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Comanagement of Pediatric Depression and Obesity: A Clear Need for Evidence

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Abstract

Purpose—The purpose of this article is to provide a review of the existing literature for the comanagement of depression and obesity in the pediatric population.

Methods—A review of the current literature was conducted using EBSCOhost and EMBASE to identify evidence and recommendations for the comanagement of depression and obesity among children and adolescents (aged 2–18 years). Additional search criteria included peer-reviewed, English language—only full-text articles published before August 2015.

Findings—Multiple factors contribute to and influence the interplay of obesity and depression in the pediatric population. These 2 chronic conditions are affected by multiple factors, including the roles of the family, school, health care practitioners, and access to health care. In addition, there are no formal recommendations for the treatment of depression in the setting of obesity for pediatric or adult populations, and there is only medication approved by the Food and Drug Administration (orlistat) for the treatment of obesity in the adolescent population. Bariatric surgery may play a role in some adolescents, but larger and long-term clinical studies with the use of therapeutic agents in conjunction with lifestyle modification need to be conducted to support this.

Implications—The interrelatedness of these 2 separate diseases is not well understood; the presence of 1 of the diseases clearly contributes to the manifestation of the other and likely to the ability to treat the other disease. Current focus is on modifying behavior to decrease weight. Weight loss is associated with improvement in depressive symptoms but may not be adequate to treat depression.

Keywords

depression; management; obesity; pediatrics

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CONFLICTS OF INTEREST

The authors have indicated that they have no conflicts of interest regarding the content of this article.

INTRODUCTION

Obesity and depression are significant public health problems in the United States. The causes of obesity are multifaceted and cannot be addressed by a single treatment. In adults and adolescents, depression is associated with obesity, and adolescent girls with depression at increased risk for becoming obese as adults compared with adolescent boys.^{1,2} Likewise, obesity increases the risk for onset of depression.³ The mechanism by which obesity increases risk for depression is not known but may be related to serotonin. Several studies report treatment-resistant depression in adults with obesity who are treated with selective serotonin reuptake inhibitors (SSRIs).^{4–6}

Obesity affects approximately 17% of US children and adolescents (aged 2–19 years) and 35% of US adults.⁷ Obesity in children and adolescents is defined as a body mass index (BMI) 95th percentile for age and sex. BMI is calculated using weight in kilograms divided by height in meters squared. The Centers for Disease Control and Prevention growth curve for BMI is then used to determine percentile.⁸

Depression affects approximately 11% to 20% of adolescents, and the risk for depression increases as a child gets older.⁹ The prevalence of depression increases significantly among obese boys (20%) and girls (30%).⁹ Symptoms of depression in adolescents differ from those in adults. Adolescents manifest depression as feeling sick, avoiding school or school problems, worrying excessively about the death of a parent, feeling misunderstood, and being “moody.”¹⁰

In 2013, an expert committee released guidelines for the treatment of adult obesity.¹¹ These guidelines recommended treatment by a team of health care professionals, including registered dietitians, psychologists, exercise specialists, health counselors, or professionals in training. There is not a specific protocol for the treatment of mental health problems, although the guidelines recommend addressing depression.¹¹ The comanagement of depression and obesity in the pediatric population poses a challenge because there are not specific evidence-based recommendations that address the comanagement of the 2 chronic health problems. The objective of this article is to provide an overview of the comanagement of depression and obesity in the pediatric population.

METHODS

Studies were identified by searching EMBASE and the University of Utah EBSCOhost online research database, which includes Alt HealthWatch, BioMed Central, Clinical Key, Cochrane Library, DynaMed, MEDLINE, PsycInfo, and several other research databases. The search was completed using the keywords *depression* AND *obesity* with the addition of each of the following terms: *treatment*, *medical management*, *medication* OR *drug management* or *drug therapy*, *bariatric surgery*, *pediatric* OR *adolescents* OR *childhood*.

The inclusion criteria for this review were (1) peer-reviewed study, (2) published in the English language, (3) provided original data describing treatment of obesity and depression with medication, and (4) study population that included children and/or adolescents aged 2 to 19 years. The search was completed in August 2015.

