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Adolescent Obesity and Psychiatric Co-Morbidities: A Dire Need for Lifestyle Modifications and Interventions

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Abstract

Due to the severity of metabolic dysfunction, obesity raises the incidence of anxiety and depression. Adolescents with depression had a 40% higher risk of being obese, whereas obese adolescents had a 70% higher risk. Overconsumption of sugar and saturated fat in the diet leads to metabolic dysfunction, neuroinflammation, and deficits in mental health. Growing data indicates that poor diet, inactivity, and visceral adipose accumulation are the primary causes of the mental effects of obesity. Neuroinflammation is triggered by adipose- and gut-derived inflammation as well as alterations in the nutritional makeup of the brain. Corticolimbic networks that regulate mood, motivation, and emotion are affected by neuroinflammation in terms of their structure, excitability, and connection.

Keywords: Obesity; Psychiatry; Adolescents; Anxiety; Depression

Obesity and Psychiatric Abnormalities

As the fifth leading cause of mortality worldwide, obesity is regarded as a major public health concern [1]. One of the key lifestyle diseases that contributes to other health issues and many chronic diseases, psychiatric disorders, and cardiovascular diseases is being overweight or obese. The World Health Organization has anticipated that, by 2030, 30% of deaths worldwide will be spurred on by lifestyle diseases, which can be avoided by appropriately identifying and addressing relevant risk factors as well as behavioural involvement policies. Due to the numerous changes that take place during this stage of life, adolescence is a crucial time in a person's life [2]. During this time, it is more likely that an individual may experience both obesity and depression at the same time [3,4]. This increased susceptibility to depression and obesity in adolescence raises the possibility of a causal relationship between the two [5,6]. Numerous behavioural, genetic, biochemical, environmental and other factors have been proposed as possible mediators in the relationship between depression and obesity. Adolescents with depression may experience changes in appetite and dietary habits that lead to weight gain or loss [7,8], are more likely to prefer carbohydrate-rich foods that are pleasurable or comforting [9,10], are more prone to sedentary behaviour [10], are more susceptible to disordered sleeping [9], and are more likely to engage in binge eating [11,12]. These elements could raise the risk of becoming obese. Teenagers who are obese may encounter stigma [13,14], have a negative body image and low self-esteem [14], which makes them more susceptible to depression [15,16]. Their actions and way of life, particularly their poor eating patterns, lack of physical activity, and sleep disturbances may also contribute to sadness [17–19]. Inflammation [20,21], poor glycaemic

