Overweight and obesity

Use of portion control in management

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Background
Overweight and obesity was responsible for 7.5% of the total burden of disease and injury in Australia in 2003, and was estimated in 2008 to cost the community $58.2 billion. More than half of the adult, and up to a third of the child, population in Australia is now classified as overweight or obese.

Objective
This article aims to provide a rationale and some common practical solutions to help GPs assist patients to reduce intake and ultimately achieve weight loss or weight maintenance. In particular, it focuses on the reduction of portion size as a weight loss method.

Discussion
Treating obesity remains a complex mix of changing someone's habits and their cognition around food and exercise while considering their current medical profile and medications, and minimising risk of further disease. Despite this complexity, controlling portion size is an effective, simple, reliable and sustainable tool that can be used to bring about weight loss.

Keywords: obesity; health promotion; diet therapy; diet

More than half of adults and up to a third of children in Australia are considered overweight or obese.[1,2] In 2008 the Australian Government included obesity as a national health priority area in its own right; however, obesity has causative links to each of the other seven national health priority areas.[3–5] In 2003, overweight and obesity were responsible for 7.5% of the total burden of disease and injury in Australia, and were estimated in 2008 to cost the community $58.2 billion annually in direct and indirect costs.[6,7]

Treating obesity can be difficult given its multifactorial aetiology, the current obesogenic society and the enormous amount of misinformation distributed in the community. General practitioners are often considered, and sought, for first line interventions to treat overweight and obesity. It is therefore important for GPs to have an understanding of simple solutions that can help precipitate weight loss in their patients.

Weight gain occurs when there is a positive energy imbalance, ie. energy intake from food and drink is greater than energy expenditure from basal metabolism, diet induced thermogenesis and physical activity. Conversely, weight loss occurs when there is a negative energy balance. Additionally, the amount of weight loss from seemingly similar calorie deficits will vary between patients depending on a range of physiological and genetic factors.[8]

An energy deficit of 1050–4200 kj (250–1000 kcals [1 kcal = 4.2 kj]) per day is required to precipitate a 1 kg per week to 1 kg per month weight loss. A weight loss of greater than 10–20% of initial weight is the target for sustainable improvements of weight related comorbidities.[9] Long term follow up is required for sustainable outcomes from all weight loss treatments.[10,11]

A wide range of strategies is available to health professionals to help patients lose weight. *Table 1* summarises the pros and cons of the most common weight management strategies currently available. However, there are an unlimited number of methods that may incorporate one or more of the weight loss strategies listed. Examples of commercial methods that employ these strategies include Weight Watchers, Jenny Craig and SureSlim but it is beyond the scope of this article to list all such methods.

Portion size

Food portion size has increased significantly over the past 20 years, as has the incidence of obesity.[12,13]

When portion size increases, people often overeat unintentionally, irrespective of their satiety or the pleasure they are getting from the food.[14,15] The increased amount of food results in an increase in energy consumption.[16] For example, 20 years ago, takeaway coffee was water based and served in a 200 mL cup. Even after adding full cream milk and two teaspoons of sugar, the maximum energy content was 400 kj (~100 kcal), the amount considered reasonable for a snack. Today we can buy 470 mL full cream milk based coffees with more than 2000 kj (~480 kcal), almost five times that of previous consumption and five times the energy intake recommended for a snack. Australians are surrounded by oversized meals and king sized packages, with point of sale promotions encouraging consumers to increase their energy intake. Reducing serving sizes is often an unobtrusive and effective approach to achieving sustainable weight loss for many patients.[17]

Reducing each meal and snack by 420 kj (100 kcal) can result in a 1200–2400 kj (300–600 kcal) deficit each day, and a theoretical weight loss of 0.3–0.6 kg/week. However, reducing energy intake (kilojoules) too much (below ~3400 kj [800 kcal]) appears not to add any further benefit and may be detrimental to long term weight maintenance.[18,19]

It has been demonstrated that choosing smaller vessels (ie. reducing the size of plates, bowls, spoons and glasses) facilitates portion reduction with little effort for the patient.[20–22] There are a number of aids available to assist health professionals in educating and demonstrating appropriate meal portions (see *Resources*). Aids may include specifically sized and portion marked bowls and plates, books that show appropriate meal sizes, or plastic moulds that are positioned on top of plates outlining the appropriate serve size for each food group. Most aids are suitable for direct use by the patient.

