

agMOOCs

Diseases of Heart & blood vessels

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## **Diseases of Heart & Blood Vessels**

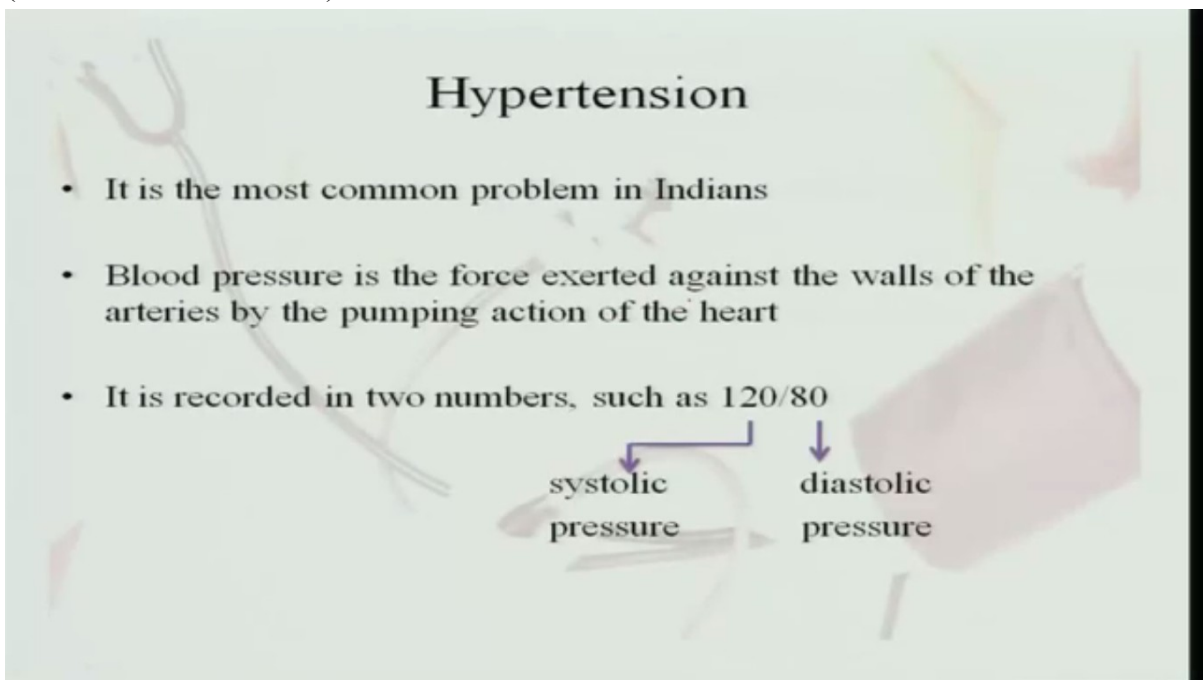
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Let us come back and see the what are the various disorders in the body. We have seen the complications of diabetes, how it can be treated by a diet. Now let us move to the heart, which is again another vital organ on which our life is existing. So we have different disorders of heart and blood vessels.

