

Weight Loss and Risk of Hypertension

Moore LL, Vioni AJ, Qureshi MM, et al. Weight loss in overweight adults and the long-term risk of hypertension: the Framingham study. *Arch Intern Med* 2005;165:1298–303.

Study Overview

Objective. To evaluate the long-term effects of weight loss on the incidence of hypertension.

Design. Longitudinal, community-based, cohort study.

Setting and participants. Overweight participants in the Framingham Heart Study aged 30 to 49 years ($n = 623$) and 50 to 65 years ($n = 605$) at baseline. Participants were classified according to amount of weight lost over 4 years: (1) weight changed by less than 1.8 kg (stable weight), (2) lost 1.8 to less than 3.6 kg, (3) lost 3.6 to less than 6.8 kg, and (4) lost 6.8 kg or more. Patients were also classified by whether weight loss was sustained over 4 years.

Main outcome measure. Adjusted risk of incident hypertension. Participants were monitored for incident hypertension for up to an additional 40 years. Adjustment accounted for sex, baseline body mass index, height, age, education level, alcohol consumption, smoking, physical activity, and incident cancer or cardiovascular disease.

Main results. Compared with adults who had stable weight, adults in both age-groups who lost weight tended to have a reduced incidence of hypertension. Patients aged 30 to 49 years with the most weight loss (≥ 6.8 kg) had a 28% adjusted relative risk (RR) reduction in hypertension incidence (RR, 0.72 [95% confidence interval {CI}, 0.49–1.05]), and patients aged 50 to 65 years had a 37% reduction (RR, 0.63 [95% CI, 0.42–0.95]). Adults aged 30 to 49 years with a sustained weight loss of at least 1.8 kg for at least 4 years had a 23% adjusted risk reduction in incident hypertension (RR, 0.77 [95% CI, 0.58–1.01]), and adults aged 50 to 65 years had a 36% reduction (RR, 0.64 [95% CI, 0.48–0.85]).

Conclusion. For overweight adults, modest weight loss, especially when sustained for at least 4 years, reduces the long-term risk of hypertension.

Commentary

Moore et al used long-term follow-up data that included repeated weight and blood pressure measurements to capture the effects of different patterns of weight loss on incident hypertension in a cohort of overweight adults. Perhaps the most striking finding is that modest weight loss (of only 1.8 kg or more), when sustained over a 4-year period, was associated with a significant reduction in the incidence of hypertension for middle-aged adults over the long term. A similar nonsignificant trend was also apparent for younger adults. These benefits were evident for adults with a mean body mass index of 27.

The length of follow-up is a particular strength of this study. The authors correctly point out that they cannot distinguish voluntary from involuntary weight loss, but their model does account for common comorbidities (cancer and cardiovascular disease), so this is probably not a major limitation. Furthermore, the benefits of weight loss could be even greater than the reported results because study outcomes are adjusted for participants' level of physical activity (a major mediator of intentional weight loss).

This report adds to results of shorter-term clinical trials that weight loss sustained for at least 4 years had a long-lasting effect on the future risk of hypertension. The findings suggest a reduction in hypertension in participants with nonsustained weight loss, but this study did not have adequate statistical power to definitively assess the impact of nonsustained weight loss.

Applications for Clinical Practice

Modest sustained weight loss should be recommended to overweight middle-aged patients at risk for developing hypertension. Given that hypertension is common and overweight/obesity is highly prevalent, large reductions in burden of illness could potentially result from efforts aimed at promoting moderate weight loss.

—Review by Stephen D. Persell, MD, MPH