

**UNIDAD EDUCATIVA PARTICULAR JAVIER**  
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**MONOGRAPH**

**Most common chronic diseases caused by hypertension**

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## **Gratitude**

I thank God and The Virgin to illuminate everyday of my life, for always taking care of me. To my Father and my Mom , for their unconditional love and support to achieve my goals. To my sisters, for their uncountable happiness and advices.

## **Summary**

High blood pressure (Hypertension) is a systemic disease in which the force of your blood pushing against the walls of the blood vessels higher than they should. The blood pressure is the result of two forces: the first force is the systolic pressure; it occurs as blood pumps out of the heart and into the arteries that are part of the circulatory system; and the second force is the diastolic pressure created as the heart rests between heart beats. According to the American Heart Association the high blood pressure hypertension stage 1

is 130- 139 mm Hg systolic or 80-89 mm Hg diastolic.

There are many causes that produce hypertension, the most common in our society are: smoking, overweight or obesity, alcoholism, stress, and genetics (family history of high blood pressure).

The uncontrolled hypertension can occur when people have high blood pressure but they do not know that they have because they do not visit the doctor or people who know they have the disease but do not take the correctly treatment. Is dangerous because it makes the heart work harder to pump blood out to the body and it contributes to hardening of the arteries (atherosclerosis), stroke, kidney disease, and to heart failure.

The complications of the uncontrolled hypertension are chronic diseases that can cause the death if the patient does not take the treatments on time. The treatments are not for cure, are for decrease the progressive effects of them.

For that reason it is important to prevent hypertension or to control it on time if the patients have been diagnosed.

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## Introduction

The body's tissues depend on nourishment from the blood in order to survive. Blood circulates to all body tissues through a network of blood vessels and organs known as the circulatory system. The blood is entirely contained by the circulatory system. It stays within the various vessels, arteries and organs such as the lungs and heart, comprising the circulatory system and fills the space within that system pretty much completely.

Blood does not move through the circulatory system by itself. It is forced through the circulatory system by the heart. The force of the heart's muscular contractions exerts pressure onto the blood, forcing it to flow through the blood vessels. The blood vessel walls contain the force exerted by the heart, pushing back on the blood and providing it only one avenue of forward movement; through the circulatory system in a continual loop.

Blood pressure is quantified as diastolic and systolic pressures measured in millimetres of mercury (mmHg). The diastolic pressure represents the pressure during ventricular relaxation in diastole whereas the systolic pressure represents the peak pressure due to ventricular contraction during systole. Either or both pressures have specified upper limits of normal and elevation in either or both pressures are used to define hypertension. To

evaluate the normal range of the blood pressure, it is important to know the American Heart Association Blood Pressure Categories Guidelines of 2017.

Hypertension (high blood pressure) is one of the most preventable causes of premature morbidity and mortality worldwide. It is preventable by medication and lifestyle modification. The unmodified risk factors for hypertension are: age of 65 and being male increases the risk, being of Afro Caribbean ethnic origin and family history of high blood pressure. And the modified factors are: excess dietary salt, overweight and obesity, physical inactivity, excess alcohol, smoking and psychosocial stressors.

Hypertension is a major risk factor for stroke, heart failure, or chronic kidney disease, peripheral vascular disease, cognitive decline and premature death. Untreated hypertension is associated a progressive rise in blood pressure, often culminating in a treatment resistant state due to associated vascular and renal damage.

