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Testing dietary interventions in obese adolescents: the ‘Eat Smart’ study

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**Background** – Childhood obesity and overweight is accelerating, with 21% of Queensland children aged 5-17 years reported to be overweight or obese. The lack of an effective evidence based treatment approach limits implementation of best dietetic practice.

**Objectives** – This pilot is designed as a ‘proof of concept’ study to test the acceptability of three different dietary treatment strategies for community living overweight adolescents who are wishing to lose weight.

**Design** – Subjects are recruited via doctor referral. The inclusion criteria are:- aged 10-17 years, body mass index (BMI) >90th percentile, exclusion criteria include:- diabetes or those taking insulin sensitizers, or who have a metabolic/endocrine cause of their obesity. Subjects choose one of 3 approaches:-a structured low fat diet using a modified TEMplate™ system, an unstructured low fat diet with kilojoule counting or a modified carbohydrate approach using a carbohydrate exchange system. Subjects undergo a range of medical and body composition measures at baseline and after 3 months of treatment. Energy prescriptions are based on measured resting energy expenditure and estimated physical activity level derived from a self reported 3-day activity diary.

**Outcomes** – Nineteen subjects (68% female) have enrolled, mean age 13.3 (range 10-16 yr) average BMI 33.3 (SD 7.2), mean weight Z score 2.4 (SD 0.5). Activity diaries show an average of 10.24 (SD 1.60) hours/day of seated behaviours (including attending school, transport and 4.43 hours of screen time). Playing outside and sports accounted for only 1.4 (SD 2.8) hours/day. Obesity related complications were already apparent in 63% (n=12), such as hypertension (n= 1); dyslipidaemia (n=6), altered liver function tests (n=5) or have evidence of insulin resistance such as acanthosis nigrans (n= 3). When given a choice of diet, 42% chose the structured low fat diet, 10% unstructured low fat diet with 48% opting for modifying their carbohydrate intake. Generally, subjects were unwilling or unable to undertake exercise of sufficient duration or intensity to affect a change in energy balance.

**Conclusions** – Adolescents, seeking help with weight reduction, have a preference for structured dietary advice, and in particular seek guidance with portion size and meal planning. In very inactive obese adolescents, exercise recommendations need to focus on reducing sedentary behaviour, such as screen time.

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Dietary patterns and nutrient intake in obese adolescents prior to starting a weight management programme

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**Background** – Despite the increasing prevalence of obesity, there is little current information as to dietary intake and food choices made by obese adolescents.

**Objectives** – This analysis aimed to examine dietary patterns and nutrient intake in community based obese 10 -17 year olds prior to starting a weight management programme.

**Design** – Subjects were recruited from ‘Eat Smart’ – a feasibility study comparing different dietary approaches in the treatment of adolescent obesity. Volunteers completed a 3-day food diary prior to arriving for baseline tests. Diet diaries were analysed for nutrient intake using Food Works (Xyris software). Core food group (CFG) analysis was performed; by counting serves from the records using the Australian Guide to Health Eating serving sizes.

**Outcomes** – Nineteen subjects (68% female); mean age 13.3 years and mean BMI 33.6 (SD 7.2; range 24.8 – 48.7) provided data. Average energy intake reported was 8424kJ/day, or 100 kJ/kg body weight (SD 30), CFG analysis showed a mean consumption of 1.3 serves of fruit/day, over half being in the form of fruit juice and 2.2 serves/day of vegetables (excluding fried potato). Sweetened beverages contributed significantly to energy intake. Children showed a preference for regular sweetened drinks as opposed to ‘diet’ varieties and consumed on average over 1 serve/day (accounting for an estimated 6% of daily energy intake). Milk as a beverage, both plain and flavoured, was not regularly consumed, with an average intake of 0.3 serve/day. Fifty six percent of children reported having consumed fast foods in the form of ‘takeaway’ at least once over the 3 day recording period.

**Conclusions** – These preliminary results indicate that obese adolescents have an intake of fruits and vegetables below the recommended levels and that sweetened beverages and takeaway meals make a significant contribution to energy intake. Weight management strategies for overweight/obese adolescents should target a reduction in sweetened beverage and takeaway consumption, and focus on establishing healthy eating patterns including a move towards greater fruit and vegetable intake. Calcium intake has the potential to be inadequate in many due to irregular consumption of milk as a beverage.