

Editorial

Hypertension – A Leading Cause of Mortality

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Introduction of Hypertension

Hypertension, or high blood pressure, means the force of blood pushing against your artery walls is too high. This makes your heart work harder to pump blood through your body. Over time, hypertension damages your arteries and heart. It can lead to serious complications, like a heart attack or stroke. Because high blood pressure usually doesn't cause symptoms, it's often known as a "silent killer."

Doctors measure blood pressure (BP) in millimeters of mercury (mmHg) and took reading as;

Systolic blood pressure: This is the top number. It's the pressure on your artery walls when your heart contracts.

Diastolic blood pressure: This is the bottom number. It's the pressure between beats when your heart relaxes. It defines as a top number (systolic BP) of 130 mmHg or higher, or a bottom number (diastolic BP) of 80 mmHg or higher.

In Europe, providers define hypertension as a top number of 140 or higher, or a bottom number of 90 or higher.

The World Health Organization has identified hypertension (high blood pressure) as the leading cause of cardiovascular mortality.

The World Hypertension League (WHL), an umbrella organization of 85 national hypertension societies and leagues, recognized that more than 50% of the hypertensive population worldwide are unaware of their condition. To address this problem, the WHL initiated a global awareness campaign on hypertension in 2005 and dedicated 17 May of each year as World Hypertension Day.¹

Hypertension, also known as high blood pressure, is a long-term medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure usually does not cause symptoms itself. It is, however, a major risk factor for stroke, coronary artery disease, heart failure, atrial fibrillation, peripheral arterial disease, vision loss, chronic kidney disease, and dementia. Hypertension is a major cause of premature death worldwide.²

Types of Hypertension

There are two main types of high blood pressure, based on what's causing it:

- **Primary Hypertension:** This means your genetics, family history and age are the primary causes of your high blood pressure. Blood pressure rises with aging in societies with a western diet and lifestyle.³ Depression is associated with hypertension and loneliness is also a risk factor.

Periodontal disease is also associated with high blood pressure. Arsenic exposure through drinking water is associated with elevated blood pressure. Air pollution is associated with hypertension.⁴ Whether these associations are causal is unknown. Gout and elevated blood uric acid are associated with hypertension.

- **Secondary Hypertension:** This means there's an identifiable cause, like a medical condition, medication or addictive substance, that is making your blood pressure high. Kidney disease is the most common secondary cause of hypertension.⁵ Hypertension can also be caused by endocrine conditions, such as Cushing's syndrome, hyperthyroidism, hypothyroidism, acromegaly, Conn's syndrome or hyperaldosteronism, renal artery stenosis (from atherosclerosis or fibromuscular dysplasia), hyperparathyroidism, and pheochromocytoma. Other causes of secondary hypertension include obesity, sleep apnea, pregnancy, coarctation of the aorta, excessive eating of liquorice, excessive drinking of alcohol, certain prescription medicines, herbal remedies, and stimulants such as cocaine and methamphetamine.⁶

Stages of Hypertension

There are two main stages of hypertension:

- **Stage 1** means your top number is in the 130s, **or** your bottom number is in the 80s.
- **Stage 2** means your top number is 140 or higher, **or** your bottom number is 90 or higher.

On either end of these stages, there are other categories that providers use to guide treatment decisions:

- **Elevated blood pressure** is blood pressure that's a bit above normal but not yet diagnosed as hypertension.
- **Severe Hypertension** is dangerously high blood pressure that's not yet causing organ damage.
- **A Hypertensive Emergency** is dangerously high blood pressure that's damaging your organs. It causes symptoms and is a medical emergency.

Signs and Symptoms of Hypertension

Hypertension is rarely accompanied by symptoms. Half of all people with hypertension are unaware that they have it.⁷ Hypertension is usually identified as part of health screening or when seeking healthcare for an unrelated problem.

Some people with high blood pressure report headaches, as well as lightheadedness, vertigo, tinnitus (buzzing or hissing in the ears), altered vision

or fainting episodes. These symptoms, however, might be related to associated anxiety rather than the high blood pressure itself.⁸

Long-standing untreated hypertension can cause organ damage with signs such as changes in the optic fundus seen by ophthalmoscopy. The severity of hypertensive retinopathy correlates roughly with the duration or the severity of the hypertension. Other hypertension-caused organ damage include chronic kidney disease and thickening of the heart muscle.

