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# Breaking the Pressure: Hypertension Management for Lasting Health

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**A B S T R A C T**
Hypertension, also known as high or raised blood pressure, is a global public health issue. It contributes to the burden of heart disease, stroke and kidney failure and premature mortality and disability. It disproportionately affects populations in low- and middle-income countries where health systems are weak. Hypertension rarely causes symptoms in the early stages and many people go undiagnosed. Those who are diagnosed may not have access to treatment and may not be able to successfully control their illness over the long term. There are significant health and economic gains attached to early detection, adequate treatment and good control of hypertension. Treating the complications of hypertension entails costly interventions such as cardiac bypass surgery, carotid artery surgery and dialysis, draining individual and government budgets. Addressing behavioural risk factors, e.g. unhealthy diet, harmful use of alcohol and physical inactivity, can prevent hypertension. Tobacco use increases the risk of complications of hypertension. If no action is taken to reduce exposure to these factors, cardiovascular disease incidence, including hypertension, will increase. Salt reduction initiatives can make a major contribution to prevention and control of high blood pressure. However, vertical programmes focusing on hypertension control alone are not cost effective. Integrated noncommunicable disease programmes implemented through a primary health care approach are an affordable and sustainable way for countries to tackle hypertension. Prevention and control of hypertension is complex, and demands multi-stakeholder collaboration, including governments, civil society, academia and the food and beverage industry.

**Keywords:** Hypertension, blood pressure, risk factors, civil society, beverage industry

**A R T I C L E  I N F O**

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**C O N T E N T S**



## 1. Introduction

Hypertension, commonly known as high blood pressure, is a significant health issue affecting over 50 million Americans and is a leading cause of morbidity and mortality. It is often referred to as a "cardiovascular disease" because it affects other organ systems of the body, such as the kidneys, brain, and eyes. Tens of millions of Americans are not even aware of being hypertensive because it is usually asymptomatic until the damaging effects of hypertension (such as stroke, myocardial infarction, renal dysfunction, etc.) are observed.

Hypertension is defined as an intermittent or persistent elevation of blood pressure, with a systolic blood pressure above 140 mm Hg or a diastolic blood pressure above 90 mm Hg, or a systolic and diastolic pressure of 20 mm Hg above the normal baseline pressure. The incidence of hypertension has recently increased throughout the world due to changes in lifestyle, dietary habits, and a lack of exercise. Previously, hypertension was predominant only in industrialized and developed countries; however, there has been a sudden increase in the number of cases in developing countries. It is often asymptomatic, but even so, the detection rate has increased over the past three decades. Untreated hypertension can lead to devastating end-organ damage. Therefore, clinicians have important responsibilities for the first detection and adequate treatment of hypertension.

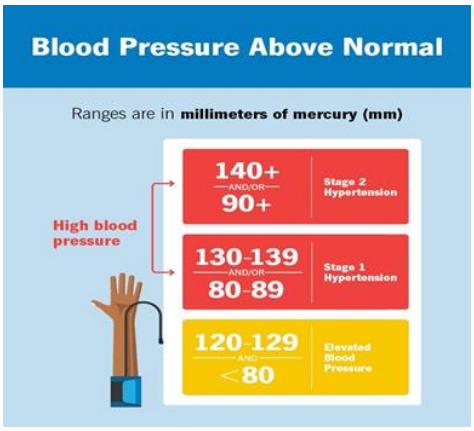


**Fig.1**

Blood flows through arteries it pushes against the inside of the artery walls. The more pressure the blood exerts on the artery walls, the higher the blood pressure will be. The size of small arteries also affects the blood pressure. When the muscular walls of arteries are relaxed or dilated, the pressure of the blood flowing through them is lower than when the artery walls narrow, or constrict. Blood pressure is highest when the heart beats to push blood out into the arteries. When the heart relaxes to fill with blood again, the pressure is at its lowest point. Blood pressure when the heart beats is called systolic pressure. Blood pressure when the heart is at rest is called diastolic pressure. When blood pressure is measured, the systolic pressure is stated first and the diastolic pressure second. Blood pressure is measured in millimeters of mercury (mm Hg). For example, if a person's systolic pressure is 120 and diastolic pressure is 80, it is written as 120/80 mm Hg. The American Heart Association considers blood pressure less than 140 over 90 normal for adults. Hypertension is serious because people with the condition have a higher risk for heart disease and other medical problems than people with normal blood pressure. Serious complications can be avoided by getting regular blood pressure checks and treating hypertension as soon as it is diagnosed. If left untreated, hypertension can lead to the following medical conditions:

