Title: Psychological Interventions for Morbid Obesity: Clinical Effectiveness

Date: 14 May 2008

Context and policy issues:

Obesity has become a significant health issue worldwide. In Canada, the prevalence of obesity is increasing at an alarming rate and the degree of obesity is also rising. Obesity is characterized by excess body fat and is generally defined by the body mass index (BMI), which is a composite measure of a person’s weight in relation to their height. The BMI is calculated by dividing weight in kilograms by height in metres squared and is expressed as kg/m².

The international standards developed by the World Health Organization for classifying overweight and obesity, which have been endorsed in Canada, are outlined in Table 1. Adults are considered overweight if their BMI is 25 kg/m² or greater and obese if their BMI is 30 kg/m² or greater. Obesity is further divided into three categories, with successive values representing escalating health risks: People with Class I obesity have a high risk of developing health problems. For those in Class II, the risk is very high and in Class III, the risk is extremely high. Morbid obesity refers to Class III, or to Class II if it is associated with significant obesity-related co-morbidity factors. These co-morbidity factors include diabetes, cardiovascular disease, stroke, high blood pressure, gall bladder disease, dyslipidemia, degenerative joint disease, obstructive sleep apnea and some cancers. Morbidly obese individuals have a significantly higher prevalence of co-morbid conditions, and a two-fold increase in the rate of premature mortality compared with those with less severe degrees of overweight.
Table 1: Classification of overweight and obesity by body mass index (BMI) and associated disease risk

<table>
<thead>
<tr>
<th>Category</th>
<th>Body Mass Index (kg/ m²)</th>
<th>Obesity class</th>
<th>Disease risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>18.5 – 24.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>25.05 – 29.9</td>
<td></td>
<td>Increased</td>
</tr>
<tr>
<td>Obese</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>30.0 – 34.9</td>
<td>I</td>
<td>High</td>
</tr>
<tr>
<td>Moderate</td>
<td>35.0 – 39.9</td>
<td>II</td>
<td>Very high</td>
</tr>
<tr>
<td>Severe (morbid)</td>
<td>≥ 40</td>
<td>III</td>
<td>Extremely high</td>
</tr>
</tbody>
</table>

In Canada, the prevalence of overweight and all levels of obesity have increased substantially in recent years. According to the most recent estimates from the 2004 Canadian Community Health Survey, 59% of the adult population is overweight, with a BMI ≥ 25 kg/ m². The prevalence of adult obesity increased from approximately 11% in 1972 to 24% (age-adjusted) in 2005. The prevalence of morbid obesity increased from 0.9% in 1978/1979 to 2.7% in 2004, a 200% increase.

For obese patients, first-line treatment options for weight reduction include non-surgical interventions such as diet, exercise, psychological interventions and drug therapy. Psychological interventions include the following four types of therapy:

1. **Behaviour therapy**

Behaviour therapy, together with diet and exercise, is a standard component of most weight loss programs. The terms “behavioural therapy” and “lifestyle modification” are often used interchangeably. Weight-loss behaviour therapy refers to a set of principles and techniques used to help patients adopt new diet and exercise habits that can be sustained long-term to promote health.

It has been shown that behaviour therapy enhances weight loss when combined with diet and exercise. The goal of behavioral treatment is to help patients make long-term changes in their eating behaviour by modifying and monitoring food intake and physical activity, as well as controlling cues and stimuli in the environment that trigger eating. The elements of behaviour therapy strategies include:

- Adherence to a low-calorie diet
- Self-monitoring (keeping food diaries and activity records, regular weighing)
- Control of the stimuli that activate eating
- Slowing down the eating process, goal setting
- Behavioral contracting and reinforcement (small tokens for success)
- Nutrition education and meal planning
- Modification of physical activity
- Social support
- Cognitive restructuring – adopting positive rather than negative self-talk
- Problem solving (strategies to manage food intake in restaurants and at parties)
2. Cognitive behaviour therapy

Cognitive behaviour therapy is aimed at identifying and modifying the specific thoughts and feelings associated with unhealthy and healthy behaviours. Two skills that are commonly taught during cognitive therapy are problem solving and cognitive restructuring to correct negative thoughts that can obstruct desired behaviour change.

