Barriers to Obesity Treatment

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Review article

Barriers to obesity treatment

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Abstract

Obesity, one of the most prevalent health problems in the Western world, is a chronic and progressive condition. Therefore, as with other chronic diseases, patients with obesity require lifelong treatment. Long-term efficacy and effectiveness of obesity treatments is notoriously poor. This may in part be attributable to the substantial barriers that undermine long-term obesity management strategies. These can include lack of recognition of obesity as a chronic condition, low socioeconomic status, time constraints, intimate saboteurs, and a wide range of comorbidities including mental health, sleep, chronic pain, musculoskeletal, cardiovascular, respiratory, digestive and endocrine disorders. Furthermore, medications used to treat some of these disorders may further undermine weight-loss efforts. Lack of specific obesity training of health professionals, attitudes and beliefs as well as coverage and availability of obesity treatments can likewise pose important barriers. Health professionals need to take care to identify, acknowledge and address these barriers where possible to increase patient success as well as compliance and adherence with treatments. Failure to do so may further undermine the sense of failure, low self esteem and self efficacy already common among obese individuals. Addressing treatment barriers can save resources and increase the prospect of long-term success.

Keywords: Obesity therapy; Barriers; Counseling/education; Medical education; Medication; Surgery; Lifestyle

1. Introduction

Obesity is one of the most prevalent health problems in the Western world [1]. Obesity increases the risk of medical illness and premature death [2] and thus imposes an enormous economic burden on the health care system [3]. Obesity is also associated with a reduced quality of life resulting from substantial limitations and restrictions in activities of daily living [4]. Obese individuals are less likely to obtain insurance, employment or promotion or enjoy personal relationships [5]. Prevention and treatment of obesity is therefore now widely recognized as a chief priority for most health care systems.

Once established, obesity becomes a chronic and progressive condition. There is currently no accepted "cure" for obesity in that patients, once obese, seldom succeed in achieving or maintaining a healthy weight in the long-term. Although maintaining a weight reduction of as little as 5% can lead to substantial reduction in risk for comorbidities [6], even such modest goals are difficult to sustain in clinical practice [7]. The few individuals able to sustain a significant weight reduction do so by chronically and often drastically restricting caloric intake in addition to maintaining markedly increased physical activity levels [8]. Thus, as with other chronic conditions (such as hypertension or type 2 diabetes), obese patients require lifelong intervention.

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Patients seeking obesity treatment generally present with a myriad of issues that need to be considered. Even in patients who are clearly ready for change and fully recognize that they will need to make considerable lifestyle adjustments, it is important to recognize potential barriers that will make weight loss difficult and/or undermine efforts at weight-loss maintenance [9]. Fortunately, many of these barriers can be modified in order to facilitate adherence to a weight management plan.

Early identification and management of treatment barriers can save resources and increase the prospect of long-term success, thereby protecting the patient from the emotional and physical consequences of weight cycling [10]. In cases where objective barriers to obesity management are insurmountable, the focus may need to be on the prevention of further weight gain rather than on weight loss.

This review will focus on common barriers that should be identified, addressed and, if possible, modified to reduce the failure rate in weight loss and maintenance (Table 1).

2. Recognition of obesity as a chronic condition

Recent physician surveys have identified poor education on obesity during medical school and residency as the most prevalent barriers to obesity care [11]. Both patients and health care providers need to clearly recognize and acknowledge the chronicity of obesity to fully appreciate the importance of long-term treatment strategies [9]. There is a common misconception that the simple solution to obesity is weight loss. However, weight loss is only the first phase of obesity management [12]. Without successful strategies to prevent weight regain, weight loss is meaningless and may be counter productive. While patients are generally prepared to go through the initial stage of weight loss they are often unprepared to accept the reality that maintaining weight loss requires lifelong lifestyle changes, and in some cases, medication or surgery to counteract the complex neurobiological and endocrine changes that seek to restore body weight to pre-loss weights. Although medications have been shown to significantly promote weight loss, their real value perhaps lies in their ability to limit weight regain [13]. Unfortunately, long-term compliance with obesity medications is notoriously poor, with 1-year persistence rates <10% and 2-year persistence rates of 2% [14]. Even in the case of bariatric surgery, arguably the most effective treatment for patients with severe obesity [15], some patients may regain weight and most will do so if surgery is reversed. Thus, both medication and surgery must be seen as long-term rather than short-term solutions to obesity management.

