

# What is the DASH Diet?

## THE BASICS

The Dietary Approaches to Stop Hypertension (DASH) diet was developed in the 1990s as a result of the National Institutes of Health (NIH) funding multiple research projects to examine the impact of specific dietary interventions on blood pressure.<sup>1</sup> Research on the DASH diet remains important today given the high prevalence of Americans diagnosed with hypertension, a condition resulting from having consistent high blood pressure that increases the risk for heart disease and stroke.<sup>2</sup>

The DASH diet provides guidance on types of foods to include daily or weekly as well as key nutrients to incorporate or minimize. The DASH diet promotes the consistent intake of fruits, vegetables, whole grains, fat-free or low-fat dairy, lean

meats, fish, poultry, beans, nuts and vegetable oils. Additionally, the DASH diet encourages limiting added sugars intake (including sugar-sweetened beverages) as well as foods that are high in saturated fat such as fatty meats, full-fat dairy, and tropical oils like coconut oil.

Specific DASH diet recommendations for daily servings of food groups based on varying calorie needs are shown in Table 1.





## TABLE 1: GUIDELINES FOR THE DASH DIET<sup>3</sup>

FOOD GROUP	SERVINGS PER WEEK			SERVING SIZES
	1,600 calories	2,000 calories	2,600 calories	
Grains	6	6 to 8	10 to 11	<ul style="list-style-type: none"> <li>• 1 slice bread</li> <li>• ~1 cup dry cereal</li> <li>• ½ cup cooked rice, pasta or cereal</li> </ul>
Vegetables	3 to 4	4 to 5	5 to 6	<ul style="list-style-type: none"> <li>• 1 cup raw leafy vegetable</li> <li>• ½ cup cut-up raw or cooked vegetable</li> <li>• ½ cup vegetable juice</li> </ul>
Fruits	4	4 to 5	5 to 6	<ul style="list-style-type: none"> <li>• 1 medium fruit</li> <li>• ¼ cup dried fruit</li> <li>• ½ cup fresh, frozen, or canned fruit</li> <li>• ½ cup fruit juice</li> </ul>
Fat-free or low-fat milk and milk products	2 to 3	2 to 3	3	<ul style="list-style-type: none"> <li>• 1 cup milk or yogurt</li> <li>• 1 ½ ounces of cheese</li> </ul>
Lean meats, poultry, and fish	3 to 6	6 or less	6	<ul style="list-style-type: none"> <li>• 1 ounce of cooked meat, poultry, or fish</li> <li>• 1 egg</li> </ul>
Fats and oils	2	2 to 3	3	<ul style="list-style-type: none"> <li>• 1 tsp soft margarine</li> <li>• 1 tsp vegetable oil</li> <li>• 1 Tbsp mayonnaise</li> <li>• 2 Tbsp salad dressing</li> </ul>
FOODS	SERVINGS PER WEEK			SERVING SIZES
Nuts, seeds and legumes	3 per week	4 to 5 per week	1 (per day)	<ul style="list-style-type: none"> <li>• 1/3 cup or 1 ½ ounces nuts</li> <li>• 2 Tbsp peanut butter</li> <li>• 2 Tbsp or ½ ounce seeds</li> <li>• ½ cup cooked legumes (e.g. dried beans or peas)</li> </ul>
Sweets and added sugars	0	5 or less per week	2 or less (per day)	<ul style="list-style-type: none"> <li>• 1 Tbsp sugar</li> <li>• 1 Tbsp jelly or jam</li> <li>• ½ cup sorbet, gelatin</li> </ul>



The DASH diet also advocates for reducing sodium intake. This sodium recommendation is based on follow-up research to the original DASH clinical trial which found that reducing dietary sodium while following the DASH diet resulted in even greater reductions in blood pressure than adhering to the DASH diet alone.<sup>4</sup> Specifically, the DASH diet recommends limiting sodium intake to less than 2,300 milligrams (mg) of sodium per day. Some DASH eating plans suggest limiting sodium intake even further to 1,500 mg per day, based on individual recommendations from a healthcare provider. Similar daily sodium intake levels have been established in the Dietary Reference Intakes from the National Academies of Sciences, Engineering, and Medicine; those intakes also are recommended by the current Dietary Guidelines for Americans.<sup>5,6</sup>

