

A REVIEW ON TYPES , TREATMENT , AWARENESS , PREVENTION , PATHOPHYSIOLOGY AND DIAGNOSIS OF HYPERTENSION

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ABSTRACT

Hypertension holds a unique place in population health and health care because it is the leading cause of cardiovascular disease and the most common non communicable condition seen in primary care worldwide. Without effective prevention and control, raised blood pressure significantly increases the risk of stroke, myocardial infarction, chronic kidney disease, heart failure, dementia, renal failure, and blindness. There is an urgent need for stakeholders—including individuals and families—across the health system, researchers, and decision makers to work collaboratively for improving prevention, screening and detection, diagnosis and evaluation, awareness, treatment and medication adherence, management, and control for people with or at high risk for hypertension. Meeting this need will help reduce the burden of hypertension-related disease, prevent complications, and reduce the need for hospitalization, costly interventions, and premature deaths.

Key words : *Hypertension, Health , Blood pressure , cardiovascular disease*

INTRODUCTION

Hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart. The higher the pressure, the harder the heart has to pump. Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney and other diseases. It is a major cause of premature death worldwide, with upwards of 1 in 4 men and 1 in 5 women – over a billion people – having the condition. The burden of hypertension is felt disproportionately in low- and middle-income countries, where two thirds of cases are found, largely due to increased risk factors in those populations in recent decades.

Hypertension, elevated blood pressure, is a noteworthy public health concern worldwide due to its significant contribution to the global health burden and its role as a prominent risk factor for the development of a number of disease processes. In the year 2001, high blood pressure accounted for 54% of stroke, 47% of ischemic heart disease, 75% of hypertensive disease, and 25% of other cardiovascular disease worldwide” (Lawes, Hoorn, & Rodgers, 2008). The negative impact of hypertension on health status is clear, especially taking into account the disability, decreased quality of life, and mortality associated with stroke and cardiovascular disease. In 2001, 7.6 million deaths (13.5% of all deaths) and 92 million disability life-years (6% of total) were attributable to systolic blood pressure greater than 115 mmHg . It is saddening to note that such pervasive negative effects are related to such a modifiable cause.

Definition:

According to the seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure JNC 7th report (2004) defined and classified hypertension in adults, as shown in

Table 1. The diagnosis of hypertension is made when the average of 2 or more diastolic BP measurements on at least 2 subsequent visits is ≥ 90 mm Hg or when the average of multiple systolic BP readings on 2 or more subsequent visits is consistently ≥ 140 mm Hg. Isolated systolic hypertension is defined as systolic BP ≥ 140 mm Hg and diastolic BP < 90 mm Hg. Individuals with high normal BP tend to maintain pressures that are above average for the general population and are at greater risk for development of definite hypertension and cardiovascular events than the general population Oscar A. et al (2000).

Table: Classification of blood pressure for adults

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

TYPES OF HYPERTENSION

1 . Primary Hypertension

Primary hypertension is also known as essential hypertension. Most adults with hypertension are in this category. Despite years of research on hypertension, a specific cause isn't known. It's thought to be a combination of genetics, diet, lifestyle, and age. Lifestyle factors include smoking, drinking too much alcohol, stress, being overweight, eating too much salt, and not getting enough exercise. Changes in your diet and lifestyle can lower your blood pressure and risk of complications from hypertension.

2. Secondary hypertension

Secondary hypertension is when there's an identifiable— and potentially reversible— cause of your hypertension. Only about 5 to 10 percent of hypertension is the secondary .It's more prevalent in younger people. An estimated 30 percent of those ages 18 to 40 with hypertension have secondary hypertension.

3. Other types of hypertension

Subtypes that fit within the categories of primary or secondary hypertension include:

1. resistant hypertension
2. malignant hypertension
3. isolated hypertension

TREATMENT

Reducing modifiable risk factors is the best way to prevent hypertension and associated diseases of the heart, brain, kidney and other organs. These factors include unhealthy diets (excessive salt consumption, a diet high in saturated fat and trans fats, low intake of fruits and vegetables), physical inactivity, consumption of tobacco and alcohol, and being overweight or obese.

There are also non-modifiable risk factors, including a family history of hypertension, age over 65 years and co-existing diseases such as diabetes or kidney disease. Avoiding dietary and behavioural risk factors is doubly important for those with unmodifiable or hereditary risk factors.

Hypertension can be managed by reducing and managing mental stress, regularly checking blood pressure and consulting with health professionals, treating high blood pressure and managing other medical conditions. Cessation of tobacco use and the harmful use of alcohol, as well as improvements in diet and exercise, can help reduce symptoms and risk factors from hypertension.

