Canadian Adult Obesity Clinical Practice GUIDELINES

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L'ASSOCIATION CANADIENNE des MEDECINS et CHIRURGIENS BARIATRIQUE
The CANADIAN ASSOCIATION of BARIATRIC PHYSICIANS and SURGEONS

Commercial Products and Programs in Obesity Management

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Update History

Version 1, June 11, 2020. Obesity Canada Adult Obesity Clinical Practice Guidelines are a living document, with only the latest chapters posted at obesitycanada.ca/guidelines.

KEY MESSAGES FOR HEALTHCARE PROVIDERS

- The commercial weight loss industry is enormous. Clinicians should familiarize themselves with the commercial obesity management offerings in their vicinity. Criteria have been published to evaluate whether a commercial program is safe and potentially successful (i.e., offering a combination of nutrition, physical activity and behaviour change support; with realistic weight loss goals of 0.5–1.0 kg per week; a long-term weight maintenance approach; a good safety profile; and reasonable costs).
- None of the weight loss products from the commercial industry that were studied in randomized control trials of more than 12 weeks duration were shown to produce clinically meaningful weight loss.
- Some commercial programs that combine nutrition, physical activity and support (Jenny Craig®, Nutrisystem®, Optifast®, WW® [formerly Weight Watchers]) can be used to induce modest weight loss. Some programs have also shown improvement in glycemic control in patients with obesity and diabetes but no effect on lipids or blood pressure have been demonstrated.

RECOMMENDATIONS

1. For adults living with overweight or obesity, the following commercial programs should achieve mild to moderate weight loss over the short or medium term, compared to usual care or education:[1]
   a) WW® (Weight Watchers): (Level 1a, Grade A);
   b) Optifast®: (Level 1b, Grade B);
   c) Jenny Craig® (Level 1b, Grade B); and
   d) Nutrisystem® (Level 1b, Grade B).

2. Optifast®, Jenny Craig®, WW® (formerly Weight Watchers) and Nutrisystem® should achieve a mild reduction of glycated hemoglobin values over a short-term period compared to usual counselling in adults with obesity and type 2 diabetes (Level 1b, Grade B).[2,3]

3. We do not recommend the use of over-the-counter commercial weight loss products for obesity management, owing to lack of evidence (Level 4, Grade D).[4]

4. We do not suggest that commercial weight loss programs be used for improvement in blood pressure and lipid control in adults living with obesity (Level 4, Grade D).[5]

KEY MESSAGES FOR PEOPLE LIVING WITH OBESITY

- The commercial weight loss industry is flourishing and is often characterized by unrealistic advertising. Before adhering to a commercial program or using a commercial weight loss product, people with obesity should ensure that the approach is safe and potentially effective (a combination of nutrition, physical activity and behaviour change support; realistic weight loss goals of 0.5–1.0 kg per week; a long-term weight maintenance approach; a good safety profile; and reasonable costs).

- People living with overweight or obesity should be leery of weight loss programs that: i) promise weight loss without diet or exercise; ii) promise weight loss while eating as much food as you want; iii) promise reduction of weight from particular locations on the body; iv) promise overly rapid loss (for example: losing 30 pounds in 30 days); or v) include before and after photos and personal endorsements that seem too good to be true.

- Many natural weight loss products are available without a prescription but none of these have been proven to provide clinically meaningful weight loss in high-quality scientific studies.

- Some commercial programs (WW® [formerly Weight Watchers], Optifast®, Jenny Craig®, Nutrisystem®) have been shown to be effective to produce modest weight loss. These are not successful in all people but are generally considered safe.

Introduction

"An intensive study of medical frauds and fads made over a period of nearly twenty years has convinced me that in the whole realm of quackery there is no field that is more easily worked nor one that offers greater financial returns to the medical swindler than that devoted to the exploitation of "cures for obesity" (Arthur J Cramp, MD, 1929).[6]

The commercial weight loss industry is enormous. The global weight loss and weight management market exceeded $168.95 billion in 2016 and is expected to reach $278.95 billion by 2023.[7] Though that number includes medical obesity management, inclusive of behavioural obesity management programs, pharmaceuticals and bariatric surgery, there's no shortage of commercial obesity management programs, products and promises that consumers can access without prescription or medical counsel. It is as true now as it was in 1929, some "cures for obesity" are undeniably exploitative.