## **CHAPTER I**

### **Hypertension**



## **Definition**

### **Causes and consequences**

### **New classification of hypertension**

## **Definition**

Hypertension is a systemic disease in which the force of your blood pushing against the walls of the blood vessels higher than they should. The blood pressure is the result of two forces the first force is the systolic pressure, it occurs as blood pumps out of the heart and into the arteries that are part of the circulatory system and the second force is the diastolic pressure created as the heart rests between heartbeats

According to the American heart association, the high blood pressure hypertension stage 1 is 130 – 139 mm Hg systolic or 80-89 mm Hg diastolic

## **Causes**

The most common are: Age, people of 60 years have more risk to have hypertension; smoking, overweight or obesity, stress, salty diet, lack of physical activity, gender, young women have fewer possibilities of hypertension because female hormones act like



cardioprotector, but young men can have this risk. Elderly women and men can have a high risk to have the disease. Genetics (family history of high blood pressure). Alcoholism, according to researchers, people who drink usually have higher systolic blood pressure, about 7 millimeters of mercury (mmHg) more.

Those causes are called essential hypertension because are influenced by diet and lifestyle, and the secondary hypertension is when a direct cause for high blood pressure can be identified such as the chronic diseases.

### **Consequences (Health Threats)**

According to American Heart Association, when the blood pressure is too high for too long, it damages the blood vessels and LDL cholesterol (low-density lipoprotein) begins to accumulate along tears in your artery walls. This increases the workload of your circulatory system while decreasing its efficiency. As a result, [high blood pressure](#) puts a greater risk for the development of life-changing and potentially life-threatening conditions such as:

Chronic diseases:

Heart attack: High blood pressure damages arteries that can become blocked and prevent blood from flowing to tissues in the heart muscle.

Stroke: High blood pressure can cause blood vessels in the brain to burst or clog more easily.

Heart failure: The increased workload from high blood pressure can cause the heart to enlarge and fail to supply blood to the body.

Kidney disease or failure: High blood pressure can damage the arteries around the kidneys and interfere with their ability to effectively filter blood.

#### Sign and Symptoms:

Vision loss: High blood pressure can strain or damage blood vessels in the eyes.

Angina: Over time, high blood pressure can lead to heart disease or microvascular disease. Angina, or chest pain, is a common symptom.

Peripheral artery disease (PAD): Atherosclerosis caused by high blood pressure can cause a narrowing of arteries in the legs, arms, stomach, and head, causing pain or fatigue.

## Sign and Symptoms of Hypertension

The Hypertension is also called the "silent killer", because it often has no warning signs or symptoms, but in some cases people show some of them, such as a severe headache, fatigue or confusion, blurred or double vision, dizziness, nosebleeds, chest pain, breathlessness, and palpitations, or irregular or forceful beating of the heart.

## Blood Pressure Categories

The American Heart Association on 2017 showed the new blood pressure guidelines.

Normal blood pressure: Is the optimal blood pressure numbers, the range of less than 120/80 mm Hg. Keep up the good work and stick with heart-healthy habits like following a balanced diet and getting regular exercise.

Elevated blood pressure: Is when readings are consistently ranging from 120-129 systolic and less than 80 mm Hg diastolic. People with elevated blood pressure are likely to develop high blood pressure unless steps are taken to control it.

Hypertension Stage 1: Is when blood pressure is consistently ranging from 130-139



systolic or 80-89 mm Hg diastolic. At this stage, doctors are likely to prescribe lifestyle changes and may consider adding blood pressure medication based on your risk of atherosclerotic cardiovascular diseases such as heart attack or stroke.

Hypertension Stage 2: Is when blood pressure is consistently ranging at levels of 140/90 mm Hg or higher. At this stage, doctors are likely to prescribe a combination of blood pressure medications along with lifestyle changes.

Hypertensive crisis: It requires medical attention. If the blood pressure readings suddenly exceed 180/120 mm Hg, wait five minutes and test again. If the readings are still high, it is necessary to call a doctor immediately, the patient could be experiencing a hypertensive crisis; also can experience signs of possible organ damage such as chest pain, shortness of breath, weakness, change in vision, difficulty speaking.

