CHAPTER 8

Behavioral Treatments for Weight Management of Patients With Schizophrenia

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An explosion of articles in the last decade has called attention to the high prevalence of metabolic abnormalities, such as obesity, diabetes, dyslipidemias, and associated problems, in persons with severe mental illness. As pointed out in Chapter 2, "Excessive Mortality and Morbidity Associated With Schizophrenia," increasingly robust evidence also indicates that in Europe and North America, people with schizophrenia and other serious mental illnesses die 20–25 years earlier on average than comparable persons in the general population (Hennekens et al. 2005; McGrath et al. 2008; Osby et al. 2000; Saha et al. 2007). Data also suggest that the increased prevalence of some risk factors for early mortality from cardiovascular disease and diabetes may have been present in individuals with psychotic illnesses as long as 100 years ago. For

example, long before the advent of modern antipsychotic medications, astute clinicians had noted that recovery in psychotic illness is often accompanied by weight gain (Jaspers 1923; Kraepelin 1919).

Much of the recent attention to metabolic issues in serious mental illness is linked to the widespread use of novel antipsychotics. However, patients and some observant practitioners had already highlighted medication-associated weight gain as a common side effect of most antipsychotics from the class now called first-generation antipsychotics (see Ganguli 1999 for a review). For example, Buis (1992) reported that weight gain was one of patients' most frequent complaints about the side effects of conventional depot antipsychotics. Although some novel antipsychotics, notably clozapine and olanzapine, are associated with especially high risk of weight gain (and insulin resistance and diabetes), all antipsychotics except molindone result in more clinically significant weight gain than placebo in randomized clinical trials (Casey et al. 2004).

Despite the long-standing nature of the problem and its importance to consumers and to their general health status, few intervention studies have addressed weight gain and its associated risks for people with schizophrenia. From a practical perspective, the interventions that have been used for persons with schizophrenia have focused almost exclusively on weight reduction. Focusing on weight reduction as a strategy to reduce the risk of cardiovascular disease and diabetes is completely consistent with the approach being taken in studies funded by the National Institutes of Health, such as the LOOK-AHEAD study (Ryan et al. 2003; see also Look AHEAD Research Group 2007), and with National Heart, Lung, and Blood Institute (1998) recommendations. Thus, in this chapter we focus on studies aimed at weight reduction. With respect to nonpharmacological approaches to weight reduction, the majority of studies have used techniques based on behavioral therapy principles, so before discussing the approaches, we briefly review the behavioral techniques common to most weight loss programs.

Principles of Behavioral Approaches to Weight Loss

As reviewed by Wing (2004), the systematic application of behavioral therapy techniques to induce weight loss started in the late 1960s. The early studies tended to treat milder forms of overweightness and obesity, through a focus on stimulus control rather than on specific calorie-

intake goals or exercise and activity. In reviewing these early programs, Wadden et al. (2004) noted that weight loss of 4–5 kg was common in programs typically lasting 10 weeks. During the 1970s and 1980s, as the prevalence of obesity grew, treatments became more sophisticated and comprehensive, and tended to last for longer. By the mid-1990s, average weight loss in behavioral programs, which typically lasted for 6 months, had risen to about 9 kg, or about double what had been reported in the 1960s (Wing 2004). Probably one of the most persuasive demonstrations of the efficacy of behavioral methods for weight loss was the Diabetes Prevention Trial, in which over 3,000 overweight or obese individuals with impaired glucose tolerance were randomized to a lifestyle intervention aimed at weight loss, metformin, or placebo. Not only was significant weight reduction achieved in the lifestyle group, but progression to diabetes was also reduced (Knowler et al. 2002). Furthermore, not only was behavioral treatment twice as effective as metformin in producing weight loss, but the intervention was so effective in preventing the progression of prediabetes to diabetes that the trial was stopped prematurely (Knowler et al. 2002). The key components for the nonpharmacological management of overweight and obesity are identified in Table 8–1.

