</sup>.

**Table 01: Readings of Blood pressure according to various categories [11]**

Blood Pressure Readings			
Blood Pressure Category	Systolic mm Hg (upper number)	Diastolic mm Hg (lower number)	What Your Blood Pressure Readings Mean
Normal	Less than 120	and Less than 80	Keep checking your blood pressure and making healthy lifestyle choices. This will help make sure your blood pressure stays at a normal level.
Elevated	120 to 129	and Less than 80	You may be at risk for hypertension. Healthy lifestyle changes can help get your blood pressure back to normal and keep it there.
High Blood Pressure (Hypertension Stage 1)	130 to 139	or 80 to 89	Healthy lifestyle changes may be enough to get your blood pressure back to normal. You may need blood pressure medicine if lifestyle changes alone are not enough.
High Blood Pressure (Hypertension Stage 2)	140 or higher	or 90 or higher	You may need both blood pressure medicines and healthy lifestyle changes to get your blood pressure to normal.
Hypertensive Crisis	Higher than 180	and/or Higher than 120	Check your blood pressure again after 5 minutes. If it is still at least 180/120, contact your healthcare provider. If you also have chest pain, trouble breathing, or vision problems, seek care immediately. This is a medical emergency.

### Dietary Approaches to Stop Hypertension (DASH)

The DASH diet, developed by the National Heart, Lung, and Blood Institute (NHLBI), focuses on reducing sodium intake and increasing consumption of potassium, calcium, and magnesium. Studies have demonstrated that the DASH diet significantly lowers blood pressure in both hypertensive and normotensive individuals<sup>[4]</sup>. Key components of the DASH diet include:

High intake of fruits, vegetables, and low-fat dairy

Inclusion of whole grains, poultry, fish, and nuts

Reduced consumption of red meat, sweets, and sugar-laden beverages

Factors in the Diet That Help Lower Blood Pressure:

Weight Loss: Aim for a BMI of 25 kg/m<sup>2</sup>.

Reduced Salt Intake: Limit sodium to 1.5 g/day.

High Potassium Intake: Increase to 4.7 g/day.

Moderation of Alcohol: Limit to 1-2 drinks/day.

Dietary Factors with Minor or Undefined Impact on Blood Pressure:

Fish Oil Supplementation: High doses reduce BP slightly in hypertensive individuals.

Fiber: May lower BP modestly.

Calcium & Magnesium: Moderate BP reduction.

Carbohydrates & Protein: Influence BP depending on the type and amount.

Vitamin C: Associated with lower BP in some studies<sup>[12-20]</sup>.

**Table 03: A diet plan chart [3, 10]**

## Following the DASH Eating Plan

Use this chart to help you plan your menus—or take it with you when you go to the store.

Food Group	Servings Per Day			Serving Sizes	Examples and Notes	Significance of Each Food Group to the DASH Eating Plan
	1,600 Calories	2,000 Calories	2,600 Calories			
Grains*	6	6–8	10–11	1 slice bread 1 oz dry cereal† ½ cup cooked rice, pasta, or cereal	Whole wheat bread and rolls, whole wheat pasta, English muffin, pita bread, bagel, cereals, grits, oatmeal, brown rice, unsalted pretzels and popcorn	Major sources of energy and fiber
Vegetables	3–4	4–5	5–6	1 cup raw leafy vegetable ½ cup cut-up raw or cooked vegetable ½ cup vegetable juice	Broccoli, carrots, collards, green beans, green peas, kale, lima beans, potatoes, spinach, squash, sweet potatoes, tomatoes	Rich sources of potassium, magnesium, and fiber
Fruits	4	4–5	5–6	1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit ½ cup fruit juice	Apples, apricots, bananas, dates, grapes, oranges, grapefruit, grapefruit juice, mangoes, melons, peaches, pineapples, raisins, strawberries, tangerines	Important sources of potassium, magnesium, and fiber
Fat-free or low-fat milk and milk products	2–3	2–3	3	1 cup milk or yogurt 1½ oz cheese	Fat-free (skim) or low-fat (1%) milk or buttermilk; fat-free, low-fat, or reduced-fat cheese; fat-free or low-fat regular or frozen yogurt	Major sources of calcium and protein
Lean meats, poultry, and fish	3–6	6 or less	6	1 oz cooked meats, poultry, or fish 1 egg‡	Select only lean; trim away visible fats; broil, roast, or poach; remove skin from poultry	Rich sources of protein and magnesium
Nuts, seeds, and legumes	3 per week	4–5 per week	1	⅓ cup or 1½ oz nuts 2 Tbsp peanut butter 2 Tbsp or ½ oz seeds	Almonds, hazelnuts, mixed nuts, peanuts, walnuts, sunflower seeds, peanut butter, kidney beans, lentils, split peas	Rich sources of energy, magnesium, protein, and fiber

### Study Design

The study is observational, including 50 hypertensive patients who are on antihypertensive medications and/or following the DASH diet. Data on medical history, lifestyle factors, dietary habits, and blood pressure readings were collected through self-designed questionnaires.

### RESULTS & DISCUSSION

The study population included 66% males and 34% females, indicating a higher prevalence of hypertension among males. Most patients (44%) discovered their hypertension through symptoms or complications. The majority (62%) had comorbidities, emphasizing the need for effective hypertension management.

#### Blood Pressure Reduction and Dietary Adherence

Patients adhering to the DASH diet showed a significant reduction in blood pressure compared to those not following the diet. Initial mean blood pressure was 170.96/111.86 mm Hg, which decreased to 136.82/90.32 mm Hg after adopting the DASH diet. This indicates the diet's effectiveness in managing hypertension.

#### Cost Comparison: DASH Diet vs. Medication

The DASH diet not only effectively reduces blood pressure but also offers a cost-effective alternative to medication. While the initial cost of dietary changes may seem high, the long-term benefits, including reduced medication dependence and improved overall health, present substantial savings.

## CONCLUSION

The study highlights the significant benefits of the DASH diet in managing hypertension. It underscores the need for greater awareness and adherence to dietary approaches, which can reduce the global burden of hypertension. The DASH diet is a viable, cost-effective method for managing hypertension, with the added advantage of minimal side effects compared to medications.

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