

Short review

Association between Obesity and Food Addiction

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Abstract

Obesity is a global health risk, challenging to manage despite available treatments. Irregular eating habits contribute to obesity, affecting both physical and mental health. Food addiction, linked to neurobiological and psychological factors, is commonly associated with obesity. Screening for food addiction and providing psychosocial support are essential, while reducing high-carbohydrate intake may help mitigate addiction.

Keywords: Behavioral therapy; Food addiction; Obesity; Neurobiology; Weight management

Abbreviations

BMI: Body Mass Index

FA: Food Addiction

HPA: The Hypothalamic-Pituitary-Adrenal

WHO: World Health Organization

Introduction

Obesity is a global epidemic and a significant health risk. Despite various treatment options, addressing the condition remains challenging. Irregular eating habits are the primary cause, disrupting the energy balance regulated by hormones like ghrelin, leptin and insulin. Hedonic factors, such as the easy access to high-calorie, palatable foods, influence overeating by activating brain reward regions and increasing cravings through dopaminergic release. Food Addiction (FA), which involves overeating pleasurable foods that exceed the

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body's energy requirements, has been found to be linked to obesity [1].

Obesity

Obesity comes from the Latin word "obedere," meaning to overeat. The World Health Organization (WHO) defines it as "an abnormal or excessive accumulation of fat that presents a health risk" [2,3]. The World Obesity Federation describes it as a progressive condition involving a positive energy balance [4]. Obesity is classified using Body Mass Index (BMI), calculated by dividing weight (kg) by the square of height (m). The WHO categorizes BMI as underweight (<18.5 kg/m²), normal (18.5-24.9 kg/m²), overweight (25.0-29.9 kg/m²), and obesity in three classes: Class 1 (30.0-34.9 kg/m²), Class 2 (35.0-39.9 kg/m²), and Class 3 (>40.0 kg/m²) [5]. Listed among the top 10 high-risk diseases by the WHO, obesity has become a global health issue [6]. Once prevalent in developed countries, it now affects all economic levels, with over 400 million people diagnosed worldwide. In the U.S., obesity rates increased by 50-70% between 1991 and 1999, and projections suggest that by 2030, rates in many countries could reach 50% [7]. Obesity is influenced by internal and external factors [8].

A significant contributor is overeating, which is often linked to irregular eating patterns. These patterns can lead to eating disorders and hedonic hunger, where individuals are particularly drawn to high-calorie, palatable foods, resulting in excessive consumption [9]. Treatment involves lifestyle modifications, medications, bariatric surgery, and nutritional therapy. Lifestyle changes focus on reducing energy intake and increasing physical activity, while medications help suppress appetite and reduce nutrient absorption [10].

Food Addiction (FA)

Food Addiction (FA) is characterized by hedonic eating, where individuals consume highly palatable but unhealthy foods beyond their energy needs. It shares similarities with binge eating disorders, with neuroimaging studies showing activation in brain regions such as the striatum, orbitofrontal cortex and amygdala. The hypothalamus, responsible for regulating satiety and eating behaviors, is also affected. Factors like impulsivity, mood, and chronic stress can disrupt the Hypothalamic-Pituitary-Adrenal axis (HPA), further influencing eating behaviors [11,12]. Symptoms of FA include an inability to control food consumption despite awareness of its harm, hiding unhealthy eating habits, and struggling to reduce food intake despite the desire to do so. Individuals may also make excuses for cravings, continue eating despite guilt or fullness, and consume excessive amounts of food once they start [13].

The etiology of FA involves multiple factors. Impaired control leads individuals to eat excessively beyond their initial intention. Craving manifests as a strong desire for specific foods, particularly those high in sugar or fat. Social impairment results from excessive eating affecting relationships and leading to isolation. Repeated use despite negative consequences refers to continued overeating despite awareness of its physical and psychological harms. Physiological

factors include tolerance and withdrawal symptoms, where reduced consumption causes cravings and discomfort similar to substance addiction [14]. Treatment for FA includes medications to regulate neurotransmitters, Cognitive-Behavioral Therapy (CBT) to address psychological triggers, and social support for emotional well-being. Lifestyle changes, including regular physical activity and emotional regulation, also play a key role in managing FA. A combination of these strategies helps control cravings and promote healthier eating habits [15].

Association between Obesity and Food Addiction

Obesity has become a significant global health issue, affecting both physical and mental well-being. Food Addiction (FA) is often linked to obesity, as it influences brain reward pathways, making unhealthy food choices more appealing. The consumption of palatable foods rich in fat, sugar, or salt triggers the brain's reward systems, leading to pleasure and cravings, similar to addictive behaviors seen in substance use. Neuroimaging studies show that food cues activate reward-related brain areas, predicting future weight gain. Additionally, excessive sugar intake stimulates dopamine and endorphins, reinforcing overeating [16-18]. Preclinical studies conducted on rats suggest that those prone to obesity gain more weight when exposed to high-fat and high-sugar diets [19]. Research indicates that FA is more common in individuals with higher BMI and is often associated with psychological factors like impulsivity, low self-esteem, and depression [11,20,21]. In children and adolescents, FA was found to be more prevalent in those with higher BMI, suggesting that it could play a role in the development of obesity [22-25]. Overall, these studies support the notion that FA contributes to obesity, with the prevalence varying across different age groups and populations. The findings suggest that addressing FA may be important for obesity prevention and management.

Conclusion

Obesity and Food Addiction (FA) are interconnected conditions that require a comprehensive, multidisciplinary approach for effective management. FA contributes to unhealthy eating behaviors and is prevalent among obese individuals, emphasizing the need for early screening and psychosocial support. Treatment strategies such as cognitive-behavioral therapy, pharmacotherapy, dietary modifications, and lifestyle changes play a crucial role in addressing both conditions. Additionally, reducing carbohydrate intake may help manage FA symptoms. Future research should focus on developing personalized treatment approaches and further exploring the FA-obesity relationship to improve long-term outcomes.

Conflict of Interest

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