## **CHAPTER II**

### **Common chronic diseases caused by hypertension.**

**Describe chronic in patients who have uncontrolled high pressure.**



**Heart failure**  
**Chronic kidney disease.**

**Heart failure**

Hypertension is a major risk factor for heart failure; it is because the force pushing on the walls of the arteries as blood moves through them is too strong. The heart's pumping power is weaker than normal or the heart has become less elastic. With heart failure, blood moves through the heart's pumping chambers less effectively, and pressure in the heart increases, making it harder for your heart to deliver oxygen and nutrients to your body.

Uncontrolled high blood pressure can damage your heart in a number of ways, such as:

affects the arteries that supply blood to the heart muscle. Arteries narrowed by coronary artery disease do not allow blood to flow freely. When blood cannot flow freely to your heart, the patient can experience chest pain, a heart attack or irregular heart rhythms

high blood pressure forces the heart to work harder than necessary in order to pump blood to the rest of the body; this causes the left ventricle to thicken or stiffen. These

changes limit the ventricle's ability to pump blood to the body. This condition increases the risk of heart attack, heart failure, and sudden cardiac death,

Heart failure, over time, the strain on the

heart caused by high blood pressure can cause the heart muscle to weaken and work less efficiently. Eventually, the overwhelmed heart simply begins to wear out and fail.

The common symptoms of heart failure are: shortness of breath, swelling in the feet, ankles or abdomen, difficulty sleeping flat in bed, bloating, irregular pulse, nausea, fatigue, greater need to urinate at night.

### **Chronic Kidney Disease**

The kidneys are a pair of organs located in the upper abdominal area against the back muscles on both the left and right side of the body. Their main function is to act as a filter system that removes waste products and excess fluid from the body, and they use a lot of blood vessels to do it. Also, kidneys , produce a hormone called aldosterone to help the

body regulate blood pressure. When the blood vessels become damaged, the nephrons that filter the blood do not receive the oxygen and nutrients they need to function well. This is why hypertension is the second leading cause of kidney failure. Over time, uncontrolled hypertension can cause hardening of the kidneys arteries; these damaged arteries are not able to deliver enough blood to the kidneys tissues and lose their ability to filter blood and regulate the fluid, hormones, acids, and salts in the body,

a creatinine blood test; creatinine is a waste product from muscle breakdown. This should be used to calculate your glomerular filtration rate. According to the National Kidney Foundation, the normal glomerular filtration rate results range from 90 to 120 mL/min.

This is a measure of your level of kidney function. If it is too low, it means the kidneys are not able to remove enough wastes and extra fluid from your blood. Also, a urine, protein test; persistent protein in the urine is a sign of kidney damage. A higher urine protein means there is an increased chance of your kidney disease may get worse of,

If someone has been diagnosed with chronic kidney disease, the doctor will follow this guide to know what the chronic kidney disease stage of the patient is.

#### . Chronic Kidney Disease Stages

Stage 1: Normal kidney function of 90-100%, no symptoms, other health issues are diabetes, hypertension, and obesity,



Stage 2: Mild kidney function of 60- 89%, no symptoms, protein leaking in urine <200 mcg.

Stage 3: Moderate Kidney function of 30- 59%, symptoms: edema, fatigue, back pain, darker urine, microalbumin <200mcg. Food restrictions: sodium and phosphorus.

Stage 4: Severe kidney function of 15-29%, have stage 3 symptoms, nausea/ vomiting, difficulty concentrating, tingling in toes/ fingers, loss of appetite, sleep problems, renal dietitian required and more food restrictions: less potassium Stage 5: Kidney failure of 0.14%, have stage 4 symptoms, fatigue/ weakness, easy bruising, bleeding, anemia, thirst, cramps, skin color changes, making little/ no urine, kidney dialysis, kidney dialysis and kidney transplant

### Quotes

Hypertension was the most common risk factor for CHF, and it contributed to a large proportion of heart failure cases in this population-based sample. Preventive strategies directed toward earlier and more aggressive blood pressure control are likely to offer the greatest promise for reducing the incidence of CHF and its associated mortality to .(JAMA.