While healthcare providers cannot be expected to be familiar with all of the direct-to-consumer obesity management goods and services, developing an awareness of what is readily available to their patients in their local geographic area is worthwhile. It is also worthwhile to gain some familiarity with some of today's more popular commercial weight loss initiatives.

Evidence for these various products and services, however, is at times scant and at other times challenging. It is perhaps most challenging when it comes to the evaluation of obesity management service provision. The efficacy of a service is in some part, if not large part, dependent on the service providers' skills. Furthermore, with many commercial programs the service being provided changes, and hence what might have been shown to be true for one iteration of a program may not necessarily be applicable to future iterations. Take, for example, WW® (formerly Weight Watchers Canada, now WW Canada Ltd. and WW International Inc.). There have been many studies exploring various aspects of the program's outcomes. Since 1997, the Weight Watchers® program has changed eight times. In December 2017 Weight Watchers® launched the freestyle program, which replaced the Smart Points program launched just two years prior. In September 2018, the company changed its name from Weight Watchers® to WW® (WW® Reimagined) and declared its new focus was no longer weight loss, but overall health and wellness, and revealed a new tagline: *"Wellness that Works."* WW® has indicated it is planning more changes for its programs in 2020.

In considering obesity management programs, the American National Institutes of Health published a short guideline[8] for both patients and practitioners, detailing what to look for in a safe and successful obesity management program, including:

- Behavioural counselling, including the use of food and activity records;
- Discussion around social determinants of health and their impact on weight;
- Discussion around the risks and benefits of medications for obesity management;
- Ongoing feedback, monitoring and support from the program;
- Weight loss goals of 0.5–1.0 kg weekly;
- A component specifically designed to address maintaining lost weight; and
- Long program durations.[8]

People should be leery of weight loss programs that:

- Promise weight loss without diet or exercise;
- Promise weight loss while eating as much food as you want;
- Promise spot reduction of weight from particular locations;
- Promise overly rapid loss (for example, losing 30 pounds in 30 days); and/or
- Include before and after photos and personal endorsements that seem too good to be true.

Commercial products

Perhaps the most widely available of the products and services purported to help with obesity management are weight loss supplements. Available in pharmacies and corner stores across the country, these products abound, with many sporting the explicit license of Health Canada's Natural Health Product Directorate in the form of an eight-digit Natural Product Number or Homeopathic Medicine Number on their labels. It is also important to note that there is a growing body of evidence that many dietary supplements are adulterated. In the case of obesity management, supplements have been found to contain prescription anti-obesity medications, and they are often the subject of Health Canada's recall and safety alerts. A recent paper published in JAMA Network Open, looking at American supplements, found more than 700 contained unlabelled pharmaceutical ingredients.[4] The inclusion of these ingredients puts users at risk for both side effects and drug interactions. Though it is difficult to quantify the degree of morbidity supplements and adulterated supplements may confer, a 2015 study published in the New England Journal of Medicine reported that they are responsible for over 23000 emergency room visits annually in the U.S.[9]

Though it is beyond the scope of these guidelines to review all available products, there are some, sold either on their own or as an ingredient in a polypill, which are worth briefly mentioning as their prevalence underscores their more widespread use and availability.

PGX®

PGX®, or PolyGlycopleX, is a highly viscous fibre that is purported to help decrease appetite, manage body weight and improve glucose, insulin and cholesterol metabolism.[10] A 2015 meta-analysis of double-blinded randomized control trials looking at PGX® concluded that the available evidence does not indicate that PGX® causes reduction in body weight, though it may cause reductions in both total and LDL-cholesterol.[11] A 2017 meta-analysis of soluble-fibre supplementation as a whole on obesity management found that, while supplementation did associate with weight loss (2.52 kg), caution in interpretation should be exercised given the "considerable between-study heterogeneity" found.[12]

Garcinia cambogia

Garcinia cambogia is a small fruit popular in cooking in Southern India, that is also purified and marketed to offer obesity management, appetite control and more. Its putative mechanism of action involves the inhibition of citric acid lyase by way of its hydroxycitric acid.[13] To date, the randomized control trial data are sparse, short term and of small size. A 2012 meta-analysis concluded that there is little evidence to support the use of Garcinia cambogia.[9] There is also concern for liver toxicity consequent to the use of Garcinia cambogia and Garcinia cambogia-containing supplements; a 2018 literature review reminded physicians to actively monitor patients taking these products.[14]