3. Psychotherapy

Psychotherapy is a less commonly used psychological intervention for weight loss. Psychotherapy may include psychoanalysis (therapy based on the idea that problems stem from hidden inner conflicts) or humanistic therapies (therapies that focus on helping clients to find meaning in their lives and live in ways consistent with their own values and traits).

4. Hypnotherapy

Hypnotherapy is a complementary psychological intervention that has been used in obesity management.

For morbidly obese patients, bariatric (weight-loss) surgery is a further treatment option. Bariatric surgical procedures include restrictive procedures, such as gastric banding or gastroplasty or malabsorptive procedures, such as gastric bypass or biliopancreatic diversion. A number of systematic reviews and meta-analyses have confirmed that bariatric surgery is the most efficacious treatment option for sustained weight loss in morbidly obese individuals. However, surgery is expensive and has an operative mortality rate of 0.2% to 2.0%, and a complication rate of greater than 20%.

A review of the evidence on the effectiveness of psychological interventions for morbid obesity would help decision makers determine if these interventions should be included in weight-loss programs prior to patients being referred to a bariatric surgery program.

Research question(s):

What is the evidence for the clinical effectiveness of psychological interventions to promote successful weight loss in morbidly obese patients?

Methods:

A limited literature search was conducted on key health technology assessment resources, including OVID MEDLINE and OVID PsycINFO, the Cochrane Library (Issue 1, 2008), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international HTA agencies, and a focused Internet search. Results include articles published between 2003 and April 2008, and are limited to English language publications only. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, and clinical guidelines. In addition, the bibliographies of retrieved publications were scanned for further relevant items.

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports are presented first, followed by systematic reviews and evidence-based guidelines.
Summary of findings:

Two health technology assessments (HTAs)\textsuperscript{3,16} and three systematic reviews (SRs)\textsuperscript{8,13,15} were identified that examined the use of psychological interventions for morbid obesity within the established timeframe.

Health technology assessments

A technical brief from the New Zealand Health Technology Assessment (NZHTA) was published in 2005.\textsuperscript{3} The objective of the review was to assess the evidence for the safety and effectiveness of surgical and non-surgical interventions for patients with morbid obesity. Non-surgical interventions included medications, diet, exercise, behavioural therapy and complementary therapies designed to reduce weight. A broad literature search identified health technology assessments, systematic reviews, meta-analyses, controlled clinical trials, or comparative studies (cohort and case-control design) that assessed interventions for morbidly obese patients. No information was provided about whether more than one reviewer appraised the articles or performed data extraction and appraisal. Twelve relevant HTAs and Cochrane reviews were identified that assessed surgical and non-surgical interventions for patients with morbid obesity. Of these, only one HTA review and one systematic review assessed non-surgical interventions, and the HTA is not further described because it falls outside the date limits of this report.

The systematic review (Avenell et al. 2004) included in the NZHTA brief was undertaken by the UK's National Health Service (NHS) R&D Health Technology Assessment Programme.\textsuperscript{4} The objective was to review the long-term effects of obesity treatments (including behaviour therapy) on body weight, risk factor modification, clinical outcomes, and obesity-related disease. A total of 84 RCTs were included, and of these, 15 studies assessed the following non-surgical interventions: behaviour therapy when combined with diet versus no treatment (three randomized controlled trials [RCTs]); bariatric surgery, diet and behaviour therapy versus bariatric surgery alone (one RCT); diet, exercise and individual behavioural therapy versus diet, exercise and family behavioural therapy (seven RCTs); diet, exercise and behaviour therapy in a group setting versus diet, exercise and individual behaviour therapy (four RCTs).

