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Vitamin D and risk of future hypertension: meta-analysis of 283,537 participants

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Out of a total of 283,537 subjects, 55,816 cases of hypertension occurred over follow-up. Having a 25-hydroxyvitamin D level among the top one-third of participants was associated with a 30% lower risk of hypertension in comparison with the risk experienced by those whose levels were among the lowest third. A pooled analysis of five studies revealed that each 10 nanogram per milliliter (ng/mL) increase in 25-hydroxyvitamin D was associated with a 12% reduction in the risk of future hypertension.

Possible mechanisms cited by the authors to explain the effects of reduced vitamin D levels on blood pressure include activation of the renin-angiotensin-aldosterone system and increased insulin resistance, as well as adverse effects in vascular endothelial and smooth muscle cells.