Green tea extract

The bioactive components of green tea are their polyphenols (catechins), whose proposed primary mechanism of action involves increasing energy expenditure and fat oxidation.[15] Reviews of green tea catechins in obesity management have not demonstrated clinical efficacy with either weight loss[15] or weight loss maintenance.[16]

Chromium picolinate

Chromium picolinate is said to stimulate neurotransmitters responsible in eating behaviours[17] improving glucose metabolism and insulin sensitivity.[18] A 2013 Cochrane review concluded that there was no current, reliable evidence to inform treatment decisions as to the use or safety of chromium picolinate supplementation for the treatment of obesity.[19]

Chitosan

Chitosan is a polysaccharide thought to reduce the absorption of dietary fat from the gastrointestinal tract.[20] A 2008 Cochrane systematic review assessing 15 trials including 1219 participants found that chitosan supplementation led to 1.7 kg greater weight loss, which it described as "minimal and unlikely to be of clinical significance."[21]

Conjugated linoleic acid

Conjugated linoleic acid is a term used to describe a group of fatty acids that are produced naturally in the digestive tracts of ruminants, pigs, chickens and turkeys.[22] Its purported anti-obesogenic properties are thought to stem from its impact on lipid metabolism and consequent reduction in body fat.[23] A recent system review of 13 trials found that conjugated linoleic acid supplementation reduced body weight on average by a "not clinically relevant" 0.52 kg.[24]

Glucomannan

Glucomannan is a soluble fibre that is thought to delay gastric emptying and in turn increase satiety and reduce dietary intake.[25] A recent systematic review of six short randomized control trials came to the conclusion that there was limited data to support that glucomannan supplementation may help to reduce body weight, but not body mass index.[26]

Acupuncture

Acupuncture involves the insertion of needles into different parts of the skin. It has been proposed that acupuncture affects the regulation of weight-related central nervous systems neuropeptides[27] as well as adipokines.[28] Multiple systematic reviews have been conducted to evaluate the benefits of acupuncture. Though some came to positive conclusions (including one that reported a 1.9 kg weight loss,[29] one that reported acupuncture was safe[30] and one that it was more effective than lifestyle modification alone[31]) their shared opinion is that the quality of trials included were low,

limiting their conclusive abilities, and that rigorous, methodologically sound and long-term studies are needed. The most recent systematic review on this topic found i) that acupuncture plus lifestyle modification was more effective than lifestyle modification alone; ii) that acupuncture alone was no more effective than sham acupuncture alone; and iii) when stratified by BMI, acupuncture was found to be effective only in those with overweight, and not those with obesity.[32]

Cryolipolysis

Cryolipolysis involves the targeted dissolution of adipocytes by way of directed cooling. A recent systematic review of 16 studies involving 1445 patients concluded that cryolipolysis led to a 19.55% mean reduction of targeted subcutaneous tissue after 3.83 months of treatment, but that long-term follow-up data was lacking.[33]

Whole body vibration therapy

Whole body vibration therapy is proposed to contribute to weight loss by way of three theoretical pathways, including inhibition of adipogenesis and fat loss, increased energy expenditure during treatment and increased muscle mass. A recent review of the sparse literature surrounding whole body vibration therapy concluded that the available literature is both inconsistent and contradictory with respect to each of those proposed pathways.[34]

WW®

The WW® commercial program is currently available in all Canadian provinces and has more than 425 points of service across the country).[35] Although the WW® program has varied over time, it relies mainly on a points-based food plan that is individualized according to sex/age/weight, using online tools (tracking, goal setting and social community) and support groups (wellness workshops) with weekly in-person meetings. An online-only version of the program is also offered at lower cost. The program focuses on a low-calorie diet composed of conventional foods, encouragement to increase physical activity and behaviour modification strategies.[35]

Effect on anthropometric measures

A systematic review published in 2015 (using data from 2002–2014) evaluated 45 studies of commercial programs of at least 12-weeks duration, including 39 randomized control trials. The population studied were adults with overweight or obesity. Six randomized control trials compared the WW® program with usual care (which could be no intervention, printed materials or less than three counselling sessions with a provider), with 1850 participants in total. No adverse events were reported. Although more weight loss was observed after three to six months (-2.5% to -7.9% absolute weight loss difference between WW® and control), in the three large studies with one-year results (n = 200 to 772) the difference between percent weight change of the WW® group versus the control group at 12 months was 2.6% to 3.2%.[1]