1996;275:1557-1562)

“kidney transplantation led to considerable improvements in short-term transplant and patient outcomes, but there are few data regarding long-term transplant outcomes in patients with vascular comorbid conditions.” (Martinez, 2011, p, 12) “ There are limited prospective data however on the progression the of arterial stiffness in CKD, including evaluating associations with bone mineral markers such as fibroblast growth factor 23 (FGF23) and soluble  $\alpha$ -klotho (sKl).In this prospective, single-center, observational study, arterial stiffness

Abdominal aortic calcification (AAC) was quantitated using lateral lumbar radiograph at baseline. Forty patients with CKD [mean estimated glomerular filtration rate (eGFR) completed follow-up. There were no differences in age, gender and body mass index between groups.” (Cassanello, 2013, p, 15)

## **CHAPTER III**

### **Treatment of each**

#### **Heart failure**

Heart failure is a chronic disease needing lifelong management. However, with treatment, signs and symptoms of heart failure can improve, and the heart sometimes becomes stronger. Treatment may help to live longer and reduce your chance of dying suddenly.

#### **Medications:**

Doctors usually treat heart failure with a combination of medications. Depending on your symptoms, you might take one or more medications, including:

Angiotensin-converting enzyme inhibitors: Help people with systolic heart failure live longer and feel better; is a type of vasodilator, widens blood vessels to lower blood pressure, improve blood flow and decrease the workload on the heart.

Angiotensin II receptor blockers: Have many of the same benefits as Angiotensin-converting enzyme inhibitors. They may be an alternative for people who can't tolerate ACE inhibitors.

Beta blockers: This class of medication not only slows the heart rate and reduces blood pressure but also limits or reverses some of the damage to the heart if patients have systolic heart failure. May reduce signs and symptoms of heart failure, improve heart function, and help you live longer.

Diuretics: Often called water pills, diuretics make urinate more frequently and keep fluid from collecting in the body.



Digoxin: Increases the strength of the heart muscle contractions. It also tends to slow the heartbeat. Digoxin reduces heart failure symptoms in systolic heart failure. It may be more likely to be given to someone with a heart rhythm problem, such as atrial fibrillation.

Surgical treatments:

Coronary bypass surgery: In this procedure, blood vessels from your leg, arm or chest bypass a blocked artery in your heart to allow blood to flow through your heart more freely.

Heart valve repair or replacement: The surgeon can modify the original valve to eliminate backward blood flow. Surgeons can also repair the valve by reconnecting valve leaflets or by removing excess valve tissue so that the leaflets can close tightly. Valve replacement is done when valve repair isn't possible. In valve replacement surgery, the damaged valve is replaced by an artificial valve.

Heart transplant: Some people have such severe heart failure that surgery or medications don't help. They may need to have their diseased heart replaced with a healthy donor heart.

Heart transplants can improve the survival and quality of life of some people with severe



heart failure. However, candidates for transplantation often have to wait a long time before a suitable donor heart is found. Some transplant candidates improve during this waiting period through drug treatment or device therapy and can be removed from the transplant waiting list.

### **Chronic Kidney Disease**

Treatment usually consists of measures to help control signs and symptoms, reduce complications, and slow progression of the disease. If the kidneys become severely damaged, you may need treatment for end-stage kidney disease.

Treating complications:

High blood pressure medications: People with kidney disease may experience worsening high blood pressure. The recommend medications to lower the blood pressure are commonly Angiotensin Converting Enzyme Inhibitors or Angiotensin II receptor blockers and to preserve kidney function. High blood pressure medications can initially decrease

kidney function and change electrolyte levels, the patients will need frequent blood tests to monitor their condition.

A lower protein diet to minimize waste products in your blood: As the body processes protein from foods, it creates waste products that the kidneys must filter from the blood. To reduce the amount of work the kidneys must do, doctors may recommend eating less protein. Also may ask to meet with a dietitian who can suggest ways to lower the protein intake while still eating a healthy diet.