Most approaches to the treatment of obesity are described as "behavioral" and are based on learning theory (Wing 2004) and the principles of classical conditioning (Wadden and Foster 2000). In the last 20 years or so, cognitive approaches have been added to behavioral therapy to restructure and correct distorted and irrational thoughts that undermine motivation and progress in treatment (Wadden and Foster 2000). Common components of most behavioral weight reduction programs include 1) goal-setting, especially establishing realistic short-term goals (Bandura 1977); 2) self-monitoring (Kazdin 1974) of nutritional intake and physical activity; 3) a nutritional focus, with teaching and demonstrating of healthy eating habits (Brownell 2004; Wing 1989); and 4) strategies to increase exercise and decrease sedentary behavior (Jakicic 2002; Jakicic and Gallagher 2003; Jakicic et al. 2004). Stimulus control, by changing the environment to alter cues so as to increase appropriate (and decrease inappropriate) eating behavior, was also an early component of behavioral programs (Ferster et al. 1962; Stuart 1967). Problem solving (D'Zurilla and Goldfried 1971) is often included to help individuals develop strategies individualized to their own unique situations (Wing 2004). Once weight loss is achieved, most programs move participants to relapse prevention or weight maintenance regimens (Brownell et al. 1986; Jeffery and French 1997; Klem et al. 2000; Perri et al. 2001; Wadden et al. 2004). Because these strategies are often offered

TABLE 8–1. Key components for the management of overweightness and obesity

Component	Key points for management
Diet	Energy intake should be reduced by 500–1,000 kcal/day.
	Dietary fat should be restricted to <30% of energy intake.
	Optimal intakes of carbohydrate and protein have not been established.
Exercise	Significant health benefits will occur with 150 minutes of moderate exercise (at 55%–69% of maximum heart rate) per week. Overweight and obese individuals should increase moderate exercise to 200–300 minutes per week.
Behavioral therapy	Training should be given in behavioral concepts (e.g., problem solving, goal setting, social support). Such training is associated with improved long-term outcomes.

Source. Adapted from Jakicic et al. (2001).

as a package, determining which program components are essential to the efficacy of the treatments is difficult. Recently, cognitive-behavioral therapy (CBT) has attempted to distinguish itself from behavioral therapy by pointing out that the former specifically includes restructuring cognitive processes (Cooper and Fairburn 2002).

In the studies of weight loss in individuals with schizophrenia, the approaches have included one or more elements of common behavioral approaches, but in many instances, the precise theoretical underpinnings of the program components have not been specified. A selective review of interventions for weight loss in schizophrenia follows.

Behavioral and Nutritional Interventions in Schizophrenia

One of the earliest published attempts to assist psychotic patients with weight loss was carried out in a state hospital in the United States, more than 40 years ago, by Harmatz and Lapuc (1968). This pioneering study involved a rigorous behavioral program using negative reinforcement:

one group of patients lost money if they failed to lose weight. Two comparison groups included a group that discussed weight loss strategies and provided peer support and a group that received nutritional counseling. The subjects were randomly assigned to one of the three groups. The group assigned to contingent negative reinforcement had significantly greater mean weight loss than the other two groups (–7% of initial body weight over 10 weeks). In a second historically important study, Rotatori et al. (1980) recruited patients with psychotic illness residing in community-based group homes. Patients were then randomly assigned to either a 14-week behavioral weight loss group intervention, closely resembling most modern weight loss programs, or to no intervention ("usual care"). The group randomly assigned to behavioral treatment lost significantly more weight (mean –3.3 kg) than the control group (mean +0.02 kg). The Rotatori et al. study is notable for the use of a well-developed manual for the delivery of treatment, and the behavioral techniques employed had already been refined in earlier studies of patients with Down syndrome. We highlight these early studies because they dealt with populations that are still relevant today: severely mentally ill persons who are in long-stay hospitals as well as those in community residential services.

These early (first-generation) studies also deserve more recognition for the following reasons: 1) they demonstrated that patients with psychotic illnesses could participate successfully in nonpharmacological weight loss interventions, and 2) even though these were pioneering studies, they were well-designed randomized trials, in the best traditions of generating evidence for clinical practice. Surprisingly, the second generation of published studies was, for the most part, uncontrolled, or failed to employ random assignment to the intervention or comparison conditions. Fortunately, the most recent generation (third generation) of reports is predominantly from randomized controlled trials, and thus a good evidence base is growing.

