## Sengamala Thayaar Educational Trust Women’s College

## (Affiliated to Bharathidasan University)

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**DIETETICS-II**

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**DIETETICS-II**

**Atherosclerosis**

**Introduction:**

Atherosclerosis is the narrowing of arteries due to plaque buildup on the artery walls.Arteries carry blood from the heart to the rest of the body. They are lined with a thin layer of cells that keeps them smooth and allows blood to flow easily which is called as endothelium.Atherosclerosis starts when the endothelium becomes damaged, allowing the harmful type of [cholesterol](https://www.medicalnewstoday.com/articles/9152.php) to build up in the artery wall.

The body sends a type of white blood cell to clean up this cholesterol, but, sometimes, the cells get stuck at the affected site.Over time, plaque made of cholesterol,macrophages, [calcium](https://www.medicalnewstoday.com/articles/248958.php)and other substances from the blood.Sometimes, the plaque grows to a certain size and stops growing, causing the individual no problems. However, sometimes, the plaque clogs up the artery, disrupting the flow of blood around the body. This makes blood clots more likely, which can result in life-threatening conditions.

In some cases, the plaque eventually, breaks open. If this happens, platelets gather in the affected area and can stick together, forming blood clots. This can block the artery, leading to life-threatening complications, such as [stroke](https://www.medicalnewstoday.com/articles/7624.php) and [heart attack](https://www.medicalnewstoday.com/articles/151444.php).The condition can affect the entire artery tree, but mainly affects the larger, high-pressure arteries.

**Causes:**

Certain factors can damage the inner area of the artery and lead to atherosclerosis.These factors include:

* + - * [high blood pressure](https://www.medicalnewstoday.com/articles/159283.php)
			* high levels of cholesterol
			* smoking
			* high levels of sugar in blood

**Symptoms:**

The first signs of atherosclerosis can begin to develop during adolescence, with streaks of white blood cells appearing on the artery wall. Most often, there are no symptoms until a plaque ruptures, or the blood flow is very restricted. This typically takes many years to occur.The symptoms depend on which arteries are affected.

**(i) Carotid arteries**

Carotid arteries provide blood to the brain. A limited blood supply can lead a stroke, and a person may experience a range of symptoms as a result of atherosclerosis in this area, including:

* + - difficulty breathing
		- [headache](https://www.medicalnewstoday.com/articles/73936.php)
		- facial numbness
		- paralysis
		- weakness

**(ii) Coronary arteries**

Coronary arteries provide blood to the heart. When the blood supply to the heart is limited, it can cause [angina](https://www.medicalnewstoday.com/articles/8886.php) and heart attack.

Symptoms include:

* Vomiting
* extreme [anxiety](https://www.medicalnewstoday.com/info/anxiety/)
* chest pain
* coughing
* feeling faint

**(iii) Renal arteries**

Renal arteries supply blood to the kidneys. If the blood supply becomes limited, there is a serious risk of developing [chronic kidney disease](https://www.medicalnewstoday.com/articles/172179.php).

The person with renal artery blockage may experience:

* loss of appetite
* swelling of the hands and feet
* difficulty concentrating

**Diagnosis:**

Those who are at risk of developing atherosclerosis should be tested because the symptoms do not show until cardiovascular disease develops. A diagnosis will be based on medical history, test results, and a physical exam.

Other tests include:

* **Blood tests:**

 These measure how much sugar, fat, and protein there is in the blood. If there are high levels of fat and sugar, it could indicate an increased risk of atherosclerosis.

* **Physical exam:**

The doctor will listen to the arteries using a stethoscope to see if there is an unusual "whooshing" sound as a result of uneven blood flow. If this is heard, it can mean there is plaque obstructing blood flow.

There may also be a very weak [pulse](https://www.medicalnewstoday.com/articles/258118.php) below the area of the artery that has narrowed. Sometimes, there is no detectable pulse.

An affected limb may have abnormally low [blood pressure](https://www.medicalnewstoday.com/articles/270644.php).

There may be a pulsating bulge behind the knee or in the abdomen, indicating the presence of an [aneurysm](https://www.medicalnewstoday.com/articles/156993.php).

Where blood flow is restricted, wounds may also not heal properly. The doctor may check for this type of wound.

* **Ultrasound:**

An [ultrasound](https://www.medicalnewstoday.com/articles/245491.php) scanner can check blood pressure at distinct parts of the body. Changes in pressure indicate where arteries may have an obstructed blood flow.