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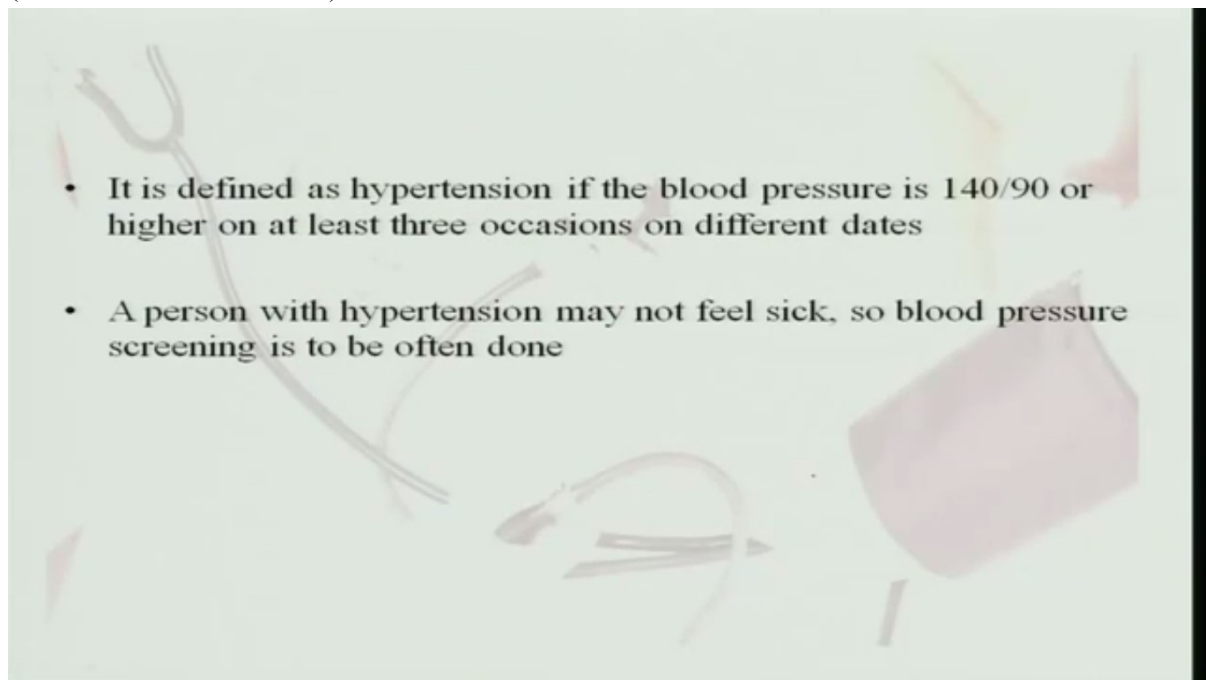
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So the main initial problem or symptom we can see in the heart disease is the hypertension. So this is the most common problem in Indians, and everybody above the age of 30, 35 should to be monitoring the hypertension or blood pressure to see whether any change occurs in their blood pressure.

So blood pressure is the force that is exerted against the walls of the arteries, and this is because of the pumping action of the heart. So it is recorded generally, the normal blood pressure is 120/80 where 120 is the systolic pressure is when the heart contracts and 80 is the diastolic pressure when the heart relaxes during pumping of the blood.

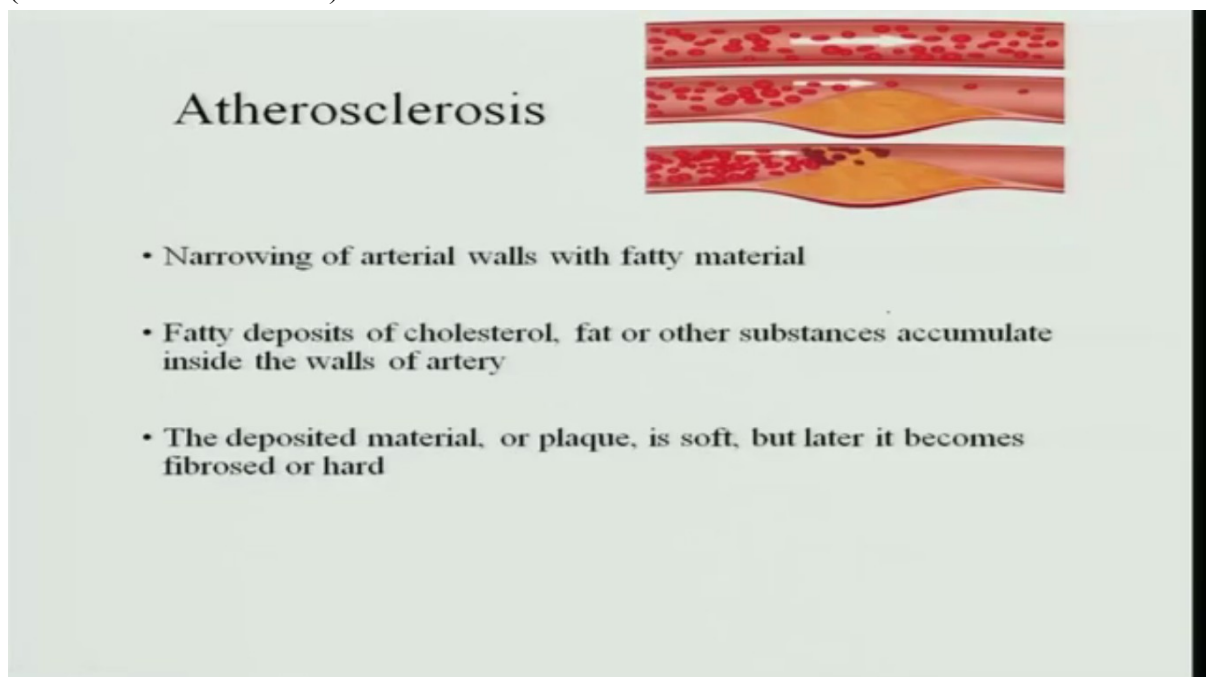
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Now it is defined as hypertension if the blood pressure is above 140/90, and this is measured in terms of millimeters per 100 ml of mercury. Then this is at least three occasions we have to test the blood pressure and then only decide whether the person is hypertensive.