A number of the weight loss strategies listed in *Table 1* are also based on a reduction in portion size. Even appetite suppressant medications, meal replacement therapies and restrictive bariatric surgery procedures work by helping the patient to control portions and reduce the amount of food eaten in a sitting.

Table 1. Summary of weight loss strategies

Approach	Pros
Low fat diet (30–50 g/day)[23]	• Fat is the most energy dense macronutrient, therefore lowering dietary fat decreases energy intake without the need to significantly reduce volume of food intake
Low carbohydrate diet (<20 g/day)[24,25]	• Low carbohydrate intake should be complemented by an increase in protein intake and protein is highly satiating • Shows a greater weight loss than low fat diets at 6 months
Portion control (calorie controlled serves for all foods)[21,26]	• Can be an effective weight gain prevention strategy for anybody • Using portion plates and choosing smaller packages may reduce intake without significant awareness or hardship. Pictorial guides provide a simple educational method for all literacy levels
Meal frequency (3–6 meals, snacks per day)[27,28]	• More even distribution of energy intake throughout the day • Improves metabolic rate • Improves glycaemic load • Tempers hunger
Meal replacement (all or some meals replaced by fortified shakes, soups or bars) Very low energy diet: <3.4 mj/day, Low energy diet: 3.4–5.0 mj/day[29]	• Good for those who have difficulty choosing or preparing meals and controlling portions • Well designed programs may be a component of a comprehensive weight management program
Exercise[30]	• Good for health generally • Can be free and enjoyable • Lowers risk of mortality regardless of body mass index (BMI) • Regular exercise has been shown to help maintain weight loss
Behavioural intervention (self monitoring, goal setting, stimulus control, cognitive techniques)[31]	• Adds to effectiveness of other therapies • Tools can be matched to individual needs
Pharmacotherapy (eg. phentermine, sibutramine, orlistat)[32]	• Effective when used in conjunction with lifestyle change
Surgery (eg. gastric banding, sleeve gastrectomy, gastric bypass)[33]	• Significantly better long term success rates than lifestyle change alone • A lifesaving operation for many obese people

Appetite reduction

Appetite is controlled by a complex interaction of hormones. As weight loss occurs and/or portion sizes of meals and snacks are decreased, hunger can increase. It is important for the patient to be informed that increased hunger is normal and is in fact desirable. If hunger becomes excessive or if the patient finds it is disrupting daily tasks, it is appropriate to apply strategies to help curb physical hunger.

Appetite reduction strategies may include:

- eating smaller meals every 2–3 hours
- increasing the amount of water drunk (as hunger and thirst are often confused)
- increasing the amount of fibre and lean

Cons
• Often good fats in the diet are reduced as well as bad fats • Sugar content and glycaemic index of diet may increase
• Difficult to adhere to in the long term as it is very restrictive • Cuts out some of the core food groups increasing risk of nutritional deficiencies • Long term safety not established • Not recommended in patients with osteoporosis, kidney disease or in patients with elevated low density lipoprotein cholesterol
• Requires constant vigilance in the face of oversized packaging, dinnerware and utensils • Requires education in appropriate portion sizes
• Often difficult to remember to eat when not prompted by hunger • Can be challenging for those who are time poor • Additional opportunities to overeat
• Some programs lack adequate follow up • May not improve long term dietary behaviours • Energy intake may be too low, slowing metabolism and provoking compensatory metabolic mechanisms
• Has not been shown to be successful as a stand alone weight loss method • Over an hour of brisk walking per day is required to achieve a 2000 kj energy deficit, which may be impractical without dietary modification
• Dietary modification needs to be ongoing to be effective
• Needs to be combined with other therapies • Medication needs to continue to keep weight off but no data on long term safety and effectiveness • Expensive • Increased side effects
• Invasive procedure • Increased nutritional risk • Expensive • Only recommended for those with a BMI >40 or >35 with comorbidities

Table 2. 5As: brief interventions for weight management[36]

What	Do	Specifics
Ask	• Identify patients who are visibly overweight or underweight • Identify patients with, or at risk of, conditions affected by weight	• Cardiovascular disease • Diabetes • Dyslipidaemia • Hypertension • Bone and joint disorder
Assess	• Conduct motivational interviewing?	• BMI and waist circumference • Dietary habits • Level of exercise • Blood pressure (in patients >18 years of age) • Readiness to change
Advise	• Provide patient with information and resources • Provide lifestyle prescription Note: restrictive dieting should not be recommended in children	• Nutritional guidelines • Physical activity guidelines • Discourage 'fad' diets
Assist	• Provide self help materials • Develop eating and exercise plans • Prescribe pharmacotherapies if needed	• Set realistic goals (1–4 kg loss per month) and develop strategies to achieve these goals
Arrange	• Referrals • Schedule follow up visit for 2–3 months	• Dietician • Exercise physiologist • Psychologist (if disordered eating or thinking is present)