Numerous reviews have been published of behavioral and nutritional interventions for weight loss in patients with schizophrenia (e.g., Alvarez-Jiménez et al. 2008; Faulkner and Cohn 2006; Faulkner et al. 2007; Ganguli 2007; Loh et al. 2006; Strassnig and Ganguli 2007; Werneke et al. 2003). All reviews concluded that modest short-term weight loss is possible in this population. In a recent meta-analysis that examined randomized controlled trials only, Alvarez-Jiménez et al. (2008) reported a statistically significant reduction in mean body weight for those in the nonpharmacological intervention groups compared with those on treatment as usual (weighted mean difference [WMD]=–2.56 kg, 95% CI –3.20 to –1.92, $P<0.001$) at the end of treat-

ment. The effect was slightly larger but not significant in studies designed to prevent weight gain. Additionally, no statistically significant or practically important differences were evident between therapeutic approaches using individual compared with group interventions or using CBT compared with nutritional counseling (Alvarez-Jiménez et al. 2008).

Rather than review each of the included randomized clinical trials in detail, we summarize them in Table 8–2. Seven of the 12 included trials investigated CBT strategies (Alvarez-Jiménez et al. 2006; Brar et al. 2005; Jean-Baptiste et al. 2007; Khazaal et al. 2007; Kwon et al. 2006; McKibbin et al. 2006; Weber and Wyne 2006); three described nutritional counseling interventions (Evans et al. 2005; Littrell et al. 2003; Scocco et al. 2006); and two combined nutritional and exercise interventions and compared this type of intervention with standard care (Wu et al. 2007) or metformin alone or in combination (Wu et al. 2008). Six trials tested group intervention formats (Brar et al. 2005; Jean-Baptiste et al. 2007; Khazaal et al. 2007; Littrell et al. 2003; McKibbon et al. 2006; Weber and Wyne 2006), and the remaining six examined individual interventions (Alvarez-Jiménez et al. 2006; Evans et al. 2005; Kwon et al. 2006; Scocco et al. 2006; Wu et al. 2007, 2008). Eight studies were designed to treat weight gain, whereas the remaining four studies were designed to prevent weight gain, typically after patients started taking or were switched to an atypical antipsychotic (Alvarez-Jiménez et al. 2006; Evans et al. 2005; Littrell et al. 2003; Scocco et al. 2006). Participants were generally outpatients, except three studies included inpatients (Alvarez-Jiménez et al. 2006; Wu et al. 2007) or a combination (Khazaal et al. 2007). Interventions lasted from 8 to 24 weeks, with an average of approximately 15 weeks. Five studies reported a follow-up assessment of 8 weeks (Littrell et al. 2003), 24 weeks (Evans et al. 2005; Khazaal et al. 2007; Scocco et al. 2006), or 6 months (McKibbin et al. 2006). In the next paragraphs, we highlight some of these studies that bring up issues we address in the discussion, including two studies (Jean-Baptiste et al. 2007; Wu et al. 2008) not incorporated in Alvarez-Jiménez et al.'s (2008) meta-analysis.

In the first of the randomized controlled clinical trials; Litrell et al. (2003) provided a 16-week psychoeducational program, focusing on nutrition, exercise, and healthy lifestyle, to patients who had been switched to olanzapine from other antipsychotics. That all the patients in this study were on one drug is notable, because in many other studies, treatment effects are potentially confounded by medication effects and interactions. Litrell et al. reported little weight change in the intervention subjects as opposed to a statistically significant weight gain in

TABLE 8–2. Randomized, controlled trials of behavioral interventions for weight gain in schizophrenia