The addition of behaviour therapy to diet was associated with greater weight loss at 12 months (-7.67 kg, 95% CI -11.97 to -3.36 kg) compared with adding exercise to diet (-1.95 kg, 95% CI -3.22 to -0.68 kg). However, the number of participants in the studies with added behaviour therapy was very small. At 18 months, the added effect of behaviour therapy was still significant (-4.18 kg, 95% CI -8.32 to -0.04 kg) but weight loss was lower compared with exercise added to diet (-7.63 kg, 95% CI -10.33 to -4.92). At 36 or 60 months the addition of behavioural modification to diet still resulted in weight loss, but it was not statistically significant compared with the addition of exercise to diet. Two studies that examined the added effect of exercise and behaviour therapy to diet were unable to demonstrate any significant changes in weight or co-morbidity risk factors at 12 or 18 months compared with diet alone. The authors suggested that exercise or behaviour therapy make an important contribution to weight loss, which is important in long-term weight maintenance. There was less evidence to determine whether both behaviour therapy and exercise should be added to diet. Family therapy was associated with more weight loss than individual treatment at 12 months (-2.96 kg, 95% CI -5.31 to -0.60 kg) and 24 months (-5.61 kg, 95% CI -10.98 to -0.24 kg), however, there was insufficient evidence to suggest that individual therapy was more effective in producing weight loss compared with group therapy.
The authors of the NZHTA Technical Brief concluded that few RCTs have assessed non-surgical interventions for patients with morbid obesity. A far greater number of studies have assessed non-surgical treatments for overweight and obese patients. It is difficult to extrapolate findings from studies that assessed non-surgical interventions for obese patients to those with morbid obesity, since absolute weight loss in the two groups of patients can result in significant differences in complications, quality of life and the resolution of obesity-related co-morbidities. Overall, only small weight reductions and resolution of some obesity-related co-morbidities were reported in morbidly obese patients treated with non-surgical interventions at up to two years follow-up. The overall quality of the evidence was limited by methodological problems such as small sample size, inadequate reporting, limited follow-up, and few quality of life data.

An update to the 2005 NZHTA technical brief was published in November 2007. However, the objective of the review was to examine the safety, effectiveness and cost-effectiveness of surgical interventions in comparison with non-surgical (diet, exercise, psychological, pharmacological) interventions for patients with morbid obesity. The review also focused on the relative effectiveness and cost-effectiveness of different bariatric surgical procedures and therefore this update is not relevant.

A Technology Assessment Report by the Institute for Clinical Systems Improvement (ICSI) was published in 2005. The objective of the review was to evaluate the safety and efficacy of behavioural therapy programs for weight loss in overweight or obese adults. A literature search was conducted using MEDLINE and PREMEDLINE, and bibliographies of articles obtained from the literature search were hand searched for other relevant articles. Criteria for the types of studies to be included or excluded was not provided; however, studies that involved pharmacological agents as part of the treatment program were excluded. No information was provided about whether or not more than one reviewer independently appraised the articles or completed data extraction and appraisal. Twenty-four studies were identified with the majority of the studies identified excluded participants who were morbidly obese.

The authors stated that individuals enrolled in behavioural therapy programs without incentives or food provision typically experienced weight losses of 2.5% to 10% of baseline weight following an active treatment phase of two to six months. There are limited post-treatment follow-up data but the available evidence suggested that weight loss may be maintained or further increased at six to 12 months following treatment. In programs involving financial incentives (refundable deposits required at program outset or payment given for attending follow-up sessions) or food provision in addition to behavioural therapy, individuals typically experienced weight losses of 6.6% to 13.7% after six months. In programs that actively continued treatment for 18 months, further weight losses were not observed. At 12 months post treatment, weight losses had been reduced to 1.7% to 8.6% of original body weight. The authors concluded that behavioural therapy programs may be suitable for overweight or obese patients. No one behavioural therapy program was found to be superior over another.

Limitations of this review include studies with small sample sizes, analysis not performed by intention-to-treat, high drop-out rates and limited follow-up data at one year or beyond. The behavioural therapy approaches varied in length and content emphasis. It is also important to point out that few of the patients enrolled in the studies were morbidly obese. Of interest, only two of the 24 studies that were included in this assessment report were also included in the 2005 Cochrane systematic review (see below). Three of the 24 studies included in this assessment were excluded from the Cochrane review; two were excluded because raw data were not provided and one was excluded because there was a greater than 15% drop-out rate.
Systematic reviews

The first systematic review conducted by McTigue et al. (2003) assessed the effectiveness of adult obesity screening and treatment, including the effects of counseling and behavioural therapy on weight loss in obese adults. The review was prepared for the U.S. Preventive Services Task Force. A comprehensive literature search identified RCTs, systematic reviews of RCTs (preferred evidence), cohort studies, and nonrandomized controlled studies published between January 1994 and February 2003. A minimum of 12 months follow-up data were required for inclusion in the review. At least two authors independently reviewed abstracts and articles, and performed data abstraction. Three systematic reviews and 17 additional RCTs were identified that assessed the effect of behavioural therapy on weight loss.

