Lifestyle interventions for obesity and overweight patients with severe mental illness

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INTRODUCTION

Severely mentally ill individuals in the United States die earlier than members of the general population [1]. Cardiovascular disease and its associated metabolic risk factors, including obesity, are a large contributor to early mortality. Cardiovascular disease is the leading cause of death in those with severe mental illness (SMI) [2-4]. (See "Metabolic syndrome in patients with severe mental illness: Epidemiology, contributing factors, pathogenesis, and clinical implications".)

Lifestyle modification for obesity and overweight individuals focused on weight reduction and increased physical activity is the primary therapy for the management of metabolic syndrome [5-7], along with medication treatment of specific metabolic abnormalities.

This topic reviews lifestyle interventions for obesity and overweight patients with SMI. The epidemiology, pathogenesis, and clinical implications of metabolic syndrome in individuals with SMI are reviewed separately. Modifiable risk factors for cardiovascular disease in patients with SMI are also described separately. Metabolic side effects of antipsychotic medications are also reviewed separately. (See "Metabolic syndrome in patients with severe mental illness: Epidemiology, contributing factors, pathogenesis, and clinical implications" and "Modifiable risk factors for cardiovascular disease in patients with severe mental illness" and "Schizophrenia in adults: Maintenance therapy and side effect management", section on 'Metabolic dysregulation'.)

APPROACH TO TREATMENT

Our approach to treating other risk factors for cardiovascular disease in patients with severe mental illness is also reviewed separately. (See "Approach to managing increased risk for cardiovascular disease in patients with severe mental illness".)

SMI AND CARDIOVASCULAR DISEASE

Despite advances in therapy over the past decades, cardiovascular disease remains the major cause of death in most developed nations, particularly among those with severe mental illnesses (SMI) [8]. (See "Modifiable risk factors for cardiovascular disease in patients with severe mental illness".)

Factors placing individuals with SMI at greater risk for cardiovascular disease compared with the general population include:

- Higher rates of tobacco use. (See "Modifiable risk factors for cardiovascular disease in patients with severe mental illness", section on 'Tobacco smoking'.)
- More sedentary lives and diets with more saturated fat and fewer fruits and vegetables [2,9,10]. (See "Modifiable risk factors for cardiovascular disease in patients with severe mental illness", section on 'Overweight and Obesity'.)
- Metabolic syndrome, which includes multiple risk factors for cardiovascular disease, including hypertension, obesity, and diabetes. (See "Metabolic syndrome in patients with severe mental illness: Epidemiology, contributing factors, pathogenesis, and clinical implications".)
- Side effects of medications used to treat SMI, particularly the antipsychotics, including weight gain, hyperlipidemia, and glucose dysregulation [11]. (See "Schizophrenia in adults: Maintenance therapy and side effect management", section on 'Metabolic dysregulation'.)

LIFESTYLE INTERVENTIONS

Lifestyle interventions target diet, exercise, and behavior with the goals of preventing and treating obesity, cardiovascular disease, and related comorbidities. Five percent or greater weight loss has been found to decrease the risk of cardiovascular disease; improved fitness (independent of weight loss) decreases cardiovascular disease-associated mortality [12].

Key components

Psychoeducation focused on nutritional counseling

- Caloric content of foods, particularly sugar-sweetened beverages, alcohol, and foods that are served in restaurants/packaged.
- Appropriate portion size, with education on food labels (number of portions per package).
- Recommended composition of diet, with an emphasis on fresh or frozen fruits and vegetables, whole grains, and lean meats, with reference to the healthy plate at the MyPlate website.
- Information on healthy snack choices, such as those from the American Heart Association website.

Dietary and physical activity modification

- Avoid alcohol and sugar-sweetened beverages.
- Avoid eating out, or plan ahead when eating out. Choose restaurants with healthier menu options and try to make smart food choices whenever possible.
- Avoid grazing on snacks throughout the day. Plan to eat three meals and one to two small snacks per day.
- Do 30 minutes of some sort of exercise every day, such as walking.
- Incorporate exercise into daily activities (take the stairs, park farther from entrance, get off the bus one stop early).
- Find an exercise buddy.

Learning skills of behavioral self-management

- Goal setting – Use “SMART” goal acronym:
  - **S**pecific – Who? What? When? Why? How?
  - **M**easurable – How much? How many? How will I know when it is accomplished?
  - **A**ttainable – Start small.
  - **R**ealistic – Must be both willing and able to achieve.