Hypertension usually has no symptoms. You could have it for years without feeling any clues. In fact, the World Health Organization estimates that 46% of adults with hypertension don't know they have it.

If your blood pressure is extremely high, you may have symptoms like:

- Changes to your mental function
- Chest pain
- Dizziness
- Edema (swelling)
- Heart palpitations
- Peeing less than usual
- Seizures
- Severe headache
- Signs of stroke, like sudden facial droop, slurred speech or sudden arm/leg weakness
- Vision changes, like eye pain, vision loss or sudden blurry vision

Causes of Hypertension

Healthcare providers can't find a single cause of hypertension for most people. Instead, many factors can come together to make your blood pressure higher. These include:

- Being over age 55
- Having a history of the condition in your biological family
- Smoking or using tobacco products
- Having overweight/obesity
- Eating foods high in sodium
- Not getting enough physical activity
- Drinking too much alcohol

In some cases, providers can find a specific cause of your high blood pressure, like an underlying condition, medication or substance. Here are some examples:

- **Conditions**, like obstructive sleep apnea, renal artery stenosis, primary aldosteronism and thyroid disease
- **Medications**, like those that manage ADHD, inflammation, autoimmune disease and mental health conditions
- **Addictive substances**, like alcohol, nicotine and cocaine

Pathophysiology of Hypertension

In most people with established essential hypertension, increased resistance to blood flow (total peripheral resistance) accounts for the high pressure while cardiac

output remains normal. There is evidence that some younger people with prehypertension or 'borderline hypertension' have high cardiac output, an elevated heart rate and normal peripheral resistance, termed hyperkinetic borderline hypertension.⁹ These individuals may develop the typical features of established essential hypertension in later life as their cardiac output falls and peripheral resistance rises with age.

It is unclear whether or not vasoconstriction of arteriolar blood vessels plays a role in hypertension. Hypertension is also associated with decreased peripheral venous compliance, which may increase venous return, increase cardiac preload and, ultimately, cause diastolic dysfunction.

Pulse pressure (the difference between systolic and diastolic blood pressure) is frequently increased in older people with hypertension.¹⁰

Excessive sodium or insufficient potassium in the diet leads to excessive intracellular sodium, which contracts vascular smooth muscle, restricting blood flow and so increases blood pressure.

Epidemiology of Hypertension

In 2024, one in three or 33% of the world population were estimated to have hypertension. Of all people with hypertension, almost half (about 44%) do not know that they have hypertension. In 1990, about 650 million people had a diagnosis of hypertension, which increased to 1.4 billion by 2024 mostly due a rise of the number of older adults in low- and middle-income countries.

Hypertension is counted as the major cause and most important factor in the development of cardiovascular diseases worldwide. However, even in the presence of efficacious antihypertensive agents and intensive research data, large numbers of patients in actual clinical practice still suffer with uncontrolled hypertension. Studies indicate that control rates vary according to various countries and geographic regions.¹¹ Even though, the rate of awareness towards hypertension is quite prominent from 62% in Australia to 72% in US, the control rates are quite discouraging as with to 24% and 35% respectively. In the South Asian region, the scenario is more threatening as China reported only 8% control rates and India with 6% in management of hypertension. At present, it is estimated that about 1 billion people worldwide have hypertension (>140/90 mmHg), and this number is expected to increase to 1.56 billion by 2025.¹²

A similar scenario is seen in Pakistan. The National Health Survey of Pakistan estimated that hypertension affects 18% of adults and 33% of adults above 45 years old. In another report, it was shown that 18% of people in Pakistan suffer from hypertension with every third person over the age of 40 becoming increasingly vulnerable to a wide range of diseases. It was also mentioned that only 50% of the people with hypertension were diagnosed and that only half of those

diagnosed were ever treated. Thus, only 12.5% of hypertension cases were adequately controlled.⁶ Some remote areas like Balochistan, there is a paucity of data but the control rate is likely to get even worse.

