

overweight/obesity from parental body shape. This study showed that in this population, parental obesity increased the risk of overall obesity and central adiposity for adult offspring, particularly for daughters. Pictograms could potentially be used as a screening tool in primary care settings to promote healthy weight among young adults.

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### Hunger and emotional eating after laparoscopic adjustable gastric banding: A path analysis predicting weight loss at 2 years post-surgery



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Levels of post-operative hunger have been associated with weight-loss after LAGB [1,2]. Dietary restraint has shown relationships with hunger cues and eating behaviours, as have stress, eating self-efficacy and emotional eating [3–6]. A path analysis model tested how pre-surgical dietary restraint may influence post-operative hunger and how perceptions of hunger affect eating self-efficacy, eating behaviours, and ultimately weight-loss across 24 months.

Participants were 147 patients (127 females, 27 males) about to undertake laparoscopic adjustable gastric banding surgery (LAGB). Questionnaires concerning eating behaviours and cognitions (cognitive restraint, hunger, eating self-efficacy, and emotional eating) and stress were completed prior to and at 12 months post-surgery. Weight was measured prior to and at 12 and 24 months post-surgery.

Results showed a negative relationship between presurgical dietary restraint and post-surgical hunger reduction, such that patients with the lowest pre-surgical restraint experienced the greatest hunger reduction at 12 months post-surgery. Lower hunger then predicted improvement in emotional eating which was partially mediated by eating self-efficacy. Improvement in emotional eating at 12 months post-surgery subsequently predicted better weight-loss between 12 and 24 months. Improve-

ment in emotional eating was not explained by reduced levels of stress.

Improved eating behaviours are important predictors of weight-loss in LAGB. These results suggest that other pre and post-surgical mechanisms such as dietary restraint, hunger, and eating self-efficacy may influence the manner in which eating behaviours are expressed. In order to enhance outcomes for patients, future research should examine the pathways involved in improved eating behaviours after bariatric surgery.

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### Dietary sugar knowledge and attitudes and their relation to free sugar intake and practices among adults: A systematic review



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**Objectives:** Excess free sugar consumption increases the risk of developing non-communicable diseases. Two potentially relevant antecedents of individuals' health behaviour are knowledge and attitudes. We conducted a systematic review: (1) to identify factors influencing adults' dietary sugar knowledge and attitudes; and (2) to determine if there is an association between adults' dietary

sugar knowledge and attitudes and free sugar intake or dietary practices.

**Methods:** 15 electronic databases were searched from inception for relevant articles. Peer-reviewed and grey literature published in English language and involving adults ( $\geq 18$  years) were eligible for inclusion. The process of study selection followed by their quality assessments was conducted using the PRISMA guidelines and Effective Public Health Practice Project tool respectively. Findings were summarised using meta-narrative synthesis.

**Results:** A total of 3287 papers were identified of which 21 studies (11 for each objective) were included. Receiving nutrition education from health professionals (such as nurse, diabetes educator, or dietician) and advertising were associated with higher sugar knowledge and positive attitudes towards lower sugar consumption. In addition, lower current and past use of sugar-sweetened beverages and exposure to sugar-specific food labelling were associated with positive attitudes towards lower sugar consumption. Individuals' attitudes towards high dietary sugar consumption were influenced by their peers. Inconsistent associations were found concerning the role of dietary sugar knowledge and attitudes in determining free sugar intake or dietary practices. The overall quality of evidence was weak.

**Conclusion:** Sugar consumption is complex. The findings of the available literature on determinants of dietary sugar knowledge and attitudes, and role of knowledge and attitudes in determining sugar consumption are inconclusive. More research with robust study designs investigating the role of broader determinants are warranted. This will enable the development of effective interventions and policies to promote healthy behaviours.

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### Voluntary exercise improves metabolic and hepatic phenotypes in dietary but not metabolic obesity in male mice



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**Background:** Increasing physical activity reduces obesity complications. In female mice with dietary or metabolic obesity, exercise maintains insulin sensitivity, reduces adipose inflammation, and improves liver histology [1]. Male gender is associated with a worse metabolic phenotype in mice. We therefore tested whether exercise can delay onset of obesity, and ameliorate metabolic phenotype in male mice by improving adipose morphology and function.

**Methods:** Male *Alms1*<sup>-/-</sup> (*foz/foz*) NOD.B10 mice and *Wt* littermates (8/group), fed atherogenic (high fat/sugar/cholesterol) diet, were caged in pairs until 24 week-old. Half the cages were fitted with an exercise wheel and cycle computer. Blood, liver, and lumbar/epididymal/mesenteric white adipose tissue were removed.

**Results:** *Wt* mice ran  $\sim 8$  km/day, whereas *foz/foz* mice ran  $\sim 1.5$  km/day; *foz/foz* mice were notably less active and showed a decrease in wheel use towards the end of study. Exercise delayed but failed to prevent development of severe obesity in *foz/foz* mice; all *foz/foz* mice weighed  $\sim 57$  g at Week 24. Exercising *Wt* mice weighed less than non-exercising counterparts ( $\sim 34$  g vs.  $\sim 44$  g;  $P < 0.05$ ). There were also reductions in liver and adipose depot weights in exercising *Wt* mice ( $P < 0.05$ ), but not in *foz/foz* mice. Exercise improved hyperglycemia and insulin sensitivity in *Wt* but not *foz/foz* mice. Exercise improved morphometry and reduced inflammatory recruitment in all adipose compartments in *Wt* mice, but failed to improve adipose dysfunction in *foz/foz* mice. Hepatic lipid partitioning was less in exercising *Wt* but not *foz/foz* mice vs. non-exercising; exercise normalized liver histology and abolished fibrosis in *Wt* mice.

**Conclusions:** Exercise confers metabolic protective effects in mice with dietary obesity