

Blood Pressure-A Silent Killer



CHEMISTRY

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ABSTRACT

High blood pressure is the main cause of strokes and heart attack, so it is important to take steps to lower the blood pressure before it causes damage to the blood vessels, heart, kidneys, eyes, and other organs.

Blood pressure is the force with which blood moves through arteries (the vessels which carry blood from heart to the rest of body). When heart muscle pumps, the blood exerts force against artery walls, this force is called the systolic blood pressure. When heart relaxes between beats, the force of the blood decreases and blood pressure drops, this is called the diastolic blood pressure. When blood pressure is higher than normal value, it is called hypertension (High blood pressure). The high blood pressure may damage eyes, brain, heart, blood vessels, and kidneys. The blood pressure between 120/80 (systolic 120 and diastolic 80) is considered to be normal range of blood pressure, range between 120/80 - 140/90 is considered as Pre-hypertension and the pressure between 140/90 and higher is considered to be High blood pressure (hypertension). | **People at High risk of hypertension;** older than 50 years, (Vasan et al., 2002) overweight or obese, smokers, diabetic, persons having kidney diseases, people who drink more than one ounce of alcohol per day | There are many types of drugs which are used to bring down the elevated blood pressure. Some remove extra fluid and salt from the body to lower blood pressure. While other down the heartbeat and widen blood vessels. | The high blood pressure affects vital organs of body in following ways | **Effect to arteries;** High blood pressure speeds up the process of hardening of the arteries. The increased pressure on the inner walls of blood vessels increases the risk of atherosclerosis. This blood-vessel damage may not produce symptoms until it reaches an advanced stage. The chest Pain (angina) is a sign that the heart muscle is not getting enough blood, is caused by severely narrowed and clogged coronary arteries. Similarly intermittent claudication (pain and difficulty) is caused due to narrowed arteries in the lower legs. A clot (thrombi) in a coronary artery (a coronary thrombosis) can result in a heart attack and clot in a blood vessel in the brain (a cerebral thrombosis) can cause a stroke. Untreated High blood pressure may increase risk of an aneurysm (ballooning of an artery) which can rupture, with life-threatening consequences. Such haemorrhage in brain may cause a stroke. A ruptured aneurysm of the aorta may prove to be dangerous if it is not repaired immediately. If there is constriction and obstruction to the blood flow in the arterioles in the kidney, it can lead to progressive renal damage. Similarly, a thickening and hemorrhaging of the tiny arteries in the eyes can result in a loss of vision. | **Damage to heart;** Hypertension leads heart to work harder in order to sustain an adequate blood flow to the tissues, resulting in an enlarged heart. In the early stages, it may have added strength needed to pump blood against the increased pressure in the arteries. But with the passage of time the enlarged heart may become stiff and weak, and unable to pump efficiently (Anderson et al., 1991). This may lead to fatal heart failure. With proper treatment nowadays much of the heart enlargement actually can be reversed. | **Damage to Brain;** Due to deposition of fats, the carotid artery and other blood vessels which supply blood to brain become clogged then the flow of blood to the brain is diminished, this may lead to stroke. | **Damage to kidneys;** Each kidney contains a million or more tiny filtering units called nephrons. The increased blood pressure may damage some of the tiny blood vessels within the kidney and reduce the

amount of blood available to the filtering units (nephrons). The filtration efficiently is reduced, Protein may be excreted in the urine rather than returned to the bloodstream and waste products get accumulated in the body, this accumulation can lead to a condition called uremia, and eventually to kidney failure, it results in need of periodic dialysis to cleanse the blood. | **Damage to eyes;** tiny blood vessels of eyes are damaged due to high blood pressure. If hypertension persists for long time, the retina may be damaged because of a decrease in blood supply; retinopathy (hemorrhage/fatty deposits) may occur in people with poorly controlled Diabetes along with high blood pressure. Uncontrolled high blood pressure may cause diminished vision and blindness. | **CAUSES OF HIGH BLOOD PRESSURE;** In the majority of cases no specific cause for the elevated blood pressure can be identified (primary or essential hypertension), this hypertension may be due to hormonal factors or due to certain substances that cause constriction of blood vessels. These are probably genetically determined, but certain environmental factors, such as a high-salt, low-potassium diet and chronic stress, may play some role. In some cases, high blood pressure may be due to another disorder, or a side effect of medication (secondary hypertension). Some of the more common causes of secondary hypertension include; kidney disorder, renovascular hypertension, adrenal tumors, pheochromocytoma and use of certain drugs. | **Long term effects of hypertension;** Hypertension usually does not produce definite symptoms until it reaches an advanced stage so it is considered as silent killer. The first indication of high blood pressure may be a stroke or heart attack. The consequences of hypertension can be largely prevented by monitoring (Pickering et al., 1999) and keeping the pressure into the normal range. | **Steps to control blood pressure ;** consume balanced diet which is having less salt (Whelton et al., 2002) and sugar, try to maintain healthy weight (He J, Whelton et al., 2000), daily exercise, avoid smoking and drinking, regular monitoring of blood pressure. | **Foods which should be avoided;** Sweetened drinks, soda, whole milk, Buttered and salted popcorn, Salty snack foods, Canned or processed foods. | **Preferred foods;** Fruit, vegetable, unbuttered and unsalted popcorn, pasta hot cereals cooked without salt. (Sacks et al., 2001) | **CONCLUSION;** High blood pressure is silent killer; it can damage vital organs of the body. The blood pressure must be regularly monitored (Pickering, 1996), and it should be properly controlled. First of all change of lifestyle may be tried, but if it fails, then one should take blood pressure medicine every day. If medicine is taken irregularly the pressure will go back up.

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