Beta-blocker is one of a drug used to reduce hypertension. It works by making our heart beat more slowly and with less force, thereby reducing blood pressure. But they are found to be less effective than other treatments. Calcium channel blockers are very helpful because they keep calcium from entering the muscle cells of the heart and blood vessels. This method widens the arteries and reduces the blood pressure.

PREVENTION AND CONTROL OF HYPERTENSION

Prevention and control of hypertension can be achieved by application of targeted and/or population-based strategies. The targeted approach is the traditional strategy used in health care practice and seeks to achieve a clinically important reduction in BP for individuals at the upper end of the BP distribution. The targeted approach is used in the management of patients with hypertension, but the same approach is well-proven as an effective strategy for prevention of hypertension in those at high risk of developing hypertension. The population-based strategy is derived from public health mass environmental control experience. It aims to achieve a smaller reduction in BP that is applied to the entire population, resulting in a small downward shift in the entire BP distribution.

An appeal of the population-based approach is that modeling studies have consistently suggested that it provides greater potential to prevent CVD compared with the targeted strategy. This finding is based on the principle that a large number of people exposed to a small increased CVD risk may generate many more cases than a small number of people exposed to a large increased risk. For example, a general population DBP-lowering of as little as 2 mm Hg would be expected to result in a 17% reduction in the incidence of hypertension, a 14% reduction in stroke risk, and a 6% reduction in the risk of coronary heart disease. Because they use the same interventions, the targeted and population-based strategies are complementary and mutually reinforcing.