Findings

We began this review as a systematic review with the above rigorous search criteria. A search of the terms *depression*, *depressive symptoms*, *major depressive disorder*, and *obesity* yielded 13,931 articles. Addition of *adolescents*, *pediatric*, and *childhood* decreased the count to 7 articles of which none met the criteria for treatment of the 2 conditions. The void of research in the area of comanagement of obesity and depression in adolescents unfortunately limits the ability to conduct a systematic review. Although outside the scope of this review, we conducted a search of the literature without the pediatric population modifier and identified 17 articles that met the above criteria. Of these, only 2 specifically evaluated cotreatment of depression and obesity (Figure).^{12,13}

The treatment of obesity in the pediatric population generally relies on improving diet, increasing physical activity, and decreasing sedentary time. The most recent expert guidelines for pediatric obesity (1998) were directed at pediatric primary care practitioners and recommend use of the Primary Care Evaluation of Mental Disorders questionnaire, which also screens for eating disorders, and the Children's Depression Inventory to screen children who seem depressed. Psychological evaluation and treatment are recommended if either tool identifies a significant mental health problem. There is no specific recommendation for the treatment of depression.¹⁴ The 2011 Expert Panel on Integrated Guidelines for Cardiovascular Disease in Children and Adolescents (2011) section on obesity similarly focuses on diet and physical activity with no recommendations for treatment of existing mental health problems.¹⁵

The treatment of major depressive disorder in the adolescent population has improved with the introduction of SSRIs, which is still limited to 1 medication approved by the Food and Drug Administration (fluoxetine).¹⁶ Many professionals use the other SSRIs (sertraline, escitalopram, citalopram, fluvoxamine) off label to treat depression in children and adolescents. A study of 25,315 adults (aged 40–49 and 70–74 years) evaluated the association of SSRIs with obesity and dyslipidemia and recommended careful monitoring for these conditions during treatment because use of SSRIs increased abdominal obesity (odds ratio = 1.4; 95% CI, 1.08–1.81) and hypercholesterolemia (odds ratio = 1.36; 95% CI, 1.07–1.73).¹⁷ We are not aware of a similar study in adolescents. A single study of treatment-resistant depression in adolescents receiving venlafaxine needs to be repeated in a population of medication-naïve adolescents with obesity and depression.¹⁸ The National Institute of Mental Health 2009 report emphasizes the need for studies that evaluate the mechanistic association between obesity and depression to develop effective treatment for both conditions.¹⁹

Bariatric surgery may be the only effective method currently available for comanagement of obesity and depression. Guidelines for adults and adolescents considering bariatric surgery recommend psychosocial behavioral evaluation by a mental health specialist with experience evaluating patients and families for bariatric surgery, but consensus guidelines for the evaluation and management of psychosocial problems do not exist.²⁰ Short-term outcomes of 0 to 24 months reveal improved psychosocial functioning with decreased depression symptoms that occur with weight loss in adolescents.^{21–23} The first of these

reports evaluated 16 adolescents (mean age, 16.2 years; mean BMI, 59.9 kg/m²) and conducted measurements at baseline and 6, 12, 18, and 24 months after Roux-en-Y gastric bypass. Decreased depressive symptoms were seen at 12 months, followed by decelerations in gains in year 2 that included weight regain ($P < 0.0001$) and increased depressive symptoms ($P = 0.004$).²¹ The second evaluated 37 adolescents (mean age, 16.6 years) 4 months after undergoing Roux-en-Y gastric bypass with Beck Youth Inventories. There was a significant decrease in raw scores of the Beck Youth Inventories ($P = 0.20$) from baseline to follow-up.²² The third used the Beck Depression Inventory to evaluate 101 severely obese adolescents aged 14 to 18 years undergoing laparoscopic adjustable gastric banding at baseline and 12 months. There was significant decrease in Beck Depression Inventory score (β slope = -0.885 , $SE = 0.279$, $P < 0.01$; β quadratic = 0.054 , $SE = 0.021$, $P < 0.001$).²³ Long-term outcomes of large numbers of postoperative adolescents are not yet available. In contrast, a few adults (<50%) who have undergone bariatric surgery and experienced an initial improvement in mental health status subsequently experience a decline in mental health improvements or no benefit at all.²⁴ Several adult studies have found a higher suicide rate among patients after bariatric surgery than the general public.^{25,26} Psychiatric evaluation to identify candidates who are most likely to experience improvement in depressive symptoms and eating disorders needs continued study. Longer-term follow-up is necessary to establish bariatric surgery as an effective treatment for obesity and depression in a select group of individuals.

CONCLUSIONS

Depression or obesity alone represents a significant disease burden for children and adolescents. Both have long-standing and far-reaching consequences for the health and well-being of the affected individual. This risk is magnified when the 2 issues are combined because it makes the treatment of one more difficult by the presence of the other. This combined burden has been ignored by the research community because often studies of one disease specifically exclude the presence of the other (ie, studies of antidepressants in depressed adolescents specifically exclude participants in the >85th percentile for weight). Much more research is needed to fill the gap in knowledge about the mechanism(s) of the association between obesity and depression (especially women) and mental health disorders. Once a mechanism has been identified, targeted intervention strategies that address the comanagement of obesity and depression can be studied.

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Figure.
Literature Query of EMBASE and EBS-COhost conducted before August 2015.