- **T**imely – Rounded within a time frame.

- Regular weigh-ins.
- Self-monitoring of daily food intake and activity levels, using handouts and journals.
- Practice portion control by using a smaller plate and by bringing containers to restaurants to save part of the meal for later.
- Engage in meal planning, grocery shopping, and food preparation.
- Incorporate mindfulness into eating (do not eat in front of the television, mobile device, or computer screen) and avoid emotional eating.

Motivational enhancement — Use techniques of motivational interviewing to assist patients in exploring and resolving ambivalence concerning behavioral changes [13] (see "Substance use disorders: Motivational interviewing"):

- Engage the patient by asking permission – "Could we take a moment to discuss your weight?"
- Focus the conversation by providing feedback using the OARS mnemonic:
  - **O**pen-ended questions that allow for the patient to express themselves – "How do you feel about your current weight?"
  - **A**ffirmative statements to support positive behaviors – "You have already made a lot of changes to try and lose weight. I can tell that this is really important to you."
  - **R**eflection to allow the patient to feel heard – "I get the feeling that you really want to lose weight, but it's been hard for you to plan and cook meals. Tell me a little bit more about that."
  - **S**ummary statements to allow the patient to come up with steps for change – "What I'm hearing is that you have struggled with your weight for years and have tried a number of diets that haven't seemed to work. You feel like you need to make a change but aren't sure of what to do next."
- Provide advice and share information – "As your doctor, I would like you to know that losing weight could help with both your blood pressure and your blood sugar."
- Make a concrete plan by discussing next steps – "If you were to make a change to work on weight loss, what would the first step be?"

- Close with a positive statements that emphasize patient strengths and highlight change talk – "I hear that you want to lose weight and are ready to make some changes in your diet. Your decision to cut out one soda per day shows that you are ready to start on this journey. Let's plan to touch base by phone in two weeks to celebrate your progress and problem-solve any challenges that you are facing. We can also talk about next steps at that time."

Addressing challenges with SMI — Lifestyle interventions for individuals with severe mental illness (SMI) should take into account a number of unique challenges faced by the SMI population. Interventions can be personalized addressing many of these factors, increasing the magnitude of intervention effects [14,15].

Socioeconomic status — Persons with SMI disproportionately suffer from poverty [16]. They may face barriers to enrolling in gym memberships, or obtaining appropriate athletic shoes or clothing for exercise. Poor neighborhoods may not provide a safe environment, prohibiting outdoor exercise.

Options for circumventing these challenges include encouraging patients to walk up and down the stairs in their residence [17], distributing exercise videos or handouts, or, if possible, providing memberships to low-cost gyms, such as the YMCA [18,19]. In-clinic exercise sessions may also overcome economic barriers to physical activity [19,20]. Local resources, such as senior centers and public parks, may be investigated as potential sites for fitness activities. Organization of group outdoor recreational activities may have the added benefit of social connectedness [21].

Poverty is also associated with poor diet, due, at least in part, to limited access to fresh fruits and in urban, impoverished areas [22,23]. Allocation of groceries and meal replacements to patients may temporarily address this problem, but long-term change requires realistically accounting for food availability and preferences. Potential solutions include accompanying patients on shopping trips to local grocery stores to demonstrate healthy options among available choices [20,24], taking participants out to nearby restaurants to help with food selection [20], and obtaining menus from local fast food restaurants and highlighting healthy choices. An alternative approach may focus on portion control rather than complicated or expensive food substitution [25].

Access to lifestyle interventions — High rates of poverty in SMI may also mean that patients are unable to afford transportation to sites offering lifestyle interventions. Problem-solving around this limitation has led to a variety of solutions [26-28]. When feasible, lifestyle modification programs may offer bus or train fare, or public transit vouchers. The convenience

of locations is an important component of planning, particularly for underserved populations. Successful interventions have been staged in churches, community centers, and local schools [29-31].

A systematic assessment of the availability (outside of clinical trials) of organized lifestyle interventions for individuals with SMI is currently lacking. In the United States, an increasing emphasis on the mortality gap for individuals with SMI has led to the incorporation of lifestyle intervention programs into public mental health clinics, perhaps most notably though the Primary Care Behavioral Health Integration projects funded by the Substance and Mental Health Services Administration [32].

Psychiatric symptoms and cognitive impairment — Psychiatric symptoms may interfere with consistent treatment. Amotivation is often prominent in schizophrenia and major depression and can lead to decreased investment in the intervention and increased dropout rates.