- Standard DASH diet: Limit sodium to 2,300 mg/day
- Lower-sodium DASH diet: Limit sodium to 1,500 mg/day

It is important to remember that the DASH diet is just one part of a healthy lifestyle regimen that can help reduce blood pressure. For broader protection against and control of elevated blood pressure:<sup>7</sup>



Be physically active.



Maintain a healthy weight.



Limit alcohol intake.



Manage and cope with stress.



Quit smoking.



Get plenty of sleep.

## THE DASH DIET AND HEALTH

Several systematic reviews and meta-analyses have been completed in an attempt to understand the relationship between the DASH diet and risks for specific diseases or health conditions.

### Hypertension

The DASH diet is most well-known for its blood-pressure-lowering effects and potential benefits in reducing the prevalence and incidence of hypertension. In the original DASH clinical trial published in 1997, researchers noted that the DASH diet decreased systolic blood pressure for all individuals by 3.0 mmHg and decreased diastolic blood pressure in hypertensive individuals by 3.0 mmHg.<sup>8</sup> In follow-up research published in 2001, the DASH-Sodium Collaborative Research Group examined the impact of two diets (control and DASH) at three sodium levels (3,500, 2,300 and 1,200 mg) on blood pressure. Compared to high-sodium control diet, the low-sodium DASH diet resulted in a reduction of 7.1 mmHg in the systolic blood pressure of subjects without hypertension and a reduction of 11.5 mmHg in the systolic blood pressure of subjects with hypertension.<sup>4</sup> More recently, a 2020 systematic review and meta-analysis, including 30 randomized controlled trials with 5,545 participants, found that use of the DASH diet was associated with a significant decrease in blood pressure in adults (3.2 mmHg in systolic blood pressure and of 2.5 mmHg in diastolic blood pressure), regardless of the subjects' hypertension status.<sup>9</sup>





## Chronic Kidney Disease

The DASH diet is associated with a reduced risk for chronic kidney disease (CKD). In 2019, investigators combined and analyzed results from six prospective cohort studies that included a total of 568,156 subjects. The researchers found that people who followed DASH or a DASH-style dietary pattern had a reduced risk of developing CKD.<sup>10</sup>

## Type 2 Diabetes

Adhering to the DASH diet is linked with a lower risk of developing type 2 diabetes. In 2019, researchers conducted a review of existing systematic reviews and meta-analyses, including three systematic reviews and meta-analyses of 15 prospective cohort studies with 942,140 subjects and four additional systematic reviews and meta-analyses of 31 unique controlled trials with 4,414 subjects. In all, the DASH diet pattern was associated with a decreased incidence of type 2 diabetes.<sup>11</sup>

## Cancer

The DASH diet is associated with reduced risks of certain types of cancer. A 2019 review of 17 cohort studies was performed to analyze potential relationships and

associations between the DASH diet and cancer (e.g., mortality from all cancer types, incidence of specific cancer types). The greatest adherence to the DASH diet was associated with a reduced mortality from all types of cancer, as well as a lower risk of developing colorectal, colon and rectal cancer.<sup>12</sup>

## Cognitive Outcomes

Adherence to the DASH diet is also associated with improved cognitive outcomes. In 2019, researchers investigated the effects of the DASH diet on cognitive function as well as for the risk for Alzheimer's disease and dementia. Analysis of this observational data showed that greater adherence to the DASH diet was linked to improved cognitive function and a lower risk of developing Alzheimer's disease.<sup>13</sup>