Complications of Hypertension

Untreated hypertension damages your arteries and overworks your heart. Over time, it may lead to:

- **Atrial Fibrillation** : A chaotic rhythm in your heart that affects how well it can pump blood
- **Chronic kidney disease**: Problems with your kidney function that can get worse over time
- **Cognitive impairment and dementia**: Changes to your thinking, memory and personality
- **Coronary artery disease**: Narrowed or blocked arteries in your heart
- **Heart attack**: A sudden lack of blood flow to your heart
- **Heart failure**: A long-term condition that affects your heart’s pumping ability
- **Hypertensive retinopathy**: Damage to your eyes that may lead to vision loss
- **Peripheral artery disease**: Narrowed or blocked arteries in your legs or arms
- **Erectile dysfunction**: Difficulty in obtaining an erection
- **Stroke**: A sudden lack of blood flow to your brain that can cause long-term neurological changes

Prevention of Hypertension

Much of the disease burden of high blood pressure is experienced by people who are not labeled as hypertensive. Consequently, population strategies are required to reduce the consequences of high blood pressure and reduce the need for antihypertensive medications. Lifestyle changes are recommended to lower blood pressure.

Recommended lifestyle changes for the prevention of hypertension include:

- maintain normal body weight for adults (e.g. body mass index below 25 kg/m²)¹³.
- reduce dietary sodium intake to <100 mmol/day (<6 g of salt (sodium chloride) or <2.4 g of sodium per day)
- engage in regular aerobic physical activity with moderate intensity (minimum 150 minutes per week)
- limit alcohol consumption, max 1 drink for women and 2 for men per day
- consume a diet rich in whole grains, fruits, and vegetables, such as the DASH diet
- not smoking
- stress reduction and management, e.g. by meditation and yoga

Management and Treatment of Hypertension

Hypertension treatments include medications to lower your blood pressure and changes to your daily habits. Common medicines prescribed for high blood pressure include diuretics, beta-blockers, calcium channel

blockers, ACE inhibitors and ARBs. Your provider will recommend the right treatment plan for you based on your blood pressure readings, the cause of your high blood pressure and any other conditions you may have.

In general, changes to your habits — sometimes called “lifestyle changes” — are a key part of treatment for everyone. This is true even if you’re taking medicine. In some cases, providers recommend making changes for a while before starting medicine. It depends on your medical history and risk for a heart attack or stroke.

Changes you can make to lower your blood pressure include:

- **Keep a weight that’s healthy for you.** Your healthcare provider can give you a target range.
- **Eat nutritious foods.** A couple of examples are the DASH diet and the Mediterranean diet. These ways of eating are full of fruits, vegetables, whole grains and low-fat dairy. They’re also low in sodium and cholesterol.
- **Cut down on sodium.** Try to limit your sodium intake to no more than 1,500 milligrams (mg) per day. If this is too hard at first, start by reducing your daily intake by at least 1,000 mg.
- **Get enough potassium.** Try to get 3,500 to 5,000 milligrams per day. Ideally, this should be through foods rather than supplements. Some foods high in potassium include bananas, avocados and potatoes (with skin).
- **Get enough physical activity.** Ask your healthcare provider what’s safe for you and how to get started. In general, start slow and work your way up to 150 minutes of aerobic exercise per week. Strength training is also helpful for your heart and whole body.
- **Quit smoking.** Quitting lowers your blood pressure and has many other benefits. Your provider will help you make a plan. This may include support groups, nicotine replacement therapy and prescription medicine that can make quitting easier.
- **Limit or avoid alcohol.** If you choose to drink, do so in moderation. This means one or fewer drinks per day for females, and two or fewer per day for males. The fewer drinks, the better.
- Doing these things can also help prevent high blood pressure if your numbers are currently in the normal range.

The following fruits, vegetables, nuts and seeds are effective to reduce Hypertension (High Blood Pressure)

Fruits	Vegetable	Nuts & Seeds
Bananas	Spinach	Almonds
Oranges	Kale	Walnuts
Strawberries	Swiss chard	Pistachios
Apricots	Beetroots	Brazil Nuts
Pineapples	Broccoli	Peanuts
Melons	Cauliflower	Pumpkin Seeds

Grapefruits	Carrots	Flax Seeds
Kiwi fruits	Sweet potatoes	Chia Seeds
Papayas	Tomatoes	Sunflower Seeds
Avocados	Bell peppers	
Blueberries	Garlic	
Watermelon	Leafy greens	
Grapes		
Pomegranates		

Green tea is a popular drink that contains plant compounds linked to better heart health, lower the blood pressure and also having anti-oxidant and anti-inflammatory properties. Simple drinking water also affects blood pressure and may help lower the blood pressure. Staying well hydrated may be an important aspect of managing high blood pressure.

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