So a person with hypertension may be feeling very sick so that the blood screening must be done.

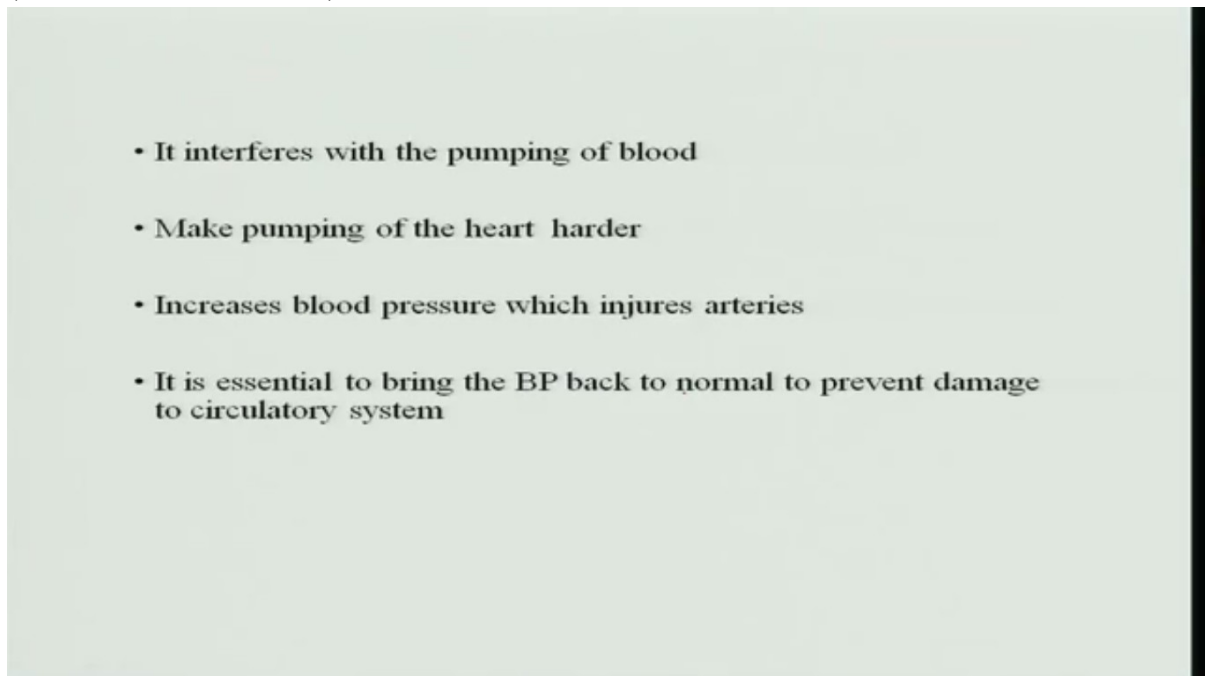
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Now atherosclerosis is the reason for hypertension which is the narrowing of the artery walls with fatty material. See you can see the normal artery and as atherosclerosis proceeds, this is the deposition of the fatty material, and you can see the lumen becomes very small. And if this continues, the entire fatty material will cover the lumen of the heart blood vessel and the flow of the blood is obstructed. Under such condition, whatever the organ is here will not get blood supply. Therefore, it will not have oxygen and nutrients, and the muscle will die.