control [22], dysregulation of the hypothalamic-pituitary-adrenocortical axis [23], and neuroendocrine mechanisms via leptin melanocortinergic-BDNF signalling [24] are a few additional shared biological mechanisms that have been linked to the aetiology of both depression and obesity. Obesity and depression may also be related by a genetic predisposition, albeit this is debatable [25,26]. High body mass index (BMI) poses a hazard to health and lifespan given the youth's easy availability to junk food and sedentary lifestyle in contemporary culture. According to a meta-analysis, those who were overweight as children and adolescents had a nearly five-fold increased risk of being overweight as adults [27]. High BMI throughout adolescence is, in fact, linked to a number of short- and long-term medical and psychological comorbidities, according to research that use a life course perspective to obesity. Low self-esteem, increased body dissatisfaction, and an increased risk of psychiatric diseases, particularly depression, are some of the mental health issues linked to obesity [28]. Teenage obesity and depression are becoming more common and are now acknowledged as serious global public health issues. The likelihood of becoming fat as an adult was almost five times higher in obese children and adolescents than in non-obese individuals. Around 80% of obese teenagers will still be obese in maturity, about 55% of obese children will continue to be obese in adolescence, and over 70% will be obese after the age of 30. Therefore, steps must be taken to lessen and avoid obesity in these teenagers [29]. Psychiatric co-morbidity and body shape dissatisfaction are common in obese non-treatment seeking adolescents and warrants need for comprehensive evaluation and management of these issues to manage the epidemic of adolescent obesity in India. The work by Arumuganathan et al. in the present issue has examined a significant and frequently disregarded subject and highlighted the psychiatric comorbidities and body image concerns among the obese Indian school-going teenagers. Social phobia (36%) was the most prevalent diagnosis in the obese group, followed by specific phobia (19%) and severe depressive disorder (19%). Ninety percent of the samples with obesity indicated concern about their body form, compared to 29% of the control group. 36% of obese participants showed mild concern, 36% strong concern, and 19% significant concern over their body shapes [30]. Paediatric obesity stems from genetic predispositions that are influenced by a permissive environment during infancy, development, and adolescence. Rare endocrine causes of obesity are typically associated with slowed growth patterns [31]. The research reveals that obese teenagers had considerably higher rates of social phobia (36%), specific phobia (19%), and severe depressive illness (19%). Compared to the normal matched controls, body image problems were more prevalent in the obese (90% vs. 29%, respectively). Despite the importance of their findings, the study's design cannot completely rule out the possibility of reverse causality because psychiatric illnesses are known to be a major contributing factor to adolescent obesity [32]. The findings showed that adolescents who were depressed had a 70% higher risk of being fat, while obese adolescents had a 40% higher risk of being depressed. No matter which way the relationship between depression and obesity was stratified, both males and females showed a bi-directional correlation, which was statistically significant. The risk differential also has a bi-directional influence. In terms of biology, females go through complicated developmental processes throughout puberty that could cause obesity issues to manifest earlier and last into adulthood [33,34]. Puberty sets in for males about two years later than it does for females [35]. The obvious gender disparities in adolescent depression may possibly be related to the earlier pubertal development in females [36]. However, the gender gap in depression is also seen after puberty, and this gender gap persists throughout the female reproductive life course [37,38]. This gender gap is more directly related to hormonal changes than to chronological age [39,40]. This gender disparity may also be exacerbated by behavioural and lifestyle factors [41,42]. In a study, it was discovered that whereas guys only got anxious when they were objectively overweight, females were unhappy with their bodies regardless of their actual weight Compared to men, women typically express greater body dissatisfaction [43]. Stress can be caused by negative life experiences including bullying and low self-esteem [44], which may then raise the risk of obesity and depressive symptoms in adolescent females more than adolescent boys [45,46]. The strength of the link was discovered to be stronger in the direction of depression leading to obesity than in the direction of obesity leading to depression, however this finding may be a result of the included studies' lengthy follow-up periods. Although depression and obesity were both risks for both sexes, the link was often greater for females and for females in early adulthood than for those in late adolescence. This study has important clinical practise ramifications, especially for young females, in that early care for both obese and depressive young women may prevent the onset of the inverse illness. There is a need for sensitive public health initiatives because obesity is regrettably also linked to significant weight stigmatisation and discrimination, which can lead to social isolation and be a major barrier to behaviour change. Additionally, evidence shows that psychiatric diseases and obesity have similar neuroendocrine pathways and hereditary predisposition. While some studies have reported obese individuals have 5 times the risk of major depression than the non-obese others have not reproduced these findings [47]. The relationship between depression and obesity also may be, to some extent, sex dependent [48]. For example, four studies have shown that middle-aged men appear to be less depressed than their normal weight counterparts [49-52]. However, in a recent large

epidemiological study obese men were at increased risk for mood and anxiety disorders [53]. Conversely, obese and overweight women consistently are at great risk of experiencing depression across the lifespan [53-55]. These sex differences suggest that environmental factors influence the co-morbidity of depression and obesity. While some research have found that obese people are 5 times more likely to experience serious depression than non-obese people [56,57], other investigations have not confirmed similar findings [58-61]. Additionally, there may be some sex-related differences in the association between depression and obesity [62]. For instance, according to four research [63-66], middle-aged men appear to be less melancholy than their normal-weight counterparts. However, obese males had a higher chance of developing mood and anxiety disorders, according to a recent large epidemiological study [67]. On the other hand, obese and overweight women are consistently at a higher risk of developing depression over their lifetime [67]. These gender disparities imply that co-morbidities between depression and obesity are influenced by environmental factors. However, both depression [68] and obesity [69] have a strong genetic basis and shared genetic risk factors are possible. In that regard, the involvement of some of the same genes in the mechanisms underlying both conditions [70,71], highlights the potential for a shared genetic vulnerability to both depression and obesity [72].

Conclusion

There is a lack of information on the most effective strategies to treat obesity in adolescents with psychiatric illnesses, which makes it difficult for healthcare professionals to discover answers to this global issue. The social effects of obesity, such as body shaming, peer victimisation, stigmatisation, and discrimination, are not generally addressed by therapies. Obesity increases the prevalence of anxiety and depression. Growing data indicates that poor diet, inactivity, and visceral adipose accumulation are the primary causes of the mental effects of obesity. The development of depression and anxiety has been linked to metabolic and vascular dysfunction as a result, including inflammation, insulin and leptin resistance, and hypertension. Recent advances in study are highlighting the significance of these many obesity corollaries and their effects on neuroimmune status as well as the brain circuits mediating mood and emotional states. Therefore, it is obvious that a deterministic nutritional approach alone will not be sufficient to address this global health issue, which has significant implications for the physical and mental health of teenagers. In order to effectively combat teenage obesity, a life course, multisectoral, and holistic approach is required, especially given the prevalence of related psychiatric comorbidities. Indeed, the need of early mental health assessment and intervention cannot be denied. A complete lifestyle change that the entire family must undertake is the cornerstone of management. It entails dietary adjustments, consistent exercise, and behavioural adjustments that support a healthy way of life. Results are good when there is regular follow-up and care is taken to maintain the child and family's motivation.

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