A recent randomized control trial in the primary care context compared a brief intervention to 12 weeks or 52 weeks of the WW® program. At 12 months, the brief intervention group had lost an average of 3.3 kg, the 12-week WW® group 4.8 kg and the participants in the 52-week WW® program 6.8 kg. At 12 months, 57% of participants in the WW® 52-week program had lost 5% of their initial weight compared to 42% and 25% of participants in the 12-week WW® program and brief intervention group, respectively. Moreover, 10% weight loss was achieved in 30% vs. 15% vs. 9% of participants, respectively. Differences between groups remained significant at the two-year follow-up.[36]

A small randomized control trial (n = 46) also compared the WW® program (17 weeks) with a nurse-led, clinic-based weight loss intervention consisting of 12 individual weight loss counselling sessions over 17 weeks plus the possibility of meal replacement and/or pharmacotherapy. In that setting, the clinic-based intervention was more effective for weight loss (-4.0 kg vs. -0.4 kg).[37]

Effect on cardiovascular risk factors

A systematic review of randomized control trials studying commercial programs from 2002–2014 was performed. There was no effect on systolic blood pressure (three studies), half of the studies reported small effects on diastolic blood pressure or small improvements in Tg, LDL and HDL. These studies, however, had a high risk of bias due to attrition.[5]

Effect on glycemic control

A recent randomized control trial has compared the effect of WW® (n = 112) with a self-help program developed by the National Diabetes Education program (based on the Diabetes Prevention Program trial intervention, n = 113). WW® participants lost more weight than controls at 12 months (5.5% vs. 0.2%) and had greater improvements in A1C and HDL.[38]

In a randomized control trial of 563 adults with type 2 diabetes, the WW® program, combined with telephone and email consultations with a certified diabetes educator was compared with standard diabetes nutrition counselling and education. The patients in the WW® group showed greater weight loss (-4.0% vs. -1.9%), improved in A1C (-0.32 vs. +0.16) and 26% could reduce diabetes medication vs. 12% in the standard care group. These patients also had significantly greater improvement in weight-related quality of life and a decrease in the diabetes distress score.[3]

Other outcomes

In the United States, a cost-effectiveness review estimated that the average direct cost of each kilogram of weight lost with the Weight Watchers® program compared favourably to the use of the Jenny Craig® program or pharmacotherapy.[39] Cost effectiveness was also

favourable in a study from the United Kingdom for a 52-week Weight Watchers® program.[36]

In a recent randomized control trial, participants in the WW® group lost significantly more weight after 12 months (-6.1 kg or 6.9% of baseline weight) than those in the usual care group who received weight management advice by their primary care professionals (-2.6 kg). This was accompanied by a greater decrease in fat mass, waist circumference and improvement in HDL in the WW® group. There was also a trend for a decrease in medication cost in the WW® group.[40]

Qualitative studies have confirmed that patients view the WW® program as an appropriate and medically pertinent intervention for obesity management. WW® participants value the support and motivation, ease of access and frequent contact provided in this program.[41]

Curves

Curves is a commercial program offering a 30-minute resistance exercise circuit, interspersed with callisthenic exercises or Zumba four days per week, and associated weekly personal coaching sessions. Curves also recommends a low-calorie, high-protein diet. Participants have access to an online, individualized, weekly meal plan and daily motivational and educational videos. One study showed that Curves participants lost 1.8 kg more than WW® participants at three months. The other studies comparing Curves to Nutrisystem® and to Jenny Craig® did not show any significant difference for weight loss and reduction of waist circumference.[42] There is no data about the efficacy of this program for reduction of lipids, blood pressure or glucose.[2]

Ideal Protein

Ideal Protein is a ketogenic meal replacement program. Its main approach is based on the consumption of Ideal Protein food, with a progressive transition to regular food. This program offers one-on-one coaching with healthcare practitioners or trained coaches, and online coaching support. It is sold by drugstores or Ideal Protein clinics. There is no data in the literature the efficacy, safety or the improvement of cardiometabolic risk factors associated with this program.