The three systematic reviews that were included in the SR by McTigue were published in 1997, 1998, and 1999. The first SR from the University of York for the U.K. National Health Service (NHS) found that behavioural intervention, combined with diet or exercise, was effective. In 24 studies, the mean net weight loss was 3.0 kg in follow-up that ranged from 12 to 60 months. The 1998 SR from the U.S. National Institutes of Health (NIH) found that in 29 trials with at least one year of follow-up, the mean weight loss was 3.3 kg in diet or physical activity groups (some including behavioural therapy). A combination of diet and physical activity counseling produced greater reduction of weight and abdominal fat than either approach alone. The authors concluded that behaviour therapy was a useful adjunct to diet or physical therapy counseling. The 1999 SR on the non-surgical treatment of obesity from the Canadian Task Force on Preventive Health Care reported a net weight loss of 2.1 kg after 24 to 84 months in six studies that assessed behavioural-cognitive therapy in combination with diet or exercise programs. Weight reduction was most effective during supervised dietary treatment but patients gradually regained weight.

A meta-analysis of the additional 17 RCTs assessed the intervention mode (group or individual therapy), components (diet, exercise, behaviour therapy) and intensity (low, moderate and high). Multi-component, intensive interventions that included behavioural therapy most often led to weight loss. Overall, counseling promoted a modest, but clinically significant weight loss of three to five kg over at least six to 12 months.

The limitations of the three systematic reviews included different eligibility criteria, treatment classifications, and approaches to data synthesis. In addition, aggregate values of their findings do not reflect variations in RCT sample size, length of follow-up, or treatment differences such as counseling intensity. There was partial but incomplete overlap in the literature covered by each review. Overall, however, findings were consistent. The RCTs also had several limitations, including patients lost to follow-up, limited diversity in sex and ethnicity of patient populations, and short-term follow-up. No counseling RCT lasted for more than 54 months.

The overall conclusion of the McTigue systematic review was that with counseling, obese patients can achieve modest but clinically significant sustained (one to two years) weight loss in the range of 3 to 5 kg. More intense programs were generally more successful, as were those incorporating behavioural therapy. Treating patients on an individual rather than a group basis appeared less important.

The second systematic review conducted by Pittler and Ernst (2005) evaluated complementary therapies for reducing body weight, including acupuncture, acupressure, dietary supplements, homeopathy, and hypnotherapy. The degree of overweight or obesity in the population of interest was not specified. A systematic literature search identified RCTs,
systematic reviews and meta-analyses of RCTs of any type of complementary therapy for weight reduction. Conference proceedings, medical journals and the bibliographies of all retrieved articles were also hand searched. Two reviewers independently extracted data on study design, quality, sample size, intervention, regimen, results, adverse events and control of lifestyle factors. Two reviewers also assessed important criteria of methodological quality using the Jadad scale. Six systematic reviews and 25 additional RCTs were identified. Of these, only one systematic review (a meta-analysis of six RCTs) and one RCT assessed the use of psychological interventions (hypnotherapy) for weight loss.

The meta-analysis (Allison 1996) included six RCTs that compared hypnotherapy plus cognitive-behaviour therapy with cognitive-behaviour therapy alone. The duration of treatment was not provided. The results reported for 321 patients suggested that adding hypnotherapy to cognitive-behavioural therapy leads to a relatively small reduction in body weight (effect size 0.28, 95% CI 0.23 to 0.33). The unblinded RCT (Strading 1998) with 60 patients compared treatment with dietary advice plus two 30-minute hypnotherapy sessions, followed by self-hypnosis, with those who received dietary advice alone. The hypnotherapy was directed at either stress reduction or energy intake. After 18 months, no intergroup differences were reported (p>0.05).

