

# **Effect of a high-fat Mediterranean diet on bodyweight and waist circumference: a prespecified secondary outcomes analysis of the PREDIMED randomised controlled trial.**

## **Abstract**

### **BACKGROUND:**

Because of the high density of fat, high-fat diets are perceived as likely to lead to increased bodyweight, hence health-care providers are reluctant to recommend them to overweight or obese individuals. We assessed the long-term effects of ad libitum, high-fat, high-vegetable-fat Mediterranean diets on bodyweight and waist circumference in older people at risk of cardiovascular disease, most of whom were overweight or obese.

### **METHODS:**

PREDIMED was a 5 year parallel-group, multicentre, randomised, controlled clinical trial done in primary care centres affiliated to 11 hospitals in Spain. 7447 asymptomatic men (aged 55-80 years) and women (aged 60-80 years) who had type 2 diabetes or three or more cardiovascular risk factors were randomly assigned (1:1:1) with a computer-generated number sequence to one of three interventions: Mediterranean diet supplemented with extra-virgin olive oil (n=2543); Mediterranean diet supplemented with nuts (n=2454); or a control diet (advice to reduce dietary fat; n=2450). Energy restriction was not advised, nor was physical activity promoted. In 2016, we reported the 5 year changes in bodyweight and waist circumference, but because of a subsequently identified protocol deviation (including enrolment of household members without randomisation, assignment to a study group without randomisation of some participants at one of 11 study sites, and apparent inconsistent use of randomisation tables at another site; 866 [11.6%] participants were affected in total), we have withdrawn our previously published report and now report revised effect estimates based on reanalyses that do not rely exclusively on the assumption that all the participants were randomly assigned. In this analysis of the trial, we measured bodyweight and waist circumference at baseline and yearly for 5 years in the intention-to-treat population. The PREDIMED trial is registered with ISRCTN.com, number ISRCTN35739639.

### **FINDINGS:**

After a median 4.8 years (IQR 2.8-5.8) of follow-up, participants in all three groups had marginally reduced bodyweight and increased waist circumference. After multivariable adjustment, including adjustment for propensity scores and use of robust variance estimators, the difference in 5 year changes in bodyweight in the Mediterranean diet with olive oil group was -0.410 kg (95% CI -0.830 to 0.010; p=0.056) and in the nut group was -0.016 kg (-0.453 to 0.421; p=0.942), compared with the control group. The adjusted difference in 5 year changes in waist circumference was -0.466 cm (-1.109 to 0.176; p=0.154) in the Mediterranean diet with olive oil group and -0.923 cm (-1.604 to -0.241; p=0.008) in the nut group, compared with the control group.

**INTERPRETATION:**

A long-term intervention with an unrestricted-calorie, high-vegetable-fat Mediterranean diet was associated with no significant difference in bodyweight and some evidence of less gain in central adiposity compared with a control diet. These results lend support to advice not restricting intake of healthy fats for bodyweight maintenance