Hypertension is a major risk factor for cardiovascular disease (stroke, angina, myocardial infarction, renal disease and other diseases.).

Presently 1.13 billion people worldwide have Hypertension, and is predicted to increase to 1.5 billion by the year 2025.

3 in 10 deaths are caused by CVD and 50% of all CVD deaths are caused by Hypertension*

GLOBAL BURDEN OF HYPERTENSION 2025 PROJECTION

**Year 2000**
- 26.4% of world adult population had hypertension
- Total of 972 million adults
- Highest prevalence is in established market economies (eg. North America, Europe)

**Year 2025**
- 29.2% of world adult population had hypertension
- Total of 1.56 billion adults
- 20% in developed nations. 80% in developing nations.
- Highest prevalence will be in developing continents (eg. Asia. Africa) will account for 75% Of world's hypertensive patients

* Blood pressure is the measurement of force applied to artery walls

HYPERTENSION IS A SILENT KILLER

According to the World Health Organization, in India HYPERTENSION Affects 1 in 4 adults

Reference:
www.who.int www.heart.org/en/health-topics/high-blood-pressure
## Types of Hypertension

### Primary Hypertension (Essential Hypertension)
- Unknown cause
- Combination of
  - Genetics
  - Diet
  - Lifestyle & Age
- Primary or essential hypertension accounts for 90-95% of adult cases, and secondary hypertension accounts for 2-10% of cases

### Secondary Hypertension (Identifiable & Potentially Reversible)
- Narrowing of the arteries
- Side effects of some medications
- Obstructive sleep apnea
- Hormone abnormalities
- Pregnancy

## Classification of Hypertension

<table>
<thead>
<tr>
<th>Systolic, Diastolic Blood Pressure (mm of Hg)</th>
<th>JNC7</th>
<th>2017 ACC / AHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;120 and &lt;80</td>
<td>Normal BP</td>
<td>Normal BP</td>
</tr>
<tr>
<td>120–129 and &lt;80</td>
<td>Prehypertension</td>
<td>Elevated BP</td>
</tr>
<tr>
<td>130–139 or 80–89</td>
<td>Prehypertension</td>
<td>Stage 1 hypertension</td>
</tr>
<tr>
<td>140–159 or 90–99</td>
<td>Stage 1 hypertension</td>
<td>Stage 2 hypertension</td>
</tr>
<tr>
<td>&gt; 160 or &gt;100 / 180 or 120</td>
<td>Stage 2 hypertension</td>
<td>Stage 2 hypertension / HTN Crisis</td>
</tr>
</tbody>
</table>

Reference: Blood Pressure Classification by JNC7 and 2017 ACC/AHA Hypertension Guidelines
RISK FACTORS OF HYPERTENSION

- Dynamic & Modifiable Factors
  - Diet
    - Bad Eating Habits
  - Sedentary Habits
  - Physical activity
  - Obesity
  - Alcohol
  - Smoking
  - Personality
  - Heredity
  - Age
  - Gender

- Static & Non-Modifiable Factors

Untreated hypertension may cause death or serious health consequences*

- Damage from high blood pressure
  - Blindness
  - Stroke
  - Heart attack
  - Heart failure
  - Kidney failure

Reference: www.tmjtherapyandsleepcenter.com
TREATMENT OF HYPERTENSION

1. MEDICAL MANAGEMENT - (ANTIHYPERTENSIVE DRUG THERAPY)

2. LIFESTYLE MODIFICATION

3. STRESS MANAGEMENT

LIFESTYLE MODIFICATION

<table>
<thead>
<tr>
<th>MODIFICATION</th>
<th>RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss</td>
<td>Maintain normal body weight (body mass index 18.5 - 22.9 kg/m². Waist circumference less than 94cm (men) or less than 80cm (women)</td>
</tr>
<tr>
<td>DASH - type dietary pattern</td>
<td>Consume a diet rich in fruits, vegetables, and low-fat dairy products with a reduced content of saturated and total fat</td>
</tr>
<tr>
<td>Reduced salt intake</td>
<td>Reduction in sodium intake to less than 2.4 grams per day</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Regular aerobic physical activity (at least 30 min/day, most days of the week)</td>
</tr>
<tr>
<td>Moderation of alcohol intake</td>
<td>Limit consumption of 2 drinks/day in men and 1 drink/day (30ml) in women.</td>
</tr>
<tr>
<td>Quit smoking</td>
<td>Abstinence is preferred.</td>
</tr>
</tbody>
</table>

Yoga - exercises are helpful in the management of hypertension, which enhances breathing and posture.

Meditation - calms the body and soul. Relaxation exercises also helps to relieve the stress.
Choose the right foods

- Complex carbohydrates (whole grains) and avoid refined foods (Refined grains)
- Plant protein like dals, lentils, peas. Prefer low fat milk and milk products.
- Egg white, fish, lean chicken. Avoid organ and red meats.
- Healthy fats like refined vegetable oils, Rice bran oil, gingerly oil extra virgin cold pressed olive oil as prescribed
- Avoid fried foods, hydrogenated fat, margarine, mayonnaise, processed cheese etc.
- Soluble and insoluble fiber rich foods like oats, whole cereals, beans, and fruits and vegetables should be preferred.
LIMIT SODIUM INTAKE IN YOUR DIET

- The American Heart Association recommends 2,300 milligrams (mgs) a day.
- 1,500 mg / day is an ideal limit for most adults, who have high blood pressure.