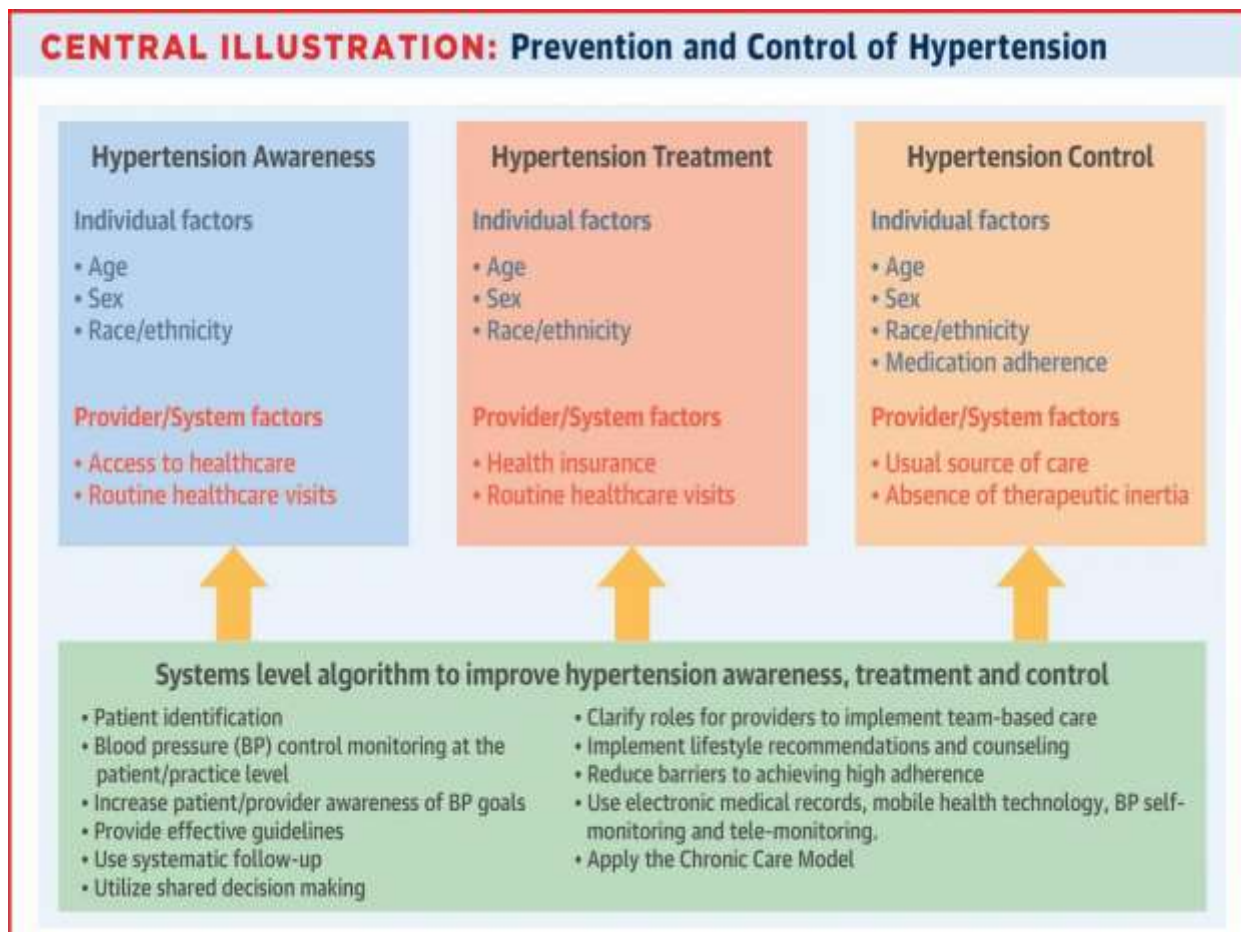


Fig. Prevention and control of Hypertension

PATHOGENESIS OF HYPERTENSION :

The pathogenesis of essential hypertension is multifactorial and highly complex. The kidney is both the contributing and the target organ of the hypertensive processes,^[1] and the disease involves the interaction of multiple organ systems and numerous mechanisms of independent or interdependent pathways. Factors that play an important role in the pathogenesis of hypertension include genetics, activation of neurohormonal systems such as the sympathetic nervous system and renin-angiotensin-aldosterone system, obesity, and increased dietary salt intake.

Arterial hypertension is the condition of persistent elevation of systemic blood pressure (BP). BP is the product of cardiac output and total peripheral vascular resistance. Multiple factors are involved in short-term and long-term regulation of BP for adequate tissue perfusion; these include the following:

- Cardiac output and circulatory blood volume
- Vascular caliber, elasticity, and reactivity
- Humoral mediators
- Neural stimulation

Pathophysiology of Hypertension

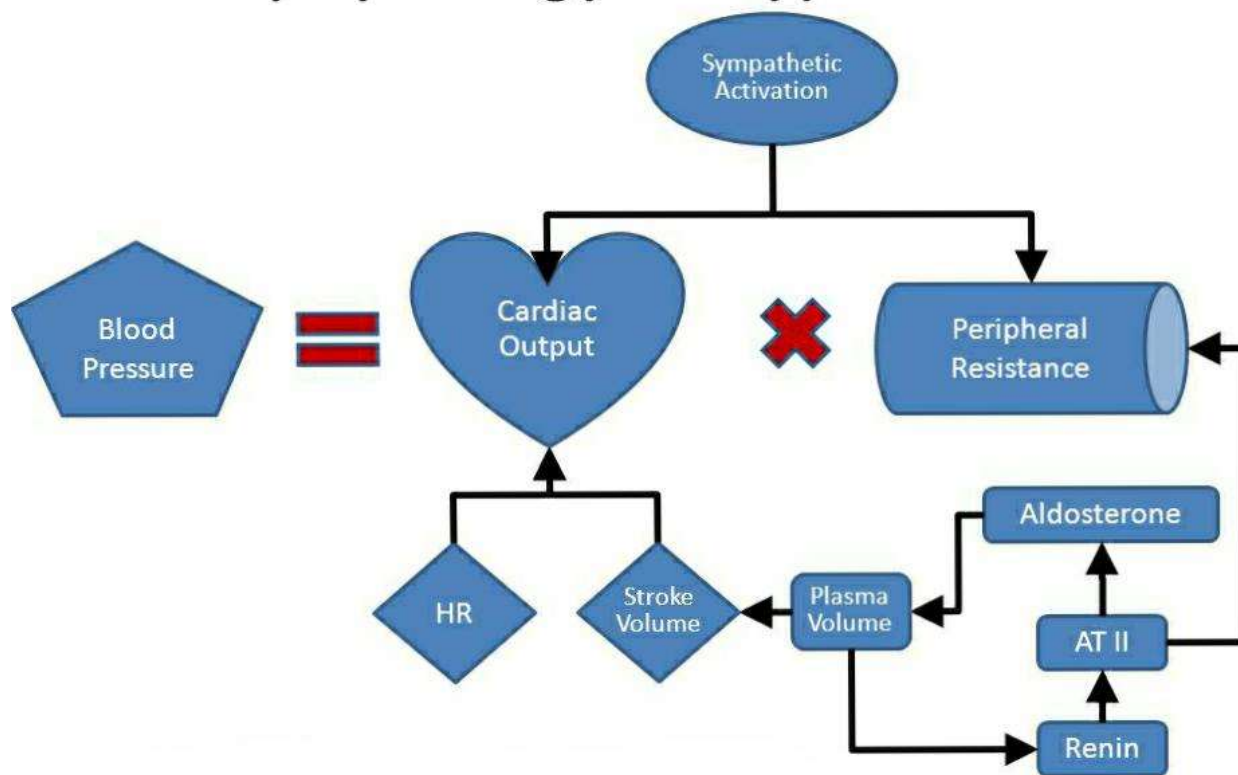


Fig. Pathophysiology of Hypertension

DIAGNOSIS AND PATIENTS EVALUATION :