Limitations of the meta-analysis include small study sample sizes, heterogeneity among studies and a lack of adverse event reporting. The degree of overweight and obesity also differed substantially among studies. Limitations of the RCT included small sample size, a lack of adverse event reporting, and results were analyzed for only 46 of the 60 enrolled patients (there was no intention-to-treat analysis). The overall conclusion of Pittler and Ernst was that on the basis of limited evidence, hypnotherapy produced small effects on weight loss compared with patients who did not receive hypnotherapy.

A Cochrane systematic review by Shaw et al (2005) evaluated the effects of psychological interventions to achieve sustained weight loss in overweight or obese patients with a BMI > 25 kg/m². Studies in this review included RCTs of at least three months duration that assessed a psychological intervention for weight loss in overweight or obese adults versus a comparison intervention. Studies with a drop-out rate of greater than 15% were excluded, as were studies that combined drug therapy with a psychological intervention. Two reviewers independently extracted data on study design, quality, interventions, patient characteristics, outcomes, and results. Thirty-six RCTs met the inclusion criteria and were included in the review. Follow-up varied from 12 weeks to 156 weeks; 30 of the 36 trials were longer than 16 weeks duration. Thirty trials assessed a behavioural intervention, while four studies evaluated a cognitive-behavioural intervention, and two evaluated a cognitive intervention. Overall, 3,495 participants were evaluated.

Behavioural treatments generally included a combination of different strategies, including stimulus control, reinforcement, self-monitoring, problem solving and goal setting. Six studies with a duration of 12 months or less (n=1,458) were suitable for meta-analysis. As a stand-alone therapy, participants who received behaviour therapy lost 2.5 kg (95%CI 1.7 to 1.3 kg) more than those in a control group who received no treatment. When behaviour therapy combined with diet and exercise was compared with diet and exercise alone, the authors noted that the combined intervention resulted in a greater weight reduction, although the actual values were not reported. Six studies, involving 467 participants were suitable for meta-analysis; no study had a duration of more than 12 months. There was significant heterogeneity between studies, but five of the six studies favoured behaviour therapy in combination with diet and exercise to improve weight loss. Seventeen studies contained groups that compared more intensive with
less intensive behavioral therapies for weight loss. Increasing the intensity of the behavioural intervention significantly increased the weight reduction by 2.3 kg (95% CI -1.4 to -3.3 kg). Cognitive-behaviour therapy, when combined with diet and exercise increased weight loss by 4.85 kg (95% CI -7.31 to -2.38 kg) compared with diet and exercise alone in two studies of six months duration or less with 63 participants. No data on mortality, morbidity or quality of life were found.

The authors of the Cochrane review concluded that behavioural and cognitive-behavioural strategies are effective weight-loss therapies and that they are predominantly useful when combined with dietary and exercise strategies in obese and overweight patients. They also concluded that cognitive therapies do not appear to be as effective; however this is based on a much smaller body of evidence.

All of the 36 included studies in the Cochrane review had some methodological weaknesses. Only two studies reported the method of randomization and for the remaining 34 studies, it was not possible to tell whether allocation to groups was concealed. In all but one study, blinding of investigators to outcomes was either not clear or not done. There was substantial selection bias in three studies, which means that the results cannot be extrapolated to other populations. Many studies had small sample sizes and only three studies were analyzed by intention-to-treat. Another significant limitation of the review is a paucity of long-term studies. Without long-term studies, the effects of weight loss due to psychological interventions on clinical outcomes such as cardiovascular disease are difficult to determine. A large number of studies were excluded from the analysis due to large losses to follow-up, which reduces the power of the meta-analysis.

Clinical practice guidelines

Five clinical practice guidelines on obesity management were identified and included information pertaining to psychological interventions for obesity treatment.\(^2\),\(^5\),\(^17\)-\(^19\)

The 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children were based on a systematic literature review and recommendations were appraised by an independent review committee.\(^2\) The guidelines endorsed a key point from the 1992 National Institutes of Health consensus development conference: “Individuals seeking therapy for severe (morbid) obesity for the first time should be considered for treatment in a nonsurgical program with integrated components of a dietary regimen, appropriate exercise and behavioural modification and support.”\(^2\)