So fatty deposits of cholesterol, fat and other substances are present in the intima of the wall. This is the wall of the artery and this deposited material or plaque is soft, but later it becomes fibrosed or hard. So in the initial stages if you can control, the plaque can be easily dissolved, and this formation of plaque takes about 20 to 25 years. So right from the childhood, the plaque starts forming. So initially from the childhood itself if you have a good diet, then the atherosclerosis may be prevented.

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And it -- this -- once this atherosclerosis is formed, it becomes fibrosed or hard. Then it affects the pumping of the heart. So heart has to work harder to pump the blood, and this will increase the blood pressure and also injure the arteries. So it is essential to bring back the blood pressure to normal so that artery -- prevention of the damage of arteries and heart is prevented.

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## Diet therapy

Hypertension is the major risk factor for stroke occurring

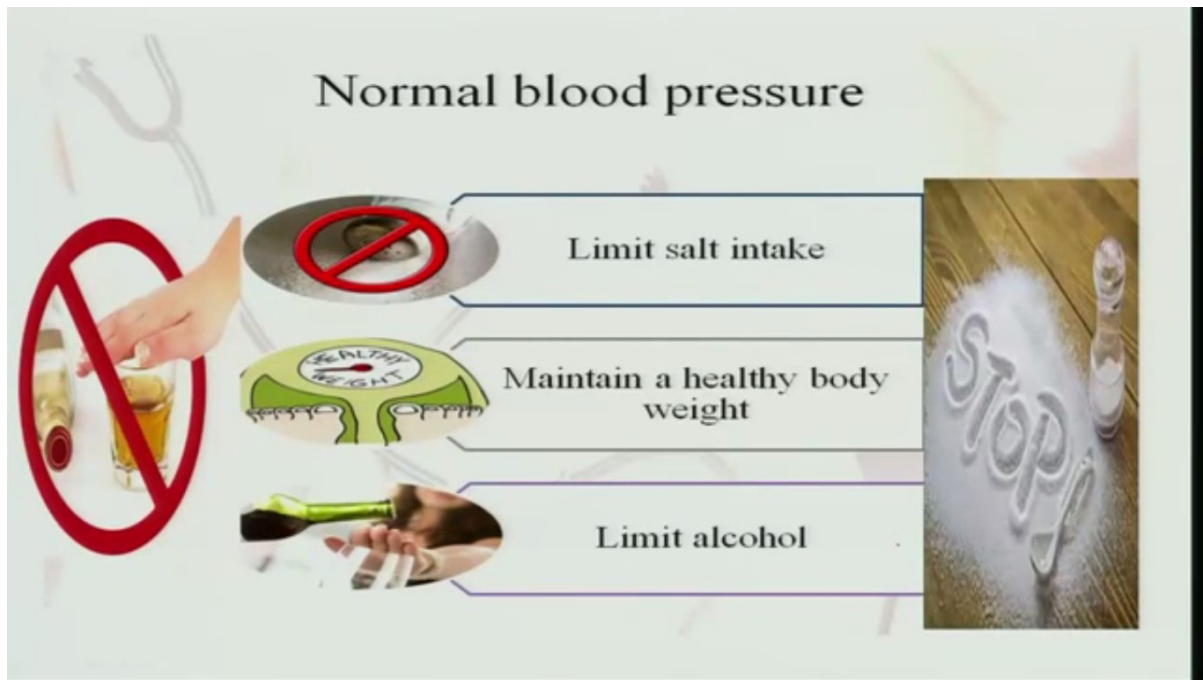
- At older age
- Higher BMI & } causes hypertension
- Ethnicity
- Two dietary influences have been related to hypertension
  - High salt intake
  - Low intake of potassium, calcium & magnesium

Now diet therapy. Here the hypertension is a major risk factor for stroke. So this is generally common in older age because from the childhood if you are taking a faulty diet, by the time the individual comes to 40, 45, the atherosclerotic plaque may become thicker and thicker and cause problem.

