

Lifestyle recommendations plus the DASH diet reduced hypertension in patients with above-optimal blood pressure

Elmer PJ, Obarzanek E, Vollmer WM, et al. Effects of comprehensive lifestyle modification on diet, weight, physical fitness, and blood pressure control: 18-month results of a randomized trial. *Ann Intern Med.* 2006;144:485-95.

Clinical impact ratings: GIM/FP/GP ★★★★★☆ Cardiology ★★★★★☆

QUESTION

In persons with above-optimal blood pressure (BP), what is the relative effectiveness of 2 behavioral interventions (established lifestyle recommendations [ELR] and ELR plus the Dietary Approaches to Stop Hypertension [DASH] diet) compared with advice only?

METHODS

Design: Randomized controlled trial (PREMIER trial).

Allocation: Concealed.*

Blinding: Blinded (outcome assessors).*

Follow-up period: 18 months.

Setting: 4 clinical centers in the United States.

Participants: 810 generally healthy persons ≥ 25 years of age (mean age 50 y, 62% women), who had above-optimal BP (systolic BP 120 to 159 mm Hg and diastolic BP 80 to 95 mm Hg) and body mass index 18.5 to 45.0 (mean 33) kg/m². Exclusion criteria included use of antihypertensive or weight-loss medications, diabetes, angina, and a previous cardiovascular event.

Intervention: ELR, involving weight loss, reduced sodium and alcohol intake, and increased physical activity (*n* = 268); ELR plus DASH diet, consisting of reduced fat intake and increased intake of fruits, vegetables, and low-fat dairy products (*n* = 269); or lifestyle advice (*n* = 273). Participants in the

ELR and ELR plus DASH groups had 26 group meetings and 7 individual sessions; those in the advice group had 2 individual sessions.

Outcomes: Hypertension (systolic BP ≥ 140 mm Hg, diastolic BP ≥ 90 mm Hg, or use of antihypertensive medication); normal BP; and change from baseline in BP, dietary intake, and weight.

Patient follow-up: 94% (intention-to-treat analysis).

MAIN RESULTS

At 18 months, hypertension was present in fewer participants in the ELR plus DASH group than the advice group; ELR did not differ from advice or ELR plus DASH (Table). The 3 groups did not differ for rate of normal BP; use of antihypertensive medication; or mean change in BP, physical activity, or fitness. The ELR and ELR plus DASH groups lost more weight than the advice group. The ELR plus DASH group had greater increases in the intake of fruits and

vegetables, dairy products, fiber, calcium, magnesium, and folate and greater decreases in the intake of total fat, saturated fat, and cholesterol than the other 2 groups. The ELR group did not show more improvement in dietary intake than the advice group, except for greater decreases in the intake of total fat and calories.

CONCLUSION

In persons with above-optimal blood pressure, established lifestyle recommendations (ELR) plus the Dietary Approaches to Stop Hypertension diet improved dietary intake more than ELR alone or advice only, and reduced the prevalence of hypertension more than advice.

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*See Glossary.

Established lifestyle recommendations (ELR) vs ELR plus Dietary Approaches to Stop Hypertension (DASH) diet vs advice for above-optimal blood pressure at 18 months†

Outcome	ELR + DASH	ELR	Advice	RRR (95% CI)	NNT (CI)
Hypertension	22%	—	32%	17% (2 to 29)	19 (11 to 152)
	—	24%	32%	12% (−3 to 25)	Not significant
	22%	24%	—	5% (−11 to 20)	Not significant

†Abbreviations defined in Glossary; RRR, NNT, and CI calculated from adjusted (for site and cohort effects and baseline hypertensive status) odds ratios in article.

COMMENTARY

The study by Elmer and colleagues shows that lifestyle and diet modifications can result in significant improvements in BP control, intake of healthy foods, and weight loss that persist over 18 months. The 6-month results of the PREMIER trial showed reductions in the same outcomes in both the ELR and ELR plus DASH groups (1). In the current study, however, only the ELR plus DASH intervention continued to reduce the prevalence of hypertension, with most benefit confined to patients who had hypertension at baseline.

A surprising finding of this study was the BP reduction in the advice-only group (a mean decrease in systolic BP of 7.4 mm Hg) achieved with only two 30-minute counseling sessions regarding nonpharmacologic treatments of hypertension. This result did not differ statistically from the mean reductions of 8.6 and 9.5 mm Hg in the ELR and ELR plus DASH groups, respectively.

The key objectives of the ELR and ELR plus DASH interventions are reduction in sodium to 2400 mg/day and weight loss. The latter is achieved through reductions in total fat (to ≤ 25% of energy), saturated

fat (to ≤ 7% of energy), and total calories, compared with a standard American diet.

The challenge for primary care physicians is to motivate patients to adopt and maintain these lifestyle changes. However, recognizing the cost and logistics of providing 33 counseling sessions to realize a decrease in BP approximately equivalent to single-drug therapy (2), a cost-effectiveness comparison would be very useful. We hope that the results of this study will encourage policymakers to evaluate and improve the sodium and saturated fat content of our food supply to make healthy eating easier for us all.

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References

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