Metabolic outcomes after an 8 weeks low-calorie-diet in overweight, pre-diabetic individuals: the role of gender in the PREVIEW study

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Background & aims
Lifestyle intervention remains the corner stone in prevention and management of type-2 diabetes (T2D). The PREVIEW intervention study (www.previewstudy.com) is to date the largest, multinational study with the aim of preventing T2D among pre-diabetic individuals with a combination of diet, physical activity and behavior modification. Initially, all participants follow a formula low-calorie diet (LCD) to achieve a significant weight loss (≥8% of initial body weight, BW). Although the majority of participants in LCD weight loss studies are women, very little attention has been paid to the role of gender.
Objectives
To compare the effect of 8 weeks' LCD on weight loss and metabolic outcomes between pre-diabetic men and women.
Material & methods
The participants received LCD [810 kcal daily] for 8 weeks (Cambridge Weight Plan®). Data from participants who achieved 8% weight loss were included in the analysis. Two-sided t-tests were used throughout. Linear regressions were applied to test correlations.
Results
Of 2,326 individuals eligible for the LCD period, a total of 1,842 (79%) participants (1,225 women and 617 men) completed the weight loss phase successfully. At baseline, mean (±SD) age was 51.6±11.6 years, BMI 35.3±6.5 kg/m2, fasting plasma glucose 6.2±0.7 mmol/L, and fasting serum insulin 13.4±7.8 mU/L.
Average weight loss was 10.6+/-4.0 kg, with men losing 12.7+/-4.2kg and women 9.6+/-3.4 kg (difference between gender, P<0.001). The men lost 11.7+/-3.5% of initial BW where the women lost 10.2+/-3.1% (P<0.001). Fasting plasma glucose decreased by 0.57+/-0.7 mmol/L in men, and by 0.37 +/-0.6 mmol/L in women (P<0.001). Fasting serum insulin decreased by 5.8+/-7.4 mU/L in men and by 3.8+/-5.4 mU/L in women (P<0.001). The linear model showed an association of the weight loss percentage as well as gender on the changes in glucose and insulin.
Conclusion
An 8 weeks' LCD intervention resulted in a marked decrease in body weight, fasting glucose and insulin among pre-diabetic subjects. Significantly larger decreases were seen in men versus women.

Funding
EU FP7, grant agreement 312057; NHMRC - EU Collaborative Grant, AUS; NZ Health Research Council (14/191), UoA Faculty Research Development Fund; The Cambridge Weight Plan has kindly donated all LCD products.

Keywords: Prediabetes, Overweight, Prevention, Low-calorie diet, Gender, Metabolic outcomes

Details

Status	:	Saved Draft. Not Submitted Yet
Presentation Type	:	Oral Presentation
Abstract Category/Topic	:	Management » Behavioural and lifestyle interventions
Language	:	English
Saved:	:	15.01.2016 14:13:16
Submit:	:	