Authors and participants	Intervention	Outcome at final assessment (weight change), compliance, and attrition
Littrell et al. 2003 (*N*=70) Prior conventional antipsychotics, commencing olanzapine at study entry	16 weekly 1-hour group sessions for diet and exercise education vs. usual care; 2-month follow-up	Intervention: –0.3 kg; usual care: +4.3 kg. Compliance rate of 92% to program sessions. No dropout rate reported.
Brar et al. 2005 (*N*=72) BMI>26, switched from olanzapine to risperidone	Two sessions per week for 6 weeks then one session per week for 8 weeks of diet and exercise education vs. usual care (encouraged to lose weight)	Intervention: –2.0 kg; usual care: –1.1 kg (NS). 5% weight loss in 32.1% of intervention subjects vs. 10.8% in control group. 15/28 patients attended all 20 sessions. 21% dropout rate in treatment group.
Evans et al. 2005 (*N*=51) Commenced olanzapine within 12 weeks of study entry	Six 1-hour individual nutrition education sessions over 3 months (every 2 weeks) vs. usual care (plus passive nutrition information)	Intervention: +2.0 kg; usual care: +9.9 kg. Fewer patients in experimental group (13%) than in control group (64%) increased initial body weight by more than 7%. Compliance not reported. 21% dropout rate in treatment group.

TABLE 8–2. Randomized, controlled trials of behavioral interventions for weight gain in schizophrenia *(continued)*

Authors and participants	Intervention	Outcome at final assessment (weight change), compliance, and attrition
Alvarez-Jiménez et al. 2006 (*N*=61) First-episode psychosis and <6 weeks antipsychotic exposure. Treated with: risperidone, olanzapine, haloperidol	10–14 individual sessions (psychoeducation, behavioral therapy, dietary counseling, exercise program) for 3 months vs. usual care	Intervention: +4.1 kg; usual care: +6.9 kg. Fewer patients in experimental group (39.3%) than in control group (78.8%) increased initial body weight by more than 7%. Compliance not reported. No dropouts, and all patients completed study.
Kwon et al. 2006 (*N*=48) More than 7% body weight gain on olanzapine	Weekly individual sessions with dietitian and exercise coordinator over 12 weeks (weekly for first 4 weeks, then every 2 weeks) vs. usual care	Intervention: –3.9 kg; usual care: –1.5 kg. Diet group: all were over 80% compliant; exercise group: 36% were over 80% compliant. 33% dropout rate in treatment group.
McKibbin et al. 2006 (*N*=64) Schizophrenia and diabetes diagnosis	Weekly 90-minute group sessions for 24 weeks focused on diabetes education, nutrition, and exercise vs. usual care (plus passive information)	Intervention: –2.3 kg; usual care: +3.1 kg. 5% weight loss in 38% of intervention subjects vs. 12% of control group. 80% of treatment group attended at least half of intervention sessions. No difference in dropout rates between intervention and usual care groups.

TABLE 8–2. Randomized, controlled trials of behavioral interventions for weight gain in schizophrenia *(continued)*

Authors and participants	Intervention	Outcome at final assessment (weight change), compliance, and attrition
Scocco et al. 2006 (N=20) Switched to olanzapine from conventional antipsychotics	8-week individual dietary intervention provided by a nutritionist	Intervention: +0.99 kg; control: +2.96 kg. Compliance not clearly reported. Dropouts: intervention 0/10, control 2/10.
Weber and Wyne 2006 (N=17) BMI>25, taking second-generation antipsychotics	16 weekly 1-hour group sessions for diet and exercise education vs. usual care	Intervention: –2.5 kg; usual care: –0.6 kg (NS). Compliance not reported. No dropout in treatment group.
Jean-Baptiste et al. 2007 (N=18) BMI>30, taking any antipsychotic	Weekly group sessions for 16 weeks with psychoeducation, goal setting, self-monitoring; $25/week for healthy foods	Intervention: –2.8 kg; usual care: +2.7 kg. Compliance not reported. 14/18 completed intervention.
Khazaal et al. 2007 (N=61) >2 kg weight gain over 6 months on any antipsychotic	Weekly 2-hour group cognitive-behavioral therapy plus psychoeducation for 12 weeks vs. a single 2-hour nutrition education session	Intervention: –2.9 kg; usual care: –0.8 kg. At end of treatment, 16.1% of experimental group vs. 13.3% of control group had lost 5% or more of initial BMI. This increased to 22.6% and 16.7% at 12-week follow-up. Follow-up (12 weeks postintervention): Intervention: –3.5 kg; usual care: +1.7 kg. Compliance not reported. Dropouts: intervention 8/31, control 7/30.