The Canadian guidelines made the following clinical recommendations, which include the level of evidence (1 to 4; Appendix 1, Table 1) and a grade (A, B or C; Appendix 1, Table 2) to reflect whether the intervention should (or should not) be implemented:

17. We suggest that individuals willing to participate in weight management programs be provided with education and support in behaviour modification techniques as an adjunct to other interventions [grade B, level 2 evidence].\(^2\)

18. We recommend comprehensive lifestyle interventions (combining behaviour modification techniques, cognitive-behaviour therapy, activity enhancement and dietary counselling) for all obese adults [grade A, level 1].\(^2\)
Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults from the National Health & Medical Research Council in Australia were published in 2003. These guidelines were based on a comprehensive assessment of the current evidence up to January 2002. The following evidence-based statements were made on the basis of the levels of evidence for clinical intervention described in Appendix 1, Table 3:

Overall, behavioural therapy used in combination with other weight-loss approaches can induce a mean weight loss of about 5 kg, although this is variable (0 to 13 kg). Three to five years after intervention ceases, weight loss falls to about 3 kg (0 to 10 kg). [level II]5

Long-term (more than a year) behavioural therapy used in combination with other weight-loss interventions can be associated with reductions in abdominal fat, even in the absence of weight loss. [level II]5

Behavioural therapy can:
  o Improve compliance with dietary and physical activity requirements. [level II]
  o Reduce blood pressure. [level II]
  o Improve psychological function. [level III-3]5

No single behavioural therapy strategy appears to be superior to any other in the population as a whole. [level II]5

Increased duration of behavioural treatment increases the likelihood of maintaining weight loss; in the absence of continued behavioural intervention, a return to baseline weight occurs in the great majority of subjects. [level II]6

Behavioural therapy adds to the benefits associated with all other forms of weight-loss treatment.5

Recommendation: Consideration should be given to making aspects of behavioural therapy — for example, self-monitoring, social support and stimulus control — a part of all weight-loss interventions. [level B]5

The National Institute for Health and Clinical Excellence (NICE) in the UK published: Obesity: Guidance on the Prevention, Identification, Assessment and Management of Overweight and Obesity in Adults and Children in 2006.17 The NICE guidelines provide recommendations based on several comprehensive literature searches (up to December 2005) and reviews of the best available evidence. Only RCTs with a follow-up duration of 12 months or more were included. Evidence statements about the effects of behaviour therapy when used alone or combined with diet and exercise are available in the full report, with a corresponding grading of the evidence. The evidence was graded according to a comprehensive and established hierarchy of research designs. The following overall clinical recommendations were provided in a summary document:

Multicomponent interventions are the treatment of choice. Weight management programmes should include behaviour change strategies to increase people’s physical activity levels or decrease inactivity, improve eating behaviour and the quality of the person’s diet and reduce energy intake.17
Behavioural interventions for adults should include the following strategies, as appropriate for the person: self monitoring of behaviour and progress; stimulus control; goal setting; slowing rate of eating; ensuring social support; problem solving; assertiveness; cognitive restructuring (modifying thoughts); reinforcement of changes; relapse prevention; strategies for dealing with weight regain.\(^\text{17}\)

**Health Care Guideline: Prevention and Management of Obesity (Mature Adolescents and Adults)** was published from ICSI in 2006.\(^\text{18}\) The methodology of the literature search was not provided. The guideline provided obesity management recommendations, however, specific evidence grading was not provided for each recommendation:

- Provide behavioral management to mature adolescents and adults who are overweight, (BMI from 25 to 29.9) have Class 1 obesity (BMI 30 to 34.9), Class II obesity (BMI 35 to 39.90) and Class III obesity (BMI > 40).\(^\text{18}\)
- Identify behaviors that may lead to an increased weight gain: for example, stress, emotional eating, boredom.\(^\text{18}\)
- Help patients set specific, measurable, time-limited goals to decrease calorie intake and increase physical activity as appropriate.\(^\text{18}\)
- Suggest patients weigh themselves weekly and record on a daily basis the amount and type of food/beverages consumed and physical activity completed.\(^\text{18}\)
- Provide support and encourage patients to also seek support from family, friends and support groups in order to assist them with their eating, activity and weight goals.\(^\text{18}\)
- Additional behavioral modification strategies that play a key role in successful weight loss and maintenance include: stimulus control, cognitive restructuring, goal setting, problem solving, social support, and relapse prevention.\(^\text{18}\)

