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Ultra Processed Food Addiction among People: A Mini-Review of the Evidence

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MINI-REVIEW

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ABSTRACT

Background: According to the availability of various types of processed food products worldwide, the demand for their consumption has increased. Ultra-processed foods (UPFs) containing high amounts of sodium, hydrogenated oils, and refined carbohydrates are triggers for activating the same neural pathways and act like drug abuse. On the other hand, changing the food environment is a key factor in obesity prevalence and its related outcomes. It may be attributed to addiction to foods that has also been called "eating dependence" which emphasizes the behavior, not the food itself. Food addiction is important for a better understanding of psychiatric and medical problems such as eating disorders, obesity, and metabolic syndrome. **Methods**: In this mini-review, we will examine food addiction and the appropriate strategies for its management. **Conclusion:** Because food addiction has negative health consequences, strategies for reducing the accessibility of UPFs should be warranted. Also, high fiber intake and consumption of probiotic products should be considered. Further interventional studies are needed to manage this problem.

Introduction

Ultra-processed food (UPF) is an industrial formulation, typically with multi-ingredients such as hydrogenated oils, refined carbohydrates, sodium, and other additives to maximize palatability (Gibney, 2019, Moubarac *et al.*, 2014). The UPFs category includes packaged snacks, candy, packaged white flour bread/pasta, sugary cereals, frozen desserts, beverages with added sugars and fast foods (Monteiro *et al.*, 2018).

Obesity is a global concern related to various adverse health outcomes, such as diabetes and cardiovascular disorders, which affect communities economically (Lopez-Jimenez *et al.*, 2022). In the context of obesity, the changing food environment has extensively been considered (Hall, 2018). The evidence shows that rising obesity rates have mirrored increases in the availability of calorie-dense and nutrient-poor

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UPFs in the environment (GBD Obesity Collaborators, 2017). Also, food addiction may increase the risk of weight gain in time (Schulte *et al.*, 2022).

Food addiction is a type of hedonic eating behavior that involves eating palatable foods which are high in salt, fat, and sugar in amounts are more than the body needs (Kalon *et al.*, 2016). Craving a special substance is an essential characteristic of addictive behavior. Findings showed that individuals with addictive eating patterns experience more food cravings (Meule and Kübler, 2012). It implies that food addiction may contribute to obesity by affecting the brain's control over food intake (Schulte *et al.*, 2016). It is estimated that UPS addiction occurs in 14% of adults and 12% of children, and is related to biopsychological mechanisms of addiction (Gearhardt *et al.*, 2023).

In the present study, the authors aim to review food addiction, its related foods, mechanisms and possible effective solutions. By identifying knowledge gaps and areas where improvement is needed, policymakers and healthcare professionals can take effective steps to promote healthy eating habits and overall well-being among people.

Assessment of food addiction

The Yale Food Addiction Scale (YFAS) was created to assess food dependence by evaluating the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria for substance use disorders in the context of consuming food. This scale evaluates all 11 symptom criteria for substance use disorder as defined by DSM-5, including diminished control over intake, cravings, withdrawal, and persistent use despite adverse consequences. The YFAS has undergone rigorous psychometric testing and has strong internal consistency and reliability (Gearhardt *et al.*, 2023, Horsager *et al.*, 2023).

Types of addictive foods and brain

Not all foods but high levels of refined carbohydrates or added fats are a strong candidate for an addictive substance. Recent research has pointed to the Western diet's addictiveness, driving excessive consumption. The UPFs (such as salty snacks and chocolate), and fast food are examples of addictive foods that seem to have a supra-additive effect on the brain reward systems that may increase their addictive potential (Gearhardt *et al.*, 2023, Lustig, 2020). The food matrix has changed in UPFs, which makes them easier and faster to consume, and potentially allows them to affect the brain fast (Kelly *et al.*, 2022). Also, additives may be contributing to the addictiveness of UPFs. Additives that improve flavor and mouthfeel include sugar, cocoa, menthol, and alkaline salt (Rees *et al.*, 2012). These foods stimulate similar levels of extracellular dopamine in the brain striatum to those seen with addictive substances such as nicotine and alcohol (Gearhardt *et al.*, 2023). Similar to drug cues in the addicted brain, food cues may evoke food cravings and trigger binge episodes (Delgado-Rodríguez *et al.*, 2023). Physiologic and neuroanatomic overlap between obesity and addiction pathways have been revealed (Lustig, 2020).

Food addiction and diseases

Food addiction is too complicated because it includes clinical components of eating and substance use disorder (craving, or continuous use despite awareness of the adverse effects), and an obsessive-compulsive disorder (intrusive thoughts related to food cues) (Pelchat, 2002). It may be associated with different health problems, from psychiatric (depression, anxiety, lower self-esteem based on weight gain, binge-eating disorder) to somatic (obesity or overweight, diabetes mellitus, or cardiovascular diseases) or social (fear of stigmatization due to overweight/obesity or addictive-like behavior) that finally result in poor quality of life (Vasiliu, 2021).

