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Depression In Adolescent Patients with Obesity

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ABSTRACT

Depression and obesity are two common illnesses with serious public health consequences that frequently co-occur in people. The link between both conditions is bidirectional: having one raises your chances of getting the other. Obesity and depression are both prevalent during adolescence, and obesity may be a trigger for adolescent depression.

1. Introduction

Obesity is a major problem in the United States, with 65 percent of people classified as overweight or obese.¹ As a result, there is a high likelihood that they will occur in tandem with serious depression, which has a prevalence rate of 10%.² Obesity and depression are both frequent illnesses that pose serious public health risks. Both of the aforementioned diseases are strongly linked to morbidity and mortality.^{3,4}

Self-reported symptoms (e.g., applying known cut-offs to questionnaire scores) or an interview-based psychiatric diagnosis of major depressive disorder could also be used to define clinically significant depression (MDD).^{5,6,7} In the United States, the lifetime prevalence of major depressive disorder (MDD) is over 10%.⁽⁸⁾ Depression is the leading cause of disability in developed countries.^{9,10} A recent review on

the impact of MDD found that patients affected with MDD have functional impairment and decreased quality of life equal to or greater than other common chronic medical diseases such as diabetes, hypertension and heart diseases while treatment of depression leads to overall improvement in functional status including mental, emotional and social functioning as well as health perception and quality of life.¹¹ Furthermore, depression has been linked to an increase in days away from work, and recovery in depressed symptoms has been linked to an increase in work productivity. The data are the same for health-care expenses, i.e., depression increases general medical care, and depression therapy is linked to lower utilisation and medical-care costs.¹¹ According to the World Health Organization, depression will continue to

be the major cause of disability in the future, second only to cardiovascular disease.¹²

Epidemiology of obesity

Obesity is described as having too much fat on your body. In children aged 2 and up, the body mass index (BMI) is the standard measure of overweight and obesity. The BMI is calculated by dividing the body weight by the height squared. Adults with a BMI between 25 and 30 are considered overweight, while those with a BMI more than or equal to 30 are considered obese. The BMI of children varies depending on their age and gender. Obesity is defined as a BMI of more than or equal to the 95th percentile for age and gender in children. The percentile BMI for age and sex approaches adult standards as children reach adulthood.¹⁸

Epidemiology of depression

The risk for depression increases in adolescents, with the prevalence of major depressive disorder (MDD) estimated to be 2% in children compared with 4% to 8% in adolescents.¹⁴ The cumulative incidence of MDD during adolescence ranges from 15% to 20%, a rate which is comparable to the lifetime prevalence of MDD in adults.¹⁵ Teenage girls are more likely to develop depression during adolescence than teenage boys.¹⁶ Gender differences appear during early adolescence and persist throughout adulthood.¹⁷

Stress and depression

The dynamic balance of all organisms can be disrupted by stress as a disorder. Chronic stress might make adolescence vulnerable, preventing them from reaching biological and psychological development.¹⁸ Obesity and chronic stress in adolescence are linked through biological and behavioral mechanisms. Stress is defined as a lack of sleep, emotional eating, and impulsive behaviors, for example. Stress causes catecholamine secretion and an increase in insulin concentration, which can contribute to central obesity.

Obesity and depression

For years, it was considered that any link between fat and depression in the general population was purely coincidental, but Luppino and colleagues showed that the influence of obesity on the development of depression was stronger in American studies in a recent subanalysis.^{19,20} They suggested that there could be a biological link between obesity, overweight, and depression, with obesity being viewed as an inflammatory state. Inflammation has also been linked to depression, which is characterized by a stressful life event that causes the brain to react in a similar way to a medical ailment, resulting in higher proinflammatory cytokines.

Fat tissue in people of normal weight contains fat cells, but fat tissue in obese people contains macrophages, which ingest pathogens and other foreign materials and release inflammatory hormones like TNF-alpha and interleukin-6 that keep the immune system active at a low level, contributing to a chronic inflammatory state.²¹ Although the molecular mechanisms underpinning obesity and depression-onset risk may be similar across cultures, sociocultural systems may be distinct and stricter in one society compared to another, according to Luppino and colleagues.¹⁹ According to the National Health and Nutrition Examination Survey (NHANES)-III data, the prevalence of major depression climbed to highly significant levels among the most obese teenagers, in the 95th to 100th percentile, 20 percent for boys and 30 percent for girls.²⁰ A longitudinal research of a large birth cohort from northern Finland looked at obesity measures at 14 and 31 years old, as well as depression measures at 31 years old, and discovered that adolescence obesity was linked to adulthood depression.²² Obesity was connected to depression and self-esteem among the youngest adolescents (aged 12 to 14 years) according to Swallen and colleagues, who performed a cross-sectional analysis of the 1996 National Longitudinal Study of Adolescent Health.²³

Obese adolescents have a higher frequency of scholastic and mental health difficulties than normal-weight adolescents, including low academic

performance and self-esteem, anxiety, depressive disorders, and a larger number of reported suicide attempts. Despite this, and the fast rising incidence and negative health effects linked with obesity and mental illness, few intervention studies with teenagers have been done to promote both their healthy lifestyles and mental health outcomes.²⁴

Obesity and depression: shared underlying pathway?

