

## **Effects of vegetarian diets on blood pressure lowering: a systematic review with meta-analysis and trial sequential analysis**

### **ABSTRACT**

The beneficial effects of a vegetarian diet on blood pressure (BP) control have been reported in previous systematic reviews; however, so far, their relative effectiveness is not well established. Here, we performed a systematic review together with trial sequential analysis to determine the effect of a vegetarian diet on the reduction of blood pressure. We searched the randomized controlled trial (RCT) through Medline, PubMed and Cochrane Central Register. Fifteen eligible RCTs with 856 subjects were entered into the analysis. The pooled results demonstrated that vegetarian diet consumption significantly lowered the systolic blood pressure (weighted mean difference (WMD),  $-2.66$  mmHg (95% confidence interval (CI) =  $-3.76$ ,  $-1.55$ ,  $p < 0.001$ ) and diastolic BP was WMD,  $-1.69$  95% CI =  $-2.97$ ,  $-0.41$ ,  $p < 0.001$ ) as compared to an omnivorous diet. In subgroup analysis, a vegan diet demonstrated a greater reduction in systolic BP (WMD,  $-3.12$  mmHg; 95% CI =  $-4.54$ ,  $-1.70$ ,  $p < 0.001$ ) as compared with a lacto-ovo-vegetarian diet (WMD,  $-1.75$  mmHg, 95% CI  $-5.38$ ,  $1.88$ ,  $p = 0.05$ ). The vegan diet has showed a similar trend in terms of diastolic blood pressure reduction (WMD,  $-1.92$  mmHg (95% CI =  $-3.18$ ,  $-0.66$ ,  $p < 0.001$ ) but those with a lacto-ovo-vegetarian diet showed no changes in diastolic BP reduction (WMD,  $0.00$ , 95% CI =  $0.00$ ,  $0.00$ ),  $p = 0.432$ ). In conclusion, vegetarian diets are associated with significant reductions in BP compared with omnivorous diets, suggesting that they may play a key role in the primary prevention and overall management of hypertension.

**Keyword:** Hypertension; Diet; Vegan; Vegetarian; Plant-based diets