In 2006, the **VA/DoD Clinical Practice Guideline for Screening and Management of Overweight and Obesity** was published from the Management of Overweight and Obesity Working Group.\(^\text{19}\) The guideline was based on a comprehensive literature search (to 2004) and quality of evidence ratings were assigned to include systematic reviews, HTAs and studies. The guideline concluded that there is good evidence that behavioural modification interventions provide additional benefit to diet or exercise therapy alone. No single type of behavioural strategy is superior to the others and multimodal strategies appear to work better than one strategy alone. The following recommendations were made and graded according to the level of evidence described in Appendix 1, Table 4:

1. Behavioral modification interventions to improve adherence to diet and physical activity should be given to overweight or obese individuals. \([B]\)\(^\text{19}\)

2. Behavioral modification interventions should be provided at a higher intensity when possible for greater effectiveness. Higher intensity is defined as more than one personal contact per month for the first three months (individual or group setting). Less frequent intervention may be an ineffective and inefficient use of manpower. \([B]\)\(^\text{19}\)
3. Multiple behavioral modification strategies should be used in combination for greater effectiveness. [A]^{19}
4. Behavioral modification intervention should be delivered in a group format when possible rather than individually. [B]^{19}
5. For individuals unable or unwilling to participate in weight loss treatment in person, telephone or internet-based behavioral modification intervention may be considered. [B]^{19}
6. Behavioral modification intervention should be continued on a long-term basis to promote maintenance of weight loss. [B]^{19}

**Conclusions and implications for decision or policy making:**

Very few RCTs have assessed psychological interventions for weight loss in morbidly obese individuals. Our limited literature search identified only one report (a 2005 health technology assessment) that assessed both surgical and non-surgical interventions (including behavioural therapy) in morbidly obese individuals.\(^{3}\) In this review, 15 small studies assessed behaviour therapy when combined with diet and exercise. The methodological quality of the studies was quite limited and very little specific detailed information was provided about the type of behaviour therapy used. Overall, small weight reductions and resolution of some obesity-related co-morbidities were reported at two-year follow-up.

A far greater number of studies have assessed psychological interventions for weight loss in overweight and obese individuals. Evidence to support the efficacy of behavioural modification interventions for weight loss in obese individuals has been described in a systematic review by the NHS (Avenell et al 2004),\(^{4}\) a Technology Assessment Report by ICSI (2005),\(^{16}\) a Cochrane systematic review (Shaw et al 2005),\(^{8}\) and a systematic review prepared for the U.S. Preventive Services Task Force (McTigue et al 2003).\(^{15}\) However, some studies excluded participants who were morbidly obese. None of the studies performed sub-analyses of data related to participants who were morbidly obese. It is difficult to extrapolate findings from studies in obese individuals to those with morbid obesity since absolute weight loss in the two groups can result in significant differences in complications, quality of life and the resolution of obesity-related co-morbidities. No one behavioural program or therapy was found to be superior over another. Behavioural modification refers to a variety of strategies which are not described in detail in most studies. This limits the conclusions that can be drawn about which behavioural strategies are the most efficacious. Another significant limitation of the existing evidence is that most trials had a limited duration of follow-up, which makes it difficult to assess the effect of weight loss on long-term clinical outcomes such as cardiovascular disease.

Only one systematic review evaluated hypnotherapy as a complementary therapy for weight loss. On the basis of very limited evidence, hypnotherapy was found to cause a small weight loss compared with no therapy; however, the number of participants was very small.

The five clinical practice guidelines included in this report recommended that behaviour modification be combined with diet and physical activity in the treatment of all overweight and obese adults. For individuals seeking therapy for morbid obesity for the first time, the Canadian clinical practice guidelines endorse an integrated treatment approach with diet, exercise and behavioural modification and support.