TABLE 8–2. Randomized, controlled trials of behavioral interventions for weight gain in schizophrenia *(continued)*

Authors and participants	Intervention	Outcome at final assessment (weight change), compliance, and attrition
Wu et al. 2007 (N=56) BMI≥27, clozapine (≥300 mg/day) for at least 1 year	Diet (inpatients) reduced by 200–300 kcal/day; walking (level and stairs) for 60 minutes 3 days a week for 6 months	Intervention: –4.2 kg; usual care: +1 kg. Compliance not reported. No dropouts in treatment group.
Wu et al. 2008 (N=128) First-episode schizophrenia, gained more than 10% of body weight	Psychoeducation, diet, and exercise (lifestyle intervention) over 12 weeks vs. usual care (placebo), metformin, and lifestyle plus metformin	Lifestyle intervention: –1.4 kg; usual care: +3.1 kg; metformin: +3.2 kg; lifestyle plus metformin: –4.7 kg. Compliance: Diet 61%–84%; exercise 50%–60%. Dropouts: Lifestyle plus metformin 2/32, lifestyle only 3/32.

Note. BMI=body mass index; NS=not signficant.

the control group. Thus, the benefit of the intervention might have been to prevent weight gain rather than to produce weight loss. Because olanzapine carries a very high risk of clinically significant weight gain (Newcomer 2005), and weight gain in adulthood is a powerful predictor of cardiovascular disease (Nanas et al. 1987; Pan et al. 1986), prevention of weight gain is a worthwhile benefit of treatment.

Prevention of weight gain was the focus of a study reported by Alvarez-Jiménez et al. (2006). In an early behavioral intervention group, 10–14 individual sessions were completed with a clinical psychologist within the first 3 months of antipsychotic treatment. The sessions consisted of a weight check, agenda setting, review of self-monitoring records, and assigning new homework. Modules were available on engagement and assessment, psychoeducation, dietary counseling, exercise, and behavioral therapy. Selection of the intervention strategies was based on a collaborative formulation after initial assessment between the therapist and the patient. At the end of treatment, significantly fewer patients in the intervention group increased their baseline weight by more than 7% (39.3% vs. 78.8%). All participants randomized completed the trial.

Brar et al. (2005) developed a manualized 16-week intervention, adapted from the study conducted by Rotatori et al. (1980). This study also controlled for confounding effects of medication by first switching all subjects to the same antipsychotic (risperidone). This is also one of the few studies to use blinded raters. Participants enrolled because they desired to lose weight. Also of note, regular mental health clinicians, as opposed to specialists in behavioral therapy or nutrition, delivered the intervention, following the manual. This approach was an attempt to make the results more likely transferable to routine clinical care. Mean weight loss in this study was larger in those randomly assigned to the intervention, but both groups lost weight, and the difference was not statistically significant. However, the proportion of subjects who lost 5% or more of their baseline body weight was three times larger in subjects randomized to the intervention than in controls (32.1% vs. 10.8%), and the difference was statistically significant.

Jean-Baptiste et al. (2007) published data from an outpatient study that used standard behavioral techniques from a widely accepted program (Brownell 2004); however, to the standard nutrition and exercise program, they added a novel indirect method of food provision. Subjects were given lists of "healthy" food choices and then, at weekly group sessions, were reimbursed for the cost of these foods, provided they had receipts showing that they had purchased these food items in the previous week. Mean weight loss was statistically significantly

greater in the intervention group than in controls. Jean-Baptiste et al. (2007) also conducted a 6-month follow-up and reported continuing weight loss of participants, but the number of subjects was only 12, leaving some uncertainty about the robustness of the results. Nevertheless, this is a promising rigorous evaluation of a multimodal approach and needs to be followed up.