- Arteriosclerosis, also called atherosclerosis
- Heart attack
- Stroke
- Enlarged heart
- Kidney damage

Arteriosclerosis is hardening of the arteries. The walls of arteries have a layer of muscle and elastic tissue that makes them flexible and able to dilate and constrict as blood flows through them. High blood pressure can make the artery walls thicken and harden. When artery walls thicken, the inside of the blood vessel narrows. Cholesterol and fats are more likely to build up on the walls of damaged arteries, making them even narrower. Blood clots can also get trapped in narrowed arteries, blocking the flow of blood. Hypertension can be classified as primary or secondary. Primary hypertension is responsible for over 90% of cases. It's more common as you get older and may be caused by one or more of several possible factors, such as being overweight, a salt-heavy diet, lack of exercise and drinking alcohol. Secondary hypertension is caused by an underlying condition, most commonly kidney problems and endocrine disorders.

## 2. Epidemiology

### Global Situations of Hypertension

WHO Global Report on Hypertension in 2023 estimated that the number of hypertensive adults almost doubled globally during the last three decades, from 650 million in 1990 to 1.3 billion adults by 2019. The health impact of increasing trends of high blood pressure translated to 10.8 million avoidable deaths annually and 235 million years of life lost or lived with disability.

Globally, almost every 1 in 3 adults is hypertensive, with male prevalence slightly higher than females under 50 years age group. Beyond the age of 50, the prevalence reaches nearly 49%, or every 1 out of 2 individuals, with nearly equal prevalence among both men and women. While early diagnosis and timely treatment is important, nearly 46% of individuals were never diagnosed. Of those diagnosed, only 42% were on treatment, with nearly half among these having their blood pressure controlled. Hence in most of the countries, there are significant gaps in diagnosis and treatment coverage, with low-income countries facing the major brunt of illness.

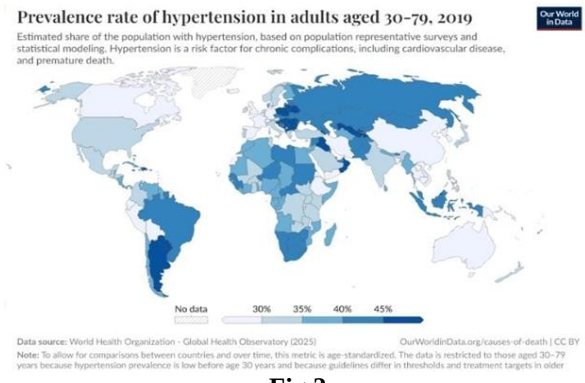


**Fig.2**

WHO has been working with Member States to improve global and national response to tackle NCDs and their risk factors since 2013. The Member States agreed on "Global action plan for the prevention and control of NCDs 2013-

2020", that was subsequently extended to 2030 synchronizing with the Sustainable Development Goals (SDG), which includes SDG target 3.4 of reducing premature mortality due to noncommunicable diseases by a third against a baseline of 2015. The global implementation roadmap 2023-2030 under this plan aims to achieve this reduction by achieving nine voluntary global targets. Reducing prevalence of hypertension by 25% is one of the targets under the global roadmap.

Hypertension status and coverage in the WHO South-East Asia Region. Hypertension poses a significant health challenge in the countries of WHO South-East Asia Region affecting an estimated 294 million individuals aged 30 and above. The condition was responsible for 2.4 million annual deaths in 2019, accounting for nearly half of all deaths due to cardiovascular diseases. Half among those with high blood pressure were unaware of their condition and only less than half of those on treatment had their condition under control. In the South-East Asia Region, The Seventy-sixth Regional Committee in 2022 endorsed the initiative "SEAHEARTS: Accelerating Prevention and Control of Cardiovascular Diseases in the South-East Asia Region (SEA/RC76/R5). The Call to Action asks for developing interim milestones for risk factor reduction and improved treatment cascade in broader context of NCD prevention and control.