Table 1
Barriers to obesity treatment

Barrier		Intervention	Rationale
Acceptance of obesity as a chronic disease		Education of patients and health care providers.	Obesity treatment requires lifelong management to maintain weight loss.
Socioeconomic status		Address limitations. Adapt strategy to socioeconomic situation.	Long-term adherence to the obesity treatment should be facilitated.
Time constraints		Reassess motivation and readiness for change. Adapt strategy to patient's schedule.	
		– Use of meal replacements	*– Offers portion control, availability, portability, ease of preparation.*
		– Flexible exercise schedule	*– Practical and sustainable.*
Saboteurs		Identification of problem. Counselling, support and motivation.	Support systems are essential to long-term weight maintenance
Comorbidities	*– Mental health*	*– Recognition and concomitant treatment of depression and attention deficit disorder (ADD)*	*– Improvement of depression and impulsive behavior facilitates adherence to obesity treatment.*
		– Recognition and referral for specific intervention of binge eating disorder (BED)	*– Cognitive behavioural therapy (CBT) focusing on binge eating and associated psychopathology facilitates adherence to lifestyle habits.*
	– Sleep	*– Evaluation and treatment of obstructive sleep apnea (OSA)*	*Reduction of cardiovascular risk and risks of accidents. Improved sleep may positively impact adherence to lifestyle changes and physical activity.*
	– Pain	*– Pain management*	*Allows patient to be more physically active.*
	– CV disease	*– Management of symptoms of cardiovascular disease*	*Allows patient to be more physically active.*
	– Respiratory disease	*– Accurate diagnosis and treatment of the cause of dyspnea*	*Allows patient to be more physically active.*
	– Digestive disease	*– Recognition and treatment of reflux symptoms*	*Avoidance of using food to relieve reflux symptoms.*
	– Endocrine disorders	*– Recognition and treatment of insulin resistance, hypothyroidism, Cushing and hypogonadism*	*Investigation of endocrine disorders is only justified when historical and clinical evidence supports the diagnosis.*
Medication		Choose medication with less propensity for weight gain	Prevent weight gain
Alcohol and substance abuse		Assessment and treatment of addictions.	Improve adherence to obesity treatment

While bariatric surgery has been gaining popularity and acceptance as an effective way to achieve massive weight loss, it remains an option only for the extremely obese. At present bariatric surgery is the only therapeutic modality that can produce sustainable weight loss and halt or resolve comorbidities in patients with morbid obesity [16]. The generally accepted criteria for gastrointestinal surgery for weight loss include patients with BMI>40 or BMI>35 complicated by weight-related comorbidities [17]. These weight parameters should be viewed as a guide for the clinician, as patients with multiple weight-related comorbidities and BMI below 35 may also be considered candidates for surgery.

It is especially important for both primary care providers and subspecialists to be familiar with currently recommended approaches to the medical treatment of obesity, as it is critical that this extremely common, treatable chronic disease be recognized, intervention initiated, and therapy maintained at every appropriate clinical opportunity. Significant medical benefits can be gained even with a relatively small percentage of weight loss.

3. Socioeconomic status

Socioeconomic status can pose a significant obstacle to obesity treatment [18]. Strategies may have to be tailored to specifically address the socioeconomic situation of the patient. In Western societies, the prevalence of obesity is greater in lower socio-economic groups. This has been attributed to the greater density of fast-food restaurants in low-income neighbourhoods [19], higher cost of healthy diets [20], safety concerns that prevent walking and other outdoor activities [21] and greater social acceptance of excess body weight [18]. Affordability of membership in commercial weight-loss programs, gyms, obesity medications or surgery can likewise prove to be important obstacles. All of these factors can pose important barriers to weight management and interventions must specifically acknowledge and address these limitations.