So at older age it occurs. And people with higher BMI, higher BMI, BMI is the relationship between the weight for height of an individual. That means in people who are obese, the BMI is high. So under such conditions also hypertension is caused. And sometimes it is ethnic. Some races of people are prone to atherosclerosis and high triglyceride levels, and they are prone to heart attacks.

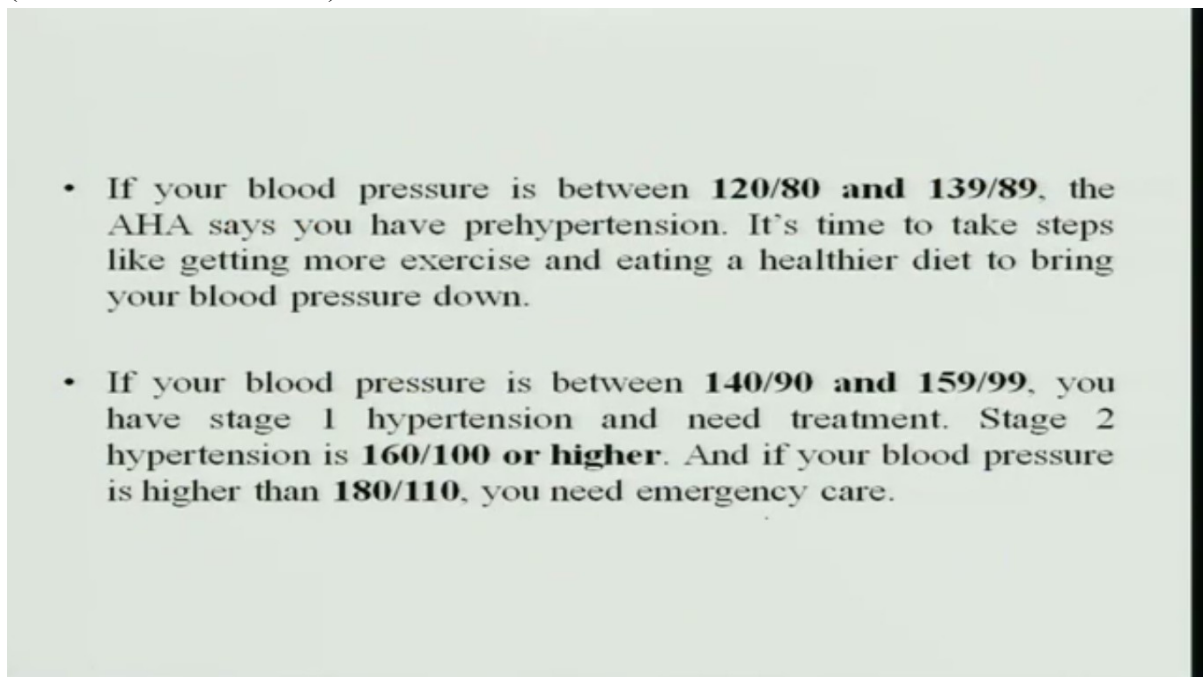
There are two dietary influences which are related to hypertension. One is high salt intake and low intake of potassium, calcium and magnesium. I told you the calcium and magnesium are important for the maintaining the rhythm of heart. So when these are low in the body, they will cause the hypertension.

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So normal blood pressure can be brought back by limiting the salt intake, maintaining a healthy body weight and limiting alcohol.