Focusing on patients with both schizophrenia and diabetes, McKibbin et al. (2006) recruited patients from board-and-care and community clubhouse settings. Optimal diabetes management requires active self-management, including weight control and weight loss. Patients with schizophrenia often have difficulty accessing and participating in comprehensive diabetes management programs. This study illustrates the effectiveness of a well-constructed intervention geared for patients with schizophrenia and diabetes. The 24-week training program was developed in collaboration with a community advisory board that comprised consumers, family members, and community clinicians and consisted of weekly, 90-minute group sessions addressing diabetes education, nutrition, and exercise. Educational material was adapted by limiting text, introducing one or two topics per session, providing an overview and summary of material, and using a teach-and-query training method and mnemonic aids. Concrete behavior change strategies included weekly weigh-ins, pedometers, healthy food sampling, and reinforcements (raffle tickets for small health gains). Patients in the intervention group lost a mean of 2.3 kg, compared with a mean weight gain of 2.7 kg in those receiving usual care (medical follow-up and written diabetes information). The intervention group also showed significant improvements in diabetes knowledge and self-efficacy, as well as self-reported physical activity, but not in fasting plasma glucose or glycosylated hemoglobin.

In the largest study to date (Wu et al. 2008), 128 first-episode schizophrenia patients were randomly assigned to one of the following: 12 weeks of placebo, 750 mg/day of metformin alone, 750 mg/day of metformin and lifestyle intervention, or lifestyle intervention only. The lifestyle intervention included psychoeducational, dietary, and exercise programs. Psychoeducation focused on the role of eating and activity in weight management. Dietary intervention followed the American Heart Association Step II diet, which recommends less than 30% of total calories from fat (<7% saturated fat and <200 mg of cholesterol), 55% from carbohydrates, more than 15% from protein daily, and fiber intake of at least 15 g per 100 kcal. Participants maintained a 3-day food diary at baseline, and a dietitian reviewed their diets and provided feedback at follow-up sessions. In the first week, exercise sessions were directed

by an exercise physiologist, and participants performed exercise (walking or jogging) on a treadmill seven times a week for 30 minutes at each session. After the first week, exercise was home-based, with recommendations to exercise 30 minutes per day. At the end of the trial, the lifestyle intervention plus metformin group (–4.7 kg, 95% CI –5.7 to –3.4) had results superior to those of either the lifestyle intervention alone (–1.4 kg, 95% CI –2.0 to –0.7) or the metformin alone (–3.2 kg, 95% CI –3.9 to –2.5) groups. Metformin alone was more effective in weight loss and improving insulin sensitivity than lifestyle interventions alone.

Notably, although considerable rigor is required to induce weight loss, in terms of maintaining a negative energy balance, in all of the identified randomized clinical trials, dropouts have generally not been a concern in the treatment arm. This might suggest that patients can be motivated to initiate and then adhere to a lifestyle intervention for weight management, at least in the short term. Dropout rates have not been as high as reported in a recent review (Loh et al. 2006), although attention must be given to the development of retention strategies to minimize dropouts (Faulkner and Cohn 2006). Furthermore, no adverse effects explicitly linked to participating in a lifestyle intervention program have been reported.

Discussion

The results achieved from weight loss interventions in persons with schizophrenia (WMD=–2.56 kg; Alvarez-Jiménez et al. 2008) are within the range of those reportedly obtained by commercial weight loss programs in the general population (Heshka et al. 2003), although not as great as suggested by a meta-analysis of randomized clinical trials of CBT combined with a diet and exercise intervention (WMD=–4.9 kg, CI –7.3 to –2.4; Shaw et al. 2005). However, a reasonable question is whether such modest improvements actually translate into measurable improvements in health status or risk of cardiovascular disease and diabetes. The general agreement is that in obese individuals, even a 5% weight loss can produce measurable health benefits. For example, in the Finnish Diabetes Prevention Study, a modest weight loss of 4.8% of initial body weight was associated with a 58% reduction in the risk of developing diabetes over the following 3 years (Tuomilehto et al. 2001). As little as 3–4 kg of weight loss over 3 years results in clinically significant reductions in systolic and diastolic blood pressure (Mertens and Van Gaal 2000). Also, accumulating evidence from prospective observational studies indicates that increasing physical activity is effective in improving the health profile of individuals who are overweight and

obese (e.g., Lee et al. 1999). Weight loss might be considered a primary goal, but clinicians should keep in mind that small, sustained positive changes in physical activity and dietary intake may be associated with significant health benefits irrespective of weight loss per se. With very few exceptions, even randomized controlled interventions have rarely followed patients for longer than 6 months. Weight loss is challenging, but even more challenging is weight loss maintenance (Wing et al. 2006). Obesity is unquestionably a chronic condition, and it is likely that long-term success may require some form of maintenance treatment. Hence, the real health benefits of weight loss interventions, even for those who respond to interventions, will be known only when data from longer studies become available. Fortunately, several ongoing clinical trials have up to 2 years of follow-up in their designs. Overall, interventions will probably need to set realistic goals, be highly structured, provide early and intensive support initially, and offer reduced but continued support over time if not indefinitely (Faulkner and Cohn 2006).