4. Time constraints

Lack of time is one of the most frequently encountered barriers to obesity management [22]. Patients may find it difficult to find extra time to engage in physical activity or to plan a healthy diet. Implementing a strategy for obesity management that the patients can adapt to fit their own schedule is essential if they are expected to follow them in the long-term [9]. For individuals with busy schedules or travel loads, activities they can engage in on their own (e.g. walking) may be more practical and sustainable than team sports or activities involving unwieldy equipment or sporting facilities.

Where time is a major obstacle to planning and preparing a healthy diet, commercial meal replacements that provide a quick source of protein and other nutrients may be a practical alternative. The advantages of meal replacements are portion and calorie control, availability, convenience, easy of preparation and portability [23]. As meal replacements are generally less expensive than "real" food, they are also an affordable alternative to fast food for individuals with low incomes [24].

When patients persistently present new time constraints their motivation and readiness for change may need to be reassessed. Strategies that employ motivational interviewing techniques to explore and address ambivalence may be beneficial in this regard [25].

5. Saboteurs

Numerous factors within a patient's social environment can sabotage and undermine weight-loss attempts and weight-loss maintenance [26]. A person's social and cultural milieu has an important influence on lifestyles and beliefs related to physical activity and nutrition. Going on a diet may be seen as being a "woman's thing" and the culture of eating vast amounts of rich foods during social interactions may be difficult to overcome. A strong support network of friends, family or peers are essential to promote successful adherence to long-term lifestyle changes but getting buy in and support may pose challenging. It is also not uncommon that people closest to someone with obesity may actively or inadvertently hamper or subvert interventions [27]. A family is a dynamic system with its own language, roles, rules, beliefs, needs, and patterns. Each family member plays a part in the system and when the role of one player changes, even for the better, it can disrupt the roles of all involved. A not uncommon example is the suspicion of infidelity that may arise, when a spouse or partner suddenly attempts to lose weight. These types of dynamics may need to be addressed if they lead to what has been described as "intimate saboteurs". It is important to anticipate such responses and pre-empt them by ensuring that the reasons and motivations for embarking on a weight management plan are clear to all.

Social and professional obligations can also sabotage the patient's efforts as participation in activities associated with food and alcohol consumption may be linked to the way a person interacts. For example, the refusal to participate in weekend binges or festivities may lead to the loss of personal friendships and support systems. These losses need to be identified and alternative behaviors put in place. Professional counselling on "exit" strategies may be required to change long-established behavioral and social patterns without leaving a social or emotional void.

6. Comorbidities

Numerous comorbidities can promote weight gain or obstruct weight loss. While reviewing the management of co-comorbidities is beyond the scope of the present review, recognition and treatment of the following comorbidities may be essential for successful obesity treatment.

6.1. Mental health

Health care professionals should screen obese adults for eating disorders, depression and psychiatric disorders as appropriate [9]. While obese individuals in general do not report more mental health problems than normal-weight individuals [28], those seeking treatment in commercial weight-loss programs or obesity clinics have higher rates of depression, increased substance abuse and an increased prevalence in eating disorders — particularly binge eating disorder (BED) and night eating syndrome [29–31]. Eating disorders, anxiety and compulsive behaviors in obese individuals have been associated with past or ongoing physical, sexual and emotional abuse [32]. All of these behaviors in turn may be perpetuated by psychosocial stressors like bullying and stigmatization resulting in poor self esteem, personality disorders and social phobias [33].