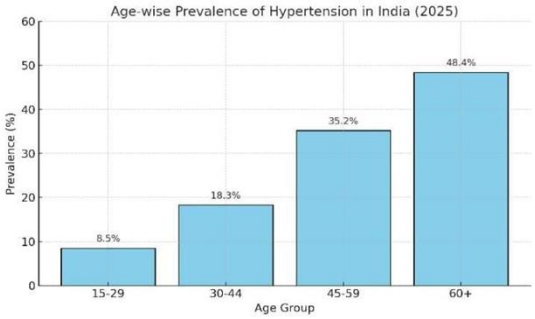


**Fig.3**

**IN INDIA**

Hypertension is increasingly prevalent across all age groups in India, with the burden rising significantly with age. As per the latest data (2025), the prevalence among individuals aged 15–29 is about 8.5%, which rises to 18.3% in the 30–44 age group, and sharply climbs to 35.2% in those aged 45–59. The highest prevalence is seen in individuals aged 60 and above, reaching 48.4%. This trend highlights the urgent need for early screening and preventive lifestyle interventions beginning in young adulthood to mitigate the growing burden of hypertension in the aging Indian population.

**3. Etiology of essential hypertension**

**Environment:** A number of environmental factors have been implicated in the development of hypertension, including salt intake, obesity, occupation, alcohol intake, family size, excessive noise exposure and crowding.

**Salt Sensitivity**

Sodium is the environmental factor that has received the greatest attention. It is to be noted that approximately 60% of the essential hypertension population is responsive to sodium intake.

**Role of Renin**

Renin is an enzyme secreted by the juxtaglomerular cells of the kidney and linked with aldosterone in a negative feedback loop. The range of plasma renin activities observed in hypertensive subjects is broader than in normotensive individuals. In consequence, some hypertensive patients have been defined as having low renin and others as having high renin essential hypertension.

**Insulin Resistance**

Insulin is a polypeptide hormone secreted by the pancreas. Its main purpose is to regulate the levels of glucose in the body; it also has some other effects. Insulin resistance and/or hyperinsulinemia have been suggested as being responsible for the increased arterial pressure in some patients with hypertension. The feature is now widely recognized as part of syndrome X, or the metabolic syndrome.

**Sleep Apnea**

Sleep apnea is a common, under- recognized cause of hypertension. It is best treated with weight loss and nocturnal nasal positive airway pressure.

**Genetics**

Hypertension is one of the most common complex genetic disorders, with genetic heritability averaging 30%. Data supporting this view emerge from animal studies as well as population studies in humans. Most of these studies support the concept that the inheritance is probably multifactorial or that a number of different genetic defects each have an elevated blood pressure as one of their phenotypic expressions. More than 50 genes have been examined in association studies with hypertension, and the number is constantly growing.

**Other Etiologies**

There are some anecdotal or transient causes of high blood pressure. These are not to be confused with the disease called hypertension in which there is an intrinsic physiopathological mechanism as described above.

**Etiology of Secondary Hypertension**

Only in a small minority of patients with elevated arterial pressure can a specific cause be identified. These individuals will probably have an endocrine or renal defect that if corrected would bring blood pressure back to normal values.

**Renal Hypertension**

Hypertension produced by diseases of the kidney. A simple explanation for renal vascular hypertension is that decreased perfusion of renal tissue due to stenosis of a main or branch renal artery activates the renin angiotensin system.

**Adrenal Hypertension**

Hypertension is a feature of a variety of adrenal cortical abnormalities. In primary aldosteronism there is a clear relationship between the aldosterone induced sodium retention and the hypertension. In patients with pheochromocytoma increased secretion of catecholamines such as epinephrine and norepinephrine by a tumor (most often located in the adrenal medulla) causes excessive stimulation of (adrenergic receptors), which results in peripheral vasoconstriction and cardiac stimulation. This

diagnosis is confirmed by demonstrating increased urinary excretion of epinephrine and norepinephrine and/or their metabolites (vanillylmandelic acid).

Coarctation of the Aorta

**Diet:** Certain medications, especially NSAIDS (Motrin ibuprofen) and steroids can cause hypertension. Ingestion of imported licorice (Glycyrrhiza glabra) can cause secondary hypoaldosteronism , which itself is a cause of hypertension.