A number of approaches can help overcome these limitations:

- Group settings, rather than individual meetings, may increase motivation and self-efficacy through example and may offer peer encouragement and competition, which may decrease attrition [19].
- The use of health-promoting incentives has been shown to improve outcomes [18] (eg, pedometers or blood glucose logs) [21].
- The engagement of a patient's support system may improve motivation. In other underserved populations (including African Americans and Latin Americans), family involvement is associated with increased engagement in lifestyle interventions [33].
- The use of facilitators to engage with participants has been shown to improve motivation [19]. Facilitators may call patients to ensure completion of food and exercise logs, to remind participants of upcoming meetings, or to problem-solve around program nonadherence.

Positive symptoms of psychosis, particularly paranoia, can interfere with patients establishing a therapeutic alliance with lifestyle intervention facilitators [34,35]. Greater therapeutic alliance may be forged by incorporating lifestyle interventions into visits with established case managers and other known mental health providers, or through the use of peer leaders [21,36].

Patients with SMI are also impaired cognitively. Neuropsychiatric testing in this population reveals deficits in memory, executive function, attention, and processing speed [37]. Several

techniques have been adopted by successful interventions to overcome cognitive deficits in participants with SMI including [24]:

- Simplification of language.
- Use of large font size in printed materials.
- Retention has been targeted through the use of educational games, lesson repetition, frequent quizzes, and integration of mnemonic devices into modules.
- To overcome low literacy rates, instructors have read aloud and used more visual materials.

Many individuals with SMI suffer from comorbid substance use disorders. A study of correlates of attendance in a healthy lifestyle intervention shows that odds of attending at least once session were significantly lower for those who reported any drug use [38]. Thus, targeting of substance use disorders is likely necessary to ensure program engagement.

Medication side effects — Side effects of psychotropic medications can interfere with participation in an effective lifestyle intervention [24]:

- **Sedation** – Antipsychotics and many mood stabilizers are sedating. This may make exercise challenging and could inhibit attention during education sessions. Activities may need to be timed for early morning, before medications are taken, or later in the day, when sedating effects have worn off.
- **Anticholinergic effects** – Many antipsychotics also have anticholinergic effects, including dry mouth. Patients often increase consumption of sugar-sweetened beverages to counteract this side effect, and counseling may need to directly address this behavior.
- **Weight gain** – Weight gain occurs with many psychotropic medications. This is particularly true of the atypical antipsychotics, though most mood stabilizers and some antidepressants also have an effect on body mass index (BMI). To combat this, lifestyle interventions can be initiated when first prescribing these medications.

  Information on the selection among antipsychotics and dosing to minimize weight gain and other metabolic abnormalities are reviewed separately. (See "Schizophrenia in adults: Maintenance therapy and side effect management", section on 'Metabolic dysregulation'.)

Efficacy — Aggressive lifestyle modification focused on weight reduction and increased physical activity is the primary therapy for the management of metabolic syndrome in patients in the

general population [5-7]. Among patients with SMI, clinical trials of the efficacy of lifestyle interventions have been mixed. The quality of available efficacy data is limited by significant methodologic limitations including small sample sizes, short-duration interventions and variability in intervention components. Future well-designed clinical trials are needed to examine interventions that are maximally effective in those with SMI.

In our clinical experience, lifestyle interventions can help SMI patients reduce body weight and improve other metabolic abnormalities, particularly interventions that are longer in duration, have multiple treatment components, and are calibrated to meet the needs of individuals with SMI [39].

Well-regarded guidelines for psychosocial treatment of people with schizophrenia recommend that those overweight or obese (BMI >25) receive a lifestyle intervention [40].

In a meta-analysis of 17 trials, lifestyle interventions (addressing both nutrition and physical activity) for weight loss in individuals with SMI were studied [41]. Studies were grouped by intervention duration. Lifestyle interventions of ≤6 months duration (10 studies) showed greater weight reduction when compared with controls, with a standardized mean difference of -0.20, but with a high degree of heterogeneity. Lifestyle interventions of ≥12 months duration (seven studies) showed an even greater weight reduction when compared with controls (standardized mean difference of -0.24), and low statistical heterogeneity. Five of the trial interventions of ≥12 months duration achieved a mean or median weight loss of 5 percent or greater, a threshold considered to be clinically significant [41].

