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## Life style modification for hypertensive patients: A short review

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### Abstract

Hypertension is a medical term used for elevated or high blood pressure. Hypertension does not mean that a person is overly tense or nervous. It increases the risk of strokes, heart failure, heart attacks and kidney failure. The complication of hypertension can be prevented by treating or controlling it in a majority of cases. Hypertension is the leading Non-Communicable Disease. Adult hypertension prevalence has risen dramatically over the past three decades. It is estimated that ischemic heart disease, peripheral vascular disease, acute myocardial infarctions and strokes are main complication of hypertension. Kidney or endocrine diseases play little role to cause hypertension. The main cause of hypertension is alcoholism, obesity, smoking, fast food, lack of physical activity, stress are the main cause of hypertension. Therefore lifestyle modification is necessary to prevent and manage hypertension.

**Keywords:** Hypertension, Lifestyle Modification, Alcoholism, Obesity.

### 1. Introduction

High blood pressure (BP) is a major public health problem in India and elsewhere [1]. Hypertension is a major cardiovascular risk factor and contributes significantly to cardiovascular mortality [2].

At ages 40-69 yr, each difference of 20 mm Hg systolic BP or 10 mm Hg diastolic BP was associated with more than a two-fold difference in the stroke death rate, and with two-fold differences in the death rates from coronary heart disease and other vascular causes. All of these proportional differences in vascular mortality were about half as extreme at ages 80-89 yr as at ages 40-49 yr, but the annual absolute differences in risk were greater in old age. There is, therefore, a need to lower BP in all groups of patients. Normal blood pressure level can be achieved by non-pharmacological (lifestyle modification) as well as pharmacological means [3].

### Main Lifestyle Modification

1. Dietary interventions
2. Weight control
3. Tobacco cessation
4. Exercise
5. Stress management

A number of pharmaceutical agents, well evidenced by large randomized clinical trials, are available for initial treatment of high BP.

### Older Pharmacological Molecules

1. Thiazide diuretics
2. Beta-blocking agents

### Newer Pharmacological Molecules

1. Dihydropyridine calcium channel blockers (CCB)
2. Angiotensin converting enzyme (ACE) inhibitors
3. Angiotensin receptor blockers (ARB)

Comprehensive hypertension management focuses on reducing overall cardiovascular risk and should be the preferred approach for initial management of hypertension.<sup>[4]</sup> Special consideration because of the high prevalence of hypertension in older age groups, and the increasing proportion of older persons in Canada. Concepts are changing about the pathophysiology of hypertension in older age groups, with growing acceptance of the dominant role of aging-induced changes in arterial structure and the function of large vessels<sup>[5, 6]</sup>. In more than 90% of cases a specific cause is not found. However, despite the fact that the exact cause of high blood pressure in most people is unknown, it can be treated effectively and thus prevent progression to more severe disease, heart attacks, strokes, and heart and kidney failure. A few patients have abnormalities of the adrenal glands, the glands that sit on top of the kidneys; others have a narrowing of the arteries to the kidneys; there are a very few women whose blood pressure is elevated by birth control pills<sup>[7]</sup>.

**Role of Environmental Factors**

Although many people can eat lots of salt without worrying about changes in blood pressure, there are “salt-sensitive” people whose blood pressures go up with an increase in salt intake. Sodium, which makes up about 40% of salt, is the part of salt that is important. Less than one half a teaspoonful/day of salt (2 g) and less than 1 g or 1000 mg/day of sodium is needed regardless of occupation or daily activities. Nothing is to be lost by getting used to a low-salt diet whether or not a family history of hypertension is present. Reducing the amount of salt or sodium may be helpful but it may not be effective in lowering blood pressure to acceptable goal levels of below 140/90 mm Hg<sup>[7]</sup>.

**Lifestyle Modification**

Adoption of healthy life styles by all persons is critical for the prevention of high BP and is an indispensable part of the management of those with hypertension. Weight loss of as little as 10 lbs (4.5 kg) reduces BP and/or prevents hypertension in a large proportion of overweight persons, although the ideal is to maintain normal body weight<sup>[8]</sup>. BP is also benefited by adoption of the Dietary Approaches to Stop Hypertension (DASH) eating plan which is a diet rich in fruits, vegetables, and low fat dairy products with a reduced content of dietary cholesterol as well as saturated and total fat (modification of whole diet). It is rich in potassium and calcium content. Dietary sodium should be reduced to no more than 100 m mol per day (2.4 g of sodium). Everyone who is able should engage in regular aerobic physical activity such as brisk walking at least 30 minutes per day most days of the week. Alcohol intake should be limited to no more than 1 oz (30 mL) of ethanol, the equivalent of two drinks per day in most men and no more than 0.5 oz of ethanol (one drink) per day in women and lighter weight persons. A drink is 12 oz of beer, 5 oz of wine, and 1.5 oz of 80-proof liquor. Lifestyle modifications reduce BP, prevent or delay the incidence of hypertension, enhance antihypertensive drug efficacy, and decrease cardiovascular risk. For example, in some individuals, a 1,600 mg sodium DASH eating plan has BP effects similar to single drug therapy. Combinations of two (or more) lifestyle modifications can achieve even better results. For overall cardiovascular risk reduction, patients should be strongly counseled to quit smoking<sup>[9]</sup>.

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, U.S. Department Of Health And Human Services National Institutes Of Health, National Heart, Lung, And Blood Institute<sup>[10, 11]</sup>.

**Table 2:** Lifestyle modifications to prevent and manage hypertension\*

| Modification                             | Recommendation   | Approximate SBP Reduction (Range)† |
|--|--|------------------------------------|
| <b>Weight reduction</b>                  | Maintain normal bodyweight (Body mass index 18.5–24.9 kg/m <sup>2</sup> ).   | 5–20 mmHg/10kg                     |
| <b>Adopt DASH eating plan</b>            | Consume a diet rich in fruits, vegetables, and low fat dairy products with a reduced content of saturated and total fat.   | 8–14 mmHg                          |
| <b>Dietary sodium reduction</b>          | Reduce dietary sodium intake to no more than 100 mmol per day (2.4g sodium or 6 g sodium chloride).  | 2–8 mmHg                           |
| <b>Physical activity</b>                 | Engage in regular aerobic physical activity such as brisk walking (at least 30 min per day, most days of the week).  | 4–9 mmHg                           |
| <b>Moderation of alcohol Consumption</b> | Limit consumption to no more than 2 drinks (e.g. 24 oz beer, 10 oz wine, or 3 oz 80-proof whiskey) per day in most men, and to no more than 1 drink per day in women and lighter weight persons. | 2–4 mmHg                           |

DASH, Dietary Approaches to Stop Hypertension; SBP, systolic blood pressure

- For overall cardiovascular risk reduction, stop smoking.
- The effects of implementing these modifications are dose and time dependent, and could be greater for some individuals.

**Conclusion**

A large number of drugs are currently available for reducing BP. More than two-thirds of hypertensive individuals cannot

be controlled on one drug and will require two or more antihypertensive agents selected from different drug classes. For example, in the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial, 60 percent of those whose BP was controlled to <140/90 mmHg received two or more agents, and only 30 percent overall were controlled on one drug. But the benefits are less without life style modification. Therefore it is necessary to modify life style with drug treatment.

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