

The effect of diet on hypertension control

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Definition of hypertension

Hypertension, often known as high blood pressure, is a serious medical condition that raises the risk of heart, brain, kidney, and other disorders dramatically. If the systolic blood pressure readings on two different days are both ≥ 140 mmHg and/or the diastolic blood pressure readings on both days are both ≥ 90 mmHg, hypertension is diagnosed.

Abstract

Hypertension is a major risk factor in the course of cardiovascular disease, which is associated with genes, environment, and social determinants. Overweight/obesity, a poor diet, too much sodium, not enough potassium, insufficient physical activity, and alcohol intake are all environmental factors.(1) Utilizing specific diet modifications can lower blood pressure for hypertensive and non-hypertensive individuals.

Background and purpose

Hypertension plays an essential role in developing cardiovascular disease, cardiovascular death, and all-cause mortality. Even though the significance of this problem has been noticed, the control of hypertension in public is still not optimal.(2) According to the National Health and Nutrition Survey, only 34% of hypertensive patients attained target blood pressure levels of less than 140/90 mmHg.(2) The control of high blood pressure can be

affected by many factors, including diet, physical exercise, alcohol consumption, smoking, and medication adherence. Dietary changes are thought to have much potential for preventing and managing hypertension for a lot less money than pharmaceutical therapies.^[3] Therefore, this study aims to see how diet affects hypertension control and to figure out which diet style is the best for blood pressure control.

Briefing note targeted audience

The audience of this briefing note is intended for the upstream, mid-stream and downstream levels. The stakeholders I want to include are patients, health care providers, the community, factories and government.

Current situation

According to current research, the DASH (Dietary Approaches to Stop Hypertension) diet, the Mediterranean diet, and manipulations of macronutrients and micronutrients have a positive influence on lowering blood pressure.

The DASH diet

Fruits, veggies, whole grains cereal, nuts, beans, protein and low-fat dairy items are abundant in the DASH diet. It is also characterized by reduced refined sugar and saturated and total fat, cholesterol.(1) In the study of Ozemek, the combination diet (the DASH diet) decreased SBP and

DBP by 5.5 and 3.0mmHg, respectively, when compared to the control diet (fruits, vegetables, and dairy items are lacking, while the fat content is average).(4) It provides evidence that the DSAH diet is helpful for hypertension control and management.

The Mediterranean diet

Fruits, veggies, bread, potatoes, legumes, nuts, cheese, yogurt, fish, and lean poultry are all included in the Mediterranean diet. With little red meat and modest red wine consumption, this diet stresses olive oil as the primary source of fat.(4) In the study of Alain J Nordmann, systolic blood pressure and diastolic blood pressure were both improved(-1.7mmHg vs. -1.5mmHg) in people who followed a Mediterranean diet compared with those accepted low-fat diets after 2-year follow up.(5)

Nutrients manipulation

Particular macronutrients and micronutrients manipulation, such as protein substitution, partial replacement of carbohydrates with dietary fat, sodium reduction, and potassium supplementation, can effectively reduce blood pressure. In numerous trials, protein supplementation or protein substitute for fat or carbohydrate in an isocaloric diet has been shown to lower blood pressure.^[3] There was a significant blood pressure reduction among participants assigned to monounsaturated fat diets, showing systolic pressure (-2.26

mmHg, 95 % CI: -4.28, -0.25) and diastolic pressure decreasing (-1.15 mmHg, 95 % CI: -1.96, -0.34), compared with those given control diets.(3)

In the analysis of Juraschek, the author categorized participants by resting SBP into four groups (<130, 130–139, 140–149, and 150mmHg) before giving intervention. The control diet group observed significant variations in average SBP of -3.2, -8.56, -8.99, and -7.04mmHg throughout the SBP categories when salt intake was reduced from high (3600 mg/day) to low (1200 mg/day). (shown in figure 1).(3) Moreover, in hypertension patients, increasing potassium consumption reduces resting SBP/DBP by around 4.4/2.5mmHg, and in non-hypertensive patients by around 1.8/1.0mmHg.(3)

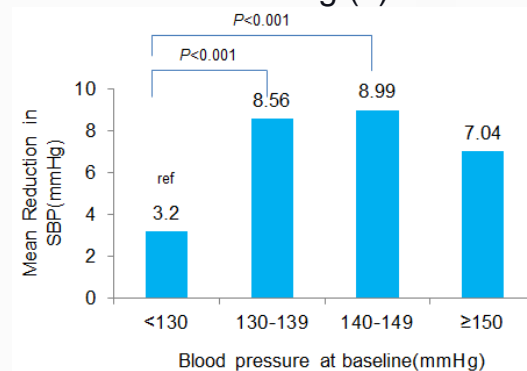


Figure1. The mean reduction in SBP after sodium reduction among hypertensive patients.

Recommended actions

The dietary approach is vital to modifying blood pressure to promote cardiovascular health. ^[3] Improving blood pressure control by diet needs a multidisciplinary approach. The recommended

actions suggested below consist of five strategies for the various stakeholders.

Patients with hypertension should follow a dietary plan like the DASH diet or the Mediterranean diet, which involves eating less saturated and total fat, obtaining plenty of potassium, and reducing sodium and alcohol. The study of Lydia A. Bazzano supported that the dietary strategies mentioned above are able to prevent and control hypertension. (3) (downstream)

Clinicians are encouraged to emphasize lifestyle modification, particularly diet, to prevent and manage hypertension regardless of pharmacologic therapy. However, a frequent overabundance of 'fad diets,' which promote quick weight loss and health improvement with a lack of scientific evidence regarding efficacy or practicality for long-term behavior modification, is a common barrier to physician endorsement of dietary modification as well as patient adoption of recommended diets. As a result, health organizations have promoted evidence-based diets for patients to follow. (4) (upstream and mid-stream)

A **community-based health education program** is strongly recommended. By increasing the health awareness of the public, encouraging and facilitating healthy behaviors, hypertension can be controlled to some extent. A randomized cluster experiment

on a huge scale about community-based sodium reduction was conducted in China rural areas. The sodium reduction interventions in this study include community health education and providing a salt substitute, which is associated with a difference in sodium excretion in urine between the intervention and control groups. (6) (mid-stream and downstream)

Processed foods account for 75% of salt in wealthy countries, whereas salt added while cooking or at the table accounts for 70% in developing countries. Therefore, it is necessary to increase the awareness of **food industries and consumers**. On the one hand, the food industry should realize the harm of excessive sodium intake and then shoulder the responsibility of gradually lowering the quantity of salt in foods. On the other hand, a public health effort to persuade consumers to use less salt, and widespread salt replacement, should be launched. (7) (mid-stream and downstream)

In addition, many cultural and sociological forces and commercial interests, influence whether or not people embrace and adhere to such a diet. For successful lifestyle interventions, assembling a multidisciplinary team of experts from multi-disciplines is strongly advised. (3)

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