Approximately 30% of patients seeking treatment for obesity will meet the diagnostic criteria for BED whereas in the prevalence of BED in general population is approximately 2.5% [30]. BED is characterized by recurrent episodes of eating binges associated with subjective and behavioural indicators of impaired control over, and significant distress about the binge eating without the presence of inappropriate compensatory behaviours. It is associated with more severe and earlier onset of obesity, earlier onset of dieting, more weight fluctuations and earlier psychopathology. Patients with BED may find it harder than other people to stay in obesity treatments and may be more likely to regain weight quickly. Patients with BED may require behavioural and cognitive treatment focusing on their binge eating and associated psychopathology before embarking on obesity treatments [34]. Recent studies have shown that pharmacological management of BED may promote weight loss [35,36] and that with proper counselling, patients with BED may do well following bariatric surgery [37].

Where present, treatment of depression may have to be initiated to allow patients to successfully address lifestyle changes [38]. Patients with mood disorders may present with depressed or irritable mood and lack of normal interest or pleasure in daily life, thus undermining any desire to follow a treatment regimen. The treatment of psychiatric illnesses in this patient population needs to occur with an understanding of the obesogenic potential of antidepressants prompting the preferential use of medications with lower propensity for weight gain [39].

Recent studies also suggest that attention deficit disorder (ADD) may not be uncommon among obese patients [40]. Lack of impulse control can make it difficult for patients to adhere to meal plans or medications. Thus identification and treatment of ADD and subsequent improvement in impulse control may help patients focus and adhere to weight management plans.

Patients with active eating disorders, substance abuse or personality issues that can interfere with obesity management need to be referred for specific interventions before commencing an obesity management program [34].

It is also important to assess patients ability to understand management strategies, as cognitive impairment (as in many syndromal forms of obesity) can pose significant barriers to obesity treatment.

6.2. Sleep

Several recent epidemiological studies suggest a relationship between disrupted or inadequate sleep and obesity [41]. This has in part been attributed to the profound influence of sleep deprivation on the neuroendocrine regulation of appetite and food intake [42]. Whether or not increased sleep can reduce the risk for obesity or play a role in obesity management has yet to be determined.

In contrast, there is little doubt that sleep disruptions due to obstructive sleep apnea is a common finding in obese individuals [43]. Prevalence of sleep apnea has been estimated to affect 40% of the adult obese population [44] and is clearly a major determinant of day-time drowsiness and irritability as well as metabolic and cardiovascular risk [45,46]. While there is little evidence that commencing treatment for obstructive sleep apnea (e.g. continuous positive airway pressure) can *per se* result in weight loss, it is not far fetched to assume that improved sleep will positively impact on physical activity levels and overall mental disposition thereby promoting motivation, initiation and adherence to lifestyle changes.

6.3. Pain

Obesity is commonly associated with musculoskeletal pain resulting in functional locomotor limitations [47]. Excess body weight is closely related to osteoarthritis [48] and lower back pain [49]. Chronic generalized pain and or chronic fatigue [50] are common findings in obese patients probably due to a combination of different factors including depression, fibromyalgia, osteoarthritis, sleep disorders and reduced cardio-pulmonary fitness. The presence of generalized pain or chronic fatigue can affect the global sense of well being, quality of life and functional capacity leading to decreased physical activity and lack of motivation to follow healthy diets. The presence of significant pain can promote immobility leading to loss of muscle mass, reduced cardio-pulmonary fitness and precipitate psychological and metabolic changes that facilitate further weight gain. Pain management may thus be an important first step to promote mobility thereby permitting a more active lifestyle.

6.4. Cardiovascular disease

Obese individuals have increased risk of cardiovascular disease [51]. The presence of angina, dyspnea, claudication or stroke sequela can limit the patients' ability to be physically active, thereby promoting sedentariness and weight gain. Thus, interventions aimed at reducing symptoms of cardiovascular disease can allow patients to be more physically active. Unless clearly indicated, the use of

medications such as beta-blockers, which can promote weight gain [52] or interfere with weight loss [53], should be avoided.