Age: Over time, the number of collagen fibres in artery and arteriolar walls increases, making blood vessels stiffer. With the reduced elasticity comes a smaller cross sectional area in systole, and so a raised mean arterial blood pressure.

**Symptoms and Signs**

Most people with hypertension don't feel any symptoms. Very high blood pressures can cause headaches, blurred vision, chest pain and other symptoms. Checking your blood pressure is the best way to know if you have high blood pressure. If hypertension isn't treated, it can cause other health conditions like kidney disease, heart disease and stroke.

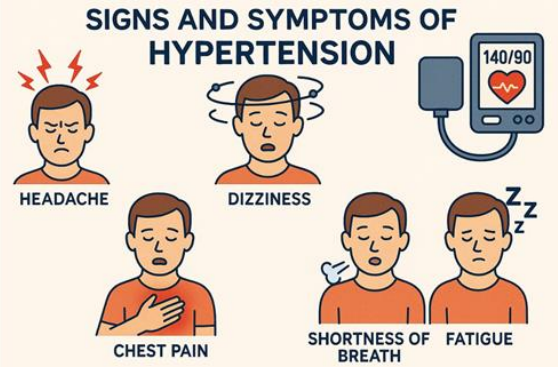


**Fig.4**

People with very high blood pressure (usually 180/120 or higher) can experience symptoms including:

1. Severe headaches
2. Chest pain
3. Dizziness
4. Difficulty breathing
5. Nausea
6. Vomiting
7. Blurred vision
8. Anxiety
9. Confusion
10. Buzzing in the ears
11. Nosebleeds

If you are experiencing any of these symptoms and a high blood pressure, seek care immediately. The only way to detect hypertension is to have a health professional measure blood pressure. Having blood pressure measured is quick and painless. Although individuals can measure their own blood pressure using automated devices, an evaluation by a health professional is important for assessment of risk and associated conditions.

**4. Pathophysiology**

- Abrupt increases in systemic vascular resistance likely related to humoral vasoconstrictors.
- Endothelial injury
- Fibrinoid necrosis of the arterioles
- Deposition of platelets and fibrin
- Breakdown of the normal autoregulatory function
- The resulting ischemia prompts further release of vasoactive substances completing a vicious cycle.

There is still much uncertainty about the pathophysiology of hypertension. A small number of patients (between 2% and 5%) have underlying renal or adrenal disease as the cause for their raised blood pressure. In the remainder, however, no clear single identifiable cause is found and their condition is labeled "essential hypertension". A number of physiological mechanisms are involved in the maintenance of normal blood pressure, and their derangement may play a part in the development of essential hypertension.

It is probable that a great many interrelated factors contribute to the raised blood pressure in hypertensive patients, and their relative roles may differ between individuals. Among the factors that have been intensely studied are salt intake, obesity and insulin resistance, the renin-angiotensin system, and the sympathetic nervous system. In the past few years, other factors have been evaluated, including genetics, endothelial dysfunction (as manifested by changes in endothelin and nitric oxide), low birth weight and intrauterine nutrition, and neurovascular anomalies.

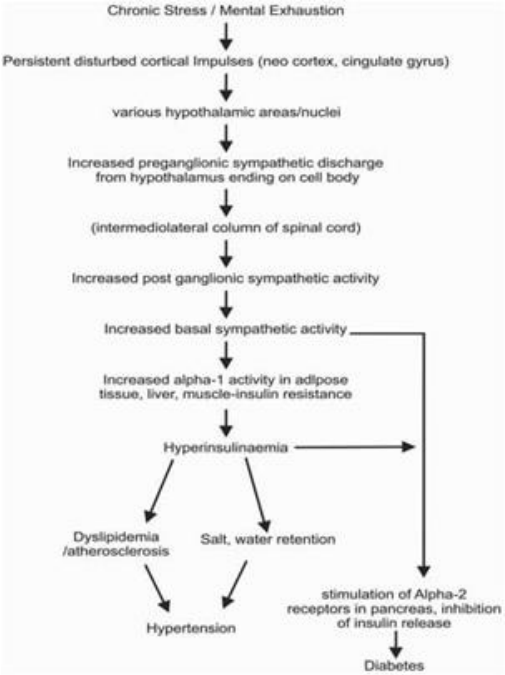


**Fig.5**

**5. Diagnosis**

There are electronic, mercury and aneroid devices that are used to measure blood pressure (14). WHO recommends the use of affordable and reliable electronic devices that have the option to select manual readings (14, 15). Semi-automatic devices enable manual readings to be taken when batteries run down, a not uncommon problem in resource-constrained settings. Given that mercury is toxic, it is recommended that mercury devices be phased out in favour of electronic devices (14). Aneroid devices such as