Strategies to manage food addiction

Nutrient deficiencies appear to account for a small fraction of food cravings at most, including iron deficiency anemia among patients (Meule, 2020). An alternate approach would be not to avoid any food in particular, but pay more attention to the quantity and quality of food intakes. Other studies recommend taking an

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individualized approach, paying attention to particular trigger foods for each person. Higher consumption of nutritional and filling foods such as dietary fibers can also be emphasized. Moreover, cognitive and neuromodulation treatment should be considered in relation to eating disorders and other psychiatric illnesses (Wilcox, 2021). Furthermore, chromium and probiotic supplementation may be effective in food intake regulation and satiety but need further studies (Anton *et al.*, 2008, Carlos *et al.*, 2022).

Some policy approaches to tackle UPF addiction are UPF and beverage taxes, mandatory or voluntary front-of-pack or shelf labeling systems and reformulation of the food supply (i.e. salt or trans-fat reduction), and a suite of policies targeting UPFs (Gearhardt *et al.*, 2023).

Conclusion

Food addiction has public health consequences. Strategies that reduce the accessibility and addictive potentials of UPFs in the modern food environment and minimize risks in particular for children and adolescents are warranted. Besides, further dietary intervention studies should be conducted to manage this problem.

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Conflict of interest

The authors declared no conflict of interests.

Authors' contributions

M Rezazadegan and R Amani contributed to all parts of the article and agreed on all aspects of the work.

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References

Anton SD, et al. 2008. Effects of chromium picolinate on food intake and satiety. *Diabetes technology & therapeutics.* **10 (5)**: 405-412.

Carlos LdO, et al. 2022. Probiotic supplementation attenuates binge eating and food addiction 1 year after Roux-en-Y gastric bypass: a randomized, double-blind, placebo-controlled trial. *Arquivos brasileiros de cirurgia digestiva.* **35**: e1659.

Delgado-Rodríguez R, Moreno-Padilla M, Moreno-Domínguez S & Cepeda-Benito A 2023. Food addiction correlates with emotional and craving reactivity to industrially prepared (ultra-processed) and home-cooked (processed) foods but not unprocessed or minimally processed foods. *Food quality and preference.* **110**: 104961.

GBD Obesity Collaborators 2017. Health effects of overweight and obesity in 195 countries over 25 years. *New England journal of medicine.* **377 (1)**: 13-27.

Gearhardt AN, et al. 2023. Social, clinical, and policy implications of ultra-processed food addiction. *British medical journal.* **383**.

Gibney MJ 2019. Ultra-processed foods: definitions and policy issues. *Current developments in nutrition.* **3 (2)**: nzy077.

Hall KD 2018. Did the food environment cause the obesity epidemic? *Obesity.* **26 (1)**: 11-13.

Horsager C, et al. 2023. Food addiction is strongly associated with type 2 diabetes. *Clinical nutrition.* **42 (5)**: 717-721.

Kalon E, Hong J, Tobin C & Schulte T 2016. Psychological and neurobiological correlates of food addiction. *International review of neurobiology.* **129**: 85-110.

Kelly AL, Baugh ME, Oster ME & DiFeliceantonio AG 2022. The impact of caloric availability on eating behavior and ultra-processed food reward. *Appetite.* **178**: 106274.

Lopez-Jimenez F, et al. 2022. Obesity and cardiovascular disease: mechanistic insights and management strategies. A joint position paper by the World Heart Federation and World Obesity Federation. *European journal of preventive cardiology.* **29 (17)**: 2218-2237.

Lustig RH 2020. Ultraprocessed food: addictive, toxic, and ready for regulation. *Nutrients.* **12 (11)**: 3401.

Meule A 2020. The psychology of food cravings:

[DOI: 10.18502/jnfs.v10i1.17769]

the role of food deprivation. *Current nutrition reports.* **9**: 251-257.

Meule A & Kübler A 2012. Food cravings in food addiction: the distinct role of positive reinforcement. *Eating behaviors.* **13 (3)**: 252-255.

Monteiro CA, et al. 2018. The UN Decade of Nutrition, the NOVA food classification and the trouble with ultra-processing. *Public health nutrition.* **21 (1)**: 5-17.

Moubarac J-C, Parra DC, Cannon G & Monteiro CA 2014. Food classification systems based on food processing: significance and implications for policies and actions: a systematic literature review and assessment. *Current obesity reports.* **3**: 256-272.

Pelchat ML 2002. Of human bondage: food craving, obsession, compulsion, and addiction. *Physiology & behavior*. **76 (3)**: 347-352.

Rees VW, et al. 2012. Role of cigarette sensory cues in modifying puffing topography. *Drug and alcohol dependence.* **124 (1-2)**: 1-10.

Schulte EM, Kral TV & Allison KC 2022. A cross-sectional examination of reported changes to weight, eating, and activity behaviors during the COVID-19 pandemic among United States adults with food addiction. *Appetite.* **168**: 105740.

Schulte EM, Yokum S, Potenza MN & Gearhardt AN 2016. Neural systems implicated in obesity as an addictive disorder: from biological to behavioral mechanisms. *Progress in brain research.* **223**: 329-346.

Vasiliu O 2021. Current Status of Evidence for a New Diagnosis: Food Addiction-A Literature Review. *Frontiers in psychiatry*. **12**: 824936.

Wilcox CE 2021. How to treat food addiction from a nutritional perspective: consideration of diet and abstinence. *Food Addiction, Obesity, and Disorders of Overeating: An Evidence-Based Assessment and Clinical Guide.* 179-188.

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