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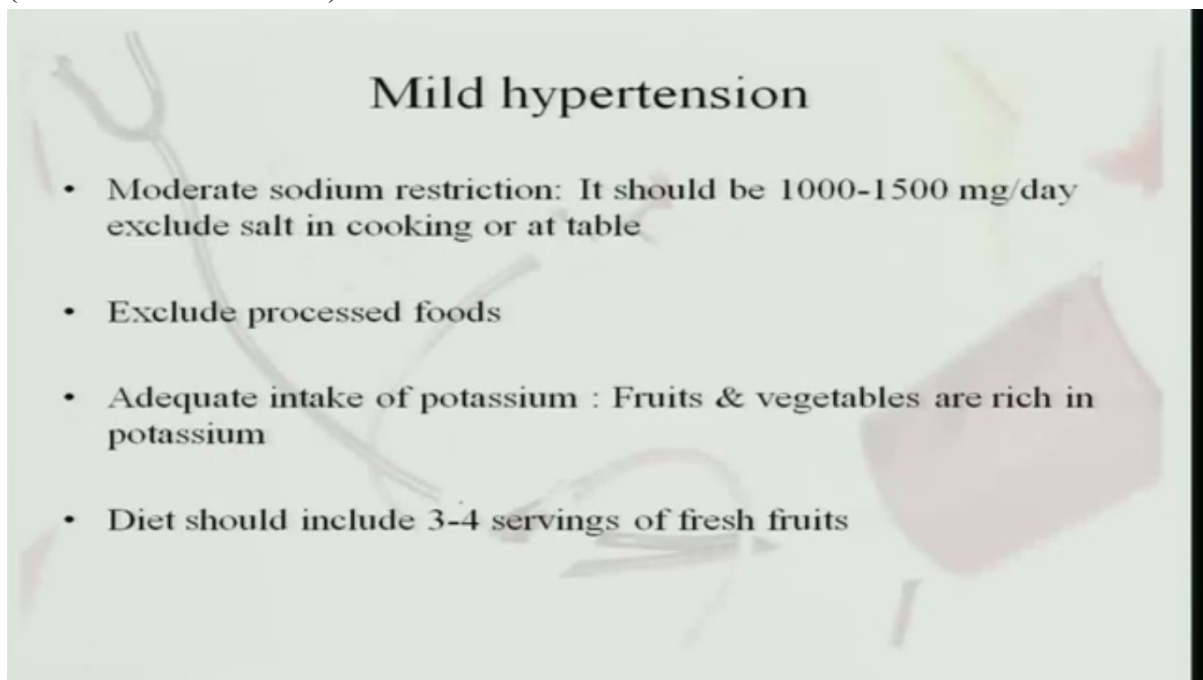


So if the blood pressure is between 120/80 and 139/89, so the American Heart Association says it is a pre-hypertensive stage. So you should be very careful. Once the blood pressure increases from 120/80 to 139/89, you have to be very careful. So if this is the time to take steps to more exercise, eating a healthier diet, and your blood pressure can be brought down.

So if the blood pressure is between 140/90 and 159/99, almost 160/100, so this is stage 1 hypertension and here is the stage where one needs treatment. The medication has to be started.

Now stage 2 hypertension is 160/100 or higher. So here a continuous medication is required and monitoring is required. A little exercise is required. And the blood pressure is higher than 180/110, then it becomes an emergency care where the person has to be hospitalized, and the blood pressure can be brought down.

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So mild hypertension, you require a moderate sodium restriction where the sodium intake can be 1000 to 1500 milligrams per day, and the salt should be excluded in cooking. No table salt. That means there should not be any salt on the table. No extra salt added in the food, and all the processed foods should be excluded because the salt content in all the processed foods is very high.

And adequate intake of potassium is necessary. For this you have to increase the intake of fruits and vegetables. And diet should include three to four servings of fresh fruits.