Jenny Craig®

Jenny Craig® is a high-intensity commercial program that offers weekly individual sessions (via telephone or face-to-face) with behavioural counselling, a low-calorie or low-carbohydrate diet with prepackaged meals and an online tracking method for food journaling.[43] One randomized control trial compared Jenny Craig® with control and two randomized control trials compared Jenny Craig® with behavioural counselling. Jenny Craig® resulted in a 4.9% greater weight loss than control or behavioural counselling at 12 months regardless of the program delivery (in-person or telephone), program version (low carbohydrate vs. traditional) or study population (general vs. patients with type 2 diabetes).[1] Attrition was less than 20% in these studies. Adherence was not reported, and 3% of participants (one individual) required cholecystectomy.

One randomized control trial that compared the traditional and low-carbohydrate versions of Jenny Craig® with counselling showed a reduction of A1C by 0.4–0.8% greater than counselling at 12 months. Insulin was reduced or stopped in 8% of participants in the counselling group as compared to 63% of participants in the traditional Jenny Craig® group, and 90% of participants in the low-carbohydrate Jenny Craig® group. Oral hypoglycemic medications were decreased or stopped in 16% of counselling participants, 39% of the traditional Jenny Craig® participants and 32% of the low-carbohydrate Jenny Craig® participants at 12 months. No trial reported glycemic outcomes in patients without type 2 diabetes.[2] The Jenny Craig® group showed a slight decrease of systolic and diastolic blood pressure at six months, but the effects on systolic blood pressure were reversed at 12 months for the traditional Jenny Craig® groups. The effects on diastolic blood pressure were also reversed at 12 months for the low-carbohydrate Jenny Craig® group. Two trials compared lipid outcomes between Jenny Craig® and counselling, but there were no appropriate variance estimates on triglycerides, LDL, HDL and total cholesterol to determine statistical significance.[5] Multiple head-to-head comparison studies between Jenny Craig® and other programs, like Curves, WW® and Nutrisystem® demonstrated that the programs performed similarly in the short-term period for weight loss, reduction of waist circumference and blood pressure.[42]

Nutrisystem®

Nutrisystem® is a high-intensity commercial program based on an individual counselling session, exercise plan, online tracking methods for food journaling and a low-calorie diet with meal replacement.[1] One randomized control trial compared Nutrisystem® with control/education, and two randomized control trials compared Nutrisystem® with behavioural counselling. Nutrisystem® resulted in 3.8% greater weight loss than control or education at three months.[1] No trials continued to 12 months. Attrition was less than 20%, and no serious adverse events were reported. Compared to counselling, Nutrisystem® improved A1C by 0.3% at six months in patients with type 2 diabetes, and 28% of participants had a reduction of oral hypoglycemic medications.[2,44] Compared to diabetes education, Nutrisystem® reduced A1C by 0.8% at three months for patients with type 2 diabetes.[45] Two head-to-head studies compared Nutrisystem® and Curves, and Nutrisystem® and Jenny Craig® — no program was shown to be superior regarding weight loss and waist circumference.[42] In a single trial, Nutrisystem® lowered systolic blood pressure by 4.7 mm Hg more than counselling at six months. There was no difference in LDL, HDL, triglycerides or total cholesterol at six months.[5] No trial reported 12-month results.

Optifast®

Optifast® programs, based in Canada, are medically supervised, high-intensity behavioural intervention programs combined with

a low-calorie meal replacement diet of 900 kcal per day. In the United States, Optifast® comes in a very low-calorie diet of 800 kcal per day format. It consists of a six-month program, featuring weekly meetings with allied health professionals and physicians, and 12 weeks of full meal replacement, following by a transition phase with a food and a weight maintenance phase. A few provinces in Canada, like Ontario, use Optifast® as part of their medical program for the treatment of obesity, and also as part of their surgical program for pre-surgery weight loss. Among program completers, demonstrated weight loss was between 15% to 25% of initial body weight during three to six months of treatment. Weight loss maintenance was about 9% after one year and 4.7% of their initial body weight after four years, but only 50% of the initial cohort participated in the long-term follow-up data. A recently published multi-centre, randomized control trial compared the Optifast® program to a food-based dietary plan and showed 12.4% and 10.5% weight loss for Optifast® at six and 12 months respectively, versus 6.6% and 5.0% weight loss for the food-based diet in the same period of time. The assessment of body composition measured by bone densitometry, at six and 12 months showed a greater fat mass and lean mass loss for Optifast® compared to the food-based dietary plan, but the proportion of weight loss from lean mass loss was similar in both groups.[46]