Obesity and depression may be linked via increased inflammation and a shifted stress response. Obesity is regarded as a pro-inflammatory condition. Obesity promotes adipose tissue expression and production of pro-inflammatory cytokines, according to animal and human research, while interventions that lower obesity or insulin resistance have a moderating influence on inflammation.²⁵ In a group of overweight youngsters, levels of the pro-inflammatory cytokine IL-6, as well as levels of C-reactive protein, were found to be greater than in normal weight controls.²⁶ In a population sample of otherwise healthy overweight kids, a biomarker for inflammation and cardiovascular disease risk was considerably higher than in non-overweight youths.²⁷

Similarly, there is mounting evidence from adult studies that depressive episodes are linked to inflammatory system dysregulation. When psychiatric inpatients with major depressive illness were compared to healthy controls, the pro-inflammatory cytokines IL-6 and tumor necrosis factor alpha were found to be greater.²⁸ In patients with diagnosis depression compared to healthy controls and previously treatment-resistant euthymic persons.²⁹ IL-6 levels in the cerebrospinal CSF did not differ between persons with serious depression and age- and gender-matched controls.³⁰ Depressed persons had significant diurnal spikes in plasma IL-6 levels as well as a shift in its circadian rhythm when compared to controls who were closely matched by gender, age, BMI, and menstrual cycle phase, all of which affect IL-6 levels.³¹ Increases in IL-6 after hepatitis C therapy with

interferon alpha have also been linked to substantial depressed adverse effects.³²

Association between obesity and depression

The link between MDD and obesity is frequently seen to be bidirectional, with each illness raising the risk of the other. Some academics have tried to figure out if obesity raises the risk of MDD or if MDD raises the risk of obesity. Obesity may play a role in the development of MDD by influencing psychological factors such as stigma, low self-esteem, and functional impairment. The appearance of MDD symptoms such as changes in appetite, anxiety, poor sleep, exhaustion, and lethargy, on the other hand, may lead to a propensity to overweight and obesity.³³ In fact, a growing body of evidence suggests that healthy behavioral changes, such as increased physical activity and improved dietary choices, are linked to a reduction in psychiatric symptoms.³⁴ MDD is often related with reduced activity, according to a recent meta-analysis of cross-sectional research, which is likely owing to various variables, including anhedonia, exhaustion, pain, and others.³⁵

Treatment of obese patients with depression

The therapy of depression in the presence of obesity, and vice versa, has an intriguing link. Obesity treatment frequently results in a reduction in depression. The most apparent example is the significant increase in mood that occurs as a result of the significant weight loss accomplished by gastric bypass surgery.³⁶ When a person loses a small amount of weight, the reduction in depression is usually small as well.³⁷

In contrast to the positive effects of obesity treatment on depression, depression treatment can have a negative impact on obesity. Treatment for depression has rarely had a greater influence on another disorder than it has on fat. Weight gain is a known side effect of traditional tricyclic antidepressants. The introduction of selective serotonin reuptake inhibitors (SSRIs) has helped to alleviate this condition. Because most SSRIs do not

promote weight gain, they have resulted in improved adherence to therapy than when tricyclic antidepressants were the primary treatment option. Finally, cognitive-behavioral therapy (CBT) for adult depression have been demonstrated to be beneficial for a wide range of people. Indeed, researchers assessed the effectiveness of CBT, interpersonal therapy, and imipramine treatments among 65 outpatients with early onset chronic depression as part of the National Institute of Mental Health Treatment of Depression Collaborative Program.³⁸ The results showed that there was no significant difference in depression improvement across the three groups. At the same time, there are no published data on concurrent weight changes linked with CBT intervention for depression that we are aware of.

2. Discussion

Munim Mannan, et al in their study, they found considerable prevalence rates of depression in obesity with adolescents. The relationship between adolescent depression and obesity. Depressed adolescents had a 70% increased chance of being fat, while obese adolescents had a 40% increased risk of being depressed, according to our findings. The link between depression and obesity was statistically significant regardless of direction, and when stratified by gender, a bidirectional association was established for both males and females. The risk difference was likewise bidirectional in terms of impact. The other findings are in line with prior research that has shown a significant prevalence of abdominal obesity in males differences in overweight and obesity prevalence between genders have been linked to geopolitical and cultural factors.³⁹ Obesity-related self-esteem impairments, as well as stigma and discrimination, are common in children with obesity, which has been linked to an increased risk of depression.

The mechanisms that underpin depression-obesity interactions are complex. Certain biological variables, such as dysregulation of the hypothalamus–pituitary–adrenal axis (HPA-axis), inflammation, leptin receptor decreases, and metabolic disturbance, have been

proposed as potential pathogeneses for the link between depression and obesity in some research.⁴⁰

3. Conclusion

A vicious loop exists between stress, obesity, and depression among adolescents, according to several research. When confronted with a stressful circumstance, hormonal changes can lead to a rise in body weight, which can lead to obesity, and obesity can lead to depression. Less physical activity and excessive weight gain are two of the most prominent effects of depression and stress on adolescents, especially among females. Gender and age, on the other hand, are two major characteristics that can influence adolescent depression and stress.

Obesity and depressive disorders are prevalent comorbidities with distinct pathoetiologies that overlap. Obesity and depression disorders occur frequently together and are strongly linked to poor health consequences. Treatment options should start with prevention and foresight. An method that takes these two conditions into account may improve outcomes in obesity and depressive disorders.

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