

## Parallel Session RTD Line 4 / Psychological Predictors of weight loss

### Lecture 2: Relationship between free living energy intake and activity energy expenditure for weight regulation

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#### **Abstract**

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Eating behaviour, food and energy intakes are influenced by a wide range of dietary, emotional and situational factors. Dietary, and non-dietary factors associated with eating behaviour and the risk of over consumption, are included in the risk models for weight regain, which will inform the development of the Obesity Risk and Behaviour Screening Tool. Here, preliminary results of the dietary and behavioural factors associated with short-term energy balance (energy intake during the food recording period, and energy expenditure), and longer-term energy balance (weight-loss and weight regain) in the DiOGenes intervention cohort are presented.

Obese and overweight adults (406 males and 712 females, mean (SD) age 41y (6.3), height 1.70m (9.2), weight 98kg (18.6), BMI 33.8kg/m<sup>2</sup> (5.3)) followed an 8-week low calorie diet (LCD), and were then randomized to one of five *ad libitum* intervention diets for 6 or 12 months. Subjects each completed three, three-day weighed food intake records; one before the LCD (CID1), and one each at the start (CID2) and end (CID3) of the intervention diet. All food and drink was recorded at each meal, and subjects answered a set of questions relating to motivational and situational influences of food intake immediately before and after each meal (de Castro and Plunkett, 2002).

Multiple regression analysis showed that the dietary and behavioural factors that were significantly correlated ( $p \leq 0.001$ ) with energy intake were; % energy from CHO (-ve, explaining 2.4% of the variance), % energy from protein (-ve, 5.9%), %energy from alcohol (+ve, <0.1%), energy density (+ve, 10.5%), number of people present at the meal (+ve, 1.6%), pre-meal hunger rating (+ve, 1.6%), post-meal satisfaction rating (+ve, 0.1%), and location (e.g. at work, home, restaurant, 1.6%). When added in a stepwise manner to multifactor models the variance accounted for by all of the dietary and eating behaviour factors rose to 34%.

Univariate analysis showed that the percentage energy intake contribution from the macronutrients and dietary energy density, as reported at CID1, correlated with weight regain during the intervention period. Lower CHO and higher protein and fat intakes, and more energy dense diets being associated with lower weight regain (all  $p < 0.005$ ), reflecting the potential difference between the intervention diets and the subjects' habitual diets. The amount of variance explained by each was between 1 and 3%.

Both pre-meal and post-meal ratings of depression and anxiety, reported at the CID2 measurement, were negatively associated with weight loss, and positively with weight regain. Pre-meal hunger ratings were negatively associated with weight loss, and post-meal hunger ratings positively with weight regain (all  $P < 0.05$ ).

Several other pre-meal and post-meal factors, recorded at CID2, were associated with weight loss or regain, but the associations were inconsistent, and the correlations relatively weak.

These preliminary results demonstrate the need for multi-factor models to predict weight-loss and risk of weight regain in the ORBAST.

#### Reference

de Castro JM and Plunkett S (2002). A general model of intake regulation. *Neuroscience and Biobehavioral Reviews* 26, 581-595