Treatment for end-stage kidney disease:

If the kidneys cannot keep up with waste and fluid clearance on their own and develop complete or near complete kidney failure, the patients have end-stage kidney disease. At that point, it is necessary dialysis or a kidney transplant.

Dialysis: Artificially removes waste products and extra fluid from the blood when the

kidneys can no longer do this. In hemodialysis, a machine filters waste and excess fluids from the blood. In peritoneal dialysis, a thin tube inserted into the abdomen fills the abdominal cavity with a dialysis solution that absorbs waste and excess fluids. After a period of time, the dialysis solution drains from the body, carrying the waste with it.

**Kidney transplant:** Involves surgically placing a healthy kidney from a donor into the body. Transplanted kidneys can come from deceased or living donors. The patients will need to take medications for the rest of their life to keep the body from rejecting the new organ. They do not need to be on dialysis to have a kidney transplant.

### **Quotes**

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## **Conclusion**

As I describe in my whole work, hypertension is one of the most common disease in our society, should be controlled, but if it is uncontrolled may causes stroke, heart failure, or chronic kidney disease. These diseases do not only affect the patients, also affects their families emotionally. I choose this topic because in our society and in our family at least we have one or more members with this disease, and we are worried about their health, because nowadays they could take their pharmacologic treatment, but their lifestyle is not correctly, and if they do not make a completely change, if more probably that in a long term they could develop an acute stage of common disease causes by high blood pressure (hypertension). Also the treatments have high prices only to control hypertension, imagine how expensive should be the treatment for the acute or chronic diseases stages caused by hypertension. For this reason I want to tell, to make awareness to prevent our families,

friends and ourselves to change the lifestyle, to live many years healthier.

### **Recommendations**

At the end of this work it is recommended that: various strategies to decrease cardiovascular disease risk and should include

- Prevention and treatment of obesity, an increase in body mass index and waist
- Circumference is associated with and increased risk of developing conditions with high cardiovascular risk, such as hypertension and diabetes.
- Follow the pharmacologic treatment correctly.
- Appropriate amounts of aerobic physical activity.
- Diets low in salt, total fat, and cholesterol.

- Limited alcohol consumption
- Avoid cigarette smoking

### **Bibliographic references**



<https://www.webmd.com/hypertension-high-blood-pressure/guide/blood-pressure-causes#1>

<https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/symptoms-causes/syc-20373410>

[http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/GettheFactsAboutHighBloodPressure/What-is-High-Blood-Pressure\\_UCM\\_301759\\_Article.jsp#.Wxcpce4vzIU](http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/GettheFactsAboutHighBloodPressure/What-is-High-Blood-Pressure_UCM_301759_Article.jsp#.Wxcpce4vzIU)

<https://www.mayoclinic.org/diseases-conditions/chronic-kidney-disease/diagnosis-treatment/drc-20354527>

<https://www.mayoclinic.org/diseases-conditions/heart-failure/diagnosis-treatment/drc-20373148>

<https://www.nhs.uk/news/heart-and-lungs/us-experts-say-high-blood-pressure-is-overtreated/#conclusion>

<https://www.healthdirect.gov.au/high-blood-pressure-hypertension>

[https://www.google.com.ec/search?](https://www.google.com.ec/search?q=conclusions+about+disease+about+high+blood+pressure&oq=conclusions+about+disease+about+high+blood+pressure&aqs=chrome..69i57j0j4&sourceid=chrome&ie=UTF)

[q=conclusions+about+disease+about+high+blood+pressure&oq=conclusions+about+disease+about+high+blood+pressure&aqs=chrome..69i57j0j4&sourceid=chrome&ie=UTF](https://www.google.com.ec/search?q=conclusions+about+disease+about+high+blood+pressure&oq=conclusions+about+disease+about+high+blood+pressure&aqs=chrome..69i57j0j4&sourceid=chrome&ie=UTF)

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