

## CAHE *Allied Health News in Review*

### Does eating less help lose weight?

**Plain English Findings:** Irrespective of the diet you choose, eating less will result in short-term weight loss.

#### Evidence Background

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Comparison of weight-loss diets with different compositions of fat, protein, and carbohydrates'. Reported by Serena Gordon for US News and World Report, February 25, 2009:

<http://health.usnews.com>

#### The origin of evidence

This news report is based on a study conducted by researchers from the U.S.A. The principal author is based at the Department of Nutrition at the Harvard School of Public Health. Funding was received from the National Heart, Lung, and Blood Institute and the General Clinical Research Centre, National Institutes of Health (U.S.A).

#### The objectives of research

To compare diets emphasizing either carbohydrate, fat or protein in the treatment of obesity in the long term (two years).

#### The nature of evidence

Randomised clinical trial

#### Participants involved in the research

In total, 811 adults aged between 30 and 70 years old (mean of 51) with a body mass index of 25-40 (mean of 33) were recruited from 2 cities in the U.S.A. Sixty-four percent of the cohort were female. The majority of the population were white and with college education.

#### Interventions utilised

Four diet types were utilised:

- 1) 20% fat, 15% protein and 65% carbohydrate
- 2) 20% fat, 25% protein and 55% carbohydrate
- 3) 40% fat, 15% protein, and 45% carbohydrate
- 4) 40% fat, 25% protein and 35% carbohydrates

Individual baseline daily energy expenditures were calculated for each participant based on their resting energy expenditure and activity level and the size of each participant's diet was based around a deficit of 750 kcal per day. Compliance with the diet was maintained by running regular group sessions with participants. These sessions included daily meal plans. Physical activity was standardised by setting a goal of 90 minutes per week of moderate intensity exercise. This exercise was monitored by an on-line self monitoring tool and a questionnaire.

#### Outcome measures

Change in weight in kilograms and change in waist circumference in centimetres.

## Key findings

There were no differences found in terms of weight loss or change in waist circumference between the four types of diets. All diets resulted in weight loss and reduced waist circumference in participants. An average of 6kg of weight loss across all diet groups was reported at 6 months. Weight gain was then reported in all four groups. By 2 years all groups had regained around half of their initial weight loss. It was concluded that for weight loss, it is more important to reduce total calorie intake than to emphasise fat, protein, or carbohydrates.

**Recommendations made by the review article:** None

## Methodological considerations

Adequate randomisation and allocation procedures were reported. It was reported that blinding of group allocation was maintained for participants, staff and investigators. A drop out rate of 20.5% was reported which may be of concern. However a power analysis showed that small changes in weight could be detected with a dropout rate of up to 40%. In addition, results were analysed by intention to treat which would serve to eliminate any bias introduced by those who dropped out. Overall this study was of high methodological quality.

## Validity and reliability of the conclusions

**Internal validity:** Questionnaires used to measure compliance with the diet showed that the actual percentages of fat, protein and carbohydrate consumed by participants varied by between 8 and 14% at various points in the study. Results were analysed in groups according to which macronutrient (fat, protein and carbohydrate) was emphasised and this was cross checked by biomarkers such as HDL cholesterol, to give an impression of the accuracy of the questionnaires. Despite this, any interpretation of the results of this study must take the discrepancy between planned diet and actual diet into account.

**External validity:** Participants taking medication which may affect body weight as well as participants with diabetes or unstable cardiovascular disease were excluded from this study. Although these exclusions may improve the internal validity of this study, it must be taken into account when extrapolating its results. In addition, the exclusion of participants who demonstrated insufficient motivation must be taken into consideration.

## Clinical implications

This study considered diets which emphasised fat, protein or carbohydrate in different percentages. Its primary outcomes relate to the treatment of obesity (reduction of weight and waist circumference). It does not consider micronutrients such as vitamins and minerals or the individual dietary requirements of the individual.

## Reference

Reports published by US News can be accessed at: <http://health.usnews.com>

## Article Reference

Sacks, F, M, Bray, G, A, Carey, V, J, Smith, S, R, Ryan, D, H, Anton, S, D, McManus, K, Champagne, C, M, L, M, Bishop, Laranjo, N, Leboff, M, S, Rood, J, C. De Jonge, L, Greenway, F, L, Loria, C, M, Obarzanek, E & Williamson, D, A 2009, 'Comparison of weight-loss diets with different compositions of fat, protein, and carbohydrates', *The New England Journal of Medicine*, vol. 360, no. 9.

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