Optifast® may reduce A1C by 0.3% more than conventional counselling after six months. A retrospective study showed a decrease of 0.8% of A1C and a discontinuation of insulin and sulfonylurea in 44.6% and 86.3% of patients, respectively, after six months.[47] Long-term data about A1C improvement are missing. Only one randomized control trial reported lipids and blood pressure outcomes at six months. A very low-calorie diet with behavioural intervention delivered by a primary care physician was shown to reduce HbA1C by 0.9% with a significant reduction of anti-diabetic medications compared to control after 52 weeks. However, this study did not demonstrate a significant reduction of blood pressure.[48] Other evidence shows that Optifast® may reduce the diastolic and systolic blood pressure by 3 mm Hg more than counselling alone, but an appropriate variance estimate was not reported to determine statistical significance.[5] There is no data about cardiovascular events or mortality. The attrition rate was between 45% to 56% after 26 weeks of treatment.[43] The reported side effects were constipation, fatigue, headache, hair loss and biliary colic. Reported cholecystectomy was 0.2% after six months, but previous studies have found the risk of gallstones three times greater with a very low-calorie diet than a low-calorie approach.[1]

Overeaters Anonymous®

Overeaters Anonymous® is a non-profit, self-help program led by peers. This program is free. The program offers physical, emotional and spiritual recovery for those who suffer from compulsive eating. Their philosophy and 12-step approach are similar to that of Alcoholics Anonymous.[43] There is no published study of the efficacy of Overeaters Anonymous® for weight loss. Scientific evidence is minimal to recommend self-help programs like Overeaters Anonymous.®

Slimfast®

Slimfast® is a self-directed program based on low-calorie meal replacement with online nutrition support and coaching text messages. Four randomized control trials compared Slimfast® with control/education and four randomized control trials compared Slimfast® to counselling. Results were mixed with most only reporting on completers. One study did not show any difference regarding weight loss between Slimfast® and control/education, but most of the studies showed a difference in weight loss between groups, ranging from -5.2% to -8.7% from six months to 51 months. Compared to behavioural intervention, Slimfast® showed a modest weight loss difference, ranging from zero to -3.4% at three to 12 months. The attrition rate was not reported for most of the studies but, when reported it varied between 13% and 42%. Harms were not reported.[1] At 12 months, there was no significant change in A1C between Slimfast® participants and the counselling group, but there was a greater reduction of oral hypoglycemic medication (40% reduction for sulfonylurea and 29% reduction of metformin).[2] The comparison of WW® and Atkins® to Slimfast® did not demonstrate any difference on weight loss between the programs, but Slimfast® participants had an average of 4.5 mm Hg lower systolic blood pressure after six months compared to the Atkins® group.[42] At six months, one randomized control trial found no significant difference in systolic and diastolic blood pressure between Slimfast® and control/education. Most trials did not report the variance estimates for between groups difference, which limits our ability to report statistical significance for blood pressure and lipids.[5,49]

Slimming World

Slimming World is a commercial program featuring weekly community group meetings. Members are encouraged to do 30 minutes of physical activity and to eat low-energy-density food, plus extra calcium and fibre, with controlled amounts of high-energy-density foods.[50] The mean percent weight loss after three months was -4.4% according to a retrospective study done from the company's database. Higher levels of attendance led to greater weight loss.[51] One randomized control trial showed that weight loss achieved with Slimming World was not statistically different than exercise alone after three and 12 months.[50, 52] We did not find any data about improvement of metabolic outcomes.

Take Off Pounds Sensibly (TOPS Club, Inc.)®

Take Off Pounds Sensibly (Tops Club, Inc.)® is a self-help, non-profit, weight loss program that recommends a low-calorie diet, featuring a curriculum on diet, physical activity and behaviour modification with weekly group sessions led by peers. A retrospective cohort study of participants in the TOPS® national database who renewed their annual membership showed a mean percent weight loss in the first year of -6.0% for women and -6.3% for men. The one-year retention was 36% and the seven-year retention was approximately 6%.[53] There is no randomized control trial on TOPS® and no data about metabolic outcomes.

The summary of the Canadian Adult Obesity Clinical Practice Guideline is published in the Canadian Medical Association Journal, and contains information on the full methodology, management of authors' competing interests, a brief overview of all recommendations and other details. More detailed guideline chapters are published on the Obesity Canada website at www.obesitycanada.ca/guidelines.

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