6.5. Respiratory disease

Interventions aimed at improving pulmonary function may be important to allow patients to be more physically active to promote weight loss and prevent weight regain. Dyspnea in obese patients can unmask other associated conditions such as respiratory and heart disease. There is a clear association between dyspnea and obesity in adults and children [54]. Hypercapnic respiratory failure and cor pulmonale are frequently observed in severe obesity [55]. With the exception of systemic corticosteroids, there is no evidence that modern pharmacological asthma treatment promotes weight gain [56].

6.6. Digestive disease

Assessment of dental status is particularly important in obese patients as poor dental health can limit the ability to eat food with high fiber content, such as cereals, fruits and vegetables, thus promoting the consumption of energy-dense processed foods [57].

Obesity is associated with an increased risk of gastro-esophageal reflux disease symptoms, erosive esophagitis, and esophageal adenocarcinoma [58]. Symptoms of reflux can be misinterpreted as hunger and are often relieved by eating. Furthermore, elevated ghrelin levels, which may promote hunger and weight gain, were reported in patients with functional dyspepsia [59]. Thus, abnormalities of the upper gastrointestinal tract can potentially contribute to weight gain. While there is one study to suggesting that in patients with type 2 diabetes, the H_1-blocker cimetidine may promote weight loss [60], the potential mechanism and relevance of this effect remain unclear.

6.7. Endocrine disorders

While endocrine abnormalities can promote weight gain or hinder weight loss, it is important to consider the *a priori* likelihood of an endocrine disorder in a given patient before embarking upon a series of endocrine function tests. Endocrine testing cannot be justified unless there is good historical and clinical evidence to support a diagnosis other than simple obesity.

Profound insulin resistance as found in patients with type 2 diabetes or polycystic ovary syndrome has been associated with poorer response to both pharmacological and non-pharmacological weight-loss interventions [61]. Similarly, increased liver and visceral fat, common findings in patients with insulin resistance, have been linked to poorer response to lifestyle interventions [62]. This may be in part due to the strong antilipolytic effects of the hyperinsulinemia present in these patients. Recent evidence suggests that insulin resistant individuals may respond better to low-carbohydrate or low-glycemic diets than to restriction of fat intake [63]. As discussed below, both insulin secretagogues and insulin treatment can promote weight gain and undermine weight-loss efforts in patients with type 2 diabetes.

Thyroid hormones are generally within normal levels [64]. Routine testing of thyroid hormones should be therefore be discouraged and limited to patients with symptoms suggesting hypothyroidism (such as dry hair and skin, cold intolerance, hair loss, difficulty concentrating, poor memory, constipation, muscle cramping, menorrhagia, goiter). Thyroid hormone should not be used as an obesity treatment in euthyreote individuals.

Although obesity is one of the cardinal features of Cushing syndrome [65], routine investigation for corticosteroid excess in unselected obese patients is not warranted. Only the presence of other features characteristic of Cushing syndrome (central obesity without affecting extremities, easy bruising, purple striae — different from the stretch marks seen in obesity —, skin atrophy, proximal myopathy, impaired glucose tolerance, hypokalemia, etc.) should prompt further investigations [66].

Testosterone and sex hormone binding globulin (SHBG) blood concentrations progressively decrease in obese men, but free testosterone levels are generally normal [64]. In patient with hypogonadism, testosterone treatment may increase libido and restore body fat distribution [67].

7. Medications

Iatrogenic weight gain as a consequence of pharmacotherapy occurs with many commonly used drugs, leading to exacerbation of comorbidities related to obesity and to non-compliance with therapy (Table 2) [68]. When these medications are necessary and cannot be replaced by medications with less propensity for weight gain, patients should be counselled regarding the possibility of weight gain and preventive measurements should be emphasized.