sphygmomanometers should be used only if they are calibrated every six months and users should be trained and assessed in measuring blood pressure using such devices. Blood pressure measurements need to be recorded for several days before a diagnosis of hypertension can be made. Blood pressure is recorded twice daily, ideally in the morning and evening. Two consecutive measurements are taken, at least a minute apart and with the person seated. Measurements taken on the first day are discarded and the average value of all the remaining measurements is taken to confirm a diagnosis of hypertension.

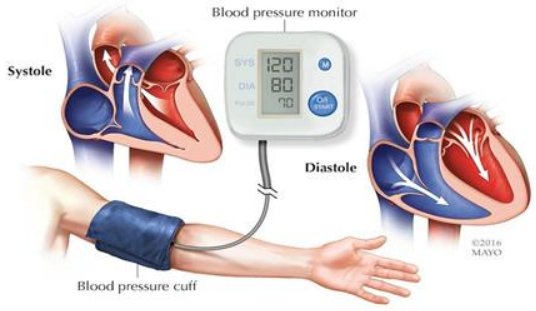


**Fig.6**

**Management:**

**Goals of management of hypertension:**

The therapeutic goal of long-term management of hypertension is to maintain a blood pressure of less than 140/90 mmHg; that is, BOTH a systolic pressure of less than 140 mmHg and a diastolic pressure of less than 90 mmHg for as long as the patient lives. Because of the higher risk of cardiovascular complications in those with current diabetes (Type I or II) or renal disease (elevated serum creatinine or microalbuminuria), the goal of management in these patients is a sustained blood pressure of less than 130/80 mmHg.

**Management strategy for hypertension**

- Determine the overall risk profile of the patient based on the risk factors identified and the above WHO Risk Prediction charts 6 and 7, and determine the patient's overall risk for CVD events over the next 10 years.
- Determine the specific therapeutic goals for the individual patient (<140/90 mmHg and <130/80 mmHg for diabetic or with renal disease) and develop a plan to lower BP and reduce the overall cardiovascular risk.

**The plan includes:**

- Life style modification to decrease risk factors
- Drug therapy
- Monitoring blood pressure and other risk factors

**Lifestyle Modification**

The adoption of healthy lifestyles by all persons is critical for the prevention of hypertension and is an indispensable part of the management of those with hypertension (Annex 3). Major lifestyle modifications shown to lower BP include:

- Weight reduction in those individuals who are overweight or obese.
- Adoption of the Dietary Approaches to Stop Hypertension (DASH) eating plan which is rich in potassium and calcium with dietary sodium reduction.
- Practicing moderate intensity physical activity.
- Cessation of smoking.
- Reduction of alcohol intake if alcohol taken.

Appropriate lifestyle modifications may eliminate the need for drug therapy in patients with borderline hypertension, decrease the dose and /or the number of drugs needed in patients with established hypertension, and reduce cardiovascular risk.

**Pharmacological Treatment**

Specific drugs can be used by individuals to treat hypertension. Doctors frequently advise starting with a low dose. Typically, antihypertensive medicines only cause modest adverse effects. In order to control their blood pressure, patients with hypertension will eventually need to mix two or more medications.

**Medications for hypertension include:**

- Diuretics, including thiazides, chlorthalidone and indapamide.
- Beta-blockers and alpha-blockers
- Calcium-channel blockers
- Central agonists
- Peripheral adrenergic inhibitor
- Vasodilators
- Angiotensin-converting enzyme (ACE) inhibitors
- Angiotensin receptor blockers

Angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers. Other antihypertensive medications targeting RAAS, such as direct renin inhibitors and mineralocorticoid receptor antagonists, are typically considered reserve medications because there is less clinical trial evidence supporting their use as first line antihypertensive therapy. Among medications that inhibit components of the RAAS, ACE inhibitors and angiotensin II receptor blockers are considered first line anti-hypertensive. In substantial trials for hypertension, ACE inhibitors and angiotensin II receptor blockers have been evaluated.