## Overall Mortality (Death Rate)

Following the DASH diet is associated with a lower risk of death from all causes. In 2020, researchers analyzed results from 17 prospective cohort studies and identified associations between adherence to the DASH diet and all-cause mortality (death rate). Even modest adherence to the DASH diet is linked with a lower risk of all-cause mortality.<sup>14</sup>



## IN SUMMARY

The DASH diet emphasizes nutrient-dense foods without being too strict regarding what you can and cannot eat. It incorporates a wide variety of foods and has been well researched. The main purpose of this diet is to help prevent or lower elevated blood pressure. Some research demonstrates that it may improve other markers of health and may help to reduce the risk of certain disease conditions, as well.

# References

1. Challa HJ, Ameer MA, Uppaluri KR. DASH Diet To Stop Hypertension. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; May 23, 2020.
2. Centers for Disease Control and Prevention. Facts About Hypertension. <https://www.cdc.gov/bloodpressure/facts.htm>. Published September 8, 2020. Accessed January 5, 2021.
3. National Heart, Lung, and Blood Institute. In Brief: Your Guide to Lowering Your Blood Pressure with DASH. [https://www.nhlbi.nih.gov/files/docs/public/heart/dash\\_brief.pdf](https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf). Published August 2015. Accessed January 5, 2021.
4. Sacks FM, Svetkey LP, Vollmer WM, et al. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. DASH-Sodium Collaborative Research Group. *N Engl J Med*. 2001;344(1):3-10.
5. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Food and Nutrition Board; Committee to Review the Dietary Reference Intakes for Sodium and Potassium, Oria M, Harrison M, Stallings VA, eds. *Dietary Reference Intakes for Sodium and Potassium*. Washington (DC): National Academies Press (US); March 5, 2019.
6. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. 9th Edition. December 2020. Available at [DietaryGuidelines.gov](https://www.dietaryguidelines.gov).
7. National Heart, Lung, and Blood Institute. DASH Eating Plan. <https://www.nhlbi.nih.gov/health-topics/dash-eating-plan>. Accessed January 5, 2021.
8. Appel LJ, Moore TJ, Obarzanek E, et al. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. *N Engl J Med*. 1997;336(16):1117-1124.
9. Filippou CD, Tsioufis CP, Thomopoulos CG, et al. Dietary Approaches to Stop Hypertension (DASH) Diet and Blood Pressure Reduction in Adults with and without Hypertension: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Adv Nutr*. 2020;11(5):1150-1160.
10. Taghavi M, Sadeghi A, Maleki V, et al. Adherence to the dietary approaches to stop hypertension-style diet is inversely associated with chronic kidney disease: a systematic review and meta-analysis of prospective cohort studies. *Nutr Res*. 2019;72:46-56.
11. Chiavaroli L, Vigiouliouk E, Nishi SK, et al. DASH Dietary Pattern and Cardiometabolic Outcomes: An Umbrella Review of Systematic Reviews and Meta-Analyses. *Nutrients*. 2019;11(2):338.
12. Ali Mohsenpour M, Fallah-Moshkani R, Ghiasvand R, et al. Adherence to Dietary Approaches to Stop Hypertension (DASH)-Style Diet and the Risk of Cancer: A Systematic Review and Meta-Analysis of Cohort Studies. *J Am Coll Nutr*. 2019;38(6):513-525.
13. van den Brink AC, Brouwer-Brolsma EM, Berendsen AAM, van de Rest O. The Mediterranean, Dietary Approaches to Stop Hypertension (DASH), and Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) Diets Are Associated with Less Cognitive Decline and a Lower Risk of Alzheimer's Disease-A Review. *Adv Nutr*. 2019;10(6):1040-1065.
14. Soltani S, Arablou T, Jayedi A, Salehi-Abargouei A. Adherence to the dietary approaches to stop hypertension (DASH) diet in relation to all-cause and cause-specific mortality: a systematic review and dose-response meta-analysis of prospective cohort studies. *Nutr J*. 2020;19(1):37.