Improvement in glycemic control is often associated with some degree of weight gain, a collateral effect that is common to many antidiabetic treatments including insulin, thiazolidinediones, and sulfonylureas [69]. Thiazolidinediones are associated with a redistribution of fat from visceral to subcutaneous depots which is associated with improvements in metabolic control [70]. Metformin [71] and acarbose [72] are not

Table 2
Medications that may be associated with weight gain

- Antidiabetic medication (insulin, sulphonylureas, thiazolidinediones)
- Antipsychotics (olanzapine, clozapine, risperidone)
- Antidepressants (tricyclic antidepressants)
- Mood stabilizers/antiepileptic drugs (valproate, carbamazepine)
- Lithium
- Steroid hormones (glucocorticoids)
- Antiretroviral therapy
- Beta-blockers

associated with weight gain and in some cases may produce modest weight loss. Newer antidiabetics agents targeting the incretin system like glucagon like peptide 1 (GLP-1) receptor agonists (e.g. exenatide), amylin analogues (e.g. pramlinitide) or dipeptidylpeptidase (DPP) IV inhibitors (e.g. vildagliptin) [73] as well as long-acting insulin analogues (e.g. glargine, detemir) [74], may limit or promote weight loss.

Weight gain is a well-documented side effect of many psychotropic medications including antipsychotic drugs, antidepressants and mood stabilizers and may have serious long-term health and psychosocial consequences [39,75]. Atypical antipsychotics, tricyclic antidepressants, mood stabilizers and lithium are all associated with weight gain and while newer antidepressants, like SSRIs, were initially reported to be associated with an early minimal weight loss, recent evidence indicates that their use can also be followed by long-term weight gain. Bupropion may be the only antidepressant routinely shown to cause weight loss [76]. In one small study, sibutramine and topiramate were shown to prevent weight gain in patients with bipolar disorder [77]. Topiramate and zonisamide are anticonvulsants with possible mood stabilizing properties and may induce substantial weight loss [78].

Weight gain is also seen in long-term pharmacological treatment with systemic glucocorticoids [79], antiretroviral therapy [80] and non-selective beta-blockers [81].

8. Substance abuse

Moderate alcohol consumption is sometimes associated with higher BMI [82]. Although alcohol can be an important source of calories (7 kcal/g), it has no effect on satiety [83]. Alcohol consumption can lead to positive fat balance through the sparing effect of alcohol on fat oxidation, leading to increased fat storage [84].

Substance abuse or the use of diuretics and laxatives for purging purposes should be investigated as these disorders need to be treated before embarking on a weight management plan.

9. Barriers to pharmacological and surgical treatment of obesity

Unlike medical treatments for other chronic conditions, the use of anti-obesity treatments is generally not reimbursed by health care systems. This puts the whole burden of cost for these treatments on patients, often making them unaffordable. This may in part explain the poor long-term adherence with these compounds [85], although modest efficacy and lack of recognition of the need for long-term treatment to sustain weight-loss maintenance may likewise play an important role. It is reasonable to assume that counselling patients on the potential benefits of long-term weight-loss maintenance may improve long-term adherence to pharmacotherapy.

Although recent studies document the significant reduction in morbidity and mortality associated with bariatric surgery [86,87], access is still not widely available. A recent French survey found that although primary care physicians and subspecialists perceive its effectiveness as high, rate of referrals for obesity surgery are remarkably low [88]. Limited coverage by public and private payers poses another important barrier to accessing this treatment. Educating health professionals, policy makers, patients and the general public on the substantial benefits to be derived from modern bariatric surgery should serve to improve access to this treatment in the coming years.

10. Conclusions

In this review we emphasize the importance of identifying barriers that could interfere with obesity treatment. Identifying and addressing these barriers may be essential before patients can make the necessary lifestyle changes and adhere to therapy. Failure to identify and address these barriers may perpetuate a sense of failure and further undermine the often low sense of self esteem and self efficacy of obese patients. On the other hand, addressing these barriers and adapting obesity management strategies to the specific situation of each patient is likely to save resources and increase success rates of obesity treatments.

11. Learning points

- Obesity is a chronic and progressive disease.
- Obesity requires lifelong treatment.
- Early identification of treatment barriers can save resources and increase the prospect of long-term success.

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