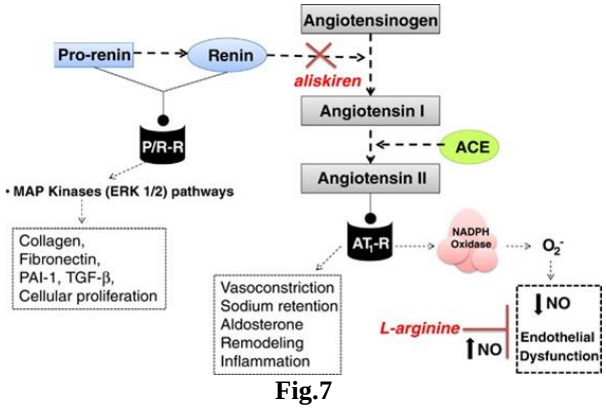


**Fig.7**

Both medication classes improved outcomes in patients with heart failure with decreased left ventricular ejection fraction or with diabetic nephropathy, making them particularly advantageous in these populations. Both groups seem to be equally effective at lowering the risk of CVD.

Dihydropyridine calcium channel blockers cause vasodilation by obstructing L-type calcium channels in vascular smooth muscle. They are potent antihypertensive medications with a wealth of knowledge from many clinical studies. This pharmacological class's ability to be taken with all other first-line antihypertensives is a practical benefit. A typical adverse effect, especially in obese people, is peripheral edoema, which is explained by peripheral arterial vasodilation rather than worsening heart failure or renal disease.

Nondihydropyridine calcium channel blockers, especially verapamil, also lower cardiac calcium channels, which can reduce heart rate and cardiac contractility. Thiazide-type diuretic such as hydrochlorothiazide, lack the benzothiadiazine ring but thiazide-like diuretics, such as chlorthalidone, metolazone, and indapamide, do. Since the earliest trials demonstrating the morbidity advantages of antihypertensive medication, both subclasses of thiazide diuretics block Na+ and CIcotransporters in renal tubules, hence inducing natriuresis, and have been a crucial part of pharmacological hypertension control.

To achieve improved risk-benefit profiles, diuretic doses have been significantly decreased over time. However, whether or not this metabolic activity translates into long-term increases in CVD risk has been questioned. Thiazide-type and thiazide-like diuretics can affect glucose metabolism raising the risk for new onset diabetes mellitus.
Beta-adrenoreceptor blockers by reducing cardiac output, heart rate, renin release, and effects on the adrenergic control of the nervous system, beta-adrenoreceptor blockers lower blood pressure.


**Fig.8**

Beta-adrenoreceptor blockers perform better than other first-line antihypertensives in reducing CVD morbidity and mortality after acute myocardial infarction and in patients with heart failure who have reduced left ventricular ejection fraction, but not when these comorbidities are present. This impact has been linked to decreased aortic BP decreases and negative effects of beta-adrenoreceptor blockage on body weight and glucose metabolism.With more recent beta-adrenoreceptor blockers, such as sinus node rate or atrioventricular conduction, some of these drawbacks may be decreased.

**Compliance with Drug Treatment**

Failure of compliance with drug treatment is a major problem in all hypertensive patients which may reach up to 60%, may result from many causes:

- Complex drug regimen.
- Nature of the doctor –patient relationship.
- Frequent dosing schedules.
- Side effects.
- Resistant hypertension which need multi drug regimen and more side effects.
- Cost of medication.

**6. Non pharmacological treatment**

Hypertension, or high blood pressure, is a leading risk factor for cardiovascular diseases, stroke, and kidney failure. While medications play a crucial role in managing elevated blood pressure, non-pharmacological interventions form the cornerstone of prevention and early treatment. These lifestyle modifications not only help control blood pressure but also improve overall health and reduce dependence on medications.

**1. Dietary Modifications**

**a) DASH Diet (Dietary Approaches to Stop Hypertension):** The DASH diet is specifically designed to combat hypertension. It emphasizes the consumption of fruits, vegetables, whole grains, lean proteins, and low-fat dairy products while reducing intake of saturated fats, red meats, and added sugars. This diet has been clinically proven to lower systolic blood pressure by 8–14 mmHg.