FOODS TO AVOID

- Packaged, preserved and processed foods like noodles, pappad, cheese and butter
- Pickles, salty snacks, soya sauce, ketchup, barbecue sauce and salad dressings
- Red meat, organ meats, canned, smoked, cured and processed meats
- Bakery foods like bread, biscuits, pizza, pasta, cakes and pastries
- Packed fruit juices and cold drinks
- Avoid to add salt to rice, lassi, fruit and vegetable salads

One teaspoon of table salt = 2325 mg of sodium

Most Sodium Comes from Processed and Restaurant Foods

- Naturally Occurring 12%
- Processed and Restaurant Foods 77%
- While Eating 6%
- Home Cooking 5%
- Added during cooking 5%
- Added at the table 12%
- Naturally occurring Food processing 77%

Sodium is a hidden ingredient in many manufactured food stuffs.

Read labels & look for foods with <400mg of sodium / serving.

DASH DIET - DIETARY APPROACHES TO STOP HYPERTENSION

DASH DIET
Eating more fruits and vegetables, beans and nuts, fish, poultry, whole grains, and low-fat or nonfat dairy, and less full-fat dairy products, fatty meats, sugar-sweetened drinks, and sweets. Consumption of less salt (sodium) is also encouraged.

HIGH IN
- Fruits (Potassium, Magnesium)
- Vegetables (K, Mg, Fiber)
- Low fat Dairy products
- Fish or poultry
- Whole grains
- Nuts, Beans & legumes

HIGH IN
- Red meats
- Fats (Saturated Fat & Cholesterol)
- Sugar sweetened foods & Beverages

Fruits
Grains
Vegetables
Milk and Alternatives
Meat, Fish, Egg and Alternatives
Fat/Oil, Salt and Sugar
CONSUME THESE MINERALS IN YOUR DIET ON A REGULAR BASIS FOR BETTER BLOOD PRESSURE MANAGEMENT

**Potassium (4700 mg) Per day**
- Lowers blood pressure
- Protects against muscle cramping, and irregular heartbeat
- Relaxes the walls of the blood vessels

**Magnesium (420 mg) Per Day**
- Regulates BP, blood glucose, muscle and nerve function
- Helps for blood vessels relax and energy production

**Calcium (1250 mg) Per Day**
- Essential for blood pressure as it helps in tightening
- Relaxing of blood vessels when they need to

**Vegetarian Diets**
Also helps to lower BP

Vegetarian people experience a lower age-related rise in BP

Vegetarian diets high in fibre, and potassium in the diet helps to lower BP

In two trials, one in non-hypertensive individual and another in hypertensive persons - lacto - ovo - vegetarian diets reduced systolic BP by ≈5 mm of Hg but had equivocal effects on diastolic BP

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**EATING MORE OF THESE MINERALS CAN HELP BALANCE THE EFFECTS OF SODIUM**

Prevention of Hypertension

Maintain Ideal Body
(BMI levels - 18.5 - 22.9 kg/m²)

Lifestyle
Regular exercise
Weight control
Reduce consumption of alcohol
Avoid smoking
Stress management

Follow DASH Diet

Heredity
Those with family history of hypertension should take extra care and measures

Restriction Sodium
Not more than 2.4 grams

Education
Awareness is stepping stone to prevent hypertension.

Potassium Intake
As per prescription

Stress
Meditate. It brings about inner peace.

Physically Active
Regular physical activity - 30 - 45 min/day or five days a week

Medical
Medication to reduce hypertension.

Alcohol Consumption
Limit your intake
**EAT INTELLIGENTLY TO LOWER YOUR BLOOD PRESSURE**

1. Include more of salads and cream free soups
2. Prefer to take plain tandoori roti instead of lacchha paratha
3. Choose grilled snacks (tandoori tikka) instead of deep fried snacks
4. Go for plain Lemon water instead of Mohito or carbonated beverages
5. Try to avoid sauce other add-ons to minimize sodium
6. Follow portion size while consuming snacks and desserts

**ALWAYS REMEMBER**

- Hypertension is a life-long condition. It’s important to take your medications and continue to monitor your blood pressure
- BP reduction is required, keep it under control, and reduce the risk of stroke, heart disease, and kidney failure
- Drugs are effective, safe and well tolerated and are required to be taken for life even when the BP is “controlled”
- It is important to screen for and manage other CVD risk factors in hypertension: smoking, diabetes, dyslipidemia, excessive weight, low fitness, unhealthy diet, psycho-social stress, and sleep apnea

Compiled & Contributed by Indian Dietetic Association (IDA), Chandigarh Chapter
Reviewed by Scientific Committee, IDA
Issued in Public Interest by:

**INDIAN DIETETIC ASSOCIATION (IDA)**