

## BMJ OPEN DIABETES RESEARCH & CARE

### Daily handful of walnuts linked to better diet and improvements in some health risk factors

*May improve blood vessel cell wall function and lower cholesterol*

Eating a daily handful of walnuts is linked to better overall diet quality and an improvement in certain risk factors among people at high risk of diabetes, finds research published in the online journal ***BMJ Open Diabetes Research & Care***.

The walnut diet was associated with improvements in blood vessel cell wall function and 'bad' cholesterol after six months, although it didn't have any impact on blood pressure or blood glucose levels.

Walnuts are a rich source of essential fatty acids and other nutrients, such as folate and vitamin E. And they have been associated with various health benefits. But they are also high in calories, prompting concerns that they might increase weight gain if not part of a calorie controlled diet.

The researchers randomly assigned 112 people to either following a diet with dietary counselling designed to curb calorie intake, or one without. Within these two groupings, participants were randomly assigned to the daily inclusion of 56 g (2 oz) of walnuts in their diet or the complete avoidance of walnuts for a period of six months.

After a three month interlude, the intervention arms were reversed.

The 31 men and 81 women, who were aged between 25 and 75, were all at high risk of developing diabetes.

Their height, weight, BMI, waist circumference, blood pressure, cholesterol, fasting blood glucose, and HbA1c (glycated haemoglobin), which gives an indication of average blood glucose levels over time, were assessed at the start of the trial, and then again after 3, 6, 12 and 15 months. Dietary intake was similarly assessed at these time points.

Diet quality was assessed using the Healthy Eating Index 2010 (HEI-2010). Improved diet is associated with a better cardiovascular risk profile and a lowered risk of long term conditions.

After taking account of influential factors, such as age, calorie and fatty acid intakes, and the amount of regular exercise taken, the analysis indicated that adding walnuts to the daily diet was associated with improved diet quality.

A walnut-rich diet was also associated with significantly improved endothelial cell function, irrespective of dietary counselling to curb calorie intake.

Endothelial cells line the walls of all blood vessels in the body, forming a selectively permeable barrier between the blood and other body tissues, enabling certain chemicals and blood gases to pass through.

Total and 'bad' (LDL) cholesterol also fell significantly among those who ate walnuts every day.

However, endothelial function and cholesterol levels also improved among those following the walnut exclusion diet, possibly due to the placebo effect, suggest the researchers.

Body fat significantly increased on the walnut-rich diet, when eaten in the absence of calorie restriction, but waist circumference fell significantly when combined with calorie restriction.

The addition of walnuts to the diet had no impact on blood pressure, fasting blood glucose, or 'good' HDL cholesterol, and HbA1c increased on both types of diet, irrespective of dietary counselling.

"Our data suggest that inclusion of walnuts in the diet, with or without dietary counselling to adjust caloric intake, improved diet quality and may also improve [endothelial function], and reduce total and LDL cholesterol in this sample of adults at risk for diabetes," conclude the researchers.

Further studies in more diverse groups of people are warranted, they suggest.