**b) Sodium Reduction**

Excessive sodium intake contributes significantly to increased blood pressure. It is recommended to limit sodium intake to less than 2.3 grams per day, with an ideal goal of under 1.5 grams/day. This can lead to a reduction in blood pressure by 2–8 mmHg.

**c) Increase in Potassium Intake**

Potassium helps balance the effects of sodium and relaxes blood vessel walls. Foods rich in potassium—such as bananas, oranges, spinach, and sweet potatoes—should be included in the daily diet.

**2. Weight Management**

Obesity is a strong risk factor for hypertension. Even modest weight loss can have a substantial impact. Losing 5–10% of body weight can significantly reduce blood pressure levels. Maintaining a healthy body mass index (BMI) between 18.5 and 24.9 kg/m² is strongly advised.

**3. Regular Physical Activity**

Engaging in regular aerobic exercise—such as brisk walking, swimming, or cycling—for at least 30 minutes most days of the week can lower systolic blood pressure by 4–9 mmHg. Resistance training 2–3 times a week also supports cardiovascular health.

**4. Limitation of Alcohol Consumption**

Excessive alcohol intake can raise blood pressure and reduce the effectiveness of antihypertensive medications. Limiting alcohol to no more than two drinks per day for men and one drink per day for women is recommended.

**5. Smoking Cessation**

Tobacco use increases blood pressure and damages blood vessels. Quitting smoking improves cardiovascular health almost immediately and is essential for long-term blood pressure control.

**6. Stress Management**

Chronic stress can contribute to temporary and sustained increases in blood pressure. Stress reduction techniques such as deep breathing exercises, yoga, meditation, and mindfulness can help reduce this effect.

**7. Adequate Sleep**

Poor sleep quality and sleep disorders, such as sleep apnea, are linked to high blood pressure. Ensuring 7–8 hours of restful sleep each night contributes to better blood pressure regulation.

**8. Reduce Caffeine Intake**

Caffeine can cause a short-term spike in blood pressure, particularly in individuals who are sensitive to it. Moderating caffeine intake to below 300 mg/day may help reduce blood pressure fluctuations.

**Special Considerations in Management of Hypertension**

**Ischemic Heart Disease:** Ischemic heart disease (IHD) is the most common form of target organ damage associated with hypertension. In patients with hypertension and stable angina pectoris, the first drug of choice is usually a BB; alternatively, long-acting CCBs. In patients with acute coronary syndromes (unstable angina or myocardial infarction), hypertension should be treated initially with BBs and ACEIs, with addition of other drugs as needed for BP control. In patients with postmyocardial infarction, ACEIs, BBs, and aldosterone antagonists have proven to be most beneficial.

**Heart Failure**

Heart failure (HF), in the form of systolic or diastolic ventricular dysfunction, results primarily from systolic hypertension and IHD. In asymptomatic individuals with demonstrable ventricular dysfunction, ACEIs and BBs are recommended. For those with symptomatic ventricular dysfunction or end-stage heart disease, ACEIs, BBs, ARBs and aldosterone blockers are recommended along with loop diuretics.

**Diabetes with Hypertension**

Combinations of two or more drugs are usually needed to achieve the target goal of <130/80 mmHg. ACEI or ARB based treatments favorably affect the progression of diabetic nephropathy and reduce albuminuria, and ARBs have been shown to reduce progression to macroalbuminuria. Thiazide diuretics, BBs, ACEIs, ARBs, and CCBs have been shown to be beneficial in reducing CVD and stroke incidence in patients with diabetes.

**Chronic Kidney Disease**

**In people with chronic kidney disease (CKD), as defined by either:** Reduced excretory function with an estimated GFR below 60 ml/min per 1.73 m2 (Corresponding approximately to a creatinine of >1.5 mg/dL in men or >1.3 mg/dL in women), OR. The presence of albuminuria (>300 mg/day or 200 mg albumin/g creatinine). Therapeutic goals are to slow deterioration of renal function and prevent CVD. Hypertension appears in the majority of these patients, and they should receive aggressive BP management, often with three or more drugs to reach target BP values of <130/80 mmHg. ACEIs and ARBs have demonstrated favorable effects on the progression of diabetic and non-diabetic renal disease. A limited rise in serum creatinine of as much as 35 percent above baseline with ACEIs or ARBs is acceptable and is not a reason to withhold treatment unless hyperkalemia develops. With advanced renal disease (estimated GFR <30 ml/min 1.73 m2, corresponding to a serum creatinine of 2.5–3 mg/dL), increasing doses of loop diuretics are usually needed in combination with other drug classes.