Further investigation of three trials with 1199 aggregate patients found that the interventions produced superior outcomes for weight, waist circumference, or body mass as compared with controls [42-50].

Other reviews of lifestyle interventions in those with SMI report similar findings of overall moderate mean weight loss in the intervention group, and mixed results in individual trials [36,39,51-55].

To date, the In SHAPE study remains one of the most successful trials of lifestyle interventions for improving cardiovascular risk in individuals with SMI. This trial randomly enrolled 133 obese (BMI >25) individuals with SMI to either lifestyle modification (the In SHAPE program) or one year of fitness club membership and education [56]. The In SHAPE program consisted of one year of weekly sessions with a fitness trainer, who also provided nutrition and resources for a healthy diet. Among the In SHAPE participants, 49 percent achieved either clinically significant increased fitness (>50 meters on the six-minute walk test) or weight loss (5 percent or greater). Participants receiving the intervention were twice as likely to walk more than 50 meters

compared with those assigned to the control intervention (40 versus 20 percent). The In SHAPE intervention was also replicated in a community setting with similar outcomes [57].

Characteristics associated with better outcomes — Analyses of clinical trial data have identified features of lifestyle intervention associated with better clinical outcomes, both in patients with SMI and in the general population:

Patients with SMI — Specific elements of lifestyle interventions have been found to be associated with superior outcomes in patients with severe mental illness (SMI) [39]:

- Longer duration (three or more months)
- Manualized, structured approach
- Focus on both nutrition and physical activity, including both educational and exercise-based sessions
- Active monitoring such as weigh-ins and food diaries (rather than nutrition education alone)
- Active monitoring of physical activity and fitness levels

Patients from general population — Intervention characteristics that have been shown to be associated with better outcomes of lifestyle interventions in patients drawn from general population [15]:

- Use of multiple components (eg, diet, exercise, and behavioral therapy)
- Personalization
- More frequent contact
- Training for treatment providers

MONITORING

Patients with severe mental illness should have their body weight and other potential metabolic abnormalities evaluated at minimum annually, and more frequently during the first year after initiating an antipsychotic drug, or if they have other factors placing them at risk of obesity (eg, a sedentary lifestyle or diabetes). A table describes a recommended monitoring schedule for patients initiating antipsychotic medication (table 1) [58]. Monitoring for metabolic abnormalities is reviewed in greater detail separately. (See "Modifiable risk factors for cardiovascular disease in patients with severe mental illness".)

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Obesity in adults".)

SUMMARY

- Our approach to treating other risk factors for cardiovascular disease in patients with severe mental illness (SMI) is reviewed separately. (See "Approach to managing increased risk for cardiovascular disease in patients with severe mental illness".)
- Patients with SMI have a greater risk of being overweight and of obesity compared with the general population because of more sedentary lifestyles, poorer diets, and side effects of medicines to treat SMI, particularly antipsychotic medications. Obesity places them at a greater risk of cardiovascular disease. (See 'SMI and cardiovascular disease' above and "Metabolic syndrome in patients with severe mental illness: Epidemiology, contributing factors, pathogenesis, and clinical implications", section on 'Risk of cardiovascular disease'.)
- Lifestyle interventions target diet, exercise, and behavior with the goals of preventing and treating obesity, cardiovascular disease, and related comorbidities. Five percent or greater weight loss has been found to decrease the risk of cardiovascular disease. Improved fitness decreases cardiovascular disease-associated mortality. (See 'Lifestyle interventions' above.)
- Key components of lifestyle interventions include (see 'Key components' above):
  - Psychoeducation focused on nutrition
  - Dietary and physical activity modification
  - Learning skills of behavioral self-management
  - Motivational enhancement
- Modifications to these interventions for SMI patients include (see 'Addressing challenges with SMI' above):
  - Making dietary and activity modifications feasible given low socioeconomic status
  - Making interventions accessible (eg, local community centers and public transit)
  - Addressing obstacles posed by psychiatric symptoms and medication side effects

- Among patients with SMI, clinical trials have shown mixed findings on the efficacy of lifestyle interventions. In our clinical experience, however, lifestyle interventions – particularly those modified to address challenges faced by SMI patients – can help them reduce body weight and improve other metabolic abnormalities. (See 'Efficacy' above.)

- Interventions of longer duration, using a structured, manualized approach, focused on both nutrition and physical activity, and employing active monitoring have been found to be associated with superior outcomes. (See 'Characteristics associated with better outcomes' above.)

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