Table 3. Four simple portion control messages

- Reduce portion size by choosing a smaller plate, bowl, glass and mug
- Reduce energy density at evening meals through nutritional balance
  - serve one-quarter plate of protein foods such as lean red meat, poultry, fish, egg, tofu or legumes
  - serve one-quarter plate of low GI carbohydrate foods including pumpkin, peas, corn, pasta, and basmati or doongara rice
  - serve one-half plate of low starch vegetables or salad such as alfalfa, asparagus, bamboo shoots, beans, bean sprouts, broccoli, brussels sprouts, cabbage, capsicum, carrots, cauliflower, celery, cucumber, eggplant, leek, lettuce, mushrooms, onions, radish, rocket, shallots, silverbeet, spinach, spring onion, squash, tomatoes, turnips or zucchini
- Buy smaller packs. Ideally, choose single serves of snack foods with around 420 kj (100 kcal) per serve, eg. 100 g yoghurts, 20 g nuts, 1 cup fruit or 20 g muesli bars
- Avoid drinks that contain sugar – choose water

protein in the diet, and
- checking that the major carbohydrate sources in the diet have a low glycaemic index (thus supplying a source of energy over a longer period and reducing fluctuations in both blood glucose and insulin concentrations).

Pharmacotherapy may assist with appetite control. A Cochrane review found that taking sibutramine resulted in weight loss 4.2 kg greater than the placebo.[34] While appetite suppressant medications may assist with weight loss, they are more effective if lifestyle modifications are followed at the same time because they appear to be effective only while they are being taken – as soon as use is discontinued, weight gain occurs.[34] Long term lifestyle changes and being consistent with these changes is the most effective way of managing weight.

Making a start: role of the GP

General practitioners are critical in the identification and management of overweight or obese patients. Preliminary data from the Absolute Risk Trial indicates there is a significant association between receiving lifestyle advice from GPs and lifestyle modification, showing patients are highly likely to act upon advice from their GP.[35]

Successful interventions begin with identifying where patients need to make changes, and by developing appropriate interventions based on the patient's willingness to change. In general practice, there is often only time for a brief intervention. This can consist of five steps: ask, assess, advise, assist, and arrange (the 5As) (*Table 2*).[36] Advice on portion control, combined with practical advice, is simple and effective, can be implemented quickly and delivered easily in a GP consultation (*Table 3*).

A number of resources available online have been developed to assist GPs to talk to patients about body weight, nutrition and physical activity (see *Resources*).

Referral to other health professionals

Sometimes weight loss requires a more comprehensive and in depth intervention. Referral to a dietician, exercise physiologist/physiotherapist and/or psychologist may be warranted to help the patient overcome barriers to weight loss. The dietician is well placed to identify the factors that sobotage weight loss and to help people achieve the required reduction in intake, while maintaining nutritional adequacy and satiety.

Conclusion

Controlling food portion size is an effective, simple, reliable and sustainable tool that can be used to bring about weight loss. General practitioners are well placed to deliver this message, and help implement the use of portion reduction.

Resources

For patients:
- Portion Perfection Pack (pack includes: Portion Perfection picture book, plate and bowl), available to purchase at www.greatideas.net.au
- this=that: a life-size photo guide to food serves, available to purchase at www.foodtalk.com.au
- The TEMplate System: www.healthyweightforlife.com.au.

For GPs:
- The Royal Australian College of General Practitioners. Guidelines for preventive activities in general practice ('red book'): www.racgp.org.au/guidelines/redbook
- The Royal Australian College of General Practitioners. Putting prevention into practice: guidelines for the implementation of prevention in the general practice setting ('green book'): www.racgp.org.au/guidelines/greenbook
- The Royal Australian College of General Practitioners. SNAP: a population health guide to behavioural risk factors in general practice: www.racgp.org.au/guidelines/snap
- National Health and Medical Research Council. Obesity guidelines: www.health.gov.au/internet/main/publishing.nsf/Content/obesityguidelines-index.htm
- The Australian Department of Health and Ageing. Lifescripts: www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-lifescripts-index.htm.

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Conflict of interest: Amanda Clark is the creator of the Portion Perfection, which has been listed as a resource.

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