**Cerebrovascular Disease**

The risks and benefits of acute lowering of BP during an acute stroke are still unclear; control of BP at intermediate levels (approximately 160/100 mmHg) is appropriate until the condition has stabilized or improved. Recurrent stroke rates are lowered by the combination of an ACEI and thiazide-type diuretic.

**Obesity and the metabolic syndrome**

Obesity (BMI >30 kg/m2) is an increasingly prevalent risk factor for the development of hypertension and CVD. Metabolic syndrome defined as the presence of and increased waist circumference (waist circumference >102 cm. in men or >88 cm. in women) with two or more of the following conditions: glucose intolerance (fasting glucose >100 mg/dL), BP >130/80 mmHg, high triglycerides (>150 mg/dL), or low HDL (<40 mg/dL in men or <50 mg/dL in women). 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.

**Hypertensive Urgencies And Emergencies**

**Emergency:** Patients with marked BP elevations and acute target-organ damage (e.g., encephalopathy, myocardial infarction, unstable angina, pulmonary edema, eclampsia, intra cranial hemorrhage, head trauma, life-threatening arterial bleeding, or aortic dissection) require hospitalization and parenteral drug therapy.

**Urgency:**

Patients with markedly elevated BP but without acute target organ damage usually do not require hospitalization, but they should receive immediate combination oral antihypertensive therapy. They should be carefully evaluated and monitored for hypertension-induced heart and kidney damage and for identifiable causes of hypertension.

**Prevention of Hypertension**

High blood pressure is preventable and treatable and because hypertension is a major risk factor for cardiovascular disease. Many deaths can be prevented if hypertension is prevented from developing or is detected early and managed properly.

**1. Primary prevention:**

This refers to actions that can be taken prior to the onset of hypertension through lifestyle modification.

**Actions:**

- Maintain normal body weight (BMI <25 kg/m2)
- Avoid high salt diet (add no salt to food either in cooking or at the table, avoid canned and processed foods)
- Engage in regular aerobic activity
- Limit alcohol consumption
- Consume diet rich in fresh fruits and vegetables,
- Replace saturated fat with polyunsaturated fats.
- Stop smoking

**2. Secondary prevention:**

This refers to actions which halt the progress of hypertension at its incipient stage and

prevents complications through early detection and proper management.

**Actions:**

- Regular blood pressure screening
- Lifestyle modification
- Early initiation of treatment and assurance of compliance

**3. Tertiary prevention:**

Refers to Measures used late in the stage of the disease to limit disease progression and clinical disease complication after overt clinical hypertension manifest

**Actions:**

**Lifestyle modifications:** Treatment of hypertension and any target organ damage with consideration of compliance, adherence, and concordance. Concomitant treatment of diseases developed secondary to hypertension

**Complications**

**Complications of uncontrolled hypertension**

Among other complications, hypertension can cause serious damage to the heart. Excessive pressure can harden arteries, decreasing the flow of blood and oxygen to the heart. This elevated pressure and reduced blood flow can cause: chest pain, also called angina; heart attack, which occurs when the blood supply to the heart is blocked and heart muscle cells die from lack of oxygen. The longer the blood flow is blocked, the greater the damage to the heart; heart failure, which occurs when the heart cannot pump enough blood and oxygen to other vital body organs; and irregular heart beat which can lead to a sudden death. Hypertension can also burst or block arteries that supply blood and oxygen to the brain, causing a stroke. In addition, hypertension can cause kidney damage, leading to kidney failure.

## 7. Conclusion

Hypertension is a very important disorder in aged people and is associated with higher risk of cardiovascular morbidity and mortality. The fact of reducing blood pressure values decreases the risk for cardiac death as well as neurological, metabolic, and musculoskeletal system sequelae in aged people. Therefore, the aim of the antihypertensive treatment must be to reduce cardiovascular risks and to maintain an adequate quality of life and good functional capacity in these patients.

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