Most currently published research has evaluated pharmacological and nonpharmacological treatments for weight loss in separate studies (pharmacological treatments are reviewed in Chapter 4, "Obesity and Schizophrenia"). However, evidence is accumulating that combining behavioral and pharmacological weight loss interventions can be more effective than either approach alone (Wadden et al. 2005). One study has been published that demonstrates the greater effectiveness of combined weight loss interventions specifically in patients with schizophrenia (Wu et al. 2008). However, given concerns about potential polypharmacy, the demands of adding further medication to an existing medical regimen, and the cost of medication, we suggest that adjunctive pharmacotherapy for weight loss be reserved for patients who do not respond adequately to lifestyle interventions alone (Faulkner et al. 2007). Further studies evaluating the combination of behavioral and pharmacological weight loss therapies are required before routinely recommending such a dual approach in clinical practice. Switching a patient to an antipsychotic medication with low liability for weight gain has also emerged as an effective strategy for weight loss and metabolic benefit, particularly when the increase in weight was clearly associated with prior antipsychotic treatment (Weiden 2007; Weiden and Buckley 2007) (see Chapter 4). No studies to date have investigated the combination of antipsychotic switching and behavioral strategies for weight loss.

Given that the current system of care for persons with severe mental illness is routinely described as underfunded and overburdened (Frank and Glied 2006), economic considerations may well determine which interventions for weight loss, if any, will make it to the front lines of community mental health. Thus, cost-benefit analyses should be included in the evaluation of proposed interventions. At this point, such analyses are almost entirely missing from the evidence base on this subject. Even without sophisticated economic analyses, clinicians should be able to evaluate the potential benefit of investing time and resources in particular interventions if the published results systematically reported the proportions of subjects who benefited and, preferably, the number needed to treat for each threshold of response. Unfortunately, most studies already published limit the results to reporting mean changes in body weight.

Conclusion

On the basis of existing studies, we can conclude that persons with schizophrenia want to and will participate in behavioral weight loss interventions. For individuals who are unmotivated or difficult to engage, consideration could be given to broader environmental interventions that aim to shape the environment in ways that are conducive to encouraging greater physical activity while restricting energy intake (Gorczynski et al. 2008). Taken together, the evidence from controlled trials indicates that patients who do participate in weight loss interventions increase their chances of losing weight. The results of simple and practical interventions are modest but clinically meaningful. The data on long-term maintenance of weight loss is essentially lacking, but some ongoing studies will provide data in the next few years. The data on preventing weight gain in persons with schizophrenia is developing and looking positive. With these observations in mind, standard behavioral weight loss interventions should be widely and routinely offered to patients with schizophrenia who are overweight or obese. In addition, discussion about the risk of weight gain and monitoring of weight should be routinely offered to all patients with schizophrenia. Given that the current trend is for the rates of obesity to continue to increase, research into enhancing the effectiveness of current interventions and the development of new approaches to weight loss need to be urgently funded.

Key Clinical Points

- Education about the health hazards of being overweight or becoming overweight should be included in the psychoeducational interventions offered to persons with schizophrenia, along with simple advice about health nutrition and exercise measures.
- Regular measurement of body weight should be part of routine care in mental health settings, and patients should be given feedback on their own weight regularly. Patients should also be encouraged to weigh themselves.
- Patients who ask for active interventions to help them lose weight should be offered group or individual interventions, preferably within the mental health treatment setting.
- Referral to specialized programs, including the full range of options for severe and/or treatment-resistant obesity, should be pursued for patients who are in need of these services.

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