Overall, it appears that certain psychological interventions are effective weight-loss therapies for adults who are overweight or obese. Behavioural therapy and cognitive-behavioural therapy have shown some benefit, however, limited data were found on the effectiveness of...
hypnotherapy and no studies on psychotherapy for weight loss were identified. Behavioural and cognitive-behavioural therapies are predominantly useful when combined with diet and exercise strategies. Weight management programs may wish to include psychological interventions as part of a multi-component approach to help obese patients achieve weight loss. A variety of behavioural therapy elements perhaps should be considered since individual response may vary.

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References:


## Appendix 1:

Table 1: Criteria for assigning level of evidence to recommendations in the 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children

<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>1</td>
<td>Evidence obtained from randomized controlled trials (or meta-analyses)</td>
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<td></td>
<td>without important limitations</td>
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<tr>
<td>2</td>
<td>Evidence obtained from randomized controlled trials (or meta-analyses)</td>
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<tr>
<td></td>
<td>with important limitations</td>
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<tr>
<td>2</td>
<td>Evidence obtained from observational studies (nonrandomized clinical</td>
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<td></td>
<td>trials or cohort studies) with overwhelming evidence.</td>
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<tr>
<td>3</td>
<td>Evidence obtained from other observational studies (prospective cohort</td>
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<td></td>
<td>studies, case-control studies, case series)</td>
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<tr>
<td>4</td>
<td>Inadequate or no data in population of interest</td>
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<tr>
<td></td>
<td>Anecdotal evidence or clinical experience</td>
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</tbody>
</table>

Table 2: Criteria for assigning a grade to recommendations in the 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity in Adults and Children

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>A</td>
<td>Strong recommendations (action can apply to most individuals in most</td>
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<tr>
<td></td>
<td>circumstances) Benefits clearly outweigh risks (or vice versa). Evidence</td>
</tr>
<tr>
<td></td>
<td>is 1, 2 or 3.</td>
</tr>
<tr>
<td>B</td>
<td>Intermediate recommendation (action may vary depending on the person's</td>
</tr>
<tr>
<td></td>
<td>characteristics or other circumstances) Unclear whether benefits</td>
</tr>
<tr>
<td></td>
<td>outweigh risks. Evidence is level 1, 2 or 3.</td>
</tr>
<tr>
<td>C</td>
<td>Consensus (weak) recommendations (alternative actions may be equally</td>
</tr>
<tr>
<td></td>
<td>reasonable) Unclear whether benefits outweigh risks. Evidence is level 3</td>
</tr>
<tr>
<td></td>
<td>or 4.</td>
</tr>
</tbody>
</table>
Table 3: Criteria for assigning levels of evidence for clinical interventions and grades of recommendation in the *Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults* from the National Health & Medical Research Council, Australia.\(^5\)

<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>Study design</th>
<th>Grades of recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Evidence obtained from a systematic review of all relevant randomized controlled trials</td>
<td>A</td>
</tr>
<tr>
<td>II</td>
<td>Evidence obtained from at least one properly designed randomized controlled trial</td>
<td>B</td>
</tr>
<tr>
<td>III-1</td>
<td>Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method).</td>
<td>B</td>
</tr>
<tr>
<td>III-2</td>
<td>Evidence obtained from comparative studies with concurrent controls and allocation not randomized (cohort studies), case controls, or interrupted times series with a control group.</td>
<td>B</td>
</tr>
<tr>
<td>III-3</td>
<td>Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series with a parallel control group.</td>
<td>C</td>
</tr>
<tr>
<td>IV</td>
<td>Evidence obtained from case series, either post-test or pre-test and post-test</td>
<td>C</td>
</tr>
</tbody>
</table>

Table 4: Quality of evidence to support recommendations provided in the VA/DoD *Clinical Practice Guideline for Screening and Management of Overweight and Obesity.*\(^19\)

<table>
<thead>
<tr>
<th>Strength of Recommendation</th>
<th>Quality of Evidence to Support Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A strong recommendation that the clinicians provide the intervention to eligible patients. <em>Good evidence was found that the intervention improves important health outcomes and concludes that benefits substantially outweigh harm.</em></td>
</tr>
<tr>
<td>B</td>
<td>A recommendation that clinicians provide (the service) to eligible patients. <em>At least fair evidence was found that the intervention improves health outcomes and concludes that benefits outweigh harm.</em></td>
</tr>
</tbody>
</table>