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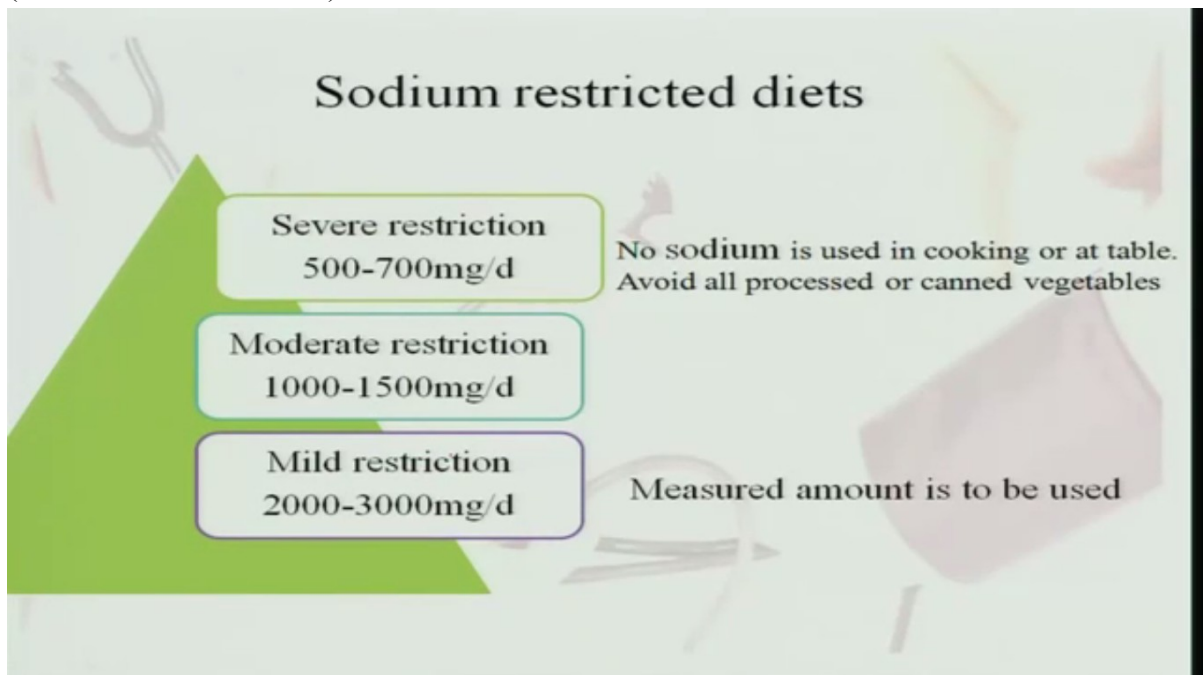


- **Regular exercise:** should walk briskly for atleast half an hour daily to be fit
- **Stress management:** It involves regular planning of one's activity
- A proper planning of work should be done to remove stress
- A planned, enjoyable routine of each day is important

Now regular exercise also is very important. So the person should have a regular brisk walk of half an hour at least five days a week. So that means overall on the week, they should have at least two-and-a-half hours of brisk walking. So this makes the person keep very fit.

Now stress management, you have to plan the activities in such a manner that does not create any stress on the individual or/and the planning makes you enjoy the work ,and without any stress the work is done. So stress management is very important.

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Now you have to have sodium restricted diet. So severe restriction is 500 to 700 milligrams per day, because here no sodium is used in cooking, no table salt, nothing. Whatever the salt is present in the food is sufficient.

Then moderate restriction as I told you it is 1000 to 1500 milligrams per day, and mild restriction 2,000 to 3,000 milligrams per day. And the normal intake of salt for a normal individual is about a teaspoon of salt or 5 grams per day. So you have to measure and use the salt so that hypertension can be controlled.