Measurement of blood pressures can be done either manually using a sphygmomanometer or an automated electronic device (both office and home) or when feasible ambulatory blood pressure monitoring is utilized. The latter two are preferred since they are reproducible and rule out observer bias. Readings are measured in both arms using arm cuffs for accuracy. The use of finger cuffs is strongly discouraged due to lack of reproducibility. Blood pressure measurements are taken on an empty bladder with the patient well positioned, legs resting on the ground and arms resting comfortably on a table. An average of two readings taken approximately 5 minutes apart is taken at two visits to determine blood pressure. In older patients postural hypertension is also assessed. In addition to blood work and electrocardiography, it is important to consider all previous cardiovascular events, risk factors plus other medical and medication history (stroke, transient ischemic attacks, coronary artery disease, heart failure, chronic kidney disease, peripheral artery disease, diabetes and sleep apnea) to determine an appropriate treatment plan.

SIGN AND SYMPTOMS :

Most people with high blood pressure will not experience any symptoms, which is why people often call hypertension the “silent killer.” However, once blood pressure reaches about 180/120 mm Hg, it becomes a hypertensive crisis, which is a medical emergency.

At this stage, a person may have:

- a headache

- nausea
- vomiting
- dizziness
- blurred or double vision
- nosebleeds
- heart palpitations
- breathlessness

Anybody who experiences these symptoms should see their doctor immediately.

Symptoms in women

Hormonal factors mean that the risk of high blood pressure may be different in males and females. Factors that can **increase the risk** of high blood pressure in females include:

- pregnancy
- **menopause**
- the use of **birth control** pills

During pregnancy, high blood pressure can be a sign of **preeclampsia**, a potentially dangerous condition that can affect the woman and her unborn baby.

Symptoms of preeclampsia include:

- headaches
- vision changes
- abdominal pain
- swelling due to **edema**

All women should follow the guidelines for screening and attend all health checks, especially during pregnancy.

Symptoms in teens

Teenagers can develop high blood pressure due to **obesity** or an underlying medical condition.

Possible medical factors include:

- aspects of metabolic syndrome, such as **type 2 diabetes**
- kidney disease
- endocrine disease, which affects the hormones
- vascular disease, which affects the blood vessels
- a neurological condition

These conditions may have symptoms of their own. The symptoms of high blood pressure, if they occur, will be the same as for other groups.

Symptoms in children

High blood pressure can affect children. Having obesity and **diabetes** increases the risk, but it can also be a sign of:

- a **tumor**
- heart problems
- kidney problems
- thyroid problems
- a genetic condition, such as Cushing's syndrome

As with adults, high blood pressure often does not cause symptoms in children. However, if symptoms do occur, they may include:

- a headache
- **fatigue**
- blurred vision
- nosebleeds

They may also have signs of another condition.

Symptoms in babies

Newborns and very young babies can sometimes have high blood pressure due to an underlying health condition, such as kidney or **heart disease**.

Symptoms may include:

- a failure to thrive
- seizures
- irritability
- lethargy
- respiratory distress

Other symptoms will depend on the condition that is causing the high blood pressure.

CAUSES :

High blood pressure can occur when certain changes happen in the body or if a person is born with specific genetic features that cause a health condition.

It can **affect people** with:

- obesity
- type 2 diabetes
- kidney disease
- **obstructive sleep apnea**
- **lupus**
- **scleroderma**
- underactive or overactive thyroid
- congenital conditions, such as Cushing's syndrome, acromegaly, or pheochromocytoma

Sometimes, there is no apparent cause. In this case, a doctor will diagnose primary hypertension. Consuming a high fat diet, carrying excess weight, drinking a lot of alcohol, smoking tobacco, and the use of some medications also increase the risk.

CONCLUSION :

Adopting a healthy lifestyle is critical for the prevention of HBP and an indispensable part of managing it. We must think of these changes as a "lifestyle prescription" and make every effort to comply with them. If we have been diagnosed with high blood pressure, also called hypertension, or are concerned because we have some of the risk factors for the disease, we must understand this: while there is no cure, high blood pressure is manageable. Maintaining a healthy life style is necessary.

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