* **CT scan:**

This can be used to find arteries that are hardened and narrowed.

**Treatment:**

Treating atherosclerosis is important for preventing complications.Treatment options include lifestyle changes, various medications, and surgical interventions. However, it is important that a doctor correctly diagnoses atherosclerosis to make sure that the arteries are returned to full capability.

The range of treatments for atherosclerosis include:

**Lifestyle changes:** These focus on weight management, physical activity, and a healthy diet. A doctor may recommend eating foods high in soluble fiber and limiting intake of saturated fats, sodium, and alcohol.

**Medication:** Antiplatelet medications can prevent the build-up of plaque or help to prevent blood clots. Others, such as statins, might be prescribed to lower cholesterol, and angiotensin-converting enzyme (ACE) inhibitors can help lower blood pressure.

**Surgery:** Severe cases of atherosclerosis may be treated by surgical procedures, such as angioplasty or coronary artery bypass grafting (CABG).Angioplasty involves expanding the artery and opening the blockage so that the blood can flow through properly again. CABG is another form of surgery that can improve blood flow to the heart by using arteries from other parts of the body to bypass a narrowed coronary artery.

**Prevention:**

Preventing the development of atherosclerosis is one of the best ways to treat the condition.Steps to limit the risk of plaque build-up include:

**Diet:** Try to avoid saturated fats, they increase levels of bad cholesterol. The following foods are high in unsaturated fats and can help keep bad cholesterol levels down:

* olive oil
* Avocados
* Walnuts
* oily fish
* nuts
* seeds

**Exercise:** Exercise will improve fitness levels, lower blood pressure, and help weight loss.

**Not smoking:** Smoking is one of the major risk factors for atherosclerosis, and it also raises blood pressure. Smokers should quit as soon as possible and arrange a meeting with their doctor about ways to give up and manage withdrawal symptoms.

**Arteriosclerosis vs. atherosclerosis**

Arteriosclerosis and atherosclerosis are different conditions.Arteriosclerosis is the stiffening or hardening of the artery walls and Atherosclerosis is the narrowing of the artery because of plaque build-up.Atherosclerosis is a specific type of arteriosclerosis.All people with atherosclerosis have arteriosclerosis, but those with arteriosclerosis might not necessarily have atherosclerosis. However, the two terms are frequently used with the same meaning.

**Complications**

Atherosclerosis can lead to serious and long-lasting complications.

It can [directly contribute to](https://www.mayoclinic.org/diseases-conditions/arteriosclerosis-atherosclerosis/symptoms-causes/syc-20350569) coronary, carotid, and peripheral [heart disease](https://www.medicalnewstoday.com/articles/237191.php). In [coronary heart disease](https://www.medicalnewstoday.com/articles/184130.php), the arteries close to the heart become narrowed. Carotid artery disease affects the arteries near the brain in the same way, and [peripheral artery disease](https://www.medicalnewstoday.com/articles/188939.php) affects the blood supply to the limbs.

These can lead to a range of dangerous complications, [including](http://www.umm.edu/health/medical/altmed/condition/atherosclerosis):

* **Heart disease and heart failure:**The heart may not be able to pump enough blood around the body or may not fill with sufficient levels of blood.
* **Heart attack:**This is a medical emergency in which the supply of blood becomes blocked. It can be life-threatening.
* **Kidney failure:**The kidneys can stop functioning if they do not receive enough blood.
* **Aneurysm:**This is a serious condition in which the walls of an artery bulge, sometimes bursting and causing potentially fatal internal bleeding.
* **Stroke:**A stroke is a medical emergency in which the blood supply to the brain is blocked, starving the brain of oxygen. This can kill brain cells.
* **Arrhythmia:**Atherosclerosis can lead to abnormal heart rhythms and palpitations.

**Risk factors**

Certain people have a higher risk of developing the condition. These include

* **Diabetes:** Individuals with poorly controlled [diabetes](https://www.medicalnewstoday.com/info/diabetes/) and frequently high blood glucose levels are more likely to develop atherosclerosis.
* **Genetics:** People who have a parent or sibling with atherosclerosis and cardiovascular disease have a much higher risk of developing atherosclerosis than others.
* **Air pollution:** Exposure to air pollution appears to [increase the risk](https://www.ncbi.nlm.nih.gov/pubmed/27156486) of cholesterol build-up in the coronary arteries.

People exposed to these risk factors should be especially careful about maintaining a low-fat and low-sodium diet and avoiding tobacco intake.