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Impact of energy restriction on eating behaviour traits in individuals with low satiety efficiency



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Introduction: Studies showed that some individuals express weaker satiety efficiency, and thus, may be more susceptible to weight gain or weight loss resistance. This study aimed to evaluate the impact of a weight-loss program on eating behaviour traits in individuals with different satiety efficiency.

Methods: A pooled cohort of obese individuals ($n=100$; aged 38.7 ± 8.7 years) who participated in a 12–16 wk weight-loss program targeting an energy deficit of 500–700 kcal/d were included in this study. The satiety efficiency was determined by median split of mean satiety quotients based on appetite sensations measured in response to a test meal at baseline. Anthropometric variables, eating behaviour traits (TFEQ) and ad libitum energy intake (EI) (buffet) were assessed before and after the intervention.

Results: Similar weight loss was observed between low and normal/high satiety efficiency groups (-3.5 ± 3.2 vs -3.8 ± 2.9 , $p=0.64$). ANOVAs (adjusted for initial weight and behaviour) showed time by group interactions for cognitive restraint, flexible control (FC), strategic dieting behaviour (STB), avoidance of fattening foods (AFF) and situational disinhibition (SD) ($0.02 \geq p \leq 0.01$). *T*-tests showed that individuals with low satiety efficiency experienced a higher increase in cognitive restraint (5.5 ± 4.1 vs. 3.5 ± 3.5 , $p=0.016$), FC (2.5 ± 2.1 vs. 1.6 ± 1.3 , $p=0.019$), SDB (1.6 ± 1.5 vs. 0.9 ± 1.5 , $p=0.02$), AFF (1.0 ± 1.2 vs. 0.4 ± 1.0 , $p=0.015$) and a lower decrease in SD (-0.7 ± 1.1 vs. -1.2 ± 1.3 , $p=0.02$) after the intervention compared to the normal/high satiety efficiency group. Moreover, individuals with lower satiety efficiency had a higher EI at the buffet meal after the intervention compared to the normal/high satiety efficiency group (920 ± 323 vs. 788 ± 291 kcal, $p=0.036$).

Conclusion: This study suggests that energy restriction could have an undesirable impact on eating behaviour traits and energy intake in individuals experiencing lower satiety efficiency. Other studies should evaluate if these changes

could increase their susceptibility to weight regain.

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The effects of increasing dietary protein during energy balance and energy restriction on homeostatic and hedonic processes



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Introduction: Compensatory increases in hunger and changes to food preferences in response to energy restriction may reduce weight loss efficacy. Increasing dietary protein could moderate these adaptive responses. The aim of this study was to determine if adding dietary protein during energy balance and energy restriction reduces compensatory increases in hunger and changes in preferences for energy-dense foods.

Methods: 22 participants (11 M, 11 F) undertook the study. The study involved 4 dietary treatments, each 2 weeks in duration: habitual diet 1 (HD1), habitual diet 2 (HD2), high protein energy balance (HPEBal: energy balance while increasing protein by 0.5 g/kg/day with a protein supplement) and high protein energy restriction (HPER: increasing protein by 0.5 g/kg/day with a protein supplement while reducing energy intake by 33%). Appetite and L & W were measured during 11hr probe days at the end of each treatment.

Results: Total day hunger significantly increased and fullness decreased during HPER compared to HD1, HD2 and HPEBal ($p < 0.01$). Satiety quotient did not differ between the conditions. There was no relationship between protein intake (grams, g/kg/day, or % energy intake) and changes in hunger in response to HPEBal or HPER. There were significant increases in explicit wanting for high fat savoury and high fat sweet foods during HPER compared to HD1 ($p < 0.05$).

Conclusions: Increasing dietary protein by 0.5 g/kg/day did not significantly mediate the compensatory changes in appetite and food

preferences commonly reported during energy restriction.

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Invited talk: Nudging supermarket customers toward healthier eating



Adrian Cameron

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The primary drivers of unhealthy diets are food environments that encourage unhealthy eating. Australian supermarkets are our primary source of food, with marketing techniques in this environment (manipulation of promotion, product, price and placement) having the potential to improve the healthiness of consumer food purchases at a population level. The current Australian supermarket environment (both within-store and in catalogues) will be reviewed, including how it compares internationally. Following on from this, the results of a series of recently completed within-store interventions in Australian supermarkets will be presented. These trials were a collaboration between retail, local government, state government and academic partners and were conducted in eight supermarkets in regional Victoria. Primary outcome assessment was whole-store sales of healthy and unhealthy food based on store sales data (scanner data). The low-cost, scalable and feasible interventions tested included labelling, signage and positioning interventions. Customer perceptions of these interventions, and the financial effect on the retailer were also assessed and will be discussed.

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Invited talk: Can price discounts on healthy food influence spending in an extremely socioeconomically disadvantaged population? The SHOP@RIC study



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Globally, diet is the leading risk for burden of disease. Diet is poorer and burden of disease higher for socio-economically disadvantaged populations in high and middle income countries. Strategies are urgently needed to address this inequity. We

examined the effectiveness of a price discount on selected purchases with and without consumer education, delivered in-store in remote Indigenous communities. A stepped-wedge randomised design was used, with 20 communities randomly assigned to 5 sets of 4 communities, spaced eight weeks apart. A 20% price discount on fresh and frozen fruit and vegetables, water and diet soft-drinks was applied for a period of 24 weeks in the community store. Two stores in each set were randomly assigned to receive a combined strategy (discount and education). Intervention effect was measured using mixed models employing weekly point-of-sale data for 131 weeks. The primary outcome was the percent change in fruit and vegetable purchases (grams) per person per day. The immediate effect of applying the price discount alone was to increase sales of fruit and vegetables combined by 13% (95%CI: 5%, 23%), fruit by 21% (7, 37) and vegetables by 9% (1, 18). Bottled water sales increased by 18% (1, 37); no significant effect was observed for artificially sweetened soft drink 5% (-6, 18). The additional benefit of in-store consumer education was an increase in vegetable sales of 14% (3%, 26%). Consistent with other studies, a price discount can improve food purchasing in low socio-economic communities.

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Invited talk: Healthy Food Environments: Navigating, synthesising and communicating the quagmire of evidence to inform policy-making



Debra Hector

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Making sense of copious, heterogeneous evidence to inform large-scale public health environmental intervention and policy is highly challenging. This is especially so in complex arenas such as 'the Food Environment'.

While there is often sufficient evidence of associations between risk factors and environmental determinants, few food environmental and policy actions have been implemented and/or sufficiently evaluated to provide robust evidence of effectiveness at the impact and outcome levels. Linking intervention to distal health outcomes of policy interest, such as obesity, is often not possible.

Additionally, study designs applicable to the clinical setting are often much less applicable