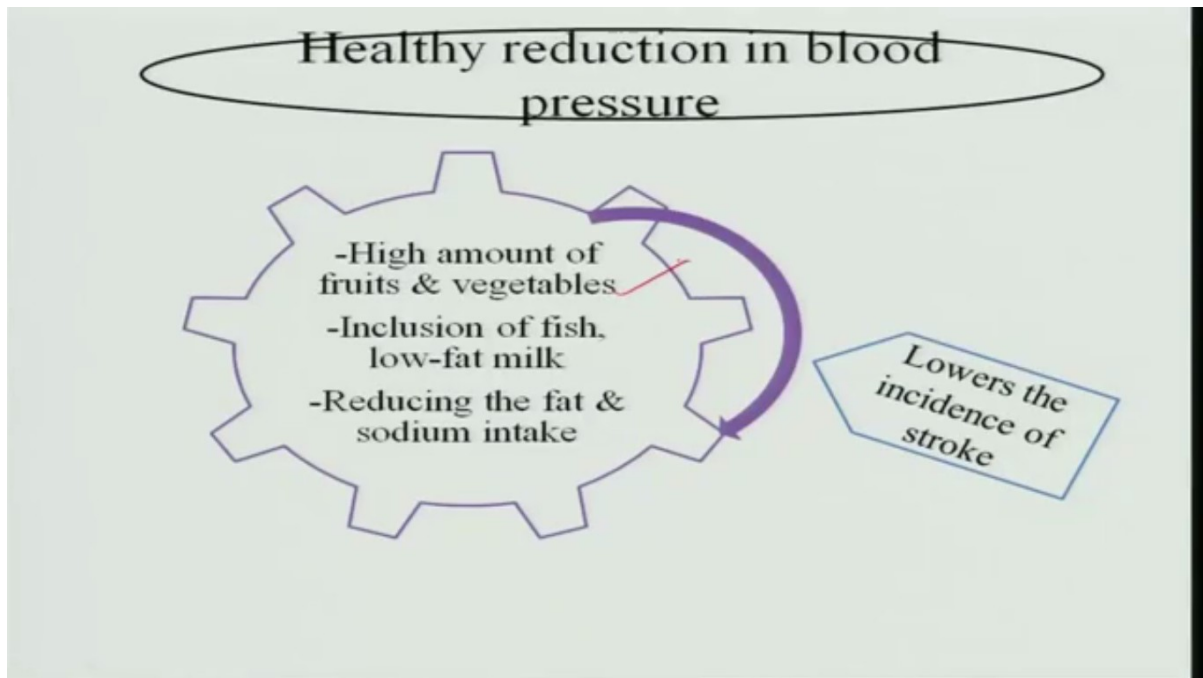
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So there is a diet called the DASH diet for hypertension. This is Dietary Approaches to Stop Hypertension. So for this you have to have seven to eight servings of grains, and four to five servings of vegetables, four to five servings of fruits. That means both together you get about eight to ten servings of fruits and vegetables. So more of fruits and vegetables.

And milk, you have to have low-fat milk, which is two to three servings. And when you take meat, it is only lean meat that is without fat, two servings or less. This is called the Dietary Approach to Stop Hypertension. So it is a DASH diet for hypertension.

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So we can have a healthy reduction in blood pressure by taking high amount of vegetables, inclusion of fish. A fish, again, should be boiled and eaten. Again, should not be a fried fish, not a salty fish. And take low-fat milk. Then reducing the fat and sodium intake. So all these will help in reducing the blood pressure thereby reducing the chances of heart stroke.

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### Sources of sodium in the diet

- Sodium is a mineral found naturally in foods and also added to foods
- All living things plants & animals require some sodium
- Plant foods are low in sodium
- Animal foods are high in sodium
- Learn to read food labels
- Buy fresh vegetables and fruits as these are naturally low in sodium

Now sources of sodium in the diet, naturally sodium is present in all the foods. So apart from the salt that is present in the food, we try to add excessive salt in the food and eat. So all living things, plants, and animal, they require some sodium. So plant foods are low in sodium and animal foods are high in sodium. So we should always learn to read the nutrition labels on the processed food before we take them. So fresh fruits and vegetables are naturally the

good source of sodium. Because they are very low in sodium, therefore, they are very useful for hypertensive patients.

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Now high-sodium foods, we have some of the leafy vegetables are high in sodium. They should be avoided and field beans. Then muskmelon, when you taste masculine, it looks salty. Therefore, the amount of salt is more. Then fruits like lichis, dry fruits, cherries are high in sodium. They can be avoided or restricted. Then salty snacks should be avoided. Baked foods should be avoided. Salted butter, salted fish and meat, these are to be avoided. No restriction also. These are to be avoided.

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## Conclusion

- Additional risk factors that affect hypertension are excessive salt intake & low intake of potassium, calcium & magnesium
- Dietary modifications in cardiovascular disease most often involve cholesterol-lowering or sodium-controlling measures



So, to conclude, what we say is additional risk factors that affect hypertension are excessive salt intake and low intake of potassium, calcium and magnesium. So in our diet, we should include less amount of sodium, and we should include potassium, calcium and magnesium, supplement with them so that our heart works properly, and it helps in pumping the heart properly. There is proper circulation to the body so that arteries are not injured, and the entire body gets the blood circulation, because blood is the carrier of all the